



GEF

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Dear Council Member:

I am writing to notify you that UNDP, the Implementing Agency for the project entitled, *Egypt: Conservation and Sustainable Use of Medicinal Plants in Arid and Semi-arid Ecosystems*, has submitted the proposed project document for CEO endorsement prior to final approval of the project in accordance with UNDP procedures.

Over the next four weeks, the Secretariat will be reviewing the project document to ascertain that it is consistent with the proposal included in the work program approved by the Council in May 2000, and with GEF policies and procedures. The Secretariat will also ascertain whether the proposed level of GEF financing is appropriate in light of the project's objectives.

If by July 30, 2001, I have not received requests from at least four Council Members to have the proposed project reviewed at a Council meeting because in the Member's view the project is not consistent with the Instrument or GEF policies and procedures, I will complete the Secretariat's assessment with a view to endorsing the proposed project document.

We have today posted the proposed project document on the GEF website at www.gefweb.org. If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Cc: Alternates, Implementing Agencies, STAP

**UNDP Response to GEF Council comments pertaining to
EGY/00/G31/A/1G/99**

**Egypt-Conservation and Sustainable Use of Medicinal Plants
in Arid and Semi-Arid Ecosystems**

Comments from Switzerland:

General Commentaries

- This ambitious project, which clearly fulfils the GEF criteria and Operational Principles, addresses in a relatively innovative and very sound way the conservation and sustainable use of wild medicinal plants in Southern Sinai, an important center of plant diversity and an area targeted by large development schemes from the government of Egypt. Its broad approach considers as well mitigation of threats on plant diversity, as possible cultivation, plant processing and trade, and intellectual property rights. The project is very well embedded in a large UE-funded programme of conservation and development, on whose participatory approach its strategy is built, and linked with a number of international and national initiatives that allow to minimize the contribution requested from the GEF, making of this project a very cost-effective one.
- We consider as particularly positive the following points:
 - The presentation of the project, with a short and clear brief, complemented by a series of very good and relevant annexes (logical framework including a precise listing of activities, root causes matrix, presentation of the potential partner organizations, etc.).
 - The really close involvement of the main stakeholders –the Bedouins-, from the very beginning of the project development, following a very participatory approach in designing the specific components they will be part of. The setting up of a Bedouin Medicinal Plant Association, which will be a crucial institution of the project is an innovative point worth to mention.
 - The particular attention put on Intellectual property rights.

Main Concerns

- In-situ conservation: in agreement with the STAP review, we consider that the methodology of selected enclosures in order to protect specific areas from various human-related pressures is still insufficiently documented: there is little evidence that this approach will really be successful.
- Capacity building further to the aspects addressed (concerning mainly best practice in plant collection, training and extension in medicinal plant cultivation, processing, etc.), a lot of technical and scientific capacity will be needed for endangered species protection, management, field monitoring and evaluation (output 1). It remains unclear how this capacity will be built or mobilized (in spite of indications given in Annex J on possible scientific institutions to be partners of the project).
- Financial sustainability: “gate fees and government commitment will be the principle means for funding PA management in the future” (58). It may be questioned if this will really be sufficient and if further ways of funding should not be explored. In general, financial sustainability appears to be insufficiently addressed in the brief, in spite of the assumption that “incrementality is expected to be negative in the long run” (Annex A, 3.)

Further Comments

- Social sustainability: in several cases (notably for outputs 1 and 5), the success of the project depends very much on assumptions concerning recognition and adhesion from local populations (e.g. collection and grazing agreements). We recognise that the project has been designed as carefully as possible to maximise this adhesion; risks of failure should anyway not be neglected, in particular if rapid changes in local societies would occur.
- Revolving fund to promote community access to loans for cultivation equipment: although we consider this a good idea, we wonder if the way envisaged to initialise the fund (through a

percentage of plant sales, and Medicinal Plant Association membership fees) will be sufficient or if further capital sources will be needed.

- Due to the complexity and the multidisciplinary aspect of the project, a great deal of expertise will be required and we agree with the STAP reviewer that, at this stage of the project's development, it remains unclear what manpower will be needed and how it will be made available.

Response from UNDP:

- **In situ conservation:** We agree with the Council Member comments with regard to the methodology for selecting enclosures to protect specific areas from various human related pressures. We have already received views from stakeholders and associated project partners on site to look closely during implementation on the feasibility of the overall proposed size of enclosures (currently estimated at 25% of the total St. Katherine area) to be placed under protection. While this comment is addressed mainly under output 1, we herewith would like to emphasize that specific enclosures will be identified following detailed ecological and botanical surveys (and socio-economic appraisals) indicating distribution and abundance of globally important and critically endangered species and eco-niches to be designated for in site protection. To do this, the project together with the local stakeholders and resource users will have to agree on certain criteria (such as presence of biodiversity of global significance, size of enclosures, people willingness to participate, level of threats, etc.) to be applied for proper selecting of enclosure. Part of this inventory-consultative process has been initiated-completed by the project team during the preparatory phase. During project implementation, the strategy will always be to protect the biodiversity value while at the same time not impeding the resource use base. Before finally deciding on enclosures, the project will follow a systematic sampling through application of transects and quadrates in the globally significant areas to be designated for protection. It is again to be emphasized that enclosure agreements will have to be agreed on/negotiated with local communities and resource users in the investigated areas. The size of enclosures will be based on the need to conserve minimum viable populations of species targeted for conservation; and these areas will then be fenced off. The enclosed areas will be monitored by the project (including local Bedouin guards) and emerging results will be used for adaptive management of enclosed areas to ensure conservation. As a parallel measure, genetic samples of all target species will be registered and deposited in Egypt's national Gene-bank after it is completed. [Comment addressed as part of output 1].
- **Capacity Building:** We agree with the Council Member comment that a great deal of technical and scientific capacity will be needed during the course of the project to ensure protection of critically endangered species. The project will make use of and mobilize all relevant capacities present at the national and international levels including international expertise and private sector (see Annex J of the project brief) to ensure sound and sustainable collection, conservation, cultivation and processing of medicinal plants. The national Research Center has a national wide expertise addressing appropriate and sustainable collection of medicinal plants. The NRC also has been doing a great deal of applied research focused on identifying active ingredients and constituents in native medicinal plants. The technical capacity of the Agricultural Research Center also will be build upon, especially with reference to techniques needed for propagation and cultivation of native medicinal plants that suit arid zone environments. Sekem (which is a private sector company involving national and international expertise mainly from Germany), Kato Aromatic and El Baquley also have sound technical expertise/capacity with regard to cultivation practices, processing and packaging a range of medicinal plants products. Sekem has already expressed its interest in co-funding/implementing the medicinal plant cultivation activities. [Comment addressed as part of output 1, second paragraph].
- **Financial Sustainability:** This comment from the Swiss Council Member is well taken. The project will promote the sustainable use of the medicinal plant resource base, within the context of protected areas management. The GoE is committed to long term management of St Katherine's following the closure of the current EU project. Gate fees will be one of primary means of funding PA management in future. Government commitment to the project is focused at sustainable development activities including the establishment of a medicinal plant center, medicinal plant association, and at developing and implementation of a medicinal plant strategy and action plan and IPR framework. This project will add value to medicinal plant resources and rooting their

sustainable use more firmly to the Bedouin household economy, and create the right incentives for Bedouin to act as custodian of their medicinal plant resource base.

The sustainability of enclosure and wild medicinal plant collection agreements, developed under the project, will depend upon helping communities to capture greater value from rangeland resources.

Medicinal plant marketing: The primary purpose of the marketing strategy will be to increase the quality and price of medicinal products rather than the quantity sold, thus demand can be reduced to sustainable levels without decreasing revenues. A primary market for medicinal plants will be the visitors' to St Katherine's. The Protectorate receives 100,000 to 150,000 visitors annually and this is expected to grow as high as 3 million annually by 2017, according to some estimates. Other existing markets include Attarin in Cairo, El-tour, Dahab and occasional export. The marketing plan will therefore seek to diversify in a number of markets. Another market will be small-scale pharmaceutical production units in El-tour that are planned under the Sinai Development Plan.

Medicinal plant cultivation and processing: Some demand will be supplied under sustainable harvesting agreements from the wild sources, while remaining demand will come from cultivated sources. Cost data for medicinal plant cultivation in the Nile valley indicates net revenues of between USD 5,000 and USD 13,290 per hectare, without including cost of land. Cultivation in St Katherine's Protectorate would be less intensive and on a smaller scale, however combined with simple processing and marketing medicinal plant cultivation could be profitable there. The challenge will be to adapt and simplify technology and methodologies for use in low volume, small-scale operations.

The Medicinal Plant Association and the Medicinal Plant Center, which will be established by the project, will play important roles for focal institutions in training and extension and for marketing of medicinal plants. The Association will generate revenue for conservation from membership fees. Initially the fees will be set very low in order to attract interest in medicinal plant cultivation, processing and marketing. As success is demonstrated, the fees can be raised. Ultimately however, the sustainability of the project lies in being able to make a profit from medicinal plant activities, thus fees can never be raised higher than what the activity will bear. To set fees before implementation of the project would be to preempt the profitability of medicinal plant cultivation, processing, and marketing. Project management and participants will need to have the flexibility to respond to the emerging experience of selling processed medicinal plants when they set the membership fees. [Comment addressed as part of section F, Project Risk and Sustainability].

- **Social sustainability:** This has been listed among the project risks requesting abatement measures, see section F. All activities build on existing traditions, and know-how. Medicinal plants have been used for many centuries in Egypt. Bedouin still cultivate and keep livestock; increasingly they have become engaged in tourist activities; and tribes are used to making and enforcing communal and private use agreements under customary and civil law. Social sustainability will be fostered through a participatory approach and building community ownership of project activities, while the Medicinal Plant Association will become a focal institution for propelling the growth of sustainable medicinal plant practices.

Rapid developmental changes in the Sinai Peninsula will not create an issue of social depreciation primarily as the local communities in Sinai is part of mainstream Egyptian population. The PDF-B team during project preparation had observed a relative shift of interest among young generations from local traditional medicine towards more promising economic sectors such as tourism. The project aims to undertake activities designed to protect and preserve traditional community knowledge and lifestyle on medicinal plant and these are aimed to promote social acceptance and feasibility of medicinal plant protection and production practices. The Government and donor support to Sinai also is in coherence with sustainable development plans and strategies of the peninsula. [Comment addressed as part of section F, Project Risk and Sustainability].

- **The Revolving Fund:** to be initiated by the project with initial capital resources of \$210,000 from UNDP and GoE. It is aimed at promoting community access to loans from the National Bank for Development for purchasing cultivation equipment and for assistance in processing storing, and selling of medicinal plants. The Medicinal Plant Association will act as guarantor of the

commercial loan. A percentage of the profits from medicinal plant sales and Association membership fees will top-up the revolving fund for ongoing training and extension work. In line with the comment provided by the Council Member, it is not clear at this stage if the total amount of capital resources to initiate the Revolving Fund will be adequate. [Comment addressed as part of section F, Project Risk and Sustainability].

- Needed Expertise: We agree with the Council Member observation and the STAP review that due to the complexity and multidisciplinary aspect of the project, a great deal of expertise will be required, and at the stage it remains to be relatively unclear what manpower will be needed. Having said so, the project during the preparatory phase has made extensive discussions with available technical and scientific capacities and expertise among national stakeholder agencies and academic-research institutions to agree on roles and to ensure full adherence of the project to emerging technical and scientific issues/activities.

Comments from France:

The purpose of the project is to maintain the diversity of plants that are currently being overexploited in the Sinai. This will be accomplished through protective measures, cultivation of threatened plants, development of sustainable harvesting and grazing techniques, promotion of alternative energy sources to replace wood, and protection of community intellectual property rights relating to plants.

The project is well-documented and could be considered an experimental project considering how rarely projects in this field have been implemented thus far. This justifies the high cost in relation to the project's scope and the population of the target zone (only 5,000 inhabitants, meaning the GEF will be investing US\$1,000 per person).

Response from UNDP:

- High cost in relation to the project scope and population of the target zone: We would like to mention herewith that while the thrust of the project is going to benefit local traditional communities in the St. Katherine-south Sinai area, a considerable portion of project activities (awareness, legal issues, IPR framework, medicinal plant strategy and action plan, etc.) will be undertaken to benefit national level sectors, thereby part of the project costs will be spread over the mainstream national Egyptian population.

**UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)
GLOBAL ENVIRONMENTAL FACILITY (GEF)
Project of the Government of Egypt
Project Document**

Project Number: EGY/00/G31/A/1G/99
 Project Title: Egypt-Conservation and Sustainable Use of Medicinal Plants in Arid and Semi-Arid Ecosystems
 Estimated starting date: June 2001
 Estimated end date: May 2006
 Management Arrangement: National Execution
 Designated Institution: EEAA
 Project Site: St. Katherine, Sinai
 Beneficiary Country: Egypt

Summary of GEF and UNDP inputs	
GEF:	US\$4,117,000
UNDP:	US\$500,080
Subtotal:	US\$4,617,080

Classification Information
ACC sector and subsector: 0430 Biological Resources
DCAS sector and sub-sector: medicinal plants, Research and Development (0527)
Primary areas of focus/sub-focus: promoting biodiversity and sustainable use of natural resources (03)
Secondary areas of focus/sub-focus: Improvement of data and information on sustainable development (0317)
Primary target beneficiaries: Local Communities and NGOs (06)
Secondary target beneficiaries: Local Governmental Organizations (0539)

Government, GTZ/EU, Private and others inputs	
GTZ/EU-(in kind):	US\$618,900
Government-(in kind)	US\$3,004,820
Private (in kind)	US\$226,398 ¹
Local/others-(in kind)	US\$415,800
Subtotal:	US\$4,265,918
Project Grand Total	US\$8,882,998

LPAC Review Date: 8 November 2000 Program Officer: Mohammed Bayoumi
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Brief Description: The project aims at conserving globally significant medicinal plant species and associated habitats in St Katherine's Protectorate as follows: 1) foreclose the use of critically endangered medicinal plant species in hotspots; 2) introduce small-scale community-based cultivation, processing and medicinal plant marketing to relieve pressure from wild sources in orchards and gardens; 3) introduce best practices for sustainable collection of wild medicinal plants throughout the protectorate; 4) promote alternative energy sources in demonstration areas; 5) disperse grazing pressure throughout the Protectorate; 6) protect community intellectual property rights; and 7) replicate project successes in Egypt.

The project is in line with the priorities set by the Egyptian National Biodiversity Strategy and Action Plan, UNDP's sustainable development program, and by GEF Operational Guidelines. The project brief and annexes as approved by the GEF Council are considered an integral part of this document. Egypt Environmental Affairs Agency will be the government counterpart institution responsible for the national coordination and execution of the project. OUDA (Operational Unit for Development Assistance) will provide financial and administrative support to the project on behalf of UNDP.

On behalf of	Signature	Date	Name/Title
Government	_____	_____	_____
Executing Agency	_____	_____	_____
UNDP	_____	_____	_____

¹ Includes USD 16,995 in co-financing from Sekem for the PDF B
 United Nations official exchange rate at date of last signature of project document: \$1.00 = LE 3.68

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LIST OF ACRONYMS AND ABBREVIATION

ARST	Academy of Scientific Research and Technology
a.s.l	above sea level
b.g.l	below ground level
BSP	Bedouin Support Programme
CBD	Convention on Biological Diversity
D.S.F.	Daily summer amount of fuel
D.W.F.	Daily winter amount of fuel
DNP	Department of Natural Protectorates
DR	Desert Research Centre
EBDA	Egyptian Bio-dynamic Association
EEAA	Egyptian Environmental Affairs Agency
endang.	Endangered
EU	European Union
ext. endang.	Extremely Endangered
GEF	Global Environmental Facility
GIS	Geographical Information System
GoE	Government of the Arab Republic of Egypt
GPS	Global Position System
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
IA	Implementing Agency
IPR	Intellectual Property Rights
IUCN	International Union for Conservation of Nature
LE	Egyptian Pound
m.a.s.l.	Meter above sea level
MALR	Ministry of Agriculture and Land Reclamation, Egypt
MOP	Ministry of Planning, Egypt
MP	Medicinal & Aromatic Plants
Mt.	Mountain
NBSAP	National Biodiversity Strategy and Action Plan
NBU	National Biodiversity Unit
NGO	Non-Governmental Organization
NODCAR	National Organization for Drug Control and Research
NRC	National Research Center
OP	Operating Programme
OUA	Operational Unit for Development Assistance
PAMU	Project Area Manager Unit
PC	Personal Computer
PDF	Project Development Facility
PIR	Project Implementation Review
ppm	parts per million
PTAC	Project Technical Advisory Committee
T.S.F.	Total amount of fuel needed in summer season
T.W.F	Total amount of fuel needed in winter season
TDA	Tourism Development Authority
TRIPS	Trade Related Intellectual Property Rights
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
USD	United States Dollars
v. rare	Very Rare
vuln.	Vulnerable
WCMC	World Conservation Monitoring Center
WWF	World Wildlife Fund

A. CONTEXT

A.1 Introduction

Egypt forms the northeastern corner of Africa embracing a total area of almost one million square kilometers and a population of more than 65 million inhabitants. Almost 99% of the population dwell in a relatively cultivated area of less than 42000 km² (4% of the total area) forming one of the world highest population density (1170 inhabitant/km²). The rest of the Egypt is desert to semi desert and is sparsely populated.

Without the Nile, Egypt would be the harshest desert globally. The rainfall does not exceed 10 mm /year in most parts of the country and the highest rainfall occurs along the Mediterranean coast with an average of 150 mm/year. This amount decreases rapidly southward until it reaches 25 mm at Cairo latitude. The Egypt territories, given its particular situation between the Asiatic and African continents, rainfall, climate, landscape and topography enjoy several phyto-geographical terrain (Irano-Turanaian, Central Asian, African and Sudanese penetration, Saharo-Arabian dimension, and a Mediterranean zone) that are manifested by unique assemblages of flora, fauna, and habitats.

The Sinai Peninsula despite the high influence of continental flora is considered one of globally significant arid and semi-arid zone ecosystems capturing high inter-specific endemism in an arid environment. This is particularly true in the mountainous region of St Katherine's Protectorate. The Sinai peninsula is almost entirely separated from Asia and Africa by the Gulfs of Aqaba and Suez. Coupled with the unique conditions, much of St Katherine's Protectorate flora is ecologically isolated from its arid surroundings and speciation has not been uncommon. Of the 316 plant species identified in St Katherine's Protectorate, at least 33 are known to be endemic¹ to the Sinai peninsula, and another 4 endemic to Egypt. The 37 endemic species found in St Katherine's represent over 60% of Egypt's floral endemism².

The massif in St Katherine's is composed of red granites and volcanic diorites and syenites, and reaches approximately 2640 meters. The variation in rock type, relief and altitude provide a wide range of habitat conditions for flora, including high variations in moisture, temperature, light and soil conditions. Its height and proximity to the coast expose the massif to higher precipitation levels than surrounding arid areas of the Sinai. High mountains support steppe vegetation dominated by *Artemisia herba-alba* accompanied by *Gymnocarpus decander*, while lower elevations are dominated by *Artemisia herba-alba* with *Zilla spinosa* and *Fagonia mollis* on stony alluvium of ridges. In general there are thirteen plants associations or more entailing unique and wide ecological distribution in South Sinai.

In terms of fauna, the Protectorate supports a number of endangered species of fauna, among them are at least two endangered reptiles (*Uromastix aegyptiaca*, *U. ornatus*), one endangered gazelle (*Gazella dorcas*) and 5 resident birds (*Cercomela melanura*, *Oenanthe monacha*, *Alectoris chukatr*, *Motacilla flava* and *Sylvia melanocephala*). These species are targeted for protection under protectorate management plans but will also benefit from the objectives of the proposed project.

Among the 316 species that were recorded in St. Katherine protectorate, 102 species can be considered as medicinal species (including medicinal, aromatic, cosmetic, and culinary) representing 32.3 % of the recorded species. Forty seven species are considered with potential as medicinal plants (14.8%), 9 species are used in veterinary medicine (2.8%) and 158 used for other purposes (50%).

One of fascinating areas of concern is reproduction ecology and physiology of desert medicinal plants on which fragmentary information is available. There is a greater need to investigate the reproductive species

¹ The rapid botanical survey conducted during the PDF-B was only able to record 316 species, which includes 19 endemics, but was not able to document 213 other species from previous surveys, which include the remainder of the endemics. The Full Project will conduct an exhaustive survey.

² The list could be potentially greater since the Peninsula has not been fully surveyed (in particular, the more insular higher altitudes have not been well studied).

ecology in order to delineate conservation measures (*in situ* or *ex situ*) for their management. Seeds forms integral part of desert ecosystems, especially for annual species of which seeds can be the most prevalent only means of dispersal and regeneration. Germination and propagation trials of woody plant species are also important for species protection and propagation by cuttings is an alternative way in species having problems in seed germination.

A.1.1 Development and the Environment

Since the thirties, Egypt has adopted a major programme of industrialization that accelerated enormously in the second half of this century. Unfortunately, environmental considerations have not been among the criteria for the determination of the type of industries nor in the choice of locations of industrial centers. Some of these centers were established in the midst of human settlements and in the Nile Valley and the Delta where they became major sources of pollution for land and its associated network of irrigation and drainage canals.

In the 1980s to early 1990s, Egypt has initiated what became to be known as the green revolution using intensive agricultural practices. This entailed the widespread use of agricultural chemicals in the form of pesticides and fertilizers with residues that seeped into rural environment in general and into the irrigation and drainage canals in particular. The immense population explosion in the second half of the twentieth century necessitated the large expansion in housing sites both in rural and urban places. This inevitably led to a severe shortage in sewage systems, which, in turn, became an additional source of pollution, especially in the agricultural irrigation and drainage systems.

All these sources of pollution have led to detrimental impacts on habitats and to major changes in the biodiversity of terrestrial, atmospheric and water environments.

On the other hand, major efforts have been made in the last two decades to improve the infrastructure throughout the country. New networks of irrigation and drainage, as well as stations for refuse treatment have been built. These are beginning to show a positive effect in improving the environment. However, pollution remains a serious source of threat to the environment.

Development programmes in Egypt include the expansion of tourism, with special emphasis on ecological tourism (i.e. where the tourist is attracted to sites with special ecological features especially along the warm coasts of the Red Sea, the Gulf of Suez and the Gulf of Aqaba). In this context, nature conservation is a basis for development. However, this important consideration needs to be strongly impressed upon development planners and investors in tourism projects. They should be made aware that conservation of corals and mangroves, with the associated multitude of organisms, coastal zone protection and the preservation of unique geological and geomorphological formations are essential to sustainable development of tourism.

There is a recent trend towards the development of desert tourism. A number of hotels are beginning to emerge in Egyptian oases, and a number of companies have been established to promote and organize this new type of desert safari. Here, the touristic attraction is ecological as it is directly related to the desert climate and landscape. Environmental conservation in these natural, and yet undisturbed habitats is a necessity for the successful development of these safaris.

A.2 Development Problem

With its high mountains and deep wadis in the southern Sinai peninsula, and its relatively unexplored desert ecosystem of flora and fauna, St. Katherine Protectorate is as one of region's most amazing areas not only for its natural landscapes, but also for its medicinal plant diversity that is presenting national and global interest. While previous plant inventories recorded 529 plant species within the protectorate boundary, only 316 plant species were rapidly recorded, of which 33 species are endemic. This shows that over the years, 213 species were not observed in the area. The disappearance of, or at least the difficulty to locate, 213 species confirms the dramatic loss global plant biodiversity.

The global significance of species found in St Katherine's Protectorate is not only related to the uniqueness of the flora and habitat, but also due to use value. At least 47% have medicinal, aromatic, cosmetic or

culinary uses in addition to their value as fodder or fuel. The Bedouin who live in St Katherine Protectorate have developed an extensive knowledge of uses for these species, and this is an integral part of their total economic value.

The development of the Sinai Peninsula has become a strategic goal for the Government of Egypt (GoE). One output will be to shift population pressure from the Nile Delta to less populated areas like south Sinai. Over 60% of new employment opportunities are expected to be created in the tourist sector which depends heavily on pristine environmental conditions, and small-scale industry, such as crafts and pharmaceutical production which have little impact on the environment. However mining and oil exploration will continue in a controlled manner.

Because of population targets, population levels are expected to increase 10 times by 2017 in the Sinai Peninsula reaching over 673,000 individual. Urban plans are being developed by St Katherine City Council, with EU assistance to accommodate the expansion and minimise the environmental impact. The influx of non-indigenous people will however accelerate socio-economic change in St Katherine.

As for tourism, nearly 43,000 additional hotel beds will be developed by 2017, mainly along the southern Sinai coast, where winter sun, pristine conditions, marine biodiversity, and coral reefs, have high potential as a tourist destination. St Katherine's attracts between 100,000 and 150,000 visitors annually mainly to see the ancient St Katherine's Monastery, but the new hotel developments are expected to significantly increase this number; to as high as 3 million visitors annually by 2017, according to some estimates. Visitor management plans and facilities are being developed by the EEAA, with EU assistance, to absorb the expected additional pressure and to minimise impact on the environment. Gate fees will also be introduced to regulate visitor numbers and raise revenue for Protectorate management. These changes will continue to make the sector a more important part of the local economy, moving it further away from a dependence on rangeland resources. Such a shift needs to be carefully managed if conservation objectives are to be realised during this transition.

On agriculture, as part of Egypt's structural adjustment plans, the GoE has removed support from much of the agricultural sector, including the animal feed industry. Feed prices have risen and livestock husbandry is largely un-profitable in Egypt now. Under the Sinai Development plan, agriculture will be encouraged in northern Sinai, where it is close to markets, and will have access to irrigation. In the arid Southern Sinai Governorate agriculture now plays a minor economic role. Less than 1 percent of the Governorate is cultivated, and extensive livestock production has declined in recent years. In many cases livestock production in St Katherine Protectorate is no longer economically viable, particularly when feed substitutes have become necessary. Production continues primarily as a cultural legacy, for home-consumption, and as insurance against economic shock.

In St Katherine many Bedouin are now sedentary and live in small scattered settlements of four or five families of a single clan, and only a minority continue traditional transhumance (ranging 35-60 km) and cultivation. Scattered plots of barley and wheat exist along the wadi beds, irrigated by floodwater from the mountains and by wells. Fruit, olive and almond are grown in some orchards and palms and tamarind is still found at lower altitudes. However a recent survey has shown that more than 40% of orchards are either neglected or totally abandoned, and in most cases communal tenure arrangements are no longer observed. Activities revolving around rangeland resources are increasingly done by the women, including fuel-wood medicinal plants, and fodder collection and shepherding the family herd.

Trade in medicinal plants, plays only a small part in the Egyptian economy, although there is now an expanding private sector which cultivates and processes medicinal plant products.

A number of threats to medicinal plants and habitat in St Katherine's were identified during the PDF B (see the root cause threats matrix in annex D of the brief). These include: (1) trampling, soil compaction and accelerated soil erosion around settlements (particularly around St Katherine City), along unpaved quarry roads and around quarries, and along tourist trekking/safari routes; (2) vegetation clearance resulting from urbanisation and quarrying; (3) smothering and leaching from solid waste and soil contamination from poor sewerage and waste-water management. These threats are being addressed by the Protectorate Integrated Management Plan.

However a number of threats to medicinal plants were identified during the PDF B that are not being addressed. These are:

a. Over-collection of Flora for Medicinal Uses

Demand is a root cause of over-collecting medicinal plants. These sources are described below.

- *Household use:* Bedouin women traditionally collect and use many different species for medicinal, aromatic, ornamental and culinary use. Annex I, Table 5 lists those species most commonly used, and their uses. Data shows over 80% of households in St Katherine continue these practices today; each family commonly stores up to 0.5 kg of 4 to 5 medicinal plant species in the home at any one time, for making tea, treating minor ailments, and for cooking. Easily found species, best used when fresh, are usually collected as needed, while more inaccessible species are dried and “hoarded”. Household interviews suggest many commonly used species are becoming more difficult to find, and “hoarding” is an increasing danger.
- *Traditional healers (Hakim):* Interviews with *Hakim* also suggest many commonly used species are becoming harder to find. Some now employ collectors to find the quantities and species needed. Modern medical services subsidised by the GoE compliment traditional medicinal cures; *Hakim* still administer traditional remedies for common or minor ailments, while Bedouin tend to go to one of the clinics in St Katherine’s for more serious illnesses. This does relieve demand for medicinal plants however traditional knowledge of medicinal plant uses will be lost as a result.
- *Medicinal plant trade:* Annex I, table 3 of the project document lists estimated 1998 Egyptian export quantities of unprocessed medicinal plant species found growing wild in St Katherine Protectorate. These raw materials are usually supplied from other more easily accessible locations than St Katherine, except when they are not available elsewhere. Hence the most rare and endangered species are most threatened from this source of demand, while more common species are supplied to local markets, particularly from the less monitored east side of the Protectorate. Discussions with *Attarin* indicate between 5-40 tonnes of dry unprocessed material, depending on species, are sold annually at these markets, while 10 tonnes of dry processed material is sold to visitors in St Katherine’s. Regional market demand is likely to increase with the promotion of the pharmaceutical production in El-tour.

Bedouin generally perceive medicinal plants to be of low economic value, and not worth management. The project will help Bedouin to realise a greater percentage of the total market value of medicinal plant raw materials through processing and a targeted marketing strategy.

b. Fuel wood Collection for Household Use

Some species such as *Moringa peregrina* and *Tamarix aphylla* are collected both for medicinal use and as fuel. In areas where primary species for fuel have been eradicated, medicinal plant species with less calorific value such as *Artemisia judaica* and *Teucrium polium* are collected (see Annex I, Table 6 for a list of the most commonly used species for fuel). In other cases medicinal plants may grow associated with woody species, which when cut or uprooted can also destroy the conditions medicinal plant species need to survive.

A Bedouin family uses around 10kg of dry matter of fuel per day in the summer, and 20kg in the winter, although butane gas is an increasingly preferred alternative because of its convenience and low price (one canister costing USD 3, can last a family one month). Over 90% of Bedouin households now use butane gas as their primary source of energy when available, but distribution of gas is restricted to regional centres such as Dahab and El-tour. It can be many weeks before Bedouin are able to get replacement canisters, during which time woody species growing wild are the only available fuel. Another source of demand is from the growing tourist trekking, camping and safari activities. Even though tour operators and tourists are supposed to pack in all necessary fuel for a trip, this is often not the case. The project will enforce regulations on fuel wood collection in St Katherine’s, and encourage the private sector to supply both imported wood and butane to St Katherine’s Protectorate and demonstrate the viability of solar technology to meet growing demand, stimulated by enforced regulation

c. Overgrazing Around Settlements

Environmental desiccation during the 1980's (see Figure 1) has reduced the economic viability of keeping livestock in St Katherine's. Reports indicate that sheep and goats have fallen by 30% over the last 20 years, to 14,500 head, and the average family herd size has decreased from 60 in 1967, to 12 today. This trend has been sustained by the growing availability of more lucrative alternative employment opportunities, which has reduced family labour available for herding. The distance and frequency of traditional transhumance practices have often decreased because of the need to remain near the source of employment, and the decrease in livestock numbers has also reduced the perceived need for co-operative rangeland management agreements such as the *hilf* and *doukhl*.

There is strong evidence that grazing pressure has shifted and concentrated around settlements, and St Katherine City in particular, and along many wadis. Some households buy supplemental feed but the cost is high. In fact, the Bedouin communities overlap closely with the highest concentration of floral diversity and endemism in the Protectorate. Thus while most endemic medicinal plants occur at higher altitude increasing grazing pressure around settlements is having a serious impact on the most globally significant biodiversity in the Protectorate.

Given the high cost of supplemental feed, the low availability of labour in some households, the low mobility of some households, and the small family herd size the project will train shepherds in modern rest and rotation grazing techniques and encourage households to pool their herd with these shepherds. Pooling herds will capture economies of scale, and shepherds will be able to graze animals away from settlements, reducing the amount of substitute feed required and the pressure of localised overgrazing around settlements. The output will also benefit species in under-grazed areas that are being suppressed by better-adapted species. The output will be underpinned by renewed grazing agreements.

A.3 Previous experiences and ongoing activities by national and international partners

A.3.1. Completed Research Projects Contributing to Medicinal Plants on the National Level:

Several Research programs contributing to medicinal Plants on the National Level include: Industrialization of Pharmaceuticals from Medicinal Plants, Development and Utilization of Wilds Medicinal Plants growing in Sinai, Cultivation of the Medicinal and Aromatic Plants in the New Reclaimed Lands, Application of the Scientific Data of the Crop under Saline Conditions, Cultivation of some Field Crops, Modified Techniques for Cultivation of Certain Medicinal Plants in Newly Reclaimed Lands as a Source for Biologically Active Agents, Assessment of Medicinal Plants in Suez Canal Zone, Isolation and Identification of the Active Constituents of Certain Medicinal Plants.

A.3.2. Ongoing Research Projects Contributing to Medicinal Plants on the National Level:

Utilization of Plants and its Extracts as Natural Pesticides Against Insects- National Research Centre and Academy of Scientific Research and Technology (Budget LE 100 000, 1996-2001). The objective of this project is to find out safe and biodegradable pesticides with no negative effect on health and environment. An important source of these pesticides is the natural compounds occurring in plants. The first phase of this project deals with screening of wild and cultivated plants, shrubs, herbs and trees for their insecticidal activities against different groups of insects to find out the different biological activities of these plants and to determine the mode of action of the different plant extracts and their identified isolates. The second phase deals with formulation of the potent extracts and isolates and the application of these formulas in the field.

Evaluation of Egyptian Medicinal Plants for their Biological Activities at NRC and Academy of Scientific Research and Technology (Budget LE 56 580, 1998-2001). The objectives of the biological evaluation of natural resources are to find out resources of potential biological active single chemical constituents or standardized product (containing more than one compound), which could be developed as drug. This work will be done on the medicinal and endemic plants growing wild or cultivated in Egypt, particularly those, which have been proved to have medicinal uses. These plants will be studied chemically and biologically to find out their biological activities. Interesting ones will be chosen according to the biological screening. Biological screening will include the following activities either in-vitro or in-vivo: anti-tumor, antioxidants, hepato-protective, and immuno-modulation, anti-inflammatory and antiviral activities.

Valuable plants will be selected and subjected to further chemical and biological studies to isolate and identify the active agents. Collection and authentication of samples for biological evaluation is the starting point, and then the primary biological and toxicological screening will be carried out including the activities mentioned above.

More detailed studies will be carried out using advanced techniques by following bioassay guided fractionation including chromatographic methods such as High Performance Liquid Chromatography (HPLC), High Performance Thin Layer Chromatography (HPTLC) using TLC scanner, Chromatotron, etc. Spectral analysis for the identification of the isolated compounds will be done.

This work will lead to full screening of the biological activities of the interesting Egyptian medicinal plants as well as finding out the chemical constituents of them. This work will also give the opportunity for securing legal protection for the products of Egyptian medicinal plants having various activities.

A3.3. Support of Medicinal Plants' Biodiversity in Egypt:

There is currently strong donor support to **Egyptian Environmental Affairs Agency (EEAA)** to assist the Agency in setting up the central and regionalized structures necessary to implement its mandate, much of it concerned with environmental quality issues, e.g. pollution and conservation of natural resources.

The EEAA currently has ongoing programmes related to biodiversity conservation and protected area management. The **European Union (EU)** is funding a 16 million ECU programme for the establishment of sand management of a protected area network in South Sinai, including Ras Mohammed National Park, and St. Katherine, Nabq, Abu Ghalum and Taba protected Areas. While this largely involves the Sinai, the EU programme also includes an institution and capacity building component for the Nature Conservation Section/EEAA, and development and reinforcement of a national protected area network.

UNEP through GEF resources supported the establishment of a **National Biodiversity Unit (NBU)** at the Nature Conservation Department of EEAA to oversee compliance with the provisions of the CBD. One of the GEF/GOE/UNEP project is Country Study on Biological Diversity and the Biodiversity Strategy and Action Plan (BSAP). Although specific sites for medicinal plant conservation were not proposed by these projects, the conservation and protection of all medicinal plants of Egypt was accorded a priority national interest. The present project is responding to this recommendation by following an integrated ecosystem approach for medicinal plant conservation and sustainable use in St. Katherine.

The GEF/UNDP project on the conservation of wetland and coastal ecosystems in the Mediterranean region is a regional initiative involving five countries (Albania, Egypt, Lebanon, Morocco and Tunisia) and the Palestinian Authority. The overall objective of this project is to provide necessary management and institutional capacities to conserve threatened biodiversity in coastal and wetland ecosystems in the above countries/authority. In Egypt, the project will ensure the protection and conservation of coastal and wetland biodiversity resources in the Zaranik and Burullus Protected Areas (declared also as Ramsar sites), and the Matrouh sector in the northern part of the country. The proposed project will complement this regional project by addressing different types of threats and root causes that impact negatively on medicinal plant diversity in arid and semi arid zone ecosystems.

The medicinal plant report that was prepared by the **National Committee for the Conservation of Nature and Natural Resources**, Academy of Scientific Research and Technology funded by the Swiss Development Cooperation (SDC) through IUCN. An inventory has been produced to help conservation and sustainable use of the wild medicinal plants in Egypt.

The Egyptian Botanical Society (EBS) implemented a programme on the conservation of rangeland biodiversity in El-Omayed Protected Area. The programme was funded by the small grants of the GEF. The budget was 26,400 US \$ for a period of 18 months. This helped to establish nurseries with the Bedouins. Awareness campaigns were held and studies on the endangered plants were undertaken. The success of the project helped to raise funds to get a donation of a piece of land of ca 6500 m² at El Hammam at a value of 32500 US\$. This is used to establish a centre and a garden for the conservation of endangered plants.

The Academy of Scientific Research and Technology, through the National Committee of Conservation of Nature and Natural Resources implemented a programme for the conservation of Biodiversity in the North Coastal Region in Egypt. The Swiss Government via the coordination of the International Union for Conservation (IUCN) supported this programme (1998-2000).

The EEAA/EU project on the protection of natural resources and cultural heritage in St. Katherine Protected Area This project is supporting infrastructure development and capacity building programs through Bedouin support activities (education, employment, etc), solid waste management and urban development, historical and cultural restoration, water management, public awareness and environmental training. This project will be instrumental and supportive of the proposed GEF project in providing a sound basis for incremental costs for medicinal plant conservation.

The technical experience of Egypt Bio-Dynamic Association (EBDA). EBDA is a non-governmental organization comprised of several partners from local communities, farmers, Egyptian associations and private sector. In the early 1980's, EBDA has established "Sekem" as a private sector corporation to deal with the conservation and production of medicinal plants for oil extracts, herbal drinks, tablets, etc. Sekem, through its partnership with farmers, has established more than 150 farms of medicinal plants in various places of Egypt.

The National Research Center (NRC) is taking a major part in targeted research and experimentation on medicinal plants in Egypt. The NRC team is currently involved in research work on biological activities and chemical constituents of some aromatic and medicinal plants collected from various places of Egypt, including *Plantago*, *Artemesia*, *Geranium*, etc

A.3.4. Ongoing Programs in the Protectorate:

Saint Katherine protectorate started in 1996 with a budget about 6 millions ECU, funded by European community and Egyptian government represented by EEAA. It has eight objectives. These objectives can be summarized as follows:

Objective 1: Institution of PAMU and establishment of protectorate. This item includes the staff deployment, which comprises rangers, and community guards. At present the PAMU staff comprises 1 area manager (the local counterpart to the project manager), and 15 rangers, including two senior rangers. Nowadays 24 community guards are employed. All the Cgs were involved on a short orientation and training course. The target staff is aimed to be 3 senior rangers, 16 rangers, 30 community guards, 2/3 machine operators, 3/4 ticket collectors, 1 secretarial support, and 7-10 ancillary staff (cleaners).

Objective 2: Development of the protectorate infrastructure and facilities programmes. The PAMU infrastructure programme comprises office facilities, staff accommodation, visitor center, 5 satellite centers and an entrance ticket office.

Objective 3: The institution of local community, Bedouin support and participatory management programmes: This includes a. Health Care, b. Veterinarian Support, c. Bedouin craft and women's income generation programme, d. Local sewerage installations of *Compost toilets and Sewerage pit*

Objective 4: The establishment of a municipal waste management system and to institute a sustainable urban development programme for St. Katherine Township. A central element of the solid waste management programme is the establishment of a waste management comprised of committee city council officials, local investors, shop owners, mosque committee, monastery representatives an local community leaders. A landfill site has been constructed and once it is operational, the present unsanitary waste dump in Wadi Al-Raha will be closed and all garbage transferred to the new landfill site. It is proposed that the W. El-Raha site be converted to a transfer station.

Objective 5: Determine restoration and conservation and protection needs for the St. Katherine monastery and other cultural and historical sites within the protectorate. This objective included three main points:

Architectural restoration survey (St. Katherine Monastery and outlying historical

properties).
Development of funding proposal for restoration.
Survey of other non-Byzantine historical and cultural sites.

Objective 6: Establish natural resource conservation management and monitoring programs including *1. Botanical Conservation Measures*, *ii. Zoological Conservation Measures*, *iii. Aerial Survey*

Objective 7: Develop and implement public awareness and visitor management programs.

Objective 8: Institute human resources development programs for PAMU staff. PAMU staff have attended, or are currently on, various training courses for general professional development and for specific management issues.

A.4 Development Objective

The project overall development objective is to conserve globally significant and endangered medicinal plants and their unique habitats. Under the baseline, the Government of Egypt together with bilateral donors (GTZ/EU) setup several programs aiming at rehabilitation of the ecosystem and supporting local Bedouins livelihood programs. These programs though relatively significant fall short to address the overall project development problem, i.e. destruction of medicinal plant biodiversity. It is therefore recognized that nature conservation, and the endangered endemic and rare medicinal plants, are an integral part of sustainable human development while improving the capacity of governmental and non-governmental agencies to address biodiversity conservation issues.

The following are the overall development goals set by the GEF-UNDP/GOE project:

- On-site protection of globally significant biodiversity in the project site. Action will be taken to broaden these initiatives beyond the selected priority sites to others in the country
- Improve knowledge of biodiversity, habitats and ecosystems, interlinkages, distribution, threats and uses.
- Improve capacity, at the local and national levels, to address biodiversity issues in lateral and integrated planning levels.
- Establish a solid legal framework for the protected area.
- Develop a detailed assessment of threatened species and appropriate measures (Management Plan) for their conservation.
- Increase public awareness with respect to the importance of natural resources conservation.
- Ensure grassroots (Stakeholders) involvement in biodiversity conservation.
- Setup a monitoring system for globally threatened medicinal plant biodiversity.
- Implement a series of training for biodiversity experts and other relevant participatory bodies.
- Establish local level management structures to ensure sustainable use of medicinal plants.
- Indirect goals include: human health improvement, employment creation, increased sustainable tourism, etc.

Meanwhile successful achievement of development objective is expected to have the following impacts:

- Enhancement of global biodiversity conservation and sustainable use in the target site by implementing various activities on protection and management of medicinal plants and habitats. The designation of enclosures for strict protection of threatened endemic species will directly benefit overall plant diversity and density.
- Local community capacity will be enhanced in dealing with conservation, sustainable management and production, and marketing of medicinal plant resources.
- Existing institutions will be able to manage medicinal plants and natural resources, conserve biodiversity and promote sustainable development. Specifically, it will use participatory planning techniques to develop a model for integrating the institutions in such a way that the strengths of each are captured and built upon. This will benefit technical services of the government and the local

society in terms of greater awareness and capability for management, and mainstreaming biodiversity conservation into regular programs.

A.5 Egypt's Strategy in Reaching Development Objectives

In the late 1980s, Government of Egypt (GoE) began experimenting with liberalization of trade and domestic prices for industrial goods. Later in early 1990s, the GoE adopted a comprehensive Economic Reform and Structural Adjustment Programme. By reducing public sector deficits and the rate of inflation this new programme is making heartening progress in controlling Egypt's macro economy. Social improvements have been important along with economic growth in the countryside. Employment is up, population growth is slowing, more children- especially girls are being educated and more women are moving into the economic mainstream.

Egypt has been among the pioneer countries in the world to take an active interest in meeting its obligations under the following conventions and protocols: 1) The Agreement for the Establishment of a General Fisheries Council for the Mediterranean Sea in February 1952; 2) The Agreement for the Establishment of a Commission for Controlling the Desert Locust in the Near East in 1972; 3) The African Convention on the Conservation of Nature and Natural Resources in 1969; 4) The International Convention on the Protection of Cultural and Natural Heritage (Paris, 1972); 5) The Convention on Trading in Endangered Species of Wild Animals (Washington, 1975); 6) The Convention on Conservation of Migratory Animals (Bonn, 1979); 7) The Convention on Wetlands of International Importance Especially as Waterfowl Habitat (also known as the Ramsar Convention, in 1986); 8) the Biodiversity Convention ratified in 1994; 9) and Desertification convention signed in 1996.

In 1998, Egypt prepared a National Biodiversity Strategy and Action Plan to meet its national commitments under the CBD. The strategy gave a high priority to the conservation and sustainable management of biological resources including medicinal plants. The main guiding principles and objectives of the strategy included: 1) Management of natural resources and its various elements; 2) Development of Egyptian scientific and technological capabilities in the fields of biodiversity; 3) Setting up programs of action to ensure positive participation of people in the implementation of strategy; 4) Establishment of legal instruments and economic and social incentives that support conservation and sustainable use of natural resources; and 5) complementarity with regional and international actions through exchange and equitably sharing available scientific and technological knowledge related to conservation and sustainable use of biodiversity.

The NBU has been actively engaged in commissioning national experts to write up comprehensive treatises on habitat types as well as on Egyptian representatives of taxonomic groups. It produced publications on: (i) ecosystems as seen from a geographical perspective (entitled "Habitat Diversity"), (ii) a Guide to the Mammals of Natural Protectorates in Egypt, (iii) the Reptiles of Egypt, including a brief account of all studies carried out until 1995, (iv) The Natural Protectorates of Egypt, (v) The Marine Algae of Alexandria, and (vi) A Checklist of the Flora of Egypt, (vii) Fungal Biota in Egypt, (viii) Birds Known to Occur in Egypt, and (ix) Freshwater Fishes of Egypt. Similarly inventories with particular emphasis on detailed description, local and global distribution, ecology and economic value of nematodes and acari are being prepared for publication.

A.6 Beneficiaries

The main beneficiaries are the people of Egypt who will gain from conserving an important natural resource and using it sustainably. The Bedouin of Sinai will benefit from the results of the project. The long-term management and sustainable use will keep for them a continuous supply of the medicinal plants for the present and coming generations. The tourists visiting St. Katherine Monastery will benefit from the conservation and sustainable use of the natural resources around the St. Katherine Monastery and the mountains.

EEAA and scientific institutions in the country will be acquainted with the field of wild medicinal plants conservation. Finding substitutes will be a good job for many scientific centres. Standardization and

applied studies will be encouraged. At international level, the experts will be helpful to cooperate with scientists from other nations.

In synthesis, target beneficiaries will be the following groups:

- Bedouin Communities who live in St Katherine Protectorate and derive their income mainly from wage labour;
- Small numbers of Bedouin who continue to largely depend on rangeland resources for their livelihoods;
- *Hakim* who derive their livelihoods directly from prescribing medicinal plants, and have both a strong conservation incentive, as well as a strong notion of intellectual property rights;
- The local businessmen who depend on the tourist trade, including Hoteliers and shop keepers, many of whom have migrated to the area;
- Medicinal plant retailers and wholesalers who get their medicinal plant raw materials from St Katherine's;
- EEAA who is responsible for the management of the Protectorate;
- staff of the European Union project who work at St Katherine;
- The Southern Sinai Governorate; and
- Academic institutions conducting research in Medicinal Plants in Egypt.

Annex II shows the proposed training programs for the beneficiaries.

A.7 Regulatory Framework

There are large numbers of actors relevant to the project. The Ministry of State for Environmental Affairs is responsible for environmental policy co-ordination among Government Ministries and The Department of Natural Protectorates (DNP) within the EEAA is responsible for overall planning and management of the protected areas in Egypt. Specific responsibility for management of St Katherine's Protectorate falls under DNP's National Biodiversity Unit (NBU). Other national organizations with capacities relevant to the project, include the Ministry of Agriculture, the Tourism Development Agency, the National Research Centre and the Desert Research Center.

At the regional level, the South Sinai Governorate is responsible for general planning and implementation of development strategies, initiating, and coordinating and managing large-scale investment projects such as roads. At the local level St Katherine's City Council is responsible for implementation and management of projects and services, including; education, housing, agriculture, drinking water, sewage, police, etc, and as such has departments for: Agriculture, Education, Health, Social Affairs, Planning and New Settlements, and Tourism.

Several organizations in Egypt are involved in research and development of medicinal plants, including the National Research Centre (NRC), Academy for Scientific Research and Technology (ASRT), Suez Canal University, Cairo University, Desert Research Institute, the Egyptian Botanical Society, The National Organisation for Drug Control and Research (NODCAR) and the NGO Egyptian Bio-dynamic Association (EBDA). A project jointly run by the first three of these institutions in the Sinai Peninsula (1990-1993), resulted in preliminary data on geographical features, habitats, plants, phyto-chemical properties of medicinal plants, and methods for the cultivation of selected wild species.

There are a few private sector corporations in Egypt producing medicinal plants. Among them, Sekem is involved in research, development and commercial application of collecting, cultivating, processing, packaging and marketing, which are fundamental elements for the success of this project

In the field of environmental legislation, Egypt has introduced a number of laws concerning the conservation of plant and animal life. The Ministry of Agriculture was empowered to put these laws into effect and to follow up their implementation. To achieve this objective, the Ministry of Agriculture set up the Egyptian Wildlife Service (an authority for the protection of nature).

Law 102/1983 was enacted to set up the legal framework for the declaration and management of protected areas. To secure a suitable source of funding for the protected areas, Law 101/1985 was enacted to levies additional tax on air tickets issued locally, income to finance programmes for developing eco-tourism and environmental protection. Law 4/1994 was enacted in which article 28 regulates the hunting of wild animals and prohibits the destruction of their natural habitats; article S4 of this law sets forth the penal code for illegal hunting. In 1989 the National Biodiversity Unit (NBU) has completed a detailed and comprehensive study on the control of hunting practices.

A.8. National Resources

The GoE is committed to the vision and objectives of this program to address medicinal plant conservation and sustainable use. This commitment has already been indicated in the Government letter of support to UNDP requesting GEF assistance to meet the above objectives. Local government offices have also expressed their support for this initiative. The National Research Center (NRC), Cairo University, Suez Canal University, and the Egyptian Bio-Dynamic Association (EBDA) through Sekem, have also been participating to the formulation of the project brief.

In-kind government contribution to meet the project objectives is estimated at US\$ 3,004,820 that will cover costs of 1) construction of initial costs for a medicinal plant center and establishment of Medicinal Plant Association in St. Katherine, 2) Covering costs of renting 2 project offices in Cairo and St. Katherine, cost of recruiting national counterpart staff (2 in Cairo and 4 in St. Katherine), offices running costs and cost for maintenance of equipment over the five year project period, 3) initiation, establishing committees and implementation of the medicinal plant strategy and action plan. However, the overall commitment to the sustainable development of Sinai peninsula is estimated at US\$ 641,000,000 mainly dedicated to infrastructure development especially in the water sector development, tourism, agriculture and urban planning.

B. STRATEGY FOR USE OF UNDP RESOURCES

B.1. Project relation to UNDP/GEF Mandate

- **This environment related project is strongly linked to the vision and mandate of UNDP. It builds on UNDP interest to support good governance through establishment of Medicinal Plant Strategic Action Plan and legal framework on Intellectual Property Rights. The project also is in full coherence with the objective relating to poverty alleviation through its emphasis on income generation, energy alternatives and sustainable livelihood options and alternatives. It also builds on gender issues by working closely with local Bedouin community in and around St. Katherine.**
- **The Government of Egypt is eligible for UNDP GEF funding based on its ratification of the Convention on Biological Diversity on 2 June 1994.**
- This project responds to the guidance and objectives of the CBD dealing with biodiversity conservation, sustainable use, and fair and equal sharing of benefits. It responds in specific, to the obligations made under articles 1, 8, 10, 11, 13 and 15 of the CBD. It also meets the objectives of other international conventions such as the UN Convention on International Trade of Endangered Species (CITES).
- It stems from the strategic considerations of the GEF Operational Program 1 on arid and semi arid zone ecosystems promoting biodiversity conservation and sustainable use primarily in countries in Africa and in Mediterranean type ecosystems. This project is also unique in promoting the preservation and maintenance of indigenous and local communities' knowledge, innovations, and practices relevant to the conservation and sustainable use of biodiversity.
- **The project is in line with New Delhi Statement point 8, which encourages GEF to increase GEF support for land degradation activities as they relate to the GEF focal areas. The project is therefore programmed in the crosscutting field of land degradation and will, through its activities, address integrated approaches for the conservation and sustainable use of dry land species and the sustainable extraction and development of dry land produce (see also GEF/C.3/8 para. 1.34d).**
- It is in accordance with the fourth Conference of Parties of the CBD providing guidance on: a) access, fair and equitable sharing of benefits that are derived from research and development on biodiversity; b) capacity building at local level to involve communities in biodiversity management and monitoring; c) the importance of indigenous communities in the conservation and sustainable use of biodiversity as stated by article 8j of the CBD; and d) promoting environmental awareness, and public education.
- **Finally, the project is given a national priority highlighted in Egypt Biodiversity Strategy and Action Plan, and the Country Study on Biological Diversity.**

B.2. Aspects of the Problem Addressed through UNDP/GEF Intervention

The objective of the project is to remove barriers for the conservation of vulnerable, endangered and endemic medicinal plants growing wild in St Katherine Protectorate (see Annex I). The area is being managed by the EEAA, under Protectorate management plans being finalised with EU funding. Careful consideration has been given to ensure that the objectives of this UNDP/GEF intervention complement the management plans for the Protectorate. The intervention objective is two-fold: (1) set aside the most endangered species from use through enclosure agreements, and ex-situ genetic conservation in Egypt's national gene-banks; and (2) ensure sustainable use of vulnerable medicinal plants. The UNDP intervention will focus on achieving sustainable use of vulnerable medicinal plants by:

- Increasing the proportion of the full market value for medicinal plant resources retained by local communities, through community based processing packaging and marketing of medicinal plant products;
- encouraging small scale cultivation practices to partially meet existing demand and relieve pressure from wild medicinal plant resources; and
- introducing sustainable alternative practices and limits for wild medicinal plant resource use, including grazing, and fuel wood collection.

B.3. Using UNDP/GEF Resources Towards Solving the Problem

To this effect there will be three types of zones: (1) enclosures; (2) cultivated areas; and (3) sustainable management areas. Bedouin will forego the right to use resources in enclosed areas, in return for assistance in processing and marketing medicinal plants to increase the proportion of the total market value they capture from their natural resource base. An additional incentive to respect enclosure agreements will come from the potential that enclosures will provide a source of seed stock for cultivation once critically endangered species have recovered. Type 1 zones will be identified following botanical surveys to identify areas with the highest abundance of critically endangered wild medicinal plants. Types 2 and 3 fall within areas where both population pressure and biodiversity global significance is highest. Cultivation will primarily take place in abandoned orchards and gardens, where stone wall structures and wells will be repaired to exclude grazing animals and provide irrigation, respectively. Usufruct will be determined in these areas to provide necessary investment security for cultivators. Grazing and medicinal plant collection best practices will be demonstrated in sustainable use zones, and agreements will underpin management and enforcement in these areas.

The project will not increase the total trade flows of medicinal plants from St Katherine's, but will increase the value of these resources to local communities. This will help create the incentive for communities to agree and enforce use agreements and sustainable practices, and move away from the open-access unmanaged regime currently practised. The project will have **negative** incremental costs. Therefore: (1) domestic benefits will be covered by co-financing equal to 52.6% of the total project costs; and (2) GEF funded activities will **remove barriers** and **demonstrate** the viability of sustainable technologies and methodologies.

UNDP/GEF resources will fund the activities covering:

- Pilot demonstration.
- Policy changes
- Conservation and sustainable use
- Alternative sustainable livelihoods awareness raising
- Complementary activities at the local and national levels

In this regard the, the project will follow a strategic approach during implementation based on the following principles:

- Local stakeholders' genuine participation
- Consultation with all the relevant groups interested in the issue of medicinal plants and their conservation and sustainable use. Meetings with scientists from different disciplines have confirmed this. e.g. ecology, phytochemistry, pharmacology, socio-economy, etc.
- Co-operation with all institutions for formulating the ideas for activities and meetings with representatives of institutions (NRC, DRC, Faculty of Pharmacy, Faculty of Science, ABT, EBDA, ESEImport of MP, Egyptian Botanical Society, etc.)
- Partnership with the different projects in the site and the proposed one.
- Information dissemination that was realized by the numerous interviews with 83 households all over the protectorate.
- Exchange of ideas and co-operation with the Archbishop of the Monastery of St. Katherine.
- The above activities implemented during the preparation of the project document assumed that the effective public involvement in the ideas of preparation of the project document is a way for the success of the project during all its cycle.

B.4. Outcomes of the Capacity Assessment.

Necessary Technical Capacity	Institution and capacity
<p><i>In-situ conservation</i> Species identification and GIS; techniques for assisted in-situ regeneration of wild medicinal plants;</p>	<p><i>Suez Canal University:</i> in co-operation with the EEAA, Local Bedouin and the South Sinai Governorate have been monitoring small enclosed areas in St Katherine's Protectorate for the conservation impact on endangered medicinal plants species. Early results have suggested that enclosure has worked for some species, however management approaches need to be worked out on a species by species basis. Suez Canal has also been conducting collaborative research in the reproductive ecology of a range of medicinal plants in Sinai. In particular they have done a number of studies on the germination propagation requirements of a number of medicinal plant species to understand the conservation management implications.</p>
<p><i>Medicinal plant cultivation:</i> Seed storage, germination, propagation, pollination; cropping systems; and pest management; and collection</p>	<p><i>The National Research Centre (NRC) and the Suez Canal University:</i> are currently expanding their expertise in the cultivation of wild medicinal plants. 19 medicinal plants found wild in the Sinai are now undergoing cultivation tests at an experimental station near Ismailia <i>EBDA:</i> has the capacity to provide a full range of extension advice to over 150 farms growing a number of medicinal plants commercially. <i>Desert Research Centre:</i> have surveyed and evaluated medicinal plants of Sinai, and have conducted trials in the introduction of the most economically promising in the North-west of the Sinai.</p>
<p><i>Medicinal plant processing and packaging:</i> cleaning; drying; extraction of active ingredients;</p>	<p><i>Medicinal Plant cultivation in Egypt:</i> there is a small but growing USD 50 million medicinal plant in Egypt including companies such as Sekem, Kato Aromatic and El Baquley, who process package a range of medicinal plant products. Sekem has already expressed an interest in implementing the medicinal plant cultivation output. <i>Hakim:</i> there are a number of <i>Hakim</i> in St Katherine's who have indigenous knowledge in processing and preparing medicinal remedies.</p>
<p><i>Medicinal plant marketing:</i></p>	<p><i>Sekem, Kato Aromatic and El Baquley</i> promote their medicinal plant products in domestic and international markets. They regularly attend trade fairs, and actively develop trade links with wholesalers and retailers to sell their products. <i>Local Sales:</i> There is already one outlet in St Katherine's that markets medicinal plants in St Katherine's own by a local businessman <i>National Organisation for Drug Control and Research (NODCAR):</i> Sets standards to control the quality of medicinal products manufactured in Egypt, helping to provide consumer protection.</p>
<p><i>Sustainable collection methods for Wild Medicinal Plants</i></p>	<p><i>NRC:</i> The NRC has been conducting extensive research on the active ingredients of the medicinal plants of Egypt, in which part of the plants they are found, and during which seasons these ingredients are present in greatest quantity. The NRC has the capacity to help define guidelines on when to collect medicinal plants, and which plants to collect <i>Suez Canal University:</i> conducted biomass and productivity during the PDF B on a sample of medicinal plants found in St Katherine's Protectorate. The results in the Report to UNDP clearly indicated that they were able to undertake these types of measurements. <i>Suez Canal University:</i> A number of studies conducted by researchers at Suez Canal University have been sited, which indicate that the capacity to study reproductive ecology of medicinal plants exists in Egypt. <i>National Research Centre/Desert Research Institute:</i> both organisations screen wild medicinal plants for active pharmaceutical ingredients. Work has included testing in which plant parts and in which seasons the greatest</p>

Necessary Technical Capacity	Institution and capacity
<i>Grazing management:</i> Shepherd training; modern rest and rotation techniques	<p>concentration of active ingredients are found. While more work needs to be done, the capacity to further develop knowledge of plant ecology, biomass production and active medicinal plant ingredients clearly exists to develop best practice wild medicinal plant collection guidelines.</p> <p>Under the auspices of the <i>Ministry of Agriculture, the Directorate of Agriculture in southern Sinai Governorate</i> provides extension services on rangeland management that encourage rotational grazing in vulnerable desert areas, dryland farming, orchard cultivation and home gardening. The Directorate is located in El -Tour Area with a department in St. Katherine. It is represented on the Governorate and the city Councils.</p>
<i>Solar Energy:</i>	<p><i>The National Research Centre</i> in Egypt through its <i>Department of Solar Technology</i> has the required capacity to undertake activities related to developing solar energy equipment suited to the environment and people in remote areas in Sinai.</p>
<i>Community Intellectual property rights:</i>	<p><i>The Patent Office affiliated to the Academy for Scientific Research and Technology</i> administers Egypt's existing intellectual property right laws. Egypt will need international expertise in developing framework legislation and creating the institutional capacity to administer community intellectual property rights law.</p>

C. IMMEDIATE OBJECTIVES, OUTPUTS AND ACTIVITIES

C.1. Immediate Objective

The immediate objective of the project is to remove root causes of biodiversity loss and the specific threats to the conservation and sustainable use of globally significant medicinal plants and their habitats in arid and semi-arid areas of Egypt.

Success Indicators:

- *Plant cover increased by 10% in target areas by the end of the project.*
- *Population size of 42 target species increased by 50% by the end of the project.*

C.2. Description of Project Outputs and Proposed Activities

Output 1: Critically Endangered Medicinal Plant (MP) Species Protected

The output will identify critically endangered target species, not covered under Protectorate arrangements, requiring immediate protection from extinction. Hotspots will be identified following detailed ecological and botanical surveys (and socio-economic appraisals) indicating distribution and abundance of globally important and critically endangered species and eco-niches to be designated for in site protection. To do this, the project together with the local stakeholders and resource users will have to agree on certain criteria (such as presence of biodiversity of global significance, size of enclosures, people willingness to participate, level of threats, etc.) to be applied for proper selecting of enclosure. Part of this inventory-consultative process has been initiated-completed by the project team during the preparatory phase. During project implementation, the strategy will always be to protect the biodiversity value while at the same time not impeding the resource use base. Before finally deciding on enclosures, the project will follow a systematic sampling through application of transects and quadrates in the globally significant areas to be designated for protection. It is again to be emphasized that enclosure agreements will have to be agreed on/negotiated with local communities and resource users in the investigated areas. The size of enclosures will be based on the need to conserve minimum viable populations of species targeted for conservation; and these areas will then be fenced off. The enclosed areas will be monitored by the project (including local Bedouin guards) and emerging results will be used for adaptive management of enclosed areas to ensure conservation. As a parallel measure, genetic samples of all target species will be registered and deposited in Egypt's national Gene-bank after it is completed.

The project will make use of and mobilize all relevant capacities present at the national and international levels including international expertise and private sector (see Annex J of the project brief) to ensure sound and sustainable collection, conservation, cultivation and processing of medicinal plants. The national Research Center has a national wide expertise addressing appropriate and sustainable collection of medicinal plants. The NRC also has been doing a great deal of applied research focused at identifying active ingredients and constituents in native medicinal plants. The technical capacity of the Agricultural Research Center also will be build upon especially with reference to techniques needed for propagation and cultivation of native medicinal plants that suit arid zone environments. Sekem (which is a private sector company involving national and international expertise mainly from Germany), Kato Aromatic and El Baquley also have sound technical expertise/capacity with regard to cultivation practices, processing and packaging a range of medicinal plants products. Sekem has already expressed its interest in co-funding/implementing the medicinal plant cultivation activities.

Success Indicators:

- *Enclosure established and functioning in 2 to 5% of the protectorate area by year "3".*

- *42 target species registered with national Gene bank.*
- *All endemic, endangered (10) target species regenerated at 30 new sites by the end of the project.*

Activities for Output 1:

1.1. Update and complete baseline survey, biomass levels and plant ecology, and map distribution of MP species in protectorate using GPS/GIS software and asses MP species and within species genetic diversity.

Responsible Parties: subcontract coordinated by the PMU

1.2. Zone the Protectorate, identify primary areas of importance for protection, and secondary areas of importance for sustainable use:

- ? Perform field survey through a number of trips to the representative sites and habitats supporting the medicinal plants in the protectorate.
- ? Identify the primary localities of importance for protection.
- ? Identify the secondary localities of importance for sustainable use.
- ? Map the output of the primary and secondary localities in the protectorate.

Responsible Parties: subcontract coordinated by the PMU

1.3. Agree on areas for enclosure and exclusion from use through participatory dialogue with Bedouin:

- ? Prepare and write the items of dialogue and questioner for use through participatory dialogue with Bedouin to agree on areas for enclosure and exclusion from use.
- ? Meet with Bedouin's Sheikhs and Omdas in the protectorate to explain the importance of the medicinal plants and our main plan for their sustainable use.
- ? Meeting with Bedouins in different settlements to discuss the importance of zone protection for medicinal plants and agree areas for enclosure and exclusion from use.
- ? Analysis of the data collected from meeting and writing recommendations.
- ? Choosing the most appropriate enclosures based on previous data.
- ? Negotiate enclosure agreements with community leaders in these areas

Responsible Parties: subcontract coordinated by the PMU

1.4. Manage targeted species in the enclosed areas according to adaptive and integrated management and collection schemes/agreements [strongly linked to output 3]

Responsible Parties: PMU, project staff, EEAA

1.5. Establish and monitor conservation status and response of enclosures compared to similar unenclosed surrounding areas:

- ? Estimate the materials required for constructing the fenced areas.
- ? Establish the enclosures supporting the threatened and important medicinal plants in the primary areas of importance in the protectorate.
- ? Support representative enclosures with equipment such as rain gauge, thermohygrograph and thermometers.
- ? Design a monitoring program and a monitoring sheet for each enclosure to follow up the conservation status of medicinal plants.

Responsible Parties: subcontract coordinated by the PMU

1.6. Collect and regenerate endangered MP in bunds and nursery; Re-establish critically endangered species in areas with doukhl agreements, establish a nursery for seed propagation of medicinal plant

species and register and store samples of critical endangered species within national Gene bank:

- ? Make field trips for collection of seeds and representative samples of critical endangered and important medicinal plant species.
- ? Register and store samples of these plants with national Gene bank.
- ? Determine suitable sites for constructing a number of “bunds” for seeding critically endangered medicinal plant species (Rehabilitation).
- ? Take field trips at different seasons for seed collection of different medicinal species.
- ? Sow collected seeds of different medicinal plant species in bunds having similar environmental factors.
- ? Arrange meetings with Bedouins and Sheikh to agree on revival of the *doukhl* system in certain areas where critically endangered MP exists.

Responsible Parties: subcontract coordinated by the PMU

Output 2: Over-Used and Vulnerable Medicinal Plants Cultivated

The output will develop community capacity to cultivate, harvest medicinal plants grown in abandoned orchards and gardens in the Protectorate, and process, store and sell medicinal plant products. Species listed in Annex I are either over-used vulnerable medicinal plants or substitutes for them, and with which there is experience of cultivation. These species will initially be targeted for cultivation.

Success Indicators:

- *20 target species cultivated by Bedouins by the end of the project.*
- *All cultivated medicinal plants are sold*

Activities for Output 2:

2.1 Establish the MP Association for conservation and sustainable use of MP for Bedouin children and Adults:

- Carry out visits to different settlements in the protectorate to raise awareness among children and adults about the importance of conservation and sustainable use of MP in the protectorate.
- Explain the approach and importance of establishing such association.
- Identify individuals who are interested in participating in the association and its activities.
- Examine legal steps for establishment of the association.
- Register the association, and elect the directory board.

Responsible Parties: PMU, EEAA and local Bedouin communities

2.2. Identify feasible sites such as abandoned orchards:

- Make visits to monastery gardens and arrange with monastery authorities to cultivate certain MP species in their gardens.
- Make visits to abandoned orchards and investigate the owners’ interest in cultivation of MP. As well, investigate availability of water for these orchards.
- Investigate feasibility for cultivation of MP in each case taking in consideration the marketing potential of these crops.

Responsible Parties: PMU, Monastery and local Bedouin communities

2.3. Work with Sheikhs to establish exclusive usufruct rights in areas identified for cultivation where necessary:

- Make visits and arrange meetings with Sheikhs and decision-makers among the tribes to achieve agreements on cultivation of MP in certain areas in some wadi beds.

- Take all the required steps to have communal agreement on the achieved agreements through public awareness.
- Pay efforts to revive the *doukhl* arrangements among tribes and families.

Responsible Parties: PMU, subcontract, and local Bedouin communities

2.4. Identify overused MP for immediate cultivation and substitutes:

- make visits to different sites in the protectorate to identify the over used MP and investigate the growing conditions for each MP, and possible way's for regeneration of these species.
- Based on the collected information about uses of the different plants, identify possible species that may substitute the over used ones.
- make field survey to collect samples from over-used MP for micro screening of effective constituents and assess biological activity.
- MP from Sinai and other regions in the country should be investigated to be substitutes for the over-used ones in St. Katherine.
- Investigate possibility of cultivating potential substitute's having same effective constituents to reduce pressure on wild species in St. Katherine.

Responsible Parties: PMU, MPA (medicinal Plant Association) and local Bedouin communities

2.5. Design and implement a Bedouin training and extension program for cultivation and harvesting over-used, easily cultivated medicinal plants:

Responsible Parties: PMU, and EEAA and subcontract

2.6. Initiate cultivation trials for over -used MP with cultivation potential, and develop training materials for the MP Association.

- Based on the information gained in the first year initiate cultivation trials in some abandoned orchards, monastery gardens, and other possible sites in some wadi beds, belonging to some of interested Bedouins.
- Follow up and evaluate the trials, and give advice and required extenuation work to help the Bedouins in cultivation of MP.
- During the implementation of these trials, prepare training materials for the members of the MP association, as well as, demonstration sites.

Responsible Parties: PMU, MPA and EEAA

2.7. Construct and equip a medicinal plant center in St.Katherine Protectorate for processing, storing, and selling of medicinal plants:

- Construct and build the center including infrastructure and furniture preparing a unit for plant material processing.
- Establish a hall of herbarium.
- Establish a cooling room.
- Establish a green house for seedlings.
- Establish a nursery for in-situ cultivation.

Responsible Parties: PMU, and EEAA and subcontract

2.8. Design and implement a Bedouin training program for processing, packaging, storing and selling medicinal plant products targeted at women:

- Design a training program for women to introduce knowledge on the proper post harvest practices and preliminary processing including drying, packaging and storing of MP.
- Purchase simple tools and machines for small scale processing of herbs and oils of MP.

- Make visits to settlements with high women population to identify target women interested in work with MP production.
- Make site visits to the target women to demonstrate the proposed techniques and tools.

Responsible Parties: PMU, MPA, and EEAA and subcontract

2.9. Design and implement a marketing strategy to promote traditional MP remedies to tourists, in hotels and Bedouin eco-lodges, 'including lectures, demonstrations, and traditional health services:

- Collect all available information on tourism in the protectorate including present number, expected number in the following 5 years, duration of visits, seasons, residence sites, their consumption of MP from St Katherine, ...etc.
- Design a marketing strategy to promote traditional MP remedies to tourists in residence and tourist places.
- Arrange with the healers in the area to be involved in this activity to introduce their traditional knowledge, and by tourists, i.e. visitor center.
- Include visits to the healers in the tourist booklets.

Responsible Parties: PMU, and EEAA and subcontract

2.10. Setup a revolving fund, under the auspices of the MP Association with an initial capitalization to provide loans to Bedouin to purchase cultivation equipment:

- Arrange with UNDP to provide a revolving fund for the MP association to be used for purchasing equipment for cultivation and post harvest processing of MP.

Responsible Parties: PMU, and EEAA and subcontract

2.11. Monitor collection and trade of medicinal plants, and impacts on biodiversity.

Responsible Parties: PMU, EEAA and subcontract

Output 3: Best Practices for Wild Medicinal Plant Collection Introduced and Collection Levels Regulated

The output will establish sustainable harvesting practices of wild medicinal plants in St Katherine Protectorate. Collectors will be encouraged to process, package and market their medicinal plants through the Medicinal Plant Centre.

Success Indicators:

- *50% of Bedouin community trained in medicinal plant collection best practices.*
- *Functioning MP collection agreements covering 80% of the protectorate by end of the project*

Activities for Output 3:

3.1. Design and implement an awareness-raising program Bedouin communities to demonstrate the cause relationship of over- collection of MP species and the impacts:

Responsible Parties: PMU, EEAA and subcontract

3.2. Build consensus for a community agreement on sustainable collection level for MP:

- Make visits to settlement and meeting with Bedouins sheikhs and leaders to achieve agreement on sustainable collection level for each of the MP species in the area.

- Try to revive and apply the doukhl and Hilf arrangements in the endangered MP plants in the area, starting with areas agreed on for protection against grazing.

Responsible Parties: PMU, EEAA and subcontract

3.3. Adapt and modify collection techniques for use in St. Katherine to minimize damage to wild medicinal plant resources:

- Make a literature surveys on the previous of phytochemical screening of the MP species in the area, and make it available for scientists in the country.
- Collect and release all available data on the same MP species available in other sites the country.
- Prepare monographs on these plants including availability in other sites.
- Arrange meetings and workshops with young scientists in research institutes to demonstrate and encourage the use of micro methods for screening and analysis.
- Circulate information for scientists about availability such micro methods and techniques in certain laboratories, and make it accessible for them.
- Arrange with the protectorate authorities to be responsible for guiding the scientists during collection of their samples based on information available about the sites of these plants and their populations.

Responsible Parties: PMU, EEAA and subcontract

3.4. Design and implement a training program in sustainable collection best practices among Bedouin collectors and community guards:

- Two training courses annually on sustainable collection best practices among Bedouin collectors.
- Lecture on sustainable collection of medicinal plants.
- Make field trips to representative sites of MP for application of sustainable collection techniques.

Responsible Parties: PMU, EEAA and subcontract

3.5. Encourage collectors to process MP through the MP center for trade (for a small fee) to add value to plant materials:

- Arrange meetings with MP collectors to assure them that the main approach of the project is the sustainable use of MP, beside conservation.
- Explain and demonstrate the difference between low quality herbs currently prepared and the high quality ones properly prepared, and the added value they can gain from proper processing.
- Make arrangements with and between collectors and the MP center for processing and packaging of the their herbs
- Arrange with wholesalers in the area and in markets in Cairo to promote marketing of these herbs in new forms.

Responsible Parties: PMU, EEAA and subcontract

3.6. Extend existing Community Guard scheme to monitor MP collection through training:

- Assess the required number of Community Guards to monitor the medicinal plant collection.
- Evaluate the required skills in the Community Guards.
- Meet with Bedouin's Sheikhs and Omdas to select Community Guards to monitor MP collection.

3.7 Monitor and disseminate results through MP Association.

Responsible Parties: PMU, MPA, EEAA and subcontract

Output 4: Alternative Energy Sources Promoted

The output will enforce regulations prohibiting collection of fuel wood for tourist activities in the Protectorate. This will help to stimulate demand for alternative fuel. Utilization of solar technology and potentialities for other renewable energy sources will be tested and after initial demonstration will be diffused among Bedouin who are cultivating medicinal plants to relieve pressure off wild resources.

Success Indicators:

- *30% of Bedouin households in the protectorate use solar heating by the end of the project*

Activities for Output 4:

4.1. Regulate use of fuel wood for camel trek through awareness and enforcement among tourists:

- Make educational materials (booklets, brochures, posters, etc.) the thread of fuel wood collection on MP and biodiversity
- Prepare workshops for stakeholders in tourism activity to aware them about the regulation of fuelwood and alternatives.

Responsible Parties: PMU, EEAA and subcontract

4.2. Demonstrate viability among local businesses of stocking imported fuel-wood and butane gas cylinders

Responsible Parties: PMU, EEAA and subcontract

4.3 Design and implement demonstration programme among women to promote use of solar ovens:

- Design and implement solar cookers.
- Demonstrate the use of the cookers in different settlements and provide demonstration specimens.
- Provide know-how to the Bedouin to produce and maintain the cookers.
- Develop local enterprises

4.4. Monitor the impact of this method on the fuelwood consumption.

Responsible Parties: PMU, EEAA and subcontract

Output 5: Grazing Management Plans Designed and Implemented

The output will take advantage of low availability and mobility of households, small herd size, and the high cost of feed to increase the economies of scale and sustainability of livestock management.

Success Indicators:

- *Functioning tribal grazing agreements covering 50% of the protectorate by the end of the project*
- *Cooperative herding and transhumance is practiced by at least 30% of the population by the end of the project*

Activities for Output 5:

5.1. Complete a baseline survey of existing grazing practices and live stock levels:

- Survey of existing and sustainable livestock levels through field trips to the areas around the Bedouin settlements and to the different routs of grazing and estimating the actual herds number and composition.
- Hold meetings with Bedouins to discuss the existing and sustainable livestock levels.
- Determine the carrying capacity of the most important areas.
- Analyze the data to reach the appropriate no. of goats and sheep for grazing in this area.

Responsible Parties: PMU, EEAA and subcontract

5.2. Design and implement a Protectorate-wide grazing management strategy:

- Survey the vegetation status, total plant cover in main localities in the protectorate.
- Estimate the biomass and productivity of palatable plant species.

- Evaluate the carrying capacity of the main localities in the protectorate.
- Evaluate the degree of grazing intensity in each locality in the protectorate.
- Mapping the areas subjected to overgrazing, moderate grazing and low grazing.
- Design a Protectorate-wide grazing management plan.
- Meeting with Bedouins and discussing the implementations of the grazing management plan.

Responsible Parties: PMU, EEAA and subcontract

5.3. Unsustainable use zones build consensus with Bedouin tribes and sub-tribes for grazing management plans oriented to conservation of medicinal plants, through re-establishment of the Hilf and negotiation of access rights.

Responsible Parties: PMU, EEAA and subcontract

5.4. Build capacity of local leaders for the development of tribal grazing management plans and their implementation:

- Arrange meetings with Sheikhs and leaders in different sites to explain the objectives of the grazing management plan and the benefits due its implementation.
- Arrange with tribes leaders to identify certain persons for implementation of the grazing plan.
- Implement a training program for these persons through lectures and site visits to raise their capacity for implementation of the plan.

Responsible Parties: PMU, EEAA and subcontract

5.5. Promote cooperative herding, revival of transhumance and status of herders:

- Arrange meetings with Bedouins in the settlements to explain the objective of this activity.
- Discuss with them the possibility and restrictions for implementation of this activity.
- Achieve agreement for cooperative herding and solve any restrictions.

Responsible Parties: PMU, EEAA and subcontract

5.6. Implement feral animal control programme:

- Arrange meeting with Bedouins to discuss the problem and the treat of this animal on the MP in the area.
- Find out the most proper way to collect and or control the feral donkeys in the area.
- Implement the agreed practices to control the feral animals
- Arrange for sustainable control in the future.
- Initiate trials on sustainable use of by-products as fodder supplement:
 - Make survey for the available wastes and by products in the area and make analysis for their physical and chemical evaluation as fodder inputs.
 - Design and implement trials to produce fodder supplement. Identify demonstration sites for training of Bedouins on the used producers, using demonstration materials

Responsible Parties: PMU, EEAA/EU

5.7. Monitor the conservation status of MP in grazing areas and adjust management schemes for conservation:

- Perform seasonal survey of the grazed areas to monitor the conservation status of medicinal plants.
- Collect plant and soil samples from each locality.
- Periodical botanical survey to monitor the vegetation changes happened in the area.
- Estimate the biomass and productivity of medicinal plants.
- Analyze the physical and chemical parameters of soil to evaluate the edaphic factors affecting the distribution and growth of medicinal plant species.
- Adjust management schemes for conservation.

Responsible Parties: PMU, EEAA and subcontract

Output 6: Community Intellectual Property Rights (IPR) Related to Medicinal Plants Protected

The project will ensure community' medicinal plant knowledge is legally recognized.

Success Indicators:

- *Legal and institutional arrangements recognizing and enforcing community intellectual property rights in place and functioning by the end of the project*

Activities for Output 6:

6.1. Identify options for legal recognition and protection of community IPR.

6.2. Conduct broad-based awareness raising and consultations with stakeholders and agree on best option for the legal protection of community IPR.

- Document community knowledge on the use of MP in St Katherine's Protectorate
- Publish booklets and promotional materials for sale to tourists on community. Knowledge of the uses of MP, (profits 'from which will be put into revolving fund)
- Local level awareness raising on IPR issues
- National level awareness raising on IPR issues:

6.3. Draft and adopt necessary legislation for legal protection of community IPR following the principles established in the convention of biological diversity.

6.4. Identify additional institutional strengthening necessary to administer and enforce IPR.

- Preserve and monitor the commercialism of properties in the public domain.
- Generally advice and encourage indigenous peoples to take steps to protect their heritage.
- Allow a mandatory consultative process with respect to any new legislation affecting indigenous people's IPR.

6.5. Administer and enforce community IPR

Responsible Parties for the output: PMU, EEAA and subcontract

Output 7: Best Practices to Protect Medicinal Plants Promoted to Other Sites

The output will scale in other Egyptian priority sites up, models and approaches to conserve and sustainably use wild medicinal plants, emerging from implementation of the project in St Katherine's Protectorate. A Logical Framework for the implementation of a National Medicinal Plant Strategy and Action Plan (NMPSAP) will result from a consultative process, the objective of which will be to conserve and sustainably use important wild medicinal plants in Egypt, in priority sites identified from survey work.

Success Indicators:

- *Priority sites for medicinal plant conservation and sustainable use identified.*
- *A fully agreed Logical Framework for NMPSAP implementation completed by the end of year "3".*
- *Implementation of the NMPSAP begins by the start of year "4".*

Activities for Output 7:

7.1. Preliminary stocktaking of MP in areas of Egypt where data exists:

- Collect and revise all the available data on wild, as well as, cultivate MP in different regions of Egypt, including botanical name, geographical distribution, population size, uses...etc and document these data on PC.
- Identify areas of Egypt where data are not available or not enough.
- Arrange visits to these areas to collect the required information.
- Document all the collected data and make available for researchers and decision-makers.

7.2. Conduct a national awareness campaign on the conservation of MP in Egypt

- Initiate a board for design and coordination of the campaign, including specialists in fields covering this issue, as well as, representative from different governorates.
- Arrange meetings, seminars, and workshops in different governorates.
- Arrange programs through the mass media.
- Prepare published materials.

7.3. Based on the experience of St. Katherine develop a national strategy and action plan for the conservation and sustainable use of MP in other parts of Egypt:

- Establish a team to formulate a draft for the national strategy (Field visits and surveys in different sites of the country, reconnaissance studies, etc.).
- Hold meetings with different stakeholders for discussing the draft.
- Hold workshops with interested groups from whole country to discuss the proposed draft proposal for action plan should be discussed and reported.
- Hold a national workshop, in the presence of decision makers to finalize the national strategy and the action plan.
- The proposed NMPSAP should be adopted by the EEAA to have it ready for approval by the government.

7.4. Setup a project management team to implement and monitor the action plan:

- Establish a team to formulate actions to be taken to implement and monitor the Action Plan.
- Identify sites for medicinal plants nationwide conservation and sustainable use.
- Identify needed activities through logical framework activity.

7.5. Secure funding to implement the action plan:

- Establishment of a team for putting plans for fund raising.
- Hold a national workshop gathering potential donors and decision makers.
- Mobilization of sufficient resources to fund the medicinal plants action plan.

7.6. Initiate the establishment of a national team for the implementation of the action plan in different sites and undertake field visits to the identified sites.

Responsible Parties: PMU, EEAA, National consultants and National MP Advisor

Annex III Shows the logical framework analysis for the project.

D. INPUTS

Summary of input contributions (cash and kind) by different entities

Output	Input (\$US)						Total ⁶
	GEF	UNDP ³	GoE ⁴	Private	Donor GTZ/EU	Others (NRC, NORDAC, Local) ⁵	
Output 1. Critically endangered MP protected	818,000				300,000		1,118,000
Output 2. Over-used and Vulnerable MP cultivated	1,169,600	165,600	287,450	209,403	189,000	244,000	2,265,053
Output 3. Best practices for MP collection levels regulated	522,800	171,300	105,100		11,000	153,000	963,200
Output 4. Alternative energy sources promoted	87,300	137,180	29,400		40,000		293,880
Output 5. Grazing management plans designed and implemented	391,800		160,000		71,400	18,800	642,000
Output 6. Community MP property rights protected	277,800	26,000	168,550		7,500		479,850
Output 7. Best practices to protect MP promoted to other sites	849,700		2,254,320				3,104,020
PDF B	169,950			16,995			186,945
Total	4,286,950	500,080	3,004,820	226,398	618,900	415,800	9,052,948

³ UNDP Inputs will cover 1) field travel, 2) processing/storing and selling of medicinal plants, 3) revolving fund for loans to Bedouins to purchase cultivation equipment, 4) marketing medicinal plants, 5) education materials, 6) alternative for fuel wood, 7) IPR enforcement, 8) women training and workshops on post harvesting and medicinal plant processing, and 9) to purchase processing equipment

⁴ Government contribution will include 1) construction of initial costs for a medicinal plant center and Med. Plant Association in St. Katherine, 2) Covering costs of renting 2 project offices in Cairo and St. Katherine, cost of recruiting national counterpart staff (2 in Cairo and 4 in St. Katherine), offices running costs and cost for maintenance of equipment over the five year project period, 3) initiation, establishing committees and implementation of the medicinal plant strategy and action plan during the first two years.

⁵ Other support (NRC, NORDAC, Private Sector) will include defining guidelines on sustainable collection of medicinal plants, cultivation practices, processing techniques and extension and commercial advice.

⁶ See project brief and incremental costs for a detailed information on breakdown of co-funding resources.

E. RISKS AND PRIOR OBLIGATIONS

E.1 Project Risks

The assumptions that underpin project design are listed in the log frame. The key risks are identified below together with measures to abate them:

Risk/ Assumption	Rating	Abatement measure
Bedouin and tourists respect enclosure agreements	M	A small number of enclosures have already been set up for research in agreement with the Bedouin, and to date there have been no infractions. Medicinal plant cultivation alternatives will be promoted among Bedouin as an incentive to agree to larger enclosures, and the existing community guard scheme will be extended to promote self-regulation of these agreements. Rangers will continue to enforce Protectorate regulations among visitors
Bedouin recognize the benefits of cultivation	L	Bedouin women already been encouraged to produce and sell handicrafts to tourists. Medicinal plant cultivation, post-harvesting, and sales techniques will be demonstrated and promoted primarily among Bedouin as an additional income source
Markets are receptive to new medicinal plant products	M	A small percentage of tourists already buy medicinal plant products, without any promotion. A range of medicinal plant products and related services will be promoted among tourist groups to enhance their visitor experience in the Protectorate
Community grazing and collection agreements are recognized and adhered to	M	In many cases herding is unprofitable for Bedouin, and trade in unprocessed medicinal plant raw materials fetch low prices. Through careful management of rangeland resources, feed substitutes can be reduced, augmented by value added sales of processed medicinal plant products and services
Livestock rearing incentives are not re-introduced by GoE	L	The GoE has begun a comprehensive set of reforms to liberalize the agricultural sector. Competitive advantages are being realized in key agricultural production sub-sectors, creating sufficient private sector incentive to increase production in these areas.
Collection best practices can be enforced among external collectors and traders	M	In target areas tenure and usufruct rights will be extended to Bedouin as an incentive to take custodianship of medicinal plant resources in these areas. In other areas, the existing community guard scheme will be enforced and extended throughout the protectorate to report infractions and legal remedy will be enforced against infractions.

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

E.2 Project Sustainability

The project will promote the sustainable use of the medicinal plant resource base, within the context of protected areas management. The GoE is committed to continued management of St Katherine's following the closure of the current EU project. Gate fees will be the primary means of funding PA management in future. Government commitment to the project is focused at sustainable development activities including the establishment of a medicinal plant center, medicinal plant association, and at developing and implementation of a medicinal plant strategy and action plan and IPR framework. This project will add value to medicinal plant resources and rooting their sustainable use more firmly to the Bedouin household economy, and create the right incentives for Bedouin to act as custodian of their medicinal plant resource base.

The sustainability of enclosure and wild medicinal plant collection agreements, developed under the project, will depend upon helping communities to capture greater value from rangeland resources.

Medicinal plant marketing: The primary purpose of the marketing strategy will be to increase the quality and price of medicinal products rather than the quantity sold, thus demand can be reduced to sustainable levels without decreasing revenues. A primary market for medicinal plants will be the visitors' to St Katherine's. The Protectorate receives 100,000 to 150,000 visitors annually and this is expected to grow as high as 3 million annually by 2017, according to some estimates. Other existing markets include Attarin in Cairo, El-tour, Dahab and occasional export. The marketing plan will therefore seek to diversify in a number of markets. Another market will be small-scale pharmaceutical production units in El-tour that are planned under the Sinai Development Plan.

Medicinal plant cultivation and processing: Some demand will be supplied under sustainable harvesting agreements from the wild sources, while remaining demand will come from cultivated sources. Cost data for medicinal plant cultivation in the Nile valley indicates net revenues of between USD 5,000 and USD 13,290 per hectare, without including cost of land. Cultivation in St Katherine's Protectorate would be less intensive and on a smaller scale, however combined with simple processing and marketing medicinal plant cultivation could be profitable there. The challenge will be to adapt and simplify technology and methodologies for use in low volume, small-scale operations.

The Medicinal Plant Association and the Medicinal Plant Center, which will be established by the project, will play important roles focal institutions for training and extension and for marketing of medicinal plants. The Association will generate revenue for conservation from membership fees. Initially the fees will be set very low in order to attract interest in medicinal plant cultivation, processing and marketing. As success is demonstrated, the fees can be raised. Ultimately however, the sustainability of the project lies in being able to make a profit from medicinal plant activities, thus fees can never be raised higher than what the activity will bear. To set fees before implementation of the project would be to preempt the profitability of medicinal plant cultivation, processing, and marketing. Project management and participants will need to have the flexibility to respond to the emerging experience of selling processed medicinal plants when they set the membership fees.

The Revolving Fund to be initiated by the project with initial capital resources of \$210,000 from UNDP and GoE is aimed at promoting community access to loans from the National Bank for Development for purchasing cultivation equipment and for assistance in processing, storing, and selling of medicinal plants. The Medicinal Plant Association will act as guarantor of the commercial loan. A percentage of the profits from medicinal plant sales and Association membership fees will top-up the revolving fund for ongoing training and extension work.

Grazing management: livestock management is generally not profitable in St Katherine, and in many cases continues from a legacy of social convention. For settled families employed in the service industry, it will be more cost-effective to capture economies of scale by pooling small family herds with trained shepherds and reduce quantity of supplemental feed needed. Shepherds will be able to graze animals away from settlements shifting grazing pressure away from the most important areas for conservation, and spread grazing pressure over the rangeland to reduce localized overgrazing.

Alternatives sources of fuel: the primary economic mechanism for driving alternative sources of energy in St Katherine will be to enforce regulation prohibiting fuel wood collection in St Katherine by trekkers and campers. This will simulate demand. Solar technology has been used in remote locations in Egypt for some time now. The challenge will be to demonstrate the technology in St Katherine, where it is not yet known.

Social sustainability: All activities build on existing traditions, and know-how. Medicinal plants have been used for many centuries in Egypt. Bedouin still cultivate and keep livestock; increasingly they have become engaged in tourist activities; and tribes are used to making and enforcing communal and private use agreements under customary and civil law. Social sustainability will be fostered through a participatory approach and building community ownership of project activities, while the Medicinal Plant Association will become a focal institution for propelling the growth of sustainable medicinal plant practices.

Rapid developmental changes in the Sinai Peninsula will not create an issue of social depreciation primarily as the local communities in Sinai is part of the main stream Egyptian population. The project will undertake activities designed to protect and preserve traditional community knowledge and lifestyle on medicinal

plant and these are aimed to promote social acceptance and feasibility of medicinal plant protection and production practices. The Government and donor support to Sinai also is in coherence with sustainable development plans and strategies.

Sustainable resource use agreements. Rangeland resources are lacking management because they are perceived to have too little value to make it worthwhile negotiating and enforcing agreements. This view is supported by the response to a new GoE law allowing citizens to acquire private property rights in state property for a nominal value. Only the most valuable areas, around wells, and near St Katherine's City have been bought. The objective of the project will be to increase the value of the rangeland resources (cultivation, processing and selling medicinal plant products) and the basic incentive for Bedouin to manage their resources through the designation and enforcement of management agreements. The project will not prescribe management and access arrangements, they will result from a brokering role that project staff will have. This approach has resulted *from extensive consultation with the Bedouin, who in fact proposed this approach* to regenerating resource use agreements, which the Bedouin have indicated they need to re-establish. In some areas it may be appropriate to have private property rights agreements, in other more extensive areas communal property rights are likely to be more practical. Added to this, because of the sporadic nature of rainfall, any management arrangements will need to be flexible enough to respond to these changes. During dry conditions management agreements will need to be cost effective to enforce and protect the rangeland while ensuring the livelihoods of Bedouin, and have the capacity to arbitrate conflicts. During wetter periods management agreements will have to respond to an increase in sustainability grazing thresholds. Ultimately agreements will be supported by an enhanced local capacity to monitor grazing thresholds. Creating permanent agreements in such uncertain circumstance would be totally out of place and tune with the ecosystem characteristics the Bedouin are dependent on.

The effectiveness of resource agreements will depend on a number of issues. (1) A threshold value of the natural resource base will need to be maintained to retain the incentive for management. This will be dependent on market demand. (2) Resource use agreements will need to be flexible and respond to changing physical and social conditions. The project will strengthen local resource use arbitration mechanisms to handle changing circumstances. (3) Resource agreements will have to respond to the need for the Bedouin to continue to make a living from rangeland resources, while not exceeding sustainable thresholds. Agreements will be structured to encourage peer enforcement. (4) Monitoring and enforcement capacity will none-the-less be further supported through the extension of the Community Guard scheme. Community Guards are all local Bedouin inhabitants, paid by the EEAA to uphold Protectorate legislation. As such they will be an important link between project and Protectorate staff and the Bedouin themselves in enforcing use agreements.

E.3. Prior Obligations

The specific financial commitments of each partner in the project are to be ensured prior to launching project implementation. An agreement will be established and signed between project partners and project management according to the schedule of disbursement for in kind and in cash contributions, including government contributions, for Government of Egypt input budget see Section J for details.

The project document will be signed by UNDP, and UNDP assistance to the project will be provided subject to UNDP receiving satisfaction that the prerequisites listed above have been fulfilled or are likely to be fulfilled. UNDP will reserve the right to suspend disbursement of fund if the above obligations are not met or are violated.

F. MANAGEMENT

F.1. Implementation Arrangements

The project will be executed by the EEAA under UNDP National Execution arrangements. The Project Management Unit (PMU) will be based in St. Katherine's City and will have the overall responsibility for implementation of the project, see Annex IV for the preliminary list of equipment.

UNDP-GEF in coordination with EEAA will appoint a full time National Project Manager for the project period through a national selection process, see Annex V for ToRs. Other two full time national experts will be appointed for participatory planning and biodiversity conservation, plus support staff. National and international consultants will be recruited to provide expertise in participatory planning with Bedouins, medicinal plant conservation, range management (transhumance), and to develop the IPR and National Action Plans. All other activities will be sub-contracted to academic institutions and NGOs. A Part-time National Scientific Advisor and one Assistant Project Manager, see Annex V for ToR₂ will be based in the EEAA offices in Cairo, under the direct supervision of the National Project Manager, to implement outputs 6 and 7. The Assistant Project Manager will also be the project liaison officer with EEAA, Steering Committee members, OUDA, Project Technical Advisory Committee members and other concerned stakeholders in Egypt. The Advisor's position will be phased out during the last 2 years of the project and as a National Implementation Unit for the National Medicinal Plant Strategy and Action Plan is phased in. Annex VI. Shows the project implementation structure

The following committees will supervise the project:

- (a) The Project Steering Committee composed of the EEAA, UNDP and the EU St. Katherine project. This committee will meet quarterly and approve work plans, progress reports and expenditures, and budget revision, see Annex V for ToR.
- (b) The Project Technical Advisory Committee (PTAC) composed of representative ministries, academic institutions, Medicinal Plant Association, NGOs, EU and Steering Committee members. The PTAC will meet at least annually to advise on the technical content of work plans. The PTAC is likely to include: the Ministry of Agriculture; the Desert Research Institute; the National Research Centre, the Tourism Development Authority; and the Ministry of Interior. Meanwhile, While EEAA and the project manager will work closely with other government institutions where it is necessary to provide additional technical expertise for implementation of project activities, Annex V.

EEAA/GEF and EEAA/EU staff will be housed in the same office; will develop annual work plans and conduct daily duties in consultation with each other; and co-ordinate joint monitoring/evaluation activities. As mentioned above, the EEAA/EU will sit on the GEF Project Steering and Technical Advisory Committees. The ongoing EU project provides a substantial base within CNS on which to build and where cross-fertilization and economies of scale, for example on training, can be achieved.

The Medicinal Plant Association MPA, which will be established by the project, will play an important role as a focal institution for training and extension and for marketing of medicinal plants. It will generate revenue for conservation from membership fees. The project manager will take overall responsibility for the establishment and operation of the MPA and together with the project team, take a positive role to set-up a sustainable system of operation for the MPA after project completion.

During the implementation of the project, specific emphasis will be put on the dialogue, information exchange and cooperation among all the relevant stakeholders, including central and local governmental, non-governmental, academic, and private sectors.

The ultimate criteria of success will be how the results of the project will be incorporated in the broader development goals of Egypt. The project tries to address this by establishing an institutional framework for cooperation and involvement of all the relevant partners.

F.2. Financial Management

Separate disbursement procedures will follow National Execution procedures. The national executing agency will open a distinct account in the project's name, which will be credited with advances from UNDP Cairo Office. Payments to this account will be made quarterly on the basis of the project workplans. The project manager appointed by EEAA and UNDP will manage the account and authorize payments to the different beneficiaries according to UNDP procedures and regulations. OUDA (Operational Unit for Development Assistance) will provide financial and administrative support to the project on behalf of UNDP/EEAA as instructed by the project manager and according to the UNDP procedures and regulations, see Annex V for OUDA specific ToR.

The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the procedures set out in Section 30503 of the UNDP Policies and Procedures Manual (PPM) and Section 10404 of the UNDP Finance Manual. The Audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

G. MONITORING AND EVALUATION

The project manager will complete brief monthly progress reports for distribution to the EEAA, UNDP Cairo, and UNDP/GEF Biodiversity Coordinator to enable both the Executing and Implementation Agencies to perform their accountability and over view functions. The project manager will also be responsible for preparation of quarterly workplan and quarterly delivery financial reports

The project will be subject to tripartite review (jointly review by representatives of the Government of Egypt, executing agency and UNDP) at least once every 12 months, the first such meeting to be held within the first 12 months of the start of full implementation. Every year also, the project will be subject to an official audit to be conducted by an independent auditor.

The project after completing the first year of implementation will be requested to prepare and submit (by July of each year) a Project Implementation Review (PIR) report to UNDP-GEF. Upon clearance from GEF-UNDP, the PIR report will be submitted to the GEF Secretariat for final review.

The project shall be subject to a mid-term evaluation approximately 24 months after the start of full implementation. Funds have been included in the budget for an international consultant team to perform the mid-term evaluation. These funds and mission may not be reduced or eliminated except by the written agreement of all parties to the project document.

The PMU will consult with the Steering Committee if it appears that significant changes will be required on the project work plan or budget revision.

The project will be subject to tripartite review (joint review by representatives of the Government, GEF and UNDP at least every 12 months, the first such meeting to be held within the first 12 months of the start of full implementation. The project manager is responsible for the preparation of an annual project report (APR) in consultation with UNDP Cairo office and stakeholders. The APR should be ready and available to the country office at least two weeks before holding each tripartite review meeting (TPR). A project terminal report will be prepared for circulation at the terminal tripartite review meeting.

The following is a tentative time schedule of reviews, reports and the mid-term evaluation :

Description	Milestone
- Project Starting Date	Signing the document Recruitment of project manager and an assistant.
- Inception report	Two months from the project starting date
- Annual Project Review (APR) Tri-partite Review (TPR)	Annually
- Independent Audit	Annually
- Project Implementation Report (PIR)	First June after completing the first year of implementation then annually.
- Mid-term Evaluation	30 months from the project starting date.
- Final Evaluation	50 months from the project starting date
- Terminal Project Review	60 months from the project starting date

H. LEGAL CONTEXT

This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Egypt and the United Nations Development Programme, signed by the parties on 19 January 1987.

The following types of revisions may be made to this Project Document with the signature of the UNDP Resident Representative only, provided he or she is assured that the other signatories of the Project Document have no objections to the proposed changes:

1. Revision in, or addition of, any of the annexes of the Project Document.
2. Revisions, which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation.
3. Mandatory annual revisions that re-phase delivery of agreed project inputs or increased expert of other costs due to inflation or take into account agency expenditure flexibility

I. WORK PLAN FOR THE PROPOSED ACTIVITIES (based on the logic framework)

	Activities	Year 1				Year 2				Year 3				Year 4				Year 5			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Establish and equip project offices																				
1.1.	Update/complete baseline surveys....																				
1.2.	Zone Protectorate, identify areas for protection...																				
1.3.	Agree on areas for enclosure...																				
1.4.	Manage targeted species in enclosed areas																				
1.5.	Establish and monitor conservation status...																				
1.6.	Collect and regenerate endangered MP in bunds.																				
2.1.	Establish a MP Association																				
2.2.	Identify feasible sites such as abandoned orchards																				
2.3.	Work with sheikhs to establish usufruct rights																				
2.4.	Identify over used MP for cultivation and substitutes																				
2.5.	Training program for Bedouins on cultivating MP																				
2.6.	Initiate cultivation trials.																				
2.7.	Construct and equip a MP Center in St. Katherine.																				
2.8.	Training program for Bedouins on processing of MP																				
2.9.	Design and implement a marketing strategy for MP.																				
2.10.	Set up a revolving fund																				
2.11.	Monitor collection and trade of medicinal plants																				
3.1.	Awareness campaign on over collection of MP																				
3.2.	Build community agreement on sustainable collection																				
3.3.	Adapt and modify collection techniques																				
3.4.	Training programme on sustainable collection of MP																				
3.5.	Encourage collectors to process MP for trade																				
3.6.	Training Community Guards to monitor MP collection																				
3.7.	Monitor and disseminate results through MPA																				
4.1.	Regulate the use of fuel wood for camel trek																				
4.2.	Demonstrate viability of stocking imported fuel-wood																				
4.3.	Implement a solar cookers demonstration programme																				

	Activities	Year 1				Year 2				Year 3				Year 4				Year 5				
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
4.4.	Monitor fuel-wood use/impact on medicinal plants																					
5.1.	Complete a baseline survey of existing grazing practices and live stock levels																					
5.2.	Design and implement a protectorate- wide grazing management strategy																					
5.3.	Build consensus with Bedouins for grazing management.																					
5.4.	Build capacity of local leaders...																					
5.5.	Promote cooperative herding...																					
5.6.	Implement a feral animal control programme																					
5.7.	Monitor the conservation status of MP in grazing areas																					
6.1.	Identify options for legal recognition IPR																					
6.2.	Conduct awareness campaign for legal protection IPR																					
6.3.	Draft and adopt necessary legislation for IPR																					
6.4.	Identify additional institutional strengthening on IPR																					
6.5.	Administer and enforce community PR																					
7.1.	Preliminary stocktaking of medicinal plants in Egypt.																					
7.2.	Conduct a national awareness on conservation of MP																					
7.3.	Develop a national strategy and action plan on MP.																					
7.4.	Develop a management plan to implement and monitor MP national strategy																					
7.5.	Secure funding to implement the action plan																					
7.6.	Initiate establishment of a national team for the implementation of the strategy and action plan																					

J BUDGETS

GEF Budget (US\$)

Country: Egypt

Project Title: Conservation and sustainable use of medicinal plants in Arid and Semi-arid ecosystem

Project Number : EGY/00/G31/A/1G/9

BL	Description	GEF total	p/m	Year 1	p/m	Year2	p/m	Year 3	p/m	Year 4	p/m	Year 5	p/m
10	Project Personnel												
11	International Consultants												
011-01	Participation with nomads	30,000	2	15,000	1	7,500	0.5	7,500	0.5				
011-02	Medicinal plants biodiversity conservation	15,000	1			15,000	1						
011-03	Range manager (transhumance)	7,500	0.5			7,500	0.6						
011-04	Fodder-expert	7,500		0		0		0		7,500	0.5	0	
011-99	Sub Total	60,000		15,000		30,000		7,500		7,500		0	
13	Administrative Support Personnel												
013-01	Accountant/Secretary (field office)	60,000	60	12,000	12	12,000	12	12,000	12	12,000	12	12,000	12
013-02	secretary (national office)	20,000	20	4,000	4	4,000	4	4,000	4	4,000	4	4,000	4
013-03	Bedouin guides	20,000	90	4,000	18	4,000	18	4,000	18	4,000	18	4,000	18
013-04	Drivers (3)	52,500	180	11,000	38	11,000	37.7	10,500	36	10,000	34	10,000	34
013-99	Sub Total	152,500		31,000		31,000		30,500		30,000		30,000	
15	Monitoring & Evaluation												
015-01	External technical evaluations (2)	40,000						20,000				20,000	
015-99	Sub Total	40,000						20,000				20,000	
16	Mission Costs												
016-01	International travel	18,000				8,000		5,000		5,000			
016-02	National travel	25,000		4,000		6,000		6,000		6,000		3,000	
016-03	Field travel	23,000		4,000		5,000		5,000		5,000		4,000	
016-99	sub total	66,000		8,000		19,000		16,000		16,000		7,000	

BL	Description	GEF total	p/m	Year 1	p/m	Year2	p/m	Year 3	p/m	Year 4	p/m	Year 5	p/m
17	National Professionals												
017-01	Field project manager	150,000	60	30,000	12	30,000	12	30,000	12	30,000	12	30,000	12
017-02	National Scientific advisor	60,000	20	12,000	4	12,000	4	12,000	4	12,000	4	12,000	4
017-03	Expert on participatory planning	48,000	30	9,600	6	9,600	6	9,600	6	9,600	6	9,600	6
017-04	Expert on biodiversity conservation	92,000	60	18,000	12	18,000	12	18,000	12	19,000	12	19,000	12
017-05	Consultants on MP national action plans	60,000	27			15,000	6.75	15,000	6.75	15,000	6.8	15,000	6.8
017-99	Sub total	410,000		69,600		84,600		84,600		85,600		85,600	
19	Component total	728,500		123,600		164,600		158,600		139,100		142,600	
20	Contracts												
21	Contract A												
021-01	Update baseline studies (activity 1.1)	30,000		12,000		10,000		8,000					
021-02	survey /map/zone MP (activity 1.2)	148,500		66,000		41,500		41,000					
021-03	Agree areas for enclosure (activity 1.3.)	29,000		12,000		12,000		5,000					
021-04	Manage targeted species in enclosures (activity 1.4)	157,300		45,100		22,000		45,100		45,100			
021-05	Establish & monitor conservation status (activity 1.5)	95,000		10,000		25,000		20,000		20,000		20,000	
021-06	Regenerate endangered MP in bunds (activity 1.6)	110,000				35,000		25,000		25,000		25,000	
021-99	Subtotal	569,800											
22	Contract B												
022-01	MP association (2.1.)	29,900		12,100		6,600		6,600		4,600			
022-02	Identify feasible sites for MP cultivation (act. 2.2)	44,600		22,300		15,300		7,000					
022-03	Establish usufruct rights (2.3.)	67,300		30,400		30,900		6,000					
022-04	Identify over-used MP & substitutes (act. 2.4)	68,500		22,500		23,000		23,000					
022-05	Bedouin training in cultivation (activity 2.5)	110,800		34,800		22,000		22,000		22,000		10,000	
022-06	In-situ MP cultivation trials (activity 2.6)	149,400		40,000		48,400		47,000		7,000		7,000	
022-07	Bedouin (women) training in process/market (act.2.8)	122,600		2,600		30,000		30,000		30,000		30,000	
022-08	Marketing MP to tourists (activity 2.9)	100,000				25,000		25,000		25,000		25,000	
022-99	Subtotal	693,100											

BL	Description	GEF total	p/m	Year 1	p/m	Year2	p/m	Year 3	p/m	Year 4	p/m	Year 5	p/m
23	Contract C												
023-01	Bedouin awareness (activity 3.1)	150,600		15,000		30,600		45,000		45,000		15,000	
023-02	Build community agreement MP (activity 3.2)	45,100		5,000		14,100		9,000		9,000		8,000	
023-03	Bedouin training on sustainable collection (act. 3.4)	70,200				40,000		10,200		10,000		10,000	
023-04	Monitor and disseminate results via MPA (3.7)	20,000				7,000		6,500		6,500			
023-99	Subtotal	285,900											
25	Contract D												
025-01	Capacity building of trade leaders (act. 5.4)	30,000				15,000		15,000					
025-02	Promote cooperative herding (5.5)	69,500						29,500		20,000		20,000	
025-03	Feral animal control (5.6)	50,000				15,000		20,000		15,000			
025-04	Monitor conservation of MP (5.7)	60,400						20,000		20,000		20,400	
025-99	Subtotal	209,900											
26	Contract E												
026-01	National IPR policy (activity 6.1 & 6.3 & 6.4)	125,800				53,000		52,800		10,000		10,000	
026-02	Conduct broad based awareness (activity 6.2)	62,200				15,700		15,500		15,500		15,500	
026-03	Administer & enforce community PR (activity 6.5)	89,800								49,900		39,900	
026-99	Subtotal	277,800											
27	Contract F												
027-01	Prelim stocktaking of MP (activity 7.1)	150,000						60,000		50,000		40,000	
027-02	National awareness on MP (activity 7.2)	120,000				30,000		30,000		30,000		30,000	
027-03	National strategy for Mp conservation (7.3.,7.6.)	290,500						130,500		93,000		67,000	
027-99	Sub total	560,500		329,800		567,100		754,700		552,600		392,800	
29	Component total	2,597,000		329,800		567,100		754,700		552,600		392,800	
30	Training & Workshops												
032-01	Dissemination workshops	125,000		25,000		25,000		25,000		25,000		25,000	
032-02	Training community guards	15,000		5,000		5,000		5,000					
032-99	Sub Total	140,000		30,000		30,000		30,000		25,000		25,000	

BL	Description	GEF total	p/m	Year 1	p/m	Year2	p/m	Year 3	p/m	Year 4	p/m	Year 5	p/m
39	Component total	140,000		30,000		30,000		30,000		25,000		25,000	
40	Equipment												
045-01	Non-expendable equipment	280,000		215,000		16,000		17,000		16,000		16,000	
045-02	Expendable equipment	16,500		5,000		5,000		3,000		2,500		2,000	
045-03	Operation and maintenance	199,913		24,264		27,804		28,644		22,938		16,263	
045.99	Sub Total	496,413		244,264		48,804		48,644		41,438		34,263	
49	Component total	496,413		244,264		48,804		48,644		41,438		34,263	
50	Miscellaneous												
052-01	Reporting Costs	26,000		5,000		4000		5000		6000		6000	
052.02	Annual external audits	25,000		5,000		5,000		5,000		5,000		5,000	
052.99	Sub Total	51,000		10,000		9,000		10,000		11,000		11,000	
053-01	contingency	184,087		33000		32,000		36,087		42,000		41,000	
053-99	Sub Total	184,087		33,000		32,000		36,087		42,000		41,000	
59	Component total	235,087		43,000		41,000		46,087		53,000		52,000	
99	Total	4,117,000		770,664		850,504		1,038,031		811,138		646,663	

UNDP Budget (US\$)

Country: Egypt

Project Title: Conservation and sustainable use of medicinal plants in Arid and Semi-arid ecosystem

Project Number: EGY/00/031/A/1G/99

BL	Description	UNDP total	p/m	Year 1	p/m	Year 2	p/m	Year 3	p/m	Year 4	p/m	Year 5	p/m
10	Project Personnel												
16	Mission Costs												
016-01	Field travel	10,000		5,000		5,000		0		0		0	
016-99	sub total	10,000		5,000		5,000		0		0		0	
19.99	Component Total	10,000											
20	Sub Contracts												
021-01	Processing, storing, and selling of MP (act. 3.5)	72,847				12,847		20,000		20,000		20,000	
021-02	Assist a revolving fund for Bedouins (act.2.10)	140,000				140,000							
021-03	Marketing MP to tourists (act 2.9)	40,000		10,000		10,000		10,000		5,000		5,000	
021-04	Regulate the use of fuel wood for camal trek (4.1)	25,000		5,000		5,000		5,000		5,000		5,000	
021-05	Demonstrate stockating imported fuel wood (4.2)	70,000		20,000		20,000		15,000		10,000		5,000	
021-06	IPR enforcement (act.6.4)	40,000		0						20,000		20,000	
021-99	Sub total	387,847		35,000		187,847		50,000		60,000		55,000	
29	Component total	387,847		195,000		55,000		50,000		40,000		35,000	
30	Training & Workshops												
030-01	Women training program on MP processing	15,000				5,000		5,000		5,000		0	
030-02	Training-sustainable collection of MP	20,000				5,000		5,000		5,000		5,000	
030-03	Regulation of fuel wood alternatives	13,000				5,000		3,000				5,000	
030-99	Sub Total	48,000		0		15,000		13,000		10,000		10,000	

BL	Description	UNDP total	p/m	Year 1	p/m	Year 2	p/m	Year 3	p/m	Year 4	p/m	Year 5	p/m
39	Component total	48,000		0		15,000		13,000		10,000		10,000	
40	Equipment												
041-00	Non-expendable equipment												
041-01	Processing machines for herbs and oils	28,000		28,000		0		0		0		0	
041-02	Operation/maintenance	12,080				3,080		3,000		3,000		3,000	
041-99	sub total	40,080		28,000		3,080		3,000		3,000		3,000	
49	Component total	40,080		28,000		3,074		3,000		2,500		2,200	
54.01	OUDA Administrative Support Cost (3%)	14,153		6,390		2,642		2,280		1,575		1,266	
99	Total	500,080		213,000		88,074		76,000		52,500		42,200	

Government of Egypt (GOE) Budget (US\$)

Country: Egypt

Project Title: Conservation and sustainable use of medicinal plants in Arid and Semi-arid ecosystem

Type: in Kind Contribution

BL	Description	TOTAL	Year 1	Year 2	Year 3	Year 4	Year 5
13	Administrative Support Personnel						
13-01	Drivers	180,000	36,000	36,000	36,000	36,000	36,000
13-02	unskilled labor	50,000	10,000	10,000	10,000	10,000	10,000
13-99	Subtotal	230,000	46,000	46,000	46,000	46,000	46,000
15	Monitoring and Evaluation						
15-01	Duty Travel	100,000	20,000	20,000	20,000	20,000	20,000
17	National Professionals						
17-01	Legal Consultants (Act. 6.1 & 6.3)	98,550		17,200	31,350	50,000	
17-02	Community Guards scheme (national personnel) (act. 3.7)	105,100			30,000	37,550	37,550
17-99	Subtotal	203,650	0	17,200	61,350	87,550	37,550
19	Component total	533,650	66,000	83,200	127,350	153,550	103,550
20	Subcontracts						
21-01	Identification of feasible sites (act. 2.2)	10,000	5,000	5,000			
21-02	Training of Bedouins on Cultivating MP (act.2.5)	28,000			14,000	14,000	
21-03	Initiation of MP cultivation (act. 2.6)	7,600		2,534	2,533	2,533	
21-04	Construct and equip a MP Center in St. Katherine (act. 2.7)	171,250	10,000	141,250	20,000		
21-05	Setup a revolving fund (act. 2.10)	70,600		30,000	20,000	20,600	
21-06	Demonstration of using alternative fuel (act 4. 2)	29,400			14,400	15,000	
21-07	Design and implement grazing management strategy (act. 5.2)	160,000		40,000	40,000	40,000	40,000
21-08	Administer and enforce intellectual property rights (act. 6.5)	70,000				30,000	40,000
21-09	Stocktaking MP in Egypt (act. 7.1)	1,200			600	600	

BL	Description	TOTAL	Year 1	Year 2	Year 3	Year 4	Year 5
21-10	Public awareness campaign on conservation of MP (act. 7.2)	103,120			43,120	30,000	30,000
21-11	Develop a plan to implement and monitor the action plan (act. 7.4)	50,000				50,000	
21-12	Implement action plan (act. 7.6)	1,370,000				685,000	685,000
29	Component total	2,071,170	15,000	218,784	154,653	887,733	795,000
43-01	Office Space	350,000	70,000	70,000	70,000	70,000	70,000
45-01	Office Equipment Maintenance	50,000	10,000	10,000	10,000	10,000	10,000
	TOTAL GOE	3,004,820	161,000	381,984	362,003	1,121,283	978,550

EU/GTZ Budget (US/\$)

Country: Egypt

Project Title: Conservation and sustainable use of medicinal plants in Arid and Semi-arid ecosystem

BL	Description	TOTAL	Year 1	Year 2	Year 3	Year 4	Year 5
17	National Professionals						
17-01	Legal Consultants (act. 6.1 & 6.3)	2,500		2,500			
20	Subcontracts						
20-01	Register of MP in National Gene Bank (act. 1.6)	300,000		300,000			
20-02	Identification of feasible sites (act. 2.2)	20,000	10,000	10,000			
20-03	Initiation of MP cultivation (act. 2.6)	10,000	3,000	7,000			
20-04	Construct and equip a MP Center (act. 2.7)	100,000		100,000			
20-05	Training women on processing MP (act.2.8)	22,000	5,000	17,000			
20-06	Market strategy to promote traditional MP (act. 2.9)	12,000		12,000			
20-07	Monitoring collection and trade for MP (act. 2.11)	25,000		25,000			
20-08	Public awareness campaign on over-collection of MP(act. 3.1)	5,000		5,000			
20-09	Promote processing of MP (act. 3.6)	6,000		6,000			
20-10	Regulate the use of fuel wood for camel trek (act. 4.1)	5,000	2,500	2,500			
20-11	Demonstration of using alternative fuel (act 4. 2)	25,000	12,500	12,500			
20-12	Implement solar cookers demonstration programme (act. 4.3)	10,000		10,000			
20-13	Baseline survey for existing grazing practices (act.5.1)	25,400	13,400	12,000			
20-14	Design and implement grazing strategy (act. 5.2)	15,000		15,000			
20-15	Building capacity for local leaders (act 5.4)	5,000		5,000			
20-16	Promote cooperative herding (act. 5.5)	5,000		5,000			
20-17	Feral animal control (act. 5.6)	16,000		16,000			
20-18	Monitoring the conservation status of MP in grazing areas (act. 5.7)	5,000		5,000			
20-19	Public awareness campaign for legal protection IPR (act. 6.2)	5,000		5,000			
	TOTAL DONOR	618,900	46,400	572,500	0	0	0

Private sector Budget (US\$)

Country: Egypt

Project Title: Conservation and sustainable use of medicinal plants in Arid and Semi-arid ecosystem

Type: in Kind Contribution (US\$)

BL	Description	TOTAL	Year 1	Year 2	Year 3	Year 4	Year 5
20	Subcontract						
20-01	Training women on for processing MP (act.2.8)	50,000		20,000	10,000	10,000	10,000
20-02	Market strategy to promote traditional MP (act. 2.9)	159,403		40,000	40,000	40,000	39,403
	TOTAL PRIVATE	209,403	0	60,000	50,000	50,000	49,403

The total for private sector excludes US\$ 16,995 contribution during the PDF-B phase.

K. ANNEXES

ANNEX I PROJECT TARGET SPECIES AND THEIR USES

ANNEX II. TRAINING PROGRAMS

ANNEX III. LOGICAL FRAMEWORK ANALYSIS

ANNEX IV PRELIMINARY EQUIPMENT LIST

ANNEX V TERMS OF REFERENCE

ANNEX VI PROJECT IMPLEMENTATION STRUCTURE

ANNEX I. PROJECT TARGET SPECIES AND THEIR USES

No	Species	Conservation status ⁷	Tourism	Construction	Over-grazing			Over-collection				
					Feral donkey	Sheep & Goats	Camels	Trade		Home use	Research	Fuel
								International	National			
1	<i>Ballota kaiseri</i>	endemic,ex.endang.	L	L	L	H	M	L	L	L	M	L
2	<i>Rosa arabica</i>	endemic,ex.endang.	H	L	L	L	M	L	L	L	M	M
3	<i>Annarhinum pubsence</i>	endemic, endang.	L	L	M	H	M	L	L	M	L	L
4	<i>Bufonia multiceps</i>	endemic, endang.	M	L	L	H	L	L	L	L	L	L
5	<i>Hypericum sinaicus</i>	endemic, endang.	M	M	L	M	L	L	L	L	L	L
6	<i>Nepeta septemcrenata</i>	endemic, endang.	M	L	L	L	L	L	L	L	H	L
7	<i>Polygala sinaica</i>	endemic, endang.	L	L	M	H	L	L	L	L	L	L
8	<i>Primula boveana</i>	endemic, endang.	M	L	L	L	L	L	L	L	M	L
9	<i>Silene leucophylla</i>	endemic, endang.	M	M	L	H	M	L	L	M	M	L
10	<i>Silene schimperiana</i>	endemic, endang.	M	M	L	H	H	L	L	M	M	L
11	<i>Thymus ducussatus</i>	endemic, endang.	M	M	L	L	L	H	H	H	H	L
12	<i>Veronica kaiseri</i>	endemic, endang.	M	L	L	L	L	L	L	L	L	L
13	<i>Veronica islensis</i>	endemic, endang.	M	L	L	L	L	L	L	L	L	L
14	<i>Origanum syriacum</i>	endemic, vulnerable	M	M	M	L	H	H	H	H	H	L
15	<i>Euphorbia santae-catrinae</i>	endemic, rare	M	H	M	L	M	L	L	L	H	L
16	<i>Phlomis aurea</i>	endemic, rare	L	L	M	L	L	L	L	L	H	M
17	<i>Cleome droserifolia</i>	Endangered	M	M	L	L	L	H	H	H	H	L
18	<i>Ephedra pachyclada</i>	Endangered	L	L	M	L	M	L	L	M	H	M
19	<i>Foeniculum vulgare</i>	Endangered	L	L	M	H	H	L	L	H	L	L
20	<i>Moringa peregrina</i>	Endangered	L	L	L	H	M	L	M	M	M	M
21	<i>Pycnocycla tomentosa</i>	Endangered	L	M	M	H	M	L	L	M	L	L
22	<i>Salvia acetabulosa</i>	Endangered	M	L	M	L	L	M	H	H	H	L
23	<i>Cotoneaster orbicularis</i>	Vulnerable	L	L	M	H	H	L	L	L	H	M
24	<i>Crateagus x sinaica</i>	Vulnerable	M	M	L	H	M	L	L	M	H	M

⁷ Categories marking conservation status for priority species conform to a large extent with IUCN listings. Criteria for extremely endangered, endangered and vulnerable are equivalent to IUCN categories of critically endangered, endangered and vulnerable. The listing of rare is given by the project to species, which are seldom in distribution (1-5 individual) in a particular site of 1-1.5 km². If a species occurs once in an area of less than 1km² then it is assigned very rare.

No	Species	Conservation status ⁷	Tourism	Construction	Over-grazing			Over-collection				
					Feral donkey	Sheep & Goats	Camels	Trade		Home use	Research	Fuel
								International	National			
25	<i>Glaucium arabicum</i>	Vulnerable	M	H	L	L	L	L	M	L	M	L
26	<i>Papaver decaisnei</i>	Vulnerable	L	H	L	M	M	L	L	M	L	L
27	<i>Papaver rhoeas</i>	Vulnerable	L	H	L	M	M	L	L	L	L	L
28	<i>Pistacia khinjuk</i>	Vulnerable	L	L	L	M	H	L	M	M	L	M
29	<i>Otostegia fruticosa</i>	Vulnerable	L	L	M	H	H	L	L	M	L	M
30	<i>Hyoscyamus pusiluns</i>	very rare	L	M	L	L	L	H	M	M	H	L
31	<i>Plantago sinaica</i>	very rare	L	L	L	M	L	L	M	L	L	L
32	<i>Verbascum sinaicum</i>	very rare	L	L	L	L	L	L	L	L	H	L
33	<i>Adiantum capillus-veneris</i>	Rare	L	H	L	L	L	L	L	L	L	L
34	<i>Blepharis ciliaris</i>	Rare	L	L	L	M	H	L	L	L	M	L
35	<i>Deverra triradiatus</i>	Rare	L	M	M	H	H	L	M	M	M	L
36	<i>Globularia arabica</i>	Rare	M	L	M	L	L	L	L	M	M	L
37	<i>Hyoscyamus boveanus</i>	Rare	L	M	L	L	L	H	M	M	H	L
38	<i>Lindenbergia sinaica</i>	Rare	L	L	L	M	L	L	L	L	L	L
39	<i>Solenostemm arghel</i>	Rare	M	H	L	L	L	H	H	M	H	L
40	<i>Tanacetum santolinoides</i>	Rare	L	L	M	M	L	M	H	M	H	M
41	<i>Varthemia montana</i>	Rare	M	L	M	H	H	H	H	H	H	L
42	<i>Verbascum sinuatum</i>	Rare	L	L	L	L	L	L	L	L	H	L

Key: L = low M = medium H = high.

Table 2. Medicinal Plants that are Cultivated or that have Cultivation Potential

Cultivated over-used species, or their substitutes	vulnerable	Vulnerable over-used species, or their substitutes with cultivation potential
<i>Mentha longifolia</i>		<i>Moringa peregrina</i>
<i>Achillea fragrantissima</i>		<i>Capparis sinaica</i>
<i>Artemisia herba-alba</i>		<i>Capparis spinosa</i>
<i>Ziziphus spina-christi</i>		<i>Lavandula coronopifolia</i>
<i>Citrullus colocynthis</i>		<i>Lavandula pubescens</i>
<i>Origanum syriacum</i>		<i>Solonostemma arghel</i>
		<i>Thymus decassatus</i>
		<i>Varthemia montana</i>
		<i>Hyoscyamus muticus</i>
		<i>Senna spp.</i>
		<i>Ammi spp.</i>

Table 3: Export Quantities of Medicinal Plant in 1998: Species found in St Katherine's Protectorate

Latin name	Quantity (tonnes)
Cleome droserifolia	
<i>Citrullus colocynthis</i>	
<i>Tamarix spp</i>	
<i>Zygophyllum coccineum</i>	
<i>Artemisia herba-alba</i>	5
<i>Achillea fragrantissima</i>	
<i>Solenostemma arghel</i>	
<i>Artemisia Judaica</i>	
<i>Cassia acutifolia</i>	~5

Table 4: Quantities of Medicinal Plants sold in Regional Markets) in 1988 (Dahab, Sharm El-Sheikh, El-Tour): Species found in St Katherine's Protectorate

Latin name	Quantity (tonnes)
Cleome droserifolia	6-8
<i>Artemisia judaica</i>	6-10
<i>Teucrium polium</i>	2-3
<i>Tamarix spp</i>	>5
<i>Mentha longifolia</i>	2-3
<i>Solenostemma arghel</i>	4-7
<i>Peganum harmala L.</i>	1
<i>Citrullus colocynthis</i>	10-15
<i>Origanum syriacum L.</i>	20-40
<i>Artemisia herba-alba</i>	10
<i>Achillea fragrantissima</i>	3

Table 5: Commonly used plants in Bedouin Households of St Katherine's Protectorate

Latin name	Uses	Part used	Mode of use	Frequency of reference in household survey
<i>Cleome droserifolia.</i>	Anti-diabetic, for slimming, Skin diseases, Diuretic	Herb, Leaves	Boiled with hot water	95%
<i>Artemisia judaica.</i>	Antispasmodic, Anthelmintic, Fuel wood, Insect repellent	Herb	Decoction, boiled	90%
<i>Hyoscyamus muticus</i>	Bronchial diseases	Leaves	Wrapped leaves as cigarettes	90%
<i>Solenostemma arghel</i>	Urinary tract diseases, Antiseptic	Leaves	Boiled	90%
JASONIA MONTANA VAHL BOTSEH (VARTHEMIA SPP.)	Antispasmodic, Kidney diseases, antiemetic	Herb	Decoction, maceration	85%
<i>Retama raetem</i> =(<i>Lygos raetam</i>) <i>Forssk.</i>	Fuel wood, Antibiotic for wounds, Anti emetic	Powdered plant, Leaves, Whole branches, bark	Powder, woody branches, boiled	85%
<i>Teucrium polium</i>	Antispasmodic, Skin allergy	Herb	Decoction, maceration, powdered plant	85%
<i>Acacia tortilis</i>	Fuel wood	Whole plant branches	Burning	80%
<i>Salvia acetabulosa.</i>	Expectorant, Common cold	Flowers, Leaves	Decoction, boiled	70%
<i>Anabasis articulata</i>	Skin diseases, Fuel wood, Soap	Whole plant branches	Boiled, powder with water	60%
<i>Mentha longifolia</i>	Antispasmodic	Herb, Leaves	Decoction, boiled	60%
<i>Origanum syriacum.</i>	Spices, A nalgesic	Leaves, Herb	Decoction	60%
<i>Thymus decussatus</i>	Antispasmodic, Dental pain	Leaves, Herb, flowers, roots	Decoction, boiled	60%
<i>Zilla spinosa</i>	Urinary tract diseases	Dry plant	Boiled	60%
<i>Achillea fragrantissima</i>	Eye lotion, Colic	Leaves	Infusion	50%
<i>Citrullus colocynthis</i>	Antirheumatic, Anthelmintic	Seeds, powdered fruit	Boiled with olive oil (as poultice)	50%
<i>Peganum harmala.</i>	Urine retention (seeds), Dental pain (roots)	Seeds, roots	Boiled	40%
<i>Hammada elegans</i>	Labour problems, fuel wood	Leaves, Seeds	Boiled	35%
<i>Gomphocarpus sinaicus</i>	Adulteration to Solenostemma argel	Leaves	Not used (toxic)	30%
<i>Capparis cartilaginea</i>	Antirheumatic, Biles, pickle vegetables	Herb, Fruit	Boiled, pickled	30%
<i>Artemisia herba-alba</i>	Antispasmodic, Flatulent	Herb	Decoction, boiled	15%
<i>Globularia arabica</i>	Leather dying, burned skin, Stomach diseases	Herb, Roots	Boiled, as powdered plant	10%

Latin name	Uses	Part used	Mode of use	Frequency of reference in household survey
<i>Rhus tripartita</i>	Antimetic	Root	Boiled	10%
<i>Tamarix spp</i>	Digestion, diseases	Skin Root Herb	Bioled	10%
<i>Moringa peregrina</i>	Nutrient	Legumes	Cooked	7%
<i>Atraphaxis spinosa</i>	Antidiabetic, allergy	Skin Herb	Boiled	5%
<i>Cassia senna</i>	Laxative	Legumes	Maceration, boiled	5%
<i>Fagonia mollis</i>	Local antibiotic	Leaves	Roasted leaves	5%
<i>Tanacetum santolinoides</i>	Antispasmodic, Antiallergenic	Herb	Boiled, dry powder	5%
<i>Capparis spinosa</i>	Antirheumatic, Biles	Herb, Trunk, branches	Boiled herb, moisten powder	4%
<i>Ballota undulata</i>	Skin allergy	Herb	Boiled	3%
<i>Stachys aegyptiaca.</i>	Bronchial asthma	Herb	Boiled	3%
<i>Pistacia atlantica</i>	Kidney failure, Cancer	Dry powdered leaves	Dry powder, boiled	2%
<i>Juncus Spp.</i>	In Labor	Seeds		2%
<i>Ochradenus baccatus</i>	Hair tonic	Herb	Percolation	1%

Table 6: Flora most commonly collected for fuel in St Katherine's Protectorate

Latin Name	Frequency of reference in household survey
<i>Retama raetem Forssk. Webb</i>	70.0%
<i>Acacia tortilis Forssk</i>	60.0%
<i>Anabasis articulata Forssk</i>	33.0%
<i>Artemisia judaica L.</i>	26.0%
<i>Tamarix spp</i>	11.5%
<i>Zilla spinosa Tura</i>	6.0%
<i>Solenostemma argel Del. Hayne</i>	5.0%
<i>Capparis spinosa Lam.</i>	3.7%
<i>Moringa peregreana</i>	3.7%
<i>Hamada elegans Bunge</i>	2.4%
<i>Aerva javonica</i>	1.5%

Table 7: Farm Budgets for the Cultivation of Different Medicinal Plant species in the Nile Valley

Inputs and Outputs	Mint (Habag)		Origanum (Zaatar)		Thyme (Zoeitran)		Salvia (Mardakoush)		Rosemary (Zanzabil)		Artemisia (Sheeh)		Senna (Sanamaki)	
	1	2 to 4	1	2 to 4	1	2 to 4	1	2 to 4	1	2 to 4	1	2 to 4	1	2 to 4
I. Inputs cost (LE)														
Planting material	100	0	250	0	250	0	250	0	250	0	100	100	100	100
Cultivation	50	0	50	0	50	0	50	0	50	0	50	50	50	50
Manures	150	200	150	200	150	200	150	200	150	200	150	150	150	150
Water	200	250	200	250	200	250	200	250	200	250	200	200	200	200
Plant protection	50	50	50	50	50	50	50	50	50	50	50	50	0	0
Harvest & Packing	50	100	50	100	50	100	50	100	50	100	100	100	100	100
Transport	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total inputs (LE)	700	700	850	700	850	700	850	700	850	700	750	750	700	700
II. Outputs														
Yield (Kg)	250	350	300	400	200	250	250	350	400	500	200	200	300	300
Unit price (LE/Kg)	15	15	10	10	15	15	15	15	6	6	15	15	8	8
Total outputs (LE)	3750	5250	3000	4000	3000	3750	3750	5250	2400	3000	3000	3000	2400	2400
III. Net return (LE/Year)	3050	4550	2150	3300	2150	3050	2900	4550	1500	2300	2250	2250	1700	1700

Notes :

1- The estimates are for a unit area of 1000 m²

2- yields are minimum found in the Nile Valley

3- 1999 farm gate prices have been used.

4- The yield increase from the second year up to the fourth year, since most of these plants are perennials.

5- No cost was added for land rent.

Table 8: Indicative Prices of some Medicinal Plant Species found St. Katharine at different stages of preparation (LE/Kg.)

Plant	Whole herb from collectors (unprocessed)	After cleaning (mostly free of stems)	Average retail price when sold in small bags (Cairo Markets)
Habag (<i>Mentha longifolia</i>)	3	15	50
Samwa (<i>Cleome droserifolia</i>)	3	6	30
Baatharan (<i>Artemisia judaica</i>)	4	8	50
Zaater (<i>Origanum syriacum</i>)	5	10	18
Geeda (<i>Teucrium polium</i>)	3	8	40
Shieh (<i>Artemisia herbaalba</i>)	4	15	18
Zoeitran (<i>Thymus decussatus</i>)	5	15	45
Senameke (<i>Cassia acutifolia</i>)	3	8	13
Mardakousk (<i>Salvia acettabulosa</i>)	4	15	30

Table 9: Birds of St. Katherine's Protectorate and their Status

Common Name	Latin Name	Status	Locality
Lesser Grey Shrike	<i>Lanius minor</i>		Nabaq & Lithi
Rock Martin	<i>Ptyonoprogne fuligula</i>		Lethi
Black Start	<i>Cercomela melanura</i>	RB	Lethi
White-crowned black wheateater	<i>Oenanthe leucopyga</i>		Lethi
Hooded wheateater	<i>O. monacha</i>	RB	Rihman
Chukar	<i>Alectoris chukatr</i>	RB	St. Katherine
Sardinian Warbler	<i>Sylvia melanocephala</i>	WNB	St.Katherine
Yellow wagtail	<i>Motacilla flava</i>	RB	Lethi & Thman

WNB = Winter but not breeding visitor; RB= Resident breeder

Table 10: Reptiles of St. Katherine's Protectorate and their Status

Common Name	Latin Name	Status	Locality
Dhab	<i>Uromastix aegyptiaca</i>	Abundant	All S. Sinai
Ornate Dhab	<i>Uromastix ornatus</i>	E	Abu Gallum
	<i>Messelinus guattlata</i>	VC	All. S. Sinai
Sinai Agama	<i>Pseudotrapelus sinaicus</i>	EC	St. Katherine, Lethi
Starred Agama, Hardun	<i>Laudokia stellio branchyductyla</i>	C	

E= Endangered VC= very common C= Common

Table 11: Mammals of St. Katherine's Protectorate and their Status

Common Name	Latin Name	Status	Locality
Dorcas Gazelle	<i>Gazella Dorcas</i>	E	El Qa'a plain, Lethi, Nabaq
Hyaena	<i>Hyaena haeyena</i>	C	Sheikh Awas, Tarfa
Red Fox	<i>Vulpes vulpes</i>	VC	Abu Sila, Katherine
Hyrax	<i>Procavia capensis</i>	C	G.Hamer, El Arabein
Cape Hare	<i>Lepus capensis</i>	C	Agramiyah
Ibex	<i>Capra ibex nubicus</i>	C	G. Hamer

E= Endangered VC= very common C= Common

ANNEX II TRAINING PROGRAMS

Training is one of the essential activities of this project. The lack of knowledge and information in the issue of this project makes training very important. The target groups are different and cover different levels. Dissemination workshops will play a great role in disseminating the knowledge and data about the project among different groups of the stakeholders.

Training programs should be designed to support the following activities:

- In implementing agreements with the Bedouin to establish enclosures needs their training so that the ideas of agreement will be acceptable to them (Training the Bedouin)
- Collection of genetic material for storage and registration (Training young graduates)
- Establishment of the association of medicinal plants in St. Katherine (Training the Bedouin)
- Cultivation of wild endangered medicinal plants (Training the young technicians and the Bedouin)
- Awareness programs for the conservation of medicinal plants (Training the journalists and other mass media personnel)
- Raising the capacity of the community guards (The community guards)
- Making use of the school children as a support to the objectives of the project (Children)
- Conservation of the indigenous knowledge (Young Bedouin)
- Minimize the overuse of medicinal plants for research (Young researchers)
- Post harvest processes (Women and children)

Training should be in Arabic language. It will be undertaken by experts from the different universities, research centres, ministries, NGO's, etc.

ANNEX III. LOGICAL FRAMEWORK ANALYSIS

INTERVENTION	Verifiable Indicators	Means of Verification	Risks/ Assumptions
Overall Goal: The rate of loss of globally significant medicinal plants is reduced			
Project Objective: Conservation and sustainable use of globally significant medicinal plant biodiversity in St Katherine's Protectorate	<ul style="list-style-type: none"> Plant cover increased by 10% in target areas by the end of the project 42 target species increase population size by 50% by the end of the project 	<ul style="list-style-type: none"> Botanical survey monitoring report 	
Output 1: Critically endangered medicinal plant species protected	<ul style="list-style-type: none"> Enclosures established and functioning in 2 to 5% of Protectorate area by year 3 42 target species registered with national gene-bank All endemic, endangered (10) target species regenerated at 30 new sites by the end of the project 	<ul style="list-style-type: none"> Mid-term evaluation Gene-bank accession records Botanical survey monitoring report 	<ul style="list-style-type: none"> Bedouin and tourists respect set-aside agreements in enclosures
Output 2: Over-used and vulnerable medicinal plants cultivated	<ul style="list-style-type: none"> 20 target species cultivated by Bedouin by the end of the project All cultivated medicinal plants are sold 	<ul style="list-style-type: none"> Medicinal Plant Centre's records Sales receipts 	<ul style="list-style-type: none"> Bedouin recognise the benefits of cultivation Markets are receptive to medicinal plant products
Output 3: Best practices for medicinal plant collection introduced and collection levels regulated	<ul style="list-style-type: none"> 50% of Bedouin community trained in medicinal plant collection best practices Functioning medicinal plant collection agreements covering 80% of the Protectorate by the end of the project 	<ul style="list-style-type: none"> Final evaluation Community guard reports 	<ul style="list-style-type: none"> Community collection agreements are recognised and adhered to by Bedouin Collection best practices can be enforced among external collectors and traders
Output 4: Alternative energy sources promoted	<ul style="list-style-type: none"> Annual distribution capacity for 5000 butane gas canisters and 100 tonnes of fuel wood established in St Katherine's by the end of the project 20% of Bedouin households in the Protectorate use solar 	<ul style="list-style-type: none"> Survey of private sector business activity Project demonstration records sample household survey 	<ul style="list-style-type: none"> The private sector has sufficient incentive to distribute, butane and fuel-wood Solar heater prove to be adequate alternatives to existing energy sources

INTERVENTION	Verifiable Indicators	Means of Verification	Risks/ Assumptions
	heating by the end of the project		
Output 5: Grazing management plans designed and implemented	<ul style="list-style-type: none"> Functioning tribal grazing agreements covering 50% of the Protectorate by the end of the project Co-operative herding and transhumance is practised by at least 30% of the population by the end of the project. 	<ul style="list-style-type: none"> Final evaluation Final Evaluation 	<ul style="list-style-type: none"> Community grazing agreements are recognised and adhered to Tribal agreements do not significantly increase conflicts over access to land Bedouin youth are amenable to re-introduction of transhumance.
Output 6: Community medicinal plants related Intellectual property rights protected	<ul style="list-style-type: none"> legal and institutional arrangements recognising and enforcing community intellectual property rights in place and functioning by the end of the project 	<ul style="list-style-type: none"> Evaluation of legal and institutional structure 	<ul style="list-style-type: none"> Communities and local doctors see the benefits of registering community property rights
Output 7: Best practices to protect medicinal plants promoted to other sites	<ul style="list-style-type: none"> Priority sites for Medicinal Plant conservation and sustainable use identified. A fully agreed Logical Framework for NMPSAP implementation completed by end of year 3. Implementation of the NMPSAP begins by the start of year 4 	<ul style="list-style-type: none"> Maps Logical Framework, and minutes of the consultative process Progress reports 	<ul style="list-style-type: none"> Sufficient donor resources can be mobilised to fund the medicinal plant action plan

Activities

Output 1: Critically endangered medicinal plant species protected

- 1.1. Update and complete baseline survey and map distribution of medicinal plant species in Protectorate
- 1.2. Assess genetic diversity of Medicinal Plants
- 1.3. Zone the Protectorate, identifying primary areas of conservation importance for protection, and secondary areas of conservation importance for sustainable use
- 1.4. Agree areas for enclosure and exclusion from use through participatory dialogue with Bedouin
- 1.5. Establish enclosures
- 1.6. Register and store genetic samples of target species with national Gene bank (with data sheets)
- 1.7. Collect and regenerate critically endangered medicinal plants in small nurseries

Activities

- 1.8. Re-establish critically endangered species in areas with use agreements
 - 1.9. Monitor response of enclosures compared to similar un-enclosed surrounding areas.
-

Output 2: Over-used vulnerable medicinal plants cultivated

- 2.1. Establish a Medicinal Plant Association for the conservation and sustainable use of medicinal plants for Bedouin children and Adults
 - 2.2. Identify feasible sites, such as abandoned orchards and Monastery gardens for medicinal plant cultivation and Bedouin interested in cultivating medicinal plants
 - 2.3. Work with Sheikhs to establish exclusive usufruct rights in areas identified for cultivation where necessary, such as through the *doukhl*
 - 2.4. Identify over-used medicinal plants for immediate cultivation, and substitutes, and over-used medicinal plants for potential cultivation
 - 2.5. Design and implement a Bedouin training and extension programme for cultivation and harvesting of over-used and easily cultivated medicinal plants
 - 2.6. Initiate cultivation trails for over-used medicinal plants with cultivation potential, and develop training and extension materials for the Medicinal Plant Association
 - 2.7. Construct and equip a medicinal plant centre for processing, storing and selling medicinal plant products, in St Katherine's Protectorate
 - 2.8. Design and implement a Bedouin training programme for processing, packaging, storing, and selling medicinal plant products, targeted at women
 - 2.9. Design and implement a marketing strategy to promote traditional medicinal plant remedies to tourists, in hotels and Bedouin eco-lodges, including lectures, demonstrations, and traditional health services
 - 2.10. Set up a revolving fund, under the auspices of the Medicinal Plant Association with an initial capitalisation to provide loans to Bedouin to purchase cultivation equipment
 - 2.11. Monitor collection and trade of medicinal plants, and impacts on biodiversity
-

Output 3: Best practices for medicinal plant collection introduced and collection levels regulated

- 3.1. Design and implement an awareness raising programme for Bedouin communities to demonstrate the cause-effect relationship between over-collection of medicinal plant species and the impacts
 - 3.2. Conduct a baseline study on productivity, biomass levels and plant ecology, and identify sustainable collection levels and best practices for collection
 - 3.3. Build consensus for a community agreement on sustainable collection level for medicinal plants, starting in areas with conservation oriented grazing management
 - 3.4. Adapt and modify collection techniques for use in St Katherine's to minimise damage to wild medicinal plant resources
 - 3.5. Design and implement a training programme in sustainable collection best practices among Bedouin collectors, and community guards
 - 3.6. Encourage collectors for trade to process medicinal plants through the medicinal plant centre (for a small fee) to add value to plant materials
 - 3.7. Extend existing Community Guard scheme to monitor medicinal plant collection through training
 - 3.8. Monitor and disseminate results through Medicinal Plants Association
-

OUTPUT 4: ALTERNATIVE ENERGY SOURCES PROMOTED

- 4.1. Regulate the use of fuel wood for camel treks through awareness and enforcement among tourists
 - 4.2. Demonstrate the viability among local businesses of stocking imported fuel-wood and butane gas cylinders
 - 4.3. Design and implement demonstration programme among women to promote the use of solar ovens
 - 4.4. Monitor fuel-wood use and its impact on medicinal plants
-

Activities

OUTPUT 5: GRAZING MANAGEMENT PLAN DESIGNED AND IMPLEMENTED

- 5.1. Complete a baseline survey of existing grazing practices and livestock levels
 - 5.2. Design and implement a Protectorate-wide grazing management strategy
 - 5.3. In sustainable use zones (identified under activity 1.2.), build consensus with Bedouin tribes and sub-tribes for grazing management plans oriented to conservation of medicinal plants, through the re-establishment of the *hilf* and negotiation of access rights
 - 5.4. Build capacity of local leaders for the development of tribal grazing management plans and their implementation
 - 5.5. Promote co-operative herding , revival of transhumance and status of herders
 - 5.6. Implement feral animal control programme
 - 5.7. Monitor the conservation status of medicinal plants in grazing areas and adjust management schemes for conservation
-

Output 6: Community medicinal plants related Intellectual property rights protected

- 6.1. Identify options for legal recognition and protection of community intellectual property rights
 - 6.2. Conduct broad-based awareness raising and consultations with stakeholders and agree best option for the legal protection of community intellectual property rights
 - 6.3. Draft and adopt necessary legislation for legal protection of community intellectual property rights
 - 6.4. Identify additional institutional strengthening necessary to administer and enforce intellectual property rights
 - 6.5. Administer and enforce community intellectual property rights
-

Output 7: Best practices to protect medicinal plants promoted to other sites

- 7.1. Preliminary stocktaking of medicinal plants in areas of Egypt where no data exists
 - 7.2. Conduct awareness raising and broad-based consultations with stakeholders and reach agreement on principles for a strategy and action plan
 - 7.3. Based on the experiences from St Katherine's Protectorate, stocking, and stakeholder consultations develop a national strategy and action plan for the conservation and sustainable use of medicinal plants in other parts of Egypt.
 - 7.4. Set up a project management team to implement and monitor the action plan
 - 7.5. Secure funding to implement the action plan
 - 7.6. Implement first two years of National Medicinal Plant Action Plan.
-

ANNEX IV. PRELIMINARY EQUIPMENT LIST

1. Non-expendable equipment

3 Vehicles 4x4
4 Computers and associated devices and software
2 Photocopier machines
1 Fax machines
2 GPS units
1 GIS software
2 printers
2 scanners,
Audiovisual equipment (Videos, TV, Video Camera, Camera, etc)
4 mobile telephone units
Camping equipment

2. Expendable equipment

Aerial photos, maps
Satellite images
Audio-visuals (tapes, etc)
Office supplies
Office utilities

ANNEX V. TERMS OF REFERENCE (Indicative)

1. Project Director/Manager. (St. Katherine's Office)

Under the full supervision and monitoring of UNDP, the Project Manager will be the key focal point for the project and his/her tasks are as follows:

- Establishment and management of two project offices in Cairo and St. Katherine.
- Ensure timely implementation of the different project activities and cost effective management of financial resources
- Preparation of ToRs and Job description for project staff, international, national and local consultants (Participatory planning, biodiversity conservation, range management, Fodder production and management, etc.) and subcontracts and discuss these with UNDP-GEF and EEAA before issuing contracts.
- Reporting to the steering committee on project performance and work quality and following up implementation of steering committee recommendations.
- Maintain regular contact and open dialogue with the national advisor on medicinal plants, national stakeholders local communities and interested groups.
- Supervision and following-up of subcontracts for each of the project activities in close consultation with UNDP and EEAA.
- Coordination of the input of national and international consultants and ensure the high quality of their deliverables.
- Circulation of information concerning the project, its activities, and the wider activities of other Ministries specifically concerning project sites.
- Assist and advise the local stakeholder agencies in the implementation of their activities under the project.
- Preparation of all the necessary reports required within the UNDP project cycle and any others, as requested.
- Representation of the project in relevant seminars, and meetings and dissemination of project results.
- Convening of project technical advisory and steering committees.
- Establishment and support of Medicinal Plant Association.
- Working on mobilizing additional resources for the project and developing linkages with similar initiatives.

Qualifications

- A University advanced degree (preferably Ph.D.) in Environmental science, Agriculture or Botany Ecology, etc.
- Experience of project management, preferably in an environmental field.
- Experience of working with local communities and Private sector and NGOs
- Familiarity with the St, Katherine area, its people
- Ability to communicate and work effectively with a wide range of project partners.
- Capacity to write reports and manage budgets
- Fluent in Arabic and English, an advantage.

2. National Scientific Advisor (Cairo Office)

- A part timer 4 mont hs /year over the period of the project
- Responsible to supervise the formulation of the medicinal plant strategy and action and assist the project manager in coordination of project activities on a national scale and prepares reports on these activities.
- Carry-out site visits as necessary.
- Reports to the Field Project Manager on all activities coordinated at the national level.
- Represents the project in the absence of the Project Manager in all related meetings.
- Is a member of the national advisory board, and steering committee of the project.

3. Assistant Project Manager (Cairo Office)

- Assist the project manager as well as the National Advisor with coordination and administrative issues.
- Assist in planning for project activities including work schedules and milestones.
- Assist in preparation of detailed work plans, ToR and tender documents for consultants and sub-contractors.
- Liaison for the Steering Committee, UNDP, EEAA, Technical Advisors and OUDA.
- Liaison with necessary governmental personnel and NGOs.
- Assist in the administration of contracts with national and international consultants.
- Respond to Nature Protection Sector, EEAA requests for information about medicinal plants and St. Catherine protectorate.
- Carry-out site visits when necessary.
- Assist in convening and in arrangements for national workshops and steering committee meetings.
- Assist in the project budgeting.
- Assist in administration of the project office in Cairo.
- Liaison with interested institutions in the medicinal plants.
- Troubleshoot potential logistical problems.
- Review expenditures and milestones accomplishments.
- Coordinate the input of the international consultant.
- Review of consultants' deliverables.
- Assist in the dissemination of information through publicity in different channels.
- Perform any other tasks as assigned by the project manager

Project Steering Committee

The committee will include the following: EEAA, UNDP, EU Project and PMU. The terms of reference of the Committee are as follows:

- Review the technical reports produced by the project and accept, or reject, their recommendations.
- Create a framework for exchange of views and harmonization of activities
- Agree on the annual work plan of the project and examine linkages with other ongoing projects.
- Review monthly progress reports, quarterly work plans, expenditures and budget revisions.
- Ensure that the views of local people are fully taken into account in the implementation/management process.
- Stimulate the search for additional funds to implement the proposals emanating from the different technical reports.

The committee may decide later to include qualified experts, or relevant institutions. Minutes of each meeting are recorded and circulated to members and to central level. The Committee will meet quarterly or as needed at the initiative of the Chairperson.

Project Technical Advisory Committee:

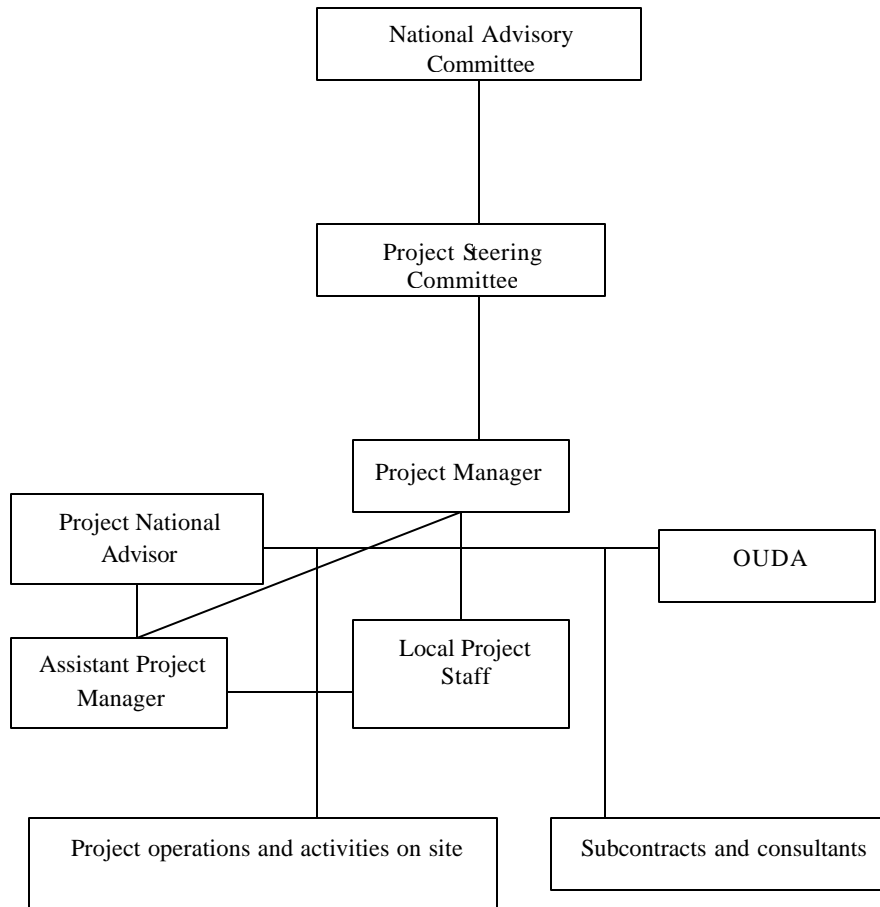
The Project Technical Advisory Committee (PTAC) will be composed of representative ministries, academic institutions, Medicinal Plant Association, NGOs, EU and Steering Committee members. The PTAC will be established at the onset of the project and will meet at least annually to:

- Provide overall advice and guidance on the technical content of the project including work plans
- Look at the overall project implementation progress and provide recommendation to enhance it
- Ensure that project objectives are in line with national conservation and sustainable use objectives and
- Ensure the project is linked with other relevant initiatives/programs at national, regional and international levels.

6. Operational Unit for Development Assistance (OUDA):

- Supply of rosters for consultants and providers of development services to the project manager.
- Recruitment of project staff.
- Contracting of consultants and experts.
- Procurement of goods and equipment.
- Management of bidding process for large contracts.
- Maintenance of records for all equipment, recruitment and utilization of inputs.
- Maintenance of up-to-date accounting system that contains records and controls to ensure the accuracy and reliability of financial information and reporting to UNDP.
- Preparation of monthly financial statements and quarterly financial reports according to UNDP guidelines.
- Recording and tracking of advances, received and disbursed funds of the project.
- Ensure that disbursements are properly identified and that budgetary categories are not exceeded.
- Assistance in organizing in-country seminars and workshops.
- Organizing training courses for capacity building.

ANNEX VI. PROJECT IMPLEMENTATION STRUCTURE (Organigram)





United Nations Development Programme
GLOBAL ENVIRONMENT FACILITY



29 May 2001

Mohammed:

Dear Mr. El-Ashry

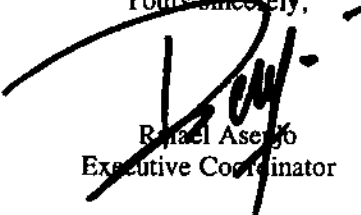
Subject: EGY/00/G31/A/1G/99 "Egypt Conservation and Sustainable Use of Medicinal Plants in Arid and Semi-Arid Ecosystems"

I am pleased to attach herewith the above mentioned project document. The brief was approved by the GEF Executive Council in May 2000. Also attached is our response to the comments raised by the GEF Secretariat and Council.

As per paragraph 29 and 30 of the GEF Project Cycle, we are submitting this project document for circulation to the members of the GEF Executive Council and, subsequently, for your final endorsement.

Thank you in advance for expediting the review and approval of this project.

Yours sincerely,



Rafael Aseff
Executive Coordinator

Mr. Mohammed El-Ashry
Chief Executive Officer
Global Environment Facility
Room G6005
1776 G Street
Washington D.C. 20433