



EGYPTIAN-ITALIAN ENVIRONMENTAL COOPERATION PROGRAM- PHASE II

SIWA ENVIRONMENTAL AMELIORATION PROJECT SECOND PHASE

PROJECT DOCUMENT

October 2002, revised

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1 SUMMARY

The Siwa Environmental Amelioration Project (SEAP) has been implemented during the period May 1998 - May 2001, and it has subsequently extended, closing formally on October 2003. The objective of the project was to contribute to the economic development and environmental amelioration of Siwa by supporting community activities aimed at the sustainable development and at the conservation of natural resources. The working methodology has been based on participatory approach, seeking the full involvement of the local community, while respecting the Siwan tradition and culture, including the traditional power, and the administrative formal authorities in place. The project has substantially achieved its objectives. However, to ensure further sustainability to the results achieved and to widening its benefit to the area, a second phase has been financed.

The architecture of SEAP-Phase II, implemented under the umbrella of the Egyptian Italian Environmental Cooperation Program-Phase II/EIECP, is based on four components reflecting the proposed widening of the project's scope. These components are: *Development of Sustainable Agriculture; Strengthening the Siwa Community Development Environment Conservation (SCDEC/Siwa Association); Strengthening the Protected Area; and Solid Waste Management.*

The project will pursue the following general objective: to contribute to the conservation and sustainable use of natural and cultural resources in the Siwa region.

The followings are the specific **development objectives** of the four Project components:

- Sustainable agriculture – To improve the present productivity and to select suitable cropping patterns, enabling the diversification of the agricultural production while enhancing water use efficiency, thus to make better use of natural resources and to increase the household income, including creation of job opportunities for new graduates.
- Strengthening the SCDEC / Siwan Association - To contribute to the improvement of living standards conditions in Siwa Oasis by promoting local structures and mechanisms through which low-income Siwans, including women, can ameliorate their economic situation in a socio-economic and environmental sustainable way.
- Strengthening the Siwa Protected Area – To firmly establish a well managed Protected Area, contributing to the development of the region as a leading tourism site, while strengthening the mandate and institutional capacity of EEAA in the Governorate.
- Solid Waste Management Task – To develop and implement a SWM scheme in Siwa oasis (which includes the town of Siwa and the surrounding villages), based on the need of the Siwan community and in line with EEAA policies.

The expected **outputs/results** are the followings:

- Development of sustainable agriculture

Based on the sub-component's six specific objectives, nine key outputs have been tentatively identified, each arising from a series of targeted activities.

- *Output 1.* The production technologies introduced in respect to soil, water and crop management have been refined through the cropping, monitoring and follow-up of 188 plots (equivalent to 202 fed.) completed within the 3 years Project period, and 22 plots (22 fed) planned for the extension period, for a total of 210 plots covering 224 fed. With the establishment of a new area of 32 fed. put under adaptive research Modules, the total area cropped and monitored results of 256 fed..
- *Output 2.* Organic farming technology has been developed and at the end of the conversion period the harvests have been certified as organic over an area of 10 fed. Less known crops have been tested and monitored over an area of 20 fed. for their introduction in the cropping patterns.
- *Output 3.* The changes of soil properties across the years have been monitored through 600 soil samples. The water management has been monitored through installation of about 230 piezometers, 50 V-Notch and measurements taken from the micro irrigation system. Landscape changes have been monitored through photo-documentation.
- *Output 4.* The crop production has been evaluated in term of suitability of the crops in the prevailing conditions in term of some growth parameters. The development of crops in different modules (individual and intercropped) has been monitored. The cropping patterns in term of rotation/soil fertility/pest, diseases and weeds control have been assessed.
- *Output 5.* The economics of various cropping patterns have been assessed through financial analysis of inputs/outputs ratio, taking into account marketing opportunities and prices throughout the year. These analyses have been compared with the traditional farming system. The socio-economic impact of the new cropping patterns/farming systems on family income and the changes likely taking place on family labour force and livelihood, market labour force, etc. has been assessed.
- *Output 6.* Income generating initiatives linked to sustainable agriculture have been developed: a Livestock Demonstration Farm for sheep and goat has been established, which also provides balanced rations and other services to local market; 100 sheep/goats and 40 buffalo/cows have been distributed to participating farmers, partly women; a nursery and 10 poles have been established for fish farming. The existing animals from the first phase will be followed-up and monitored.
- *Output 7.* Women beneficiaries have been trained and provided with 10 spinning wheels to introduce the utilization of the wool by processing it into yarns and then into carpets. Equipment to better utilize the milk produced from buffalo, cows and goats for processing to products such as yoghurt, cheese, and butter for

household consumption and possibly for marketing has been distributed to 10 trained women.

- *Output 8.* The level of knowledge of local community members and Project staff, young generations and women has been enhanced through training done in the field, homes and demonstration farms giving high respect to local traditions and customary habits. The training has covered various Project activities.

The participatory approach adopted has facilitated the effectiveness of the advices and recommendations given to beneficiaries and the transfer of his findings and problems to the specialists.

- *Output 9.* Collaborative agreements with specialised Institutions/Organizations have been signed and implemented. The specific scientific support has been provided to the Project, while the Institutions have been benefited from the fieldwork implemented with the participating community. Thus the findings are based on solid basis, more reliable and reflecting the prevailing conditions of the Siwa region. Siwan community has been provided with a well-equipped Laboratory, able to respond in time and reliably to all the needed information required for an effective sustainable management of natural resources.

- Strengthening the SCDEC/Siwan Association

Based on the sub-component's five specific objectives, five key outputs have been tentatively identified, each arising from a series of targeted activities.

- *Output 1.* SCDEC effectively manages and monitors the local credit scheme that supports socio-economic and environmental sustainable development initiatives.
- *Output 2.* Establishment of a well-functioning and self-sustaining micro-crediting mechanism managed by SCDEC
- *Output 3.* The Window service has been established, delivering technical information, technical booklets and preparing feasibility studies. There is also broad awareness within the community about the existence and the opportunities offered by the micro-crediting mechanism and the window for technical assistance.
- *Output 4.* Agro-industrial processing units (on its own or in partnership with the private sector) are established. Marketing and sales opportunities for the Siwan community are enhanced in a coordinated manner.
- *Output 5.* More social equity and empowerment of Siwan women and marginalized groups are pursued through their access to micro-crediting scheme. Women and marginalized groups become important actors, within Siwan association framework structure, of initiatives promoted by NGOs in cultural heritage preservation, handicraft production and ecotourism.

- Strengthening Siwa - Protected Area

- ❑ *Output 1.* Institutional capacity for field conservation enabled through legal, human resources and infrastructure development
- ❑ *Output 2.* Collaborative management of the protected area is operational based on the adaptive, equitable and sustainable use of biodiversity resources
- ❑ *Output 3.* Monitoring and evaluation of biodiversity resources, their utilisation and management has been tested, and a system is operational
- ❑ *Output 4.* Information Education Communication (IEC) efforts are building local and national constituencies for biodiversity conservation
- ❑ *Output 5.* Ecotourism is managed to demonstrate innovative, environmentally-compatible, economic activities meeting sustainable livelihood needs
- ❑ *Output 6.* An overall biodiversity strategy and action plan for the Siwa region is developed and biodiversity conservation is firmly inscribed on the local development agenda
- ❑ *Output 7.* The management capacity of the Environmental Management Unit of the Matrouh Governorate is enhanced

- Solid Waste Management

In order to achieve the objectives of the Project Task, the following outputs/results will be produced:

- ❑ *Output A-1:* An updated solid waste related database that will include general attributes of the Siwa Oasis and the solid waste specific attributes. It will also include a map of Siwa showing available routes and their traffic capacity, population concentration and growth trends, and the location of commercial and industrial activities.
- ❑ *Output B-1:* An executive, ready-for-implementation plan for the establishment of a comprehensive and sustainable SWM scheme for the entire Siwa Oasis.
- ❑ *Output B-2:* An improved and implemented SWM scheme. Depending on the outcome of B-1, this new scheme will improve the existing collection system and making it more comprehensive. Collection systems might include household and commercial waste containers, collection vehicles and equipment upgrade, and the organization and equipping of collection workers, (such as the provision of protective clothing). The scheme might also include the addition of temporary waste storage and transfer points, equipment for waste transfer, and the procedures for operating and maintaining these facilities and equipment. Furthermore, the SWM scheme will improve the operation of the existing dumpsite located 10 km north of the town of Siwa (on Marsa Matrouh road).
- ❑ *Output C-1:* A framework for an Operations Unit (OU), which will assume the responsibility of planning, managing and monitoring the execution of the SWM

scheme. On the basis of this framework, the following will be set: job descriptions, training needs assessments, and work force development plans.

- ❑ *Output C-2*: Operating the OU after being supported with qualified staff and workers.
- ❑ *Output D-1*: A set of documents and reports as a part of a mechanism that will assure the sustainability and functionality of the Siwa SWM Project. These documents will also emphasize the continuous updating of the data related to solid waste and the continuous measurement of the outputs of the Project task.
- ❑ *Output D-2*: Bi-annual follow-up reports addressing the outputs of the task implementation and monitoring the sustainability of the operations.

Moreover, two Italian NGOs (Ricerca & Cooperazione and COSPE) will integrate, in autonomous administrative structured organization, the activities undertaken by SEAP in the fields of cultural heritage, hand-crafts and ecotourism, aiming respectively to rehabilitate the local constructions, to revive the local traditions and to promote sustainable tourism, stimulating the overall development of income generating activities. A close coordination and collaboration with the NGOs will thus help the Project to enhance its level of effectiveness in addressing social development.

The Project Document presents a detailed description of the specific objectives and envisaged activities of the Project. Those have been accordingly budgeted.

The organizational and implementation arrangements of the Project and the institutional arrangements within the Program are also described in detail.

SEAP LOGICAL FRAMEWORK

Project Structure	Indicator of achievements	Means of Verification	Assumptions
<p><u>Overall Objective:</u></p> <p>To contribute to the conservation and sustainable use of natural and cultural resources in the Siwa region.</p>			
<p><u>Development and specific objectives</u></p> <p>1) Development of sustainable agriculture</p> <p><i>The development objective of the sustainable agriculture component is to improve the present productivity and to select suitable cropping patterns, enabling the diversification of the agricultural production while enhancing water use efficiency, thus to make better use of natural resources and to increase the household income, including creation of job opportunities for new graduates</i></p> <p><u>Specific objective 1.</u> Refine the production technologies introduced in respect to soil, water and crop management.</p> <p><u>Specific objective 2.</u> Develop organic farming and introduce less known crops.</p>	<p>Cultivated area under production technologies disseminated by the Project gradually increasing.</p> <p>Production technologies introduced by the Project have been improved.</p> <p>Cultivated area under organic farming, and less known crops gradually increasing</p>	<p>Field survey Hydrological survey Socio-economic survey Interviews</p> <p>Field survey</p> <p>Field survey</p>	<p>Research Centres and Universities willing to collaborate with SEAP Community participates</p>

<p><u>Specific objective 3.</u> Monitoring of natural resources: changes of soil properties across the years, water management, and crop production. Perform the financial evaluation of the interventions proposed for dissemination.</p> <p><u>Specific objective 4.</u> Develop income-generating initiatives linked to sustainable agriculture: raising of small and large animals, fish farming, small agro-industry.</p> <p><u>Specific objective 5.</u> Implement training and extension activities</p> <p><u>Specific objective 6.</u> Sign collaborative agreements with specialised Institutions/Organizations.</p>	<p>Production technologies introduced by the Project are validated and are evaluated from the financial point of view.</p> <p>Livestock activities are revived. Women are particularly involved</p> <p>Level of knowledge of staff and community enhanced.</p> <p>Involvement of renowned organizations in project activities</p>	<p>Field survey Project documents</p> <p>Records of the SCDEC Site visit.</p> <p>Interviews</p> <p>Field survey Project documents</p>	<p>Women are willing to undertake income-generating activities.</p>
<p>2) Strengthening of the SCDEC/Siwan Association</p> <p><i>The development objective of the strengthening the SCDEC/ Siwa Association is to contribute to the improvement of living standards conditions in Siwa by promoting local structures and mechanisms through which low-income Siwans, including women, can ameliorate their economic situation in a socio-economic and environmental sustainable way.</i></p>	<p>Living standard conditions in Siwa are improved while the environment is preserved</p>	<p>Socio-economic survey Site visit</p>	<p>Community willing to participate</p>
<p><u>Specific objective 1.</u> Strengthening the institutional</p>	<p>SCDEC association is strengthened</p>	<p>Field survey</p>	<p>Community fully involved</p>

<p>capacity of the local community - represented by SCDEC - to plan, manage and monitor credit activities, which are aiming at the improvement of the economic, social and environmental living conditions in Siwa Oasis.</p> <p><u>Specific objective 2.</u> Firmly establish a self-sustaining micro-crediting mechanism managed by SCDEC</p> <p><u>Specific objective 3.</u> Establish a Window service of technical assistance for Siwan community</p> <p><u>Specific objective 4.</u> Establish agro-industrial joint ventures (on its own or in partnership with private sector) and develop marketing and sales opportunities for the Siwan community</p> <p><u>Specific objective 5.</u> Support the empowerment of low-income Siwan women and marginalized groups in order to enhance their social status as well as their families' living standards conditions.</p> <p>3) Strengthening the Siwa Protected Area</p> <p><i>The development objective is to firmly establish a well managed Protected Area, contributing to the development of the region as a leading tourism site, while strengthening the mandate and</i></p>	<p>contributing to improvement of living conditions in Siwa</p> <p>Number of loans being repaid</p> <p>Number of loans disbursed and being properly utilized.</p> <p>Number and value of agro-industries established. Amount of sales reached through the Association.</p> <p>Standard living conditions are enhanced also for women and marginalized groups.</p> <p>The PA is well established. The Siwa region is developed as a leading tourism site. MSEA/EEAA mandate and</p>	<p>Project documents</p> <p>Funds record of SCDEC</p> <p>Funds record of SCDEC</p> <p>Project records</p> <p>Socio-economic survey.</p> <p>Site visits. Tourism Departments records</p>	<p>SCDEC is well managed.</p> <p>Women are willing to undertake income-generating activities.</p>
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<p><i>institutional capacity of MSEA/EEAA in the governorate.</i></p> <p><u>Specific objective 1.</u> Firm establishment of a collaboratively managed protected area in the Siwa region, aiming at the protection of biodiversity and cultural heritage resources, their sustainable and equitable use, and acting as a focus for regional planning and development of innovative, environmentally-friendly, economic activities.</p> <p><u>Specific objective 2.</u> Contribute to the development of the Siwa region as a leading ecotourism site in the Western Desert of Egypt, by engaging the local communities, the private sector and other key stakeholders in the diversification and development of non-intrusive ecotourism facilities and services.</p> <p><u>Specific objective 3.</u> Strengthen the mandate and institutional capacity of EEAA to plan, implement, monitor and enforce environmental policy in the Siwa region with the support of a dedicated Environmental Management Unit (EMU) in Matrouh Governorate.</p> <p>3) Solid Waste Management</p> <p><i>The development objective of the Siwa Project SWM Task is to develop and implement a SWM scheme in Siwa oasis (which includes the town of</i></p>	<p>institutional capacity strenghtened in the governorate</p> <p>PA firmly established and controlled by EEAA.</p> <p>Private sector and local community initiatives in ecotourism undertaken. Number of days spent by tourists in Siwa region.</p> <p>Human & physical resources of EMU enhanced, institutional capacity strengthened.</p> <p>SWM is developed with involvement of communities, private sector and other key-stakeholders</p>	<p>Survey of physical and human resources available for the Protected Area. Site visits. EEAA records.</p> <p>Site visit. Hotels records. Interviews. Number of jobs created.</p> <p>Institutional audit</p> <p>Site survey Community satisfaction</p>	<p>Local communities, private sector and other stakeholders participate</p> <p>Governorate supports EMU</p>
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<p><i>scheme in Siwa oasis (which includes the town of Siwa and the surrounding villages), based on the need of the siwan community and in line with EEAA policies</i></p> <p><u>Specific objective A:</u> Establish a database to support the SWM decisions in Siwa by gathering new data and refining of the available data</p> <p><u>Specific objective B:</u> Develop and implement a solid waste management scheme that includes a new set of quality standards for the solid waste practices in Siwa</p> <p><u>Specific objective C:</u> Develop needed institutional capacity for the planning, managing and monitoring the implementation of the SWM scheme</p> <p><u>Specific objective D:</u> Introduce a mechanism for sustaining, updating, and monitoring the SWM scheme activities within the Siwa institutions</p>	<p>stakeholders</p> <p>Availability and reliability of SW basic data</p> <p>SWM ground initiatives carried out after completion be disigned, implemented and managed according to a cost effective and systemic integrated approach.</p> <p>Skill of relevant staff. Circulation and understanding of Project conceptual findings with key-stakeholders. Quality standards have improved.</p> <p>A reliable mechanism for developing the process is being put in place.</p>	<p>Analysis of relevant documentation</p> <p>Analysis of relevant documentation. Site survey.</p> <p>Interviews. Analysis of relevant documentation</p> <p>Analysis of relevant documentation</p>	
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Outputs/Results

1) Development of sustainable agriculture

Output 1. The production technologies introduced in respect to soil, water and crop management have been refined through the cropping, monitoring and follow-up of the plots established throughout the Project life. This work of adaptive research has been carried out with specialised local scientific Institutions (Universities – Research centers- etc.) with mutual (SEAP- Institutions-Community) benefit.

Output 2. Organic farming technology has been developed and at the end of the conversion period the harvests have been certified as organic. Less known crops have been tested and monitored for their introduction in the cropping patterns.

Output 3. The changes of soil properties across the years have been monitored through soil samples. The water management has been monitored through installation of piezometers, V-Notch and measurements taken from the micro irrigation system. Landscape changes have been monitored

Nr 188 plots equivalent to 220 feddans from 1st phase; Nr. 22 plots equivalent to 22 feddans from extension period Nr. 32 feddans from Phase II. Total area cropped, followed-up and monitored of 256 feddans

Produce over an area of 10 feddans certified as organic at the end of the 3 years of conversion period/project. Less known crops tested and monitored over an area of 20 feddans.

600 samples of soil analysed; 230 piezometers, 50 V-Notch installed for water measurement; landscape changes monitored through photo-documentation.

Field visits
SEAP Progress Reports.

Field visits
SEAP Progress Reports

Field visits
SEAP Progress Reports

Research Centers and Universities are willing to cooperate

<p>through photo-documentation.</p> <p><i>Output 4.</i> The crop production has been evaluated in term of suitability of the crops in the prevailing conditions in term of some growth parameters. The development of crops in different modules (individual and intercropped) has been monitored. The cropping patterns in term of rotation/soil fertility/pest, diseases and weeds control have been assessed.</p> <p><i>Output 5.</i> The economics of various cropping patterns have been assessed through financial analysis of inputs/outputs ratio, taking into account marketing opportunities and prices throughout the year. These analysis have been compared with the traditional farming system. The socio-economic impact of the new cropping patterns/farming systems on family income and the changes likely taking place on family labor force and livelihood, market labor force, etc. has been assessed.</p> <p><i>Output 6. Income generating initiatives linked to sustainable agriculture have been developed: a Livestock Demonstration Farm for sheep and goat has been established, which also provides balanced rations and other services to local market; livestock has been distributed to</i></p>	<p>Growth parameters assessed to determine crop suitability. Monitoring done for crop development. Assessment of cropping patterns done on rotation/soil fertility/pest, diseases and weeds control.</p> <p>Impact assessment of the Project on Siwan community</p> <p>Livestock Demonstration Farm for sheep and goat established. 100 sheep/goats and 40 buffalo/cows distributed. 1 nursery and 10 poles have been established for fish farming. Livestock</p>	<p>Field visits SEAP Progress Reports</p> <p>Socio-economic survey</p> <p>SEAP Progress Reports Field visits</p>	
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<p>participating farmers, partly women; fish farming has been developed. The existing animals from the first phase will be followed-up and monitored.</p> <p><i>Output 7.</i> Women beneficiaries have been trained and provided with spinning wheels to introduce the utilization of the wool by processing it into yarns and then into carpets. Equipment to better utilize the milk produced from buffalo, cows and goats for processing to products such as youghourt, cheese, and butter for household consumption and possibly for marketing has been distributed to 10 trained women.</p> <p><i>Output 8.</i> The level of knowledge of local community members and project staff, young generations and women has been enhanced through training done in the field, homes and demonstration farms giving high respect to local traditions and customary habits. The training has covered various project activities. The participatory approach adopted has facilitated the effectiveness of the advices and recommendations given to beneficiaries and the transfere of his findings and problems to the specialists.</p> <p><i>Output 9.</i> Collaborative agreements with specialised</p>	<p>for fish farming. Livestock from 1st phase monitored.</p> <p>10 spinning wheels distributed to trained women. 10 women have been trained and equipped for milk and wool processing</p> <p>Level of knowledge in Siwa community enhanced .</p> <p>Collaborative agreements</p>	<p>Site visit. Interviews.</p> <p>Project records. Interviews</p> <p>Project documents.</p>	
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<p>Institutions/Organizations have been signed and implemented. The specific scientific support has been provided to the Project, while the Institutions have been benefitted from the fieldwork implemented with the participating community. Thus the findings are based on solid basis, more reliable and reflecting the prevailing conditions of the Siwa region. Siwan community has been provided with a well-equipped Laboratory, able to respond in time and reliably to all the needed information required for an effective sustainable management of natural resources.</p> <p>2) Strengthening of the SCDEC/Siwan Association</p> <p><i>Output 1.</i> SCDEC effectively manages and monitors the local credit scheme that supports socio-economic and environmental sustainable development initiatives.</p> <p><i>Output 2.</i> Establishment of a well-functioning and self-sustaining micro-crediting mechanism managed by SCDEC</p> <p><i>Output 3.</i> The Window service has been established, delivering technical information, technical booklets and preparing feasibility studies. There is also broad awareness within the community about the existence and the</p>	<p>signed and implemented. Man/months of collaboration provided to SEAP.</p> <p>Laboratory established, equipped and operational.</p> <p>Credit schemes supports sustainable development initiatives</p> <p>Credit scheme well managed</p> <p>Information is well delivered and reaches the community</p>	<p>Site visit</p> <p>Funds records of SCDEC Progress report</p> <p>Funds record of SCDEC</p> <p>Interviews</p>	
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<p>opportunities offered by the micro-crediting mechanism and the window for technical assistance.</p> <p><i>Output 4.</i> Agro-industrial processing units (on its own or in joint ventures with the private sector) are established. Marketing and sales opportunities for the Siwan community are enhanced in a coordinated manner.</p> <p><i>Output 5.</i> More social equity and empowerment of Siwan women and marginalised groups are pursued through their access to micro-crediting scheme. Women and marginalised groups become important actors, within Siwan association framework structure, of initiatives promoted by NGOs in cultural heritage preservation, handicraft production and ecotourism.</p> <p>3) Strengthening of Siwa - Protected Area</p> <p><i>Output 1.</i> Institutional capacity for field conservation enabled through legal, human resources and infrastructure development</p> <p><i>Output 2.</i> Collaborative management of the protected area is operational based on the adaptive, equitable and sustainable use of biodiversity resources</p>	<p>The Community can operate in many ways and can overcome sales problems.</p> <p>Women and marginalised groups become important stake-holders</p> <p>Human and physical resources and infrastructures for the management of the PA developed</p> <p>CM agreements with local stakeholders formalized. MP (Management Plan) prepared and implemented</p>	<p>Interviews.</p> <p>Fund records of SCDEC Progress reports.</p> <p>Survey of physical & human resources available from PA</p> <p>Site visit. Interviews.</p>	<p>Local stakeholders are willing to implement CM agreements</p>
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<p><i>Output 3.</i> Monitoring and evaluation of biodiversity resources, their utilisation and management has been tested, and a system is operational</p> <p><i>Output 4.</i> Information Education Communication (IEC) efforts are building local and national constituencies for biodiversity conservation</p> <p><i>Output 5.</i> Ecotourism is managed to demonstrate innovative, environmentally-compatible, economic activities meeting sustainable livelihood needs</p> <p><i>Output 6.</i> An overall biodiversity strategy and action plan for the Siwa region is developed and biodiversity conservation is firmly inscribed on the local development agenda</p> <p><i>Output 7.</i> The management capacity of the EMU in the Matrouh Governorate is enhanced</p>	<p>Periodical monitoring reports produced.</p> <p>IEC activities implemented and materials produced</p> <p>Ecotourism initiatives undertaken, number of local tourist guides trained.</p> <p>Biodiversity strategy and action plan for the Siwa region produced.</p> <p>Human & physical resources of EMU enhanced</p>	<p>Review of monitoring and evaluation reports</p> <p>Progress reports. Review of material.</p> <p>Progress reports Interviews</p> <p>Strategy document</p> <p>Audit</p>	
<p>4) Solid Waste Management</p> <p><i>Output A-1:</i> An updated solid waste related database that will include general attributes of the Siwa Oasis and the solid waste specific attributes. It will also include a map of Siwa showing available routes and their traffic capacity, population concentration and growth trends, and the location of commercial and industrial activities</p> <p><i>Output B-1:</i> An executive, ready-for-implementation plan for the establishment of a comprehensive and sustainable SWM scheme for the entire Siwa Oasis</p>	<p>Reliable data, including map showing routes, settlements, activities available from SEAP.</p> <p>A ready-for-implementation plan for the establishment of a comprehensive and sustainable SWM scheme for the entire Siwa</p>	<p>Analysis of relevant documentation</p> <p>Project documents</p> <p>Project documents.</p>	<p>Awareness, commitment and participation of data holders</p>

<p>the entire Siwa Oasis</p> <p><i>Output B-2:</i> An improved and implemented SWM scheme. Depending on the outcome of B-1, this new scheme will improve the existing collection system and making it more comprehensive. Collection systems might include household and commercial waste containers, collection vehicles and equipment upgrade, and the organization and equipping of collection workers (such as the provision of protective clothing). The scheme might also include the addition of temporary waste storage and transfer points, equipment for waste transfer, and the procedures for operating and maintaining these facilities and equipment. Furthermore, the SWM scheme will improve the operation of the existing dumpsite located 10 km north of the town of Siwa (on the Marsa Matrouh road)</p> <p><i>Output C-1:</i> A framework for an Operations Unit (OU), which will assume the responsibility of planning, managing and monitoring the execution of the SWM scheme. On the basis of this framework, the following will be set: job descriptions, training needs assessments, and work force development plans</p> <p><i>Output C-2:</i> Operating the OU after being supported with qualified staff and workers</p>	<p>Oasis available.</p> <p>The SWM scheme is effective. Operation of existing dumpsite improved.</p> <p>Framework for the OU designed</p> <p>OU is well established and functioning well.</p>	<p>Project reports. Site visit Interviews</p> <p>Project documents.</p> <p>Project documents.</p>	<p>Proper staffing</p>
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<p>supported with qualified staff and workers</p> <p><i>Output D-1:</i> A set of documents and reports as a part of a mechanism that will assure the sustainability and functionality of the Siwa SWM Project. These documents will also emphasize the continuous updating of the data related to solid waste and the continuous measurement of the outputs of the Project task</p> <p><i>Output D-2:</i> Bi-annual follow-up reports addressing the outputs of the task implementation and monitoring the sustainability of the operations</p> <p><u>Activities</u></p> <p>1) Development of sustainable agriculture</p> <p>New crop production</p> <ul style="list-style-type: none"> Establishment of new Modules for demonstration under adaptive research methodology and rehabilitation of old gardens under “Extension” approach benefiting in particular willing and committed new graduates Development of Organic Farming 	<p>Documents and reports prepared and updated</p> <p>Reports prepared and updated</p> <p>Full establishment of new 32 fed. Rehabilitation of 100 fed. old gardens.</p> <p>Organic farming demonstrated over an area of 10 feddans</p>	<p>Project documents.</p> <p>Project documents</p> <p>Project record</p> <p>Project record</p>	<p>Willingness for monitoring</p>
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<ul style="list-style-type: none"> • Introduction of less known crops 	<p>Cultivation done over an area of 20 feddans.</p>	<p>Project documents</p>	
<p><u>Monitoring of Natural Resources</u></p>			
<ul style="list-style-type: none"> • Monitoring the changes of soil properties across the years 	<p>600 samples of soil collected and analysed</p>	<p>Project documents</p>	
<ul style="list-style-type: none"> • Monitoring water management 	<p>230 piezometers, 50 V-Notch installed and monitored</p>	<p>Project documents</p>	
<ul style="list-style-type: none"> • Monitoring Crop Production 	<p>Growth parameters assessed to determine crop suitability. Monitoring done for crop development. Assessment of cropping patterns done on rotation/soil fertility/pest, diseases and weeds control.</p>	<p>Project documents</p>	
<ul style="list-style-type: none"> • Monitoring Landscape Changes 	<p>Photo- documentation prepared.</p>	<p>Project documents</p>	
<ul style="list-style-type: none"> • Performing Financial Evaluation 	<p>Assessment of the economics of various cropping patterns, comparing them with the traditional farming system. Assessment the socio-economic impact of the new cropping patterns/farming systems</p>	<p>Interviews</p>	

<p><u>Income Generating Activities Linked to Sustainable Agriculture</u></p> <ul style="list-style-type: none"> • Livestock development a) Establishment of a Demonstration Farm b) Distribution of Small and Large Ruminants c) Development of Small Agro-Industry for Income Generating Activities d) Development of Minor Species like Chicken, Rabbit, Pigeon • Fish Farms development • Training and extension 	<p>on family income and changes.</p> <p>Demonstration Farm for sheep and goat established. Provision of animals, balanced rations and other services to local community.</p> <p>100 sheep/goats and 40 buffalo/cows distributed and followed up to participating farmers.</p> <p>New activities undertaken and developed</p> <p>Minor species developed</p> <p>A nursery and 10 poles have been established for fish farming.</p> <p>Training courses implemented</p>	<p>Site visit. Project record SCDEC record</p> <p>Site visit. Project record SCDEC record</p> <p>SCDEC and project record.</p> <p>Site visit. SCDEC record</p> <p>Site visit.</p> <p>Project record</p>	
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<ul style="list-style-type: none"> • Collaborative Agreements with Specialised Institutions/Organizations <p>2) Strengthening of the SCDEC/Siwan Association</p> <p>(1.1.) Within the <u>Committee Portfolio Management</u> following main activities will be conducted: (i) administration and management of the outstanding loans, (ii) support to each Committee in organising and implementing the recollection of the outstanding instalments, (iii) management of the new disbursing cycles.</p> <p>(2.1) Perform all the operations required to establish and operate the Micro-credit Association Service (MAS).</p> <p>(3.1) Perform all the operations required for the establishment of an efficient Window (technical assistance) service.</p> <p>(4.1) Perform all the activities required to establish agro-industrial joint ventures ad to develop trade and marketing initiatives.</p> <p>(5.1) The activities to be performed for achieving the objective are similar to the activities already described at point 2.1. However, care will be placed</p>	<p>Agreements signed</p> <p>Loans installments collected and new loans disbursed</p> <p>MAS is operating</p> <p>Window service is effective</p> <p>Joint ventures established and marketing developed</p> <p>Women are particularly benefitted by the micro-credit</p>	<p>Project documents</p> <p>Fund record of SCDEC</p> <p>Fund record of SCDEC</p> <p>Interviews</p> <p>Public consultation</p> <p>Funds record of SCDEC</p>	
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<p>in treating the issues as gender sensitive, which requires more efforts in understanding the problems and more flexibility in dealing with the administrative and financial procedures. It is nevertheless believed that the results from these categories of beneficiaries will definitively be impressive if the Project will be able to deal all the matter with the required competence.</p> <p>3) Strengthening Siwa Protected Area</p> <p>1.1) Legal definition of the mandate, functions and organisational chart of the PAMU and design of legal procedures to allow (i) the PAMU to enter into collaborative management agreements with local stakeholders, (ii) the licensing of economic activities within the protected area and the associated adjacent area, (iii) the development and endorsement of PA bye-laws and regulations.</p> <p>(1.2) Recruitment of the full complement of technical and administrative core staff of the PAMU, according to the human resource requirements, staff profile and key functions defined in the approved organizational chart.</p> <p>(1.3) Build the capacity of the permanently recruited, core staff of the PAMU by supporting (i) customised courses on basic PA management principles emphasising social outreach, participatory learning and action skills, (ii) on-the-</p>	<p>PAMU established with well-defined structure and legal and institutional prerogatives.</p> <p>Number of patrolling, monitoring, inspections, auditing protocols, etc.</p> <p>Staff recruited according to the organizational structure and requirements.</p> <p>Staff attending customised training courses.</p> <p>On the job training delivered.</p> <p>Staff participating in attachments,</p>	<p>Site visit</p> <p>PAMU records</p> <p>Progress reports, EEAA records</p> <p>Progress reports, attendance list to training events</p> <p>Progress reports</p>	
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<p>participatory learning and action skills, (ii) on-the-job training undertaken through external technical assistants and advisers collaborating with the project, (iii) work attachments and internships in other Egyptian protected areas, (iv) the attendance of relevant workshops and meetings by selected PAMU staff.</p>	<p>internships and workshops.</p>	<p>Progress reports, attendance lists to training events</p>	
<p>(1.4) Development of clear guidelines and procedures regulating all key PAMU administrative functions such as (i) staff recruitment and management of human resources; (ii) estate development and management; (iii) procurement, maintenance and inventories of vehicles, tools and equipment; (iv) financial control and records, budget, bank accounts, financial statements and audits.</p>	<p>Guidelines produced and approved.</p>	<p>PAMU and EEAA documents</p>	
<p>(1.5) Produce and implement plans for basic protected area infrastructure including PA headquarters and associated interpretation facilities, two outposts, tracks, signposting etc.; procurement of vehicles, office and technical equipment; establishment of HF/VHF radio-communication links between PAMU headquarters, outposts and mobile units.</p>	<p>PA Infrastructures (Headquarters, outposts, tracks, signposting) established. Equipment and vehicles procured. Communication system established.</p>	<p>Site visit PAMU records, invoices PAMU records, invoices, site visit</p>	
<p>(2.1) Establish and mobilise an interdisciplinary Collaborative Management (CM) team composed</p>	<p>Interdisciplinary Collaborative Management team established.</p>	<p>PAMU reports</p>	

<p>of a technically competent and dedicated group of professionals including biodiversity and participatory appraisal specialists and experienced facilitators, in order to assist the PAMU staff with assessing the feasibility of possible partnerships, as well as with the preparation, development and implementation of pilot CM agreements.</p>			
<p>(2.2) Negotiate CM pilot agreements based on the: (i) identification of territory or set of resources; (ii) evaluation of the range of functions and sustainable uses provided; (iii) stakeholder analysis; (iv) determination of functions, responsibilities, benefits and rights of stakeholders; (v) formulation of management priorities and/or site management plan; (vi) establishment of conflict-resolution procedures for implementing collective decisions; (vii) agreement on specific rules for monitoring, evaluating and reviewing the partnership.</p>	<p>Number of pilot CM agreements negotiated.</p>	<p>Progress reports PAMU records</p>	
<p>(2.3) Accord usufruct and stewardship rights to local communities over areas and/or resources stipulated in CM pilot agreements; formalise, publicise and support the implementation of CM pilot agreements.</p>	<p>CM agreements formalised and implemented.</p>	<p>Progress reports PAMU records</p>	
<p>(2.4) Build-capacity of local conservation-enabling institutions such as management committees by convening regular intra-community forums to facilitate informal exchanges and resolve outstanding problems between community-based</p>	<p>Number of intra-community forums held.</p>	<p>Progress reports</p>	

<p>outstanding problems between community-based groups.</p> <p>(2.5) Support the establishment and functioning of a Protected Area Management Board (PAMB) with strong authority on legally sanctioned communal natural resource regimes and facilitate periodical meetings among representatives from local management committees and other key stakeholders to share experiences and co-ordinate management activities.</p> <p>(3.1) Design a biodiversity monitoring program in collaboration with other agencies and institutions by building consensus on monitoring priorities and establishing a central Biodiversity Monitoring Unit for the Siwa region.</p> <p>(3.2) Develop simple participatory methods for data collection and train PAMU staff, so that different teams and results may collect information compared with confidence.</p> <p>(3.3) Outsource initial treatment of remote sensed data and the design of an integrated database and information system with final output to be adapted for a PC platform using a user-friendly GIS package.</p>	<p>Protected Area Management Board (PAMB) established and functioning</p> <p>Biodiversity monitoring system designed, and Biodiversity Monitoring Unit established.</p> <p>Amount of data collected in a participatory way</p> <p>Database and information system established enabling the use of remotely sensed data</p>	<p>PAMU records PAMB documents</p> <p>Site visit Monitoring reports</p> <p>Project records.</p> <p>Progress reports Site visit.</p>	
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<p>(3.4) Training of selected PAMU staff to input data and use the integrated GIS system in order to generate data sets and reports that contribute to management decisions.</p>	<p>Number of PAMU staff trained in GIS use.</p>	<p>Progress reports</p>	
<p>(3.5) Support the implementation of the M&E system based on monitoring of: (i) habitat and land use through remote sensing and ground surveys; (ii) a manageable number of keystone / flagship species; (iii) utilisation of biodiversity within human impact zones using participatory techniques; (iv) PA management effectiveness through standardised methods of reporting with measurement of achievements against time-bound targets.</p>	<p>Monitoring and Evaluation system implemented.</p>	<p>Monitoring and evaluation reports</p>	
<p>(3.6) Co-ordinate the flow of data from the GIS / M&E system in order to synthesise information and disseminate results ensuring that information is shared with all serious stakeholders in Egyptian biodiversity conservation.</p>	<p>Monitoring and Evaluation reports produced and disseminated.</p>	<p>Monitoring and evaluation reports</p>	
<p>(4.1) Develop with local stakeholders a comprehensive Information, Education, Communication (IEC) strategy based on (i) the clear identification of target audiences; (ii) the definition of a simple message emphasising the links between the natural and cultural heritage of the Siwa region; (iii) the design of media-specific IEC tools and activities; (iv) a detailed operational</p>	<p>IEC strategy developed.</p>	<p>Analysis of IEC strategy</p>	

<p>work-plan.</p> <p>(4.2) Support the implementation of the approved IEC strategy through (i) field-based environmental education activities and tools complementing formal education programs; (ii) interpersonal communication activities and tools such as familiarisation tours, thematic workshops, the realisation of information portfolios for specialised audiences; (iii) co-ordinated public relations with the local and national press and media; (iv) production of a high-quality TV documentary and internet-based products to make available in the public domain information on the protected area and its activities.</p> <p>(4.3) Support advocacy functions of NGOs to monitor development operations and provide early warning of conflicts and malfeasance.</p> <p>(5.1) Sensitise tourism operators, potential investors and other concerned parties about desert conservation and environmentally sound, sustainable desert tourism.</p> <p>(5.2) Provide technical assistance to facilitate local private sector initiatives in obtaining usufruct rights and leases for the development of ecotourism facilities and services, as well as supporting access to existing micro-credit schemes.</p>	<p>IEC activities implemented.</p> <p>IEC products developed.</p> <p>Printed material produced and distributed.</p> <p>Involvement of NGOs increased.</p> <p>Activities with operators and investors implemented</p> <p>Private sector initiatives started with technical support from project</p>	<p>Progress reports</p> <p>Review of products</p> <p>Analysis of materials produced</p> <p>Survey of NGOs activities</p> <p>Progress reports</p> <p>Progress reports, survey of private sector initiatives</p>	
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<p>(5.3) Conduct training programmes for interpretation and guiding services and the management of visitor interpretation facilities.</p>	<p>Number of people trained in interpretation and guiding services.</p>	<p>Progress reports</p>	
<p>(5.4) Formulate and publish best practice guidelines for the development and diversification of ecotourism facilities and services in the Siwa region.</p>	<p>Guidelines produced and published</p>	<p>Analysis of guidelines</p>	
<p>(5.5) Strengthen the capacity of the PAMU and other regulatory bodies to license ecotourism activities according to procedures set out in the best practice guidelines and monitor ecotourism activities according to procedures set out in the licenses and related EIAs.</p>	<p>Licenses for ecotourism activities issued according to procedures detailed in best practice guidelines.</p>	<p>PAMU and EEAA records</p>	
<p>(5.6) Design in collaboration with the private sector and other stakeholders, and support the implementation of a finely targeted marketing strategy to promote the Siwa region as a leading ecotourism site in the Western Desert of Egypt.</p>	<p>Marketing strategy developed.</p>	<p>Analysis of marketing strategy</p>	
<p>(6.1) Desktop survey and review of all available information on the Siwa region, and field surveys to complete the collection of baseline data on biodiversity resources, their utilisation, and associated threats to their long-term conservation.</p>	<p>Desktop and field surveys completed.</p>	<p>Analysis of survey reports</p>	

<p>(6.2) Synthesis of information on the resource profile and technical description of the protected area, including the production of baseline and thematic maps for the PA through the services of the GIS system.</p>	<p>Document synthesising information and thematic maps produced.</p>	<p>Analysis of technical documents produced</p>	
<p>(6.3) Participatory planning through extensive interaction and negotiations with key stakeholders as initiated through the CM process (output 2)</p>	<p>Participatory planning sessions carried out</p>	<p>Progress reports PAMU records</p>	
<p>(6.4) Draft zoning, based on stakeholder consultations and information from specialist missions, and the integrated GIS and M&E systems.</p>	<p>Draft zoning map produced.</p>	<p>Analysis of zoning plan</p>	
<p>(6.5) Formulation of management guidelines, and based on an initial implementation and testing phase, update and operate necessary revisions according to key steps outlined under activities 6.1 – 6.4.</p>	<p>Management guidelines produced, and applied.</p>	<p>Analysis of guidelines document Site visit</p>	
<p>(6.6) Formulation of a comprehensive biodiversity strategy and action plan covering the five-year period following project termination.</p>	<p>Biodiversity strategy and action plan document produced.</p>	<p>Analysis of relevant documents</p>	
<p>(6.7) Regional and national review of the biodiversity strategy and action plan by relevant institutions, government departments and key stakeholders and official adoption for implementation.</p>	<p>Biodiversity strategy and action plan document reviewed and adopted.</p>	<p>Analysis of relevant documents</p>	

<p>(7.1) Support the ongoing decentralisation of EEAA functions by providing technical and logistical assistance to the EMU in Matrouh Governorate.</p>	<p>Technical assistance and logistic support provided</p>	<p>Progress reports, technical assistance reports, invoices</p>	
<p>(7.2) Focus enabling and training activities on selected staff in order to strengthen the capacity of the office to exchange information and co-ordinate activities with technical, administrative and security services of the Matrouh Governorate, while optimising the capacity of the EMU to provide effective backstopping for the PAMU.</p>	<p>Training and education events attended by EMU staff</p>	<p>Progress reports Training documentation Attendance list to training events</p>	
<p>(7.3) Clarify and define the functions of the EMU in implementing procedures for the licensing and regulation of economic activities in and around protected areas.</p>	<p>Functions of EMU defined and formalised</p>	<p>Institutional audit</p>	
<p>(7.4) Reinforce the EMU in order to (i) adequately handle legislative and institutional matters; (ii) design and operate a simple environmental monitoring system based on the regular collection of environmental data and standardised site inspection and environmental auditing protocols; (iii) effectively implement legal procedures against offenders.</p>	<p>Efficiency of EMU enhanced; inspections increased and quality enhanced; number of EIAs reviewed.</p>	<p>EMU office records</p>	
<p>(7.5) Sensitise the private and public sectors to innovate and incorporate emerging best practices from biodiversity conservation initiatives by developing resource materials and hosting local</p>	<p>Resource materials produced Local workshops held</p>	<p>Analysis of resource materials Progress reports, workshop records</p>	

<p>developing resource materials and hosting local workshops.</p> <p>(7.6) Negotiate and sign memorandums of understanding with partner agencies, establishing a joint programmatic framework for conservation and community development interventions ensuring that conservation objectives are fully incorporated into regional development plans, including infrastructure and sector plans.</p> <p>(7.7) Support the EMU to capitalise on intermediate results in the Siwa protected area by replicating appropriate activities in other protected areas under the jurisdiction of the Matrouh Governorate.</p> <p>4) Solid Waste Management Task</p> <p><u>Activity A-11:</u> Data collection and refinement of already available data.</p> <p><u>Activity B-11:</u> Evaluation of the current practices and operations structure related to SWM in Siwa along with an assessment of the outcome of these</p>	<p>Memorandums of understanding signed with partner agencies</p> <p>EMU able to replicate appropriate activities in other protected areas.</p> <p>Data collected on districts' characterization, trucks, manpower, streets sweeping. Industrial waste & construction waste characteristics. Dumpsite characteristics.</p> <p>Evaluation and assessments of current practices and equipment. Meetings held with stakeholders.</p>	<p>Analysis of relevant documents</p> <p>EMU office record</p> <p>Project documents</p> <p>Analysis of relevant documents Project records</p>	<p>Strong commitment and active participation of all relevant Siwan institutions, as well as active support from Matrouh Governorate</p>
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<p>along with an assessment of the outcome of these practices. This will be done through meetings with the concerned stakeholders such as the City Council, commercial stores, hotels owners, water factories, olive and dates factories, current solid waste collectors, and local community leaders. Also, solid waste management facilities and equipment will be evaluated in regards to their operating characteristics, performance, maintenance requirements, and expected life cycle costs</p> <p><u>Activity B-12:</u> Evaluation and identification of feasible alternatives to improve the current practices</p> <p><u>Activity B-13:</u> Design of a comprehensive SWM scheme for the whole Siwa oasis. This will include, but not limited to, collection routes, storage, collection frequency, transfer stations and improvement of the operation of the dumpsite</p> <p><u>Activity C-11:</u> Identifying the responsibilities, reporting lines and administrative and financial structure of the OU. Also, identifying the qualifications and training needs for the OU's staff</p> <p><u>Activity B-21:</u> Upgrading of the existing collection, transport and disposal system and implementation of the new SWM scheme based on the outcome of</p>	<p>Alternatives prepared and evaluated</p> <p>SWM scheme for Siwa Oasis designed</p> <p>OU' organization chart designed and training need assessment identified</p> <p>New collection system in place. New treatment site in place</p>	<p>Analysis of relevant documents</p> <p>Analysis of relevant documents</p> <p>Analysis of relevant documents</p> <p>Site visit Public consultation</p>	<p>Availability of skilled local staff. Awareness and active participation of relevant Siwan institutions staff</p> <p>Awareness and commitment of all stakeholders</p>
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<p>Activity B-13.</p> <p><u>Activity C-21:</u> Establishment of the OU enforced with the required capacity to manage and operate the SWM scheme.</p> <p><u>Activity D-11:</u> Developing a set of documents, checklists and reports to assure the continuous and effective operations of the SWM scheme.</p> <p><u>Activity D-21:</u> A monthly visit and bi-annually reports to assess the efficiency and the sustainability of the new SWM scheme.</p>	<p>Management and monitoring institutional capacity on SWM developed through OU</p> <p>Documents, checklists and reports developed</p> <p>Sustainability and effectiveness continuously pursued</p>	<p>Analysis of relevant documents Site visit</p> <p>Analysis of relevant documents</p> <p>Analysis of relevant documents Interviews Site visit</p>	<p>stakeholders.</p>
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3 BACKGROUND

3.1 Origins of the Project and its contemporary context

The proposal for a Phase II of the *Siwa Environmental Amelioration Project* (hereinafter referred as SEAP) is related to the Program titled “*Institutional support to the Egyptian Environmental Affairs Agency (EEAA) to improve planning capabilities for rehabilitation and protection of natural and cultural environmental resources and implementation of pilot-Projects within the framework of Egypt’s NEAP activities*”. The Program was agreed through the Memorandum of Understanding signed on June 18th, 1998 between the Government of the Italian Republic and the Government of the Arab Republic of Egypt.

The program, known as the Egyptian-Italian Environmental Program and now referred to as the Egyptian-Italian Environmental Cooperation Program (EIECP) has been executed within the framework of donors’ initiatives aimed to assist the implementation of the National Environmental Action Plan (NEAP) and it is funded by the Directorate General of Cooperation for Development (DGCD) of the Italian Ministry of Foreign Affairs.

The EIECP has the overall objective “to contribute to the protection of Egypt’s natural and cultural resources”, and the following immediate objectives:

- 1) to strengthen Egyptian capacities to analyse, plan and implement adequate measures for the conservation and rehabilitation of natural, cultural and man-made environments;
- 2) to enhance current strategies and ways to protect and expand available natural resources base, with the aim of leading to higher productivity, reduced migration and improvement of the living conditions in rural areas;
- 3) to contribute to reinforce the role of EEAA, as the central co-ordinating and competent body, and its partners institutions for the protection and promotion of the environment.

To achieve these objectives, the following specific activities have been implemented subsequent to proper identification and preparation:

- establishment of a joint *Program Coordination Unit (PCU)* with the task to assist the Donor and the Recipient Government, including the Steering Committee, in coordinating the Program and its components;
- two pilot Projects within the context of Water and Land Resource Conservation Section of the NEAP, and under the framework of Egypt’s biodiversity conservation strategy and the plan of a national protected areas system. Namely these are:
 - (i) *Establishment of the Wadi Rayan Protected Area (WRPA) in Fayoum oasis,*
 - (ii) *Siwa Environmental Amelioration Project (SEAP).*

- an applied planning scheme for the water sector, adopting the Decision Support System (DSS) as a key instrument and an environmental balance methodology, aimed at featuring a holistic strategy for the sustainable use of Egypt's water resources: *“Decision Support System for Water Resources Planning based on Environmental Balance (DSS)”*
- a Project aiming at better preserving and managing cultural heritage assets in Egypt: *“Enhancement of the organizational and planning capabilities to preserve and manage Cultural Heritage Assets of Egypt”*.

The execution of these Projects has been ongoing from 1998; the completion date of SEAP was set at 31 December 2002, but utilizing some residual funds the activities will be formally concluded in October 2003.

A Program Review Mission, jointly conducted by the Directorate General of Cooperation for Development (DGCD) of the Italian Foreign Ministry and EEAA, was held during June-July 2000 to review the progress achieved, the problems encountered and the lessons learned. The mission also made specific recommendations regarding future activities.

Following the positive assessment made by the Mission, the EEAA and the Italian Cooperation decided to move forward with the design of future activities. A Task Force (hereinafter named TF), headed by one Egyptian expert seconded by the EEAA and one Italian expert recruited by the DGCD, was constituted with the purpose to carry out the preparatory work for Phase II of the program. This was performed by the TF from November 12th to December 21st, 2000 on the basis of the guidelines received from EEAA and DGCD-Local Technical Unit (UTL) of Italian Embassy, and in close cooperation with the key stakeholders.

The TF produced a profile of the proposed components of the second phase of the program, including the estimated budgets and the logical frameworks (Project Concept Papers). The Steering Committee, in its meeting held on the 17th of February 2001, approved the Projects identified. However, some elements had to be further verified, discussed and finalized with the Implementing Agencies (IAs). This process was completed by the TF before undertaking the preparation of full Project Documents (formulation) as it was the case for the Project under consideration. During the bilateral discussions held between the Italian and Egyptian Governments on February 2002, the financing of Phase II of the Program was agreed for an Italian contribution of about nine millions Euro. Subsequent decisions were taken about the mechanism for implementation and financing, in order to ensure that the different Projects will be implemented through the most adapted and favorable mechanism/organization.

The draft Project Document of SEAP was submitted to EEAA during October 2002. On a joint meeting held in Cairo on December 16, 2002 it was decided to revise the proposal, in line with the observations made by H.E. the Governor of Matrouh.

The present Project Document is the updated final version, which shows the approved final financial budget.

3.2 An Outline Account of the SEAP

3.2.1 Location

The oasis of Siwa is located in the northwest part of the Egyptian Western Desert, at about 750 km from Cairo and 300 km from the Mediterranean coast, and is administratively part of the Matrouh Governorate. The Oasis has a length of 75 km from east to west, a width between 5-25 km and it is located in a depression starting at sea level and reaching 20 m below sea level. The oasis is the focal point for most human activity in the region and due to its rich cultural heritage, currently represents its main visitor attraction.

The oasis is located within the Siwa depression (about 980 km²), one of a series of depressions occurring along the boundary between the Miocene plateau to the north and the Eocene plateau to the south and extending from latitude 29° in the east to Jaghbub, Libya in the west. The adjacent Qattara Depression is one of the largest and deepest in the world, with an estimated area of 19,500 km² and a depth of up to 134 m below sea level.

The Siwa ecosystem is bounded to the north by cliffs and a continuous ridge, which represents the southern margin of the El Diffa plateau, a limestone formation with numerous clay pans gently sloping northwards towards the Mediterranean Sea. Many short wadis dissect this ridge and drain into the depression below.

To the south the extensive dune fields of the Great Sand Sea form a natural barrier extending some 700 km to the south, and concealing the southern edge of the Siwa depression. The dunes of the Sand Sea are mostly of the longitudinal Seif type, with extensive inter-dunes, frequently exposing the underlying Eocene plateau.

To the west lie several oases falling in small isolated depressions while in the east and south east, clusters of oases occur on the margins of the Qattara Depression, displaying spectacular erosion formations sculpted over millennia by wind and sand. Further east lies the flat floor of the Qattara Depression, covered with limestone, clay and halite.

3.2.2 Population

The total population is estimated at about 20,000 in Siwa oasis and 350 in Qara (El Gara) oasis, with a growth rate of over 3% per year. Small numbers of Bedouins from the Mediterranean coastal region seasonally graze their livestock in the southern and eastern “abandoned oases”. The Siwan language is Berber in origin, but Arabic is generally spoken and used in public education.

The oasis has developed in relative isolation and its own distinctive culture has grown up. The social organisation is based on a tribal system, each tribe counting on a Sheikh elected by consensus of all households. There are ten traditional *qabilas* (tribes) established in Siwa and in the separate but socially related oasis of Qara. To these, a more recent “*qabila*” of people of Bedouin origin is to be added, taking the total to eleven. There are further social distinction of “*butuns*” (clans) within a given *qabila* and two main groupings, Easterners and Westerners. With the exception of Qara and

Aghourmi (a village within Siwa), the *qabilas* are not localised on a given territory, but households within the same *qabila* own plots of land (orchards) that may be scattered throughout the oasis. Collaborative resource management systems exist among people belonging to different *qabilas*, for instance *hatiyyas* are formed around the management of water from a well serving several gardens.

The Siwan culture is characterised by the *qabila* system and the Muslim religion. Social relationships in the area are generally open and peaceful, with potential conflicts rapidly solved through interventions by the Sheikhs (community elders). Married women are severely secluded and cannot work or even be seen outside the home.

3.2.3 *Socio-economic context*

The traditional economy relies mainly on flood-irrigated agriculture in household gardens, which if well irrigated, support an abundant production of dates, olives and alfa alfa. The latter is used to feed the small livestock kept by women in the courtyards of their homes. The irrigation is free except for a small compensation fee, paid to the person managing the water distribution system (*hatiyyas*). The cultivated area is about 14,000 fed. (fed), equivalent to 5,880 hectares (ha), out of a total area of 250,000 fed. The cash economy depends on selling the production of dates and olives to external buyers. As a result, the cash income is entirely concentrated in two months of the year (September-October), those of the harvest of olives and dates during harvest; outside labour is hired for approximately two months. Vegetables and fruits are grown for household consumption and for gifts, and the raising of livestock is also household-oriented. Over the last few years, as a consequence of a crisis in the olive market, the revenues of Siwans decreased and many households have been forced to sell their harvest in advance, entering in cycles of debts.

Against the backdrop of a society which still retains many traditional practices, the secular and extreme isolation of the area has been broken by the advent of the asphalt roads connecting Siwa and Qara to Marsa Matruh and to “modernity”. Many Sheikhs are selling their traditional *qabila* rights and land is being rapidly taken up by outside investors and speculators. The traditional *karshief* houses have been largely replaced by modern buildings, more easily maintained especially after heavy rains, and conferring on their occupants improved social standing. The ancient fortified towns of Siwa and Qara have been all but abandoned.

Government intervention and private external investments support oil and gas production, the development of large-scale agricultural Projects and small-scale industry such as bottling of mineral water and agro-industrial processing plants.

Based on the rich cultural and natural resources of the region, tourism is emerging as a key sector of the local economy. Some privately owned hotels offer a total capacity of over 200 rooms and several new facilities are under construction. Some cultural and nature-based eco-tourism services are being developed; spearheading private investment in what may become one of the leading and most flourishing sectors of the Siwan economy of the future.

3.2.4. Formal political and administrative structure

The official governing bodies established under the authority of the Matruh Governorate are hereunder listed:

- The Mayor of Siwa town, overall head of public administration in the main oasis.
- The Mayors of each of the five officially recognised villages, head the local administration, appointed by the Governorate in Bahey-ed-Din, Maraki, Aghourmi, Abu Shuruf, and Qara.
- People's Council, Siwa Oasis. A formally elected assembly representing the population of the whole oasis. It is constituted by 64 members, apparently selected by the most influential families along tribal lines and according to their relative importance. The president holds office for one year and the position rotates each year between the tribes.
- People's Council, Siwa Town. A formally elected assembly representing the population of Siwa town. Selection procedures for its 34 members are reportedly similar to those for the larger assembly with jurisdiction over the whole oasis.
- Village People's Councils. Formally elected, 24 member assemblies with jurisdiction over each of the five officially recognised villages (see above).

3.2.5 The Project: existing situation

The Siwa Environmental Amelioration Project has been designed to contribute to the economic development and environmental amelioration of Siwa by supporting community activities aimed at the sustainable development and at the conservation of natural resources. The working methodology has been based on participatory approach, seeking the full involvement of the local community, while respecting the Siwan tradition and culture, including the traditional power, and the administrative formal authorities in place.

Some guiding principles on the sustainable development concept followed by the Project are hereunder reported as they have been expressed by Dr. Mostafa Tolba, the former Executive Director of United Nations Environmental Programme in his book *Saving Our Planet*: "The environment is a complex dynamic system that includes many interacting components. Our knowledge about these components and the interaction between them and the relation between the people, the resources, the environment and the development made a great progress in the last two decades. Generally, if the development is not guided by social, environmental, cultural and traditional considerations, most of it will have undesired results and little benefit or even complete failure. The *non-sustainable development* will result in the aggravation of the environmental problems existing now. We all have to understand the fact of the limitation of resources and the tolerance of the ecological system. We have to set plans that will lead to *non-destructive development* or *sustainable development* that responds to the needs of the present generation."

The development of sustainable agriculture was identified by the Project as a crucial element for addressing environmental problems while strengthening and empowering the local society. The Project started implementing the activities from the areas of daily life, which are closer to the Siwan population and easily understood such as water, soil and agricultural practices. The Project has introduced new models of cropping patterns and water use, concentrating on better management of natural resources and diversification of production. Most of the interventions have been done in new reclaimed land, on cost/share basis with the beneficiaries, through establishment of a Revolving Fund financed by the Project.

The SEAP has been substantially completed within its timeframe (May 1998 - May 2001) in accordance with the overall Work Plan and the annual Work Plans. However, in order to achieve greater sustainability of the initiatives undertaken it has been deemed necessary, by the Egyptian and Italian Authorities, to extend the Project for a consolidation period of nineteen months (from June 2001 to Dec. 2002). During this period the responsibility of the management of the operations has been handed over to the Implementing Agency. In Annex 1 are reported the objectives set for the Project, the results achieved and the lessons learned, as per the assessment of the Evaluation Committee/Quartet Meeting. This Committee included the MSEA/EEAA, the Italian Cooperation, the Governorate of Matrouh and the Ministry of Foreign Affairs.

The finding of the Task Force at the moment of the formulation (early 2002) was as follows: (i) all the activities are being implemented based on participatory approach, with the involvement of the local population, the authorities, and the concerned institutions. In particular close links have been secured with the traditional representatives (sheiks) and the thirteen Villages Committees which have been constituted, covering all tribes; (ii) a reliable group of local technicians on agriculture has been formed; (iii) more than 200 plots have been implemented as demonstration/extension/trial activity, as well as three village micro-nurseries have been established; (iv) an organization representing the Siwan community having strong grassroots connections, the Siwa Community Development Environment Conservation association (SCDEC), has been constituted and legalized to administer the revolving fund in order to promote and support the development of members' initiatives; (v) some gender issues have been addressed (implementing a small animal breeding program for landless household-women); (vi) awareness on environment and conservation of natural resources has been widespread in Siwan community, through public education programs, "green-corner" initiatives, workshops, etc. Clean-up campaigns for villagers and students have educated the population to the concept of solid waste management; (vii) training of farmers, staff and trainers have been organized, including nine candidate Rangers and Community Guards from Siwa for the protected area; (viii) seminars have been held at local and national level. It is worth to mention the national seminar "Sustainable development of the Siwa Region" organized in Cairo on January 24th, 2001 which brought together key-decision makers concerned with the future of Siwa Oasis and the Western Desert; (ix) a considerable documentation has been produced. In addition to internal Project technical reports, specific studies were conducted on: geo-morphological, soil and land suitability/land use maps; marketing for rural products; redesign of micro-credit services; potential for developing organic agriculture; feasibility studies of olive processing unit and development of fish farming; sustainable eco-tourism development; and cultural heritage in the Siwa Oasis; (x) in addition to leaflets, posters and other printed material,

the Project has realized a documentary film on Siwa region and organized, in collaboration with the Italian Cultural Centre, a national photo exhibition held during January 2001 in Cairo; and (xi) on July 2002 the Protected Area of Siwa was declared by Prime Minister Decree.

The overall context of the Project appears positive and promising. In particular, the trust gained in the Siwan community and its participatory involvement in Project activities is an achievement of paramount importance.

However, the fears expressed in the original Project document/feasibility study about the short duration of the intervention has been turned out as justified. The document states, in its foreword, that: "...for an environmental Project envisaging people participation in both decision-making and activities planning, a lifespan of three years, if not followed by a further period of three years at least, could mainly represent a pilot intervention aimed at designing and testing in the field appropriate development models which would still need to have a certain consolidation period". There are in fact several issues which deserve due consideration about the *sustainability* of activities undertaken:

- (i) sustainable agriculture: the replication of technology packages (modules) applied at extension level have been too vast to be properly followed-up and monitored by the limited Project staff. It goes without saying that these *extension plots* should have been established once the *demonstration phase* had been completed. *Instead the extension phase overlapped with demonstration*. It must be emphasized that the Project introduced consistent innovations in term of land reclamation, packages of technologies, cropping patterns, water use and farm management of the individual farms. Therefore the real level of dissemination and adoption of new/improved techniques is still low, in spite of the good willingness shown by the community to learn and to improve their present situation. Moreover, the data collected from the field by the Project are lacking in terms of reliability from the technical point of view as well as they are not supported by adequate economic and financial analysis.
- (ii) the utilisation and administration of the Revolving Fund has been matter of concern. The Fund was established with the aim to support all the interventions made on sustainable agriculture, from the work done on land reclamation till the cultivation of demonstration plots. In spite of the full contribution to the costs requested to the farmers for the implementation of the plots, thus including the demonstration activities, the Fund proved to be not financially sustainable and difficult to manage within the 13 Committees. Remedial measures were taken, including the creation within the Project of an ad-hoc Revolving Fund Unit, which promoted the constitution of a legal association (the SCDEC) registered on January 2001 with the Ministry of Insurance and Social Affairs under the law number 32/164. The association, established by the 13 Committees, is recognised as a Community Development Association/NGO. The Association is entrusted to administer the Revolving Fund, giving emphasis towards a micro-credit service that appears to be more adequate in responding to the emerging needs of the Siwan community. Intensive training for the board and staff of the Association was imparted, but more support in term of human resources enhancement, technical assistance and fresh capital injection is required to build up the capacity of the association to design, implement and monitor development activities. Furthermore, the Association should

enter into marketing opportunities, including the agro-processing business, and should pay particular attention to women, in all their specific activities and income-generating initiatives.

- (iii) along with the above mentioned activities, Siwan community needs support for its socio-economic and cultural development, to ensure more social equity and empowerment of marginalized groups by a gender focussed approach. All these aspects have been “touched” by the Project that acted often as a “catalyst”, but in an erratic way since it was not prepared, staffed and equipped for this purpose; awareness has been anyhow raised. There is a need of a solid follow-up, accompanied by specific activities.

These would be ensured to the committees and to the Association, in an integrated approach with the Project, by the assistance of specialized Italian NGOs, which are planning to start their activities in Siwa in parallel with the second phase of the Project¹. These activities will cover the following fields: (1) safeguard and enhancement of the oasis’ architectural and cultural heritage: lacking the application of planning, zoning and building codes, the local communities and private investors are no longer constructing buildings in traditional style, altering the charm and character of the oasis; (2) promotion of eco-sustainable tourism: most of the tourism is now driven by external forces which tend to have low appreciation of Siwan culture, pursuing the same unsustainable tourism development models as in other parts of the country; (3) support to the traditional handicrafts: local culture is not safeguarded and traditional crafters are disappearing.

Furthermore, *new components* have been identified as functional to the development of an integrated sustainable process of environmental amelioration for the region:

- (a) Strengthening the Protected Area (PA): it is essential to support the full establishment of the newly declared Protected Area.
- (b) Solid Waste Management (SWM): the Project management and the Governorate have regarded as essential to include this component in Phase II. The implementation of a solid waste management component can build upon the awareness already raised by the Project, and might be seen as an important step towards prevention of negative effects of growing tourism impact. Solid waste management represents a growing environmental concern in Siwa: rapid industrial and touristic development have introduced new patterns of consumption and increased the quantities of solid waste generated. Currently, the quantities of solid waste produced daily are estimated to range from 6 to 8 tons. Most of these quantities are generated from residential areas. Industries comprising of four water-bottling factories and several olives and dates processing factories contribute about 1 to 2 tons of the total figure. Currently, water-bottling factories transport their solid waste outside of the oasis. In addition to the residential and industrial sources of solid waste, there are two medical facilities operating in Siwa; one of which is a military facility that handles its own waste.

¹ Consortium of NGOs between two Italian NGOs: Ricerca & Cooperazione/RC and COSPE.

In particular, the *General problem* to be addressed has been identified as the lack of institutional capacity to plan, implement and monitor SWM development initiatives, leading to a consequent generalised inadequacy of the SWM framework, as well as management practices throughout the Siwa Oasis. The main *specific problems* have been identified as the followings:

- lack of background data and information to support the development of an effective and sustainable SWM scheme for the entire Oasis,
- weakness of the Siwa institutional sector planning and monitoring system, as well as decision making process, for the derivation of both plans and specific ground initiatives,
- lack of a viable environment (reliable and institutional framework; previous successful experiences; willingness of service users to pay the SWM fees) to introduce and to sustain an endogenous process of translating theoretical exercises into implementation of physical sector development Projects.

(c) Support to the Environmental Management Unit (EMU): the need for assistance to the environmental affairs department of the Governorate of Matrouh has been recognized as a priority by the Program Evaluation Mission and by the Governorate itself. It is considered an important step that aims to strengthen the role of the local institutions and EEAA, in application of the decentralised environmental management policy already undertaken.

In consideration of the above issues, a second phase of the Project is highly justified.

3.3 Government Plans/Strategies on Environment

The principal challenge underlying Egyptian Environmental Policy is to manage the scarce common resources of water and cultivable land more effectively to meet the growing needs of the population, which is placing enormous pressure on agricultural production and on the non-renewable and limited natural resources. Thus a balance should be achieved between the needs of a progressing economy and the protection of natural resources, while addressing the impact of current environmental problems.

Within the above contest, the Ministry of State for Environmental Affairs (MSEA) and its executive arm, the EEAA, have defined the objectives and policy directives as follows:

3.3.1 Objectives

Strategic objective: to introduce and integrate environmental concerns relevant to the protection of human health and management of natural resources into all national policies, plans, and programs.

Medium-term objective: to preserve Egypt's natural resources, biodiversity, and the national heritage within the context of sustainable development.

Short-term objective: to reduce current pollution levels and minimize health hazards to improve the quality of life in Egypt.

3.3.2 Policy directives

- Foster partnerships, co-ordination and collaboration among the different segments of Egyptian society at national level, other organizations and the private sector, and the revision of the 1992 NEAP based on a gender-sensitive, participatory development approach.
- Foster partnership at the bilateral, regional and global levels that support transfer and use of environmentally friendly technology.
- Enforcing Law 4/1994 for the protection of the environment, and Law 102/1983 for Natural Protectorates and all other environmental legislation
- Develop and upgrade Egypt's 21 natural protectorates and protect biodiversity, in part by encouraging the sustainable development and management of protected areas, mobilizing local participation to support their protection, promoting eco-tourism and sustainable tourism initiatives, and implementing the national Strategy for Biodiversity.
- Support institutional strengthening and capacity building at central and regional levels
- Support sustainable environmental management systems by adding an environmental dimension to large-scale national Projects and preparing environmental action plans for Egyptian Governorates.
- Integrate the use of market-based instruments into the practice of environmental protection, including customs duty exemptions for pollution-abatement equipment and preferential terms on the sale of land for use in environmentally sound Projects.

3.3.3 Environmental Basic Legislation

The first basic law containing a comprehensive set of rules on the environment is Law N.4 of 27 January 1994, complemented by the Executive Regulations issued by Prime Minister's Decree N.338 of 18 February 1995. No environmental legislation as such existed before the promulgation of this law, but only specific laws covering individual environmental aspects were in force, e.g. in the field of agriculture, fisheries, tourist activities, water pollution, etc. The only law explicitly abrogated by Law N.4/1994 is the old Law N.72 of 1968, concerning the prevention of seawater pollution by oil. However, other rules contained in the preceding legislation should be considered superseded by the recent Law, whenever they are incompatible with the new rules, which entirely cover new areas and sectors. Moreover, it is stated (First Article in the preamble) that the establishments existing at the time of promulgating this law shall conform to the new rules within three years as from the date of publishing its Executive Regulations. This deadline has expired on 1st March 1998.

The Administrative Bodies, empowered to establish regional offices within the Governorates in which the protectorates are located, are equally designated by Prime Minister's Decrees (art. 4). The law also establishes a special Fund for receipt of donations allocated to the protectorates, admission fees and fines collected in connection with the infringements of its rules (art. 6). This Fund has subsequently been incorporated within the "Environmental Protection Fund".

After providing basic definitions of words and expressions concerning the environment, used in current legislation, this Law provides for the restructuring of EEAA and the

redefinition of the Environmental Protection Fund. The first part of the law addresses land pollution, specifying rules on hazardous materials and wastes including the issue of licenses and permits for activities requiring an environmental impact assessment (EIA). The second and third part of the law deals with the protection of air and water from pollution. The final part covers administrative and judicial procedures and penalties.

3.3.4 Egyptian Environmental Affairs Agency (EEAA)

The EEAA is the main administrative body responsible for environmental protection in Egypt. It was established under decree N.631/1982 within the Prime Minister's Office, to act as the umbrella body to co-ordinate all government activities pertaining to the environment and conservation including the management and supervision of protected areas.

The main rules concerning EEAA's operation and functioning are contained in Prime Minister's Decree N.338/1995, promulgating the Executive Regulations of the Law for the Environment N.4/1995. The responsibilities of EEAA are shown in Annex 2. The EEAA has very comprehensive powers and tasks regarding environmental matters, including the formulation of general policies and draft legislation; the preparation and implementation of all plans and programs envisaged by the law for the protection of the environment in co-ordination with other concerned authorities; issuing rules, regulations and standards (e.g., measures and standards for the environmental impact assessment of Projects); suggesting economic mechanisms to encourage activities in the field of pollution prevention; enforcing laws and other environmental rules (art. 5 of Law N.4/1994). In this framework, an important monitoring function of EEAA is to ensure compliance of existing establishments with the requirements set by Law N.4/1994, to which they should have conformed within the deadline of 1st March 1998.

The Board of Directors is the supreme authority that governs the Agency and formulates its general policy. It has the authority to take decisions for the fulfilment of EEAA's objectives (art. 7 of Law N.4/1994). It is chaired by the Minister of Environmental Affairs and is composed of representatives of the Ministries and other institutions involved in the management of the environment, including the Ministries of Agriculture, Public Works and Water Resources, Transport and Communications, Industry, Interior, and Health; NGOs; the Legal Opinion Department of the State Council; Universities and Scientific Research Centres (art. 3 of Decree N.338/1995). Its tasks include the approval of all plans and programs concerning the environment; formulation of draft environmental rules; approval of limit values for the concentration of certain pollutants in water and air; approval of standards and criteria for EIA; the supervision of the Environmental Protection Fund (EPF); approval of the organisational structure of the Agency and its branches in the Governorates; approval of internal rules and regulations, and of the annual budget; the introduction of a system of incentives aimed at other agencies, establishments and individuals which implement environmental protection activities and Projects; the determination of resolutions to be submitted to the Cabinet of Ministers for decision (art. 4 of Decree N.338/1995).

The Chief Executive Officer (CEO) is responsible for the implementation of the general policy set for the achievement of EEAA's objectives and for the implementation of the Resolutions of the Board of Directors. The CEO manages the EEAA, including

handling technical, financial, personnel and other matters. He has also responsibilities for the enforcement of environmental rules and the collection of data and information connected with EEAA's objectives (art. 5 and 6 of Decree N.338/1995).

3.3.5 Environmental Funds

Funding for administration and management of Egyptian protected areas is channelled through the EEAA from various sources including the Environment Fund. The latter is used for supplementing the budget of the administrative bodies responsible for implementing the provision of Law N.102/1983. According to Law N.4/1994 (art. 4) the EPF should be endowed with state budget allocations, donations granted by national and foreign agencies for the purpose of environmental protection and promotion, fines and compensations which are agreed upon or determined for any damage affecting the environment, in addition to other resources specified in art. 7 of Prime Minister's Decree N.338/1995.

The same Decree (art. 8) lists the purposes for which the EPF's resources can be utilised, which include confronting environmental disasters and pollution from unknown sources; financing of Projects, studies and research in the field of environmental protection; transfer of low cost techniques successfully applied; financing the manufacture of equipment, devices and stations treating environmental pollutants; establishing and administering natural reserves; consolidating EEAA's basic structures and developing EEAA's activities; other purposes aimed at environmental protection as approved by EEAA's Board of Directors. The responsibility for the internal regulations of the EPF is assigned to EEAA, in agreement with the Minister of Finance. EPF's activities and financial arrangements are subject to the control of the Central Auditing Agency.

The Tourism and Environmental Services Fund has a board which includes the Ministers of Finance, Cabinet Affairs, Tourism, Culture and Local Administration. Presidential Law N.101/1985 and prime ministerial decree N.1488/1985, provide financial assistance for pollution prevention and nature conservation in Egypt, as the "Tourism and Environmental Services Fund". Through this law a 10% tax was levied on all international air tickets issued in Egypt in local currency; by 1991 this percentage had increased to 25% (EEAA, 1991). The EEAA and Tourism board manage these funds for environmental and tourism Projects which the national budget is unable to finance and determines their priority. This tax is also used to develop recreational tourist areas and hotels, develop archaeological sites and finance pollution prevention and nature conservation Projects.

3.3.6 Protected Areas

The establishment of Protected Areas is one of the main instruments of the Egypt's strategy for the conservation of biodiversity and other natural resources. Since the 80's, the Egyptian government has undertaken several efforts to preserve significant portions of natural habitats from resource depletion and human disturbance. The bases for the creation of protected areas were laid down in 1983 with the issue of Law 102, which established the legal framework for their institution. Since then, 23 Protected Areas

have been declared in different parts of Egypt, making up a network that covers more than 8% of the terrestrial surface of the country.

In line with international trends, protected areas have been considered as crucial tools to secure the safeguard of the country's biodiversity, natural and cultural resources. The creation, development and management of natural protectorates is part of the overall environmental and development strategy of Egypt. The preservation of natural resources and biodiversity within the context of sustainable development is in fact the main medium term objective of the MSEA/EEAA. It is also one of the priorities for the country's environmental policy, which is an integral part of its overall development plan. Furthermore, at the international level the Arab Republic of Egypt is a signatory of all main conventions protecting biodiversity, migratory species and regulating the trade in wildlife and natural resources (EEAA, 1998).

Law N.4/1994 and Prime Minister's Decree N.264/1994 assign a major role to EEAA in the management and monitoring of protected areas, including the management of the licensing system. All activities carried out in protected areas are subject to EEAA's control, which can take steps to enforce the rules and stop any illegal activity.

The policy of the EEAA towards protected areas is as follows: "to construct an efficient network of natural parks, protected areas and managed areas by developing the recently declared sites and selecting new locations; integration of protectorates programme with the social and economic development, to attain sustainable development; conservation of biological resources, its monitoring, surveying, survival and development; to maintain sound management and administration of protected areas Projects and enforcing Law N.102/1983".

As mentioned above, the Law N.102 of 1983 provides the legal framework for the establishment of protected areas throughout Egypt. The sole category referred to in this law is the natural protectorate, which is defined (art. 1) as "any area of land, or coastal or inland water characterized by flora, fauna and natural features having cultural, scientific, tourist or aesthetic value". These areas are designated by Prime Minister's Decrees upon recommendations of the Egyptian Environmental Affairs Agency (EEAA), which proposes boundary maps and is entrusted with the management and supervision of such protected areas (Law N.4/1994, art. 5).

Law 102 (art. 2 and 3) lists acts and activities that are strictly prohibited inside the protectorates, which include hunting, transporting, killing and disturbing wildlife; damaging or removing any living organisms, or natural features or resources such as shells, corals, rocks or soil, and plants; spoiling or destroying the geological structures (and other features) of the sites serving as natural habitat and breeding areas for plants and animals; introducing foreign (non-indigenous) species into the protected area; polluting the soil, water or air. It is forbidden to construct buildings and establishments, pave roads, drive vehicles or carry out any activities in the protected areas except with the permission of the concerned Administrative Body in accordance with rules, regulations and restrictions specified by Prime Minister's Decrees. It is also forbidden to carry out activities or experiments in the areas surrounding designated protectorates, which may have a harmful effect on the protectorate's environment and nature, except with the explicit permission of the concerned Administrative Body. Penalties are

envisaged for offenders (art. 7 and 8), including bearing the cost of removal or reparation, and the confiscation of equipment, weapons or tools used in committing the offence.

The Executive Regulations provide more details on the subjects covered by the Law, including the licensing system, and sets specific standards, parameters, concentration limits etc. The basic rules on the licensing system are complemented by the Executive Regulations issued by Prime Minister's Decree N.338/1995 and Decree 245 of 1994 with regard to protected areas. Prime Minister's Decree N.264/1994 establishes conditions to carry out activities in protected areas and assigns full responsibility to EEAA for releasing licenses concerning such activities.

3.4 Main Physical and Socio-Economic Features of Egypt

Egypt covers a land area of about one million square kilometres, of which about 3 percent is under cultivation. Permanent vegetative coverage consisting of trees, shrubs and lawns is in the range of 1.6 percent. Roads, parks, building and other public utility facilities occupy about 0.4 percent of the land. The remaining 95 percent of the area is mainly made up of desert, semi-desert areas, hills and sand dunes. Rapid urbanization has exerted a large claim on land available for agriculture: since 1952 some 378,000 hectares (ha) of the fertile Nile Valley lands has been lost to urbanization and industrial growth: urban areas have doubled over the last 20 years. The annual rainfall in most parts is less than 50 mm; the river Nile provides 97 percent of the water.

Egypt is the second most populous country in Africa, with 65 millions inhabitants; the population growth has declined from 2.8 percent in 1976 to 2.1 percent in 1999.

Egypt is classified as a middle-income country, with a GDP of \$ 89 billion and GDP per capita of \$ 1,529. The economy is diversified: agriculture, which employs 28 percent of the population and constitutes about 17 percent of gross domestic product (GDP); trade, finance and insurance represents about 21 percent of GDP; industry constitutes about 18 percent of GDP; energy about 7 percent of GDP; transport, tourism and communication are important economic sectors. The economic reform adopted is transforming the country from a central, state controlled economy into a market driven economy. GDP has grown five per cent a year for the years 1994-1999; inflation has gradually declined from 21 percent in 1991 to less than four percent in 1999. However, despite the relatively successful Economic Reform and Structural Adjustment Programme (ERSAP) embarked upon since 1987 achieving significant progress at macroeconomic level, inadequate wealth is being generated to offset population growth, to effectively reduce poverty and unemployment. In fact, the overall impressive economic growth recorded - the per capita gross national product (GNP) grew from US\$ 660 in 1993 to 1,290 in 1998 (1 US\$= LE 3.37) is also characterized by its uneven distribution: 34 percent of the urban and 18 of the rural population fall below the poverty line (defined at LE 697 and LE 438 respectively) and 17 per cent of the urban population and 8 per cent of the rural population are considered to be living below the ultra poverty line (in 1994, LE 527 for urban and 356 LE for rural population). Women are particularly hit by poverty. UNDP's 1997 Human Development Report ranks Egypt 109th out of 175 countries in its gender-related development index. Illiteracy is quite high, at 45 percent.

Egypt is classified by FAO as a low-income, food-deficit country (LIFDC). Food insecurity and poverty remain major issues: though per capita food availability is maintained satisfactorily, access to food is uneven and malnutrition is widespread; about 20 percent of the population lives on less than the recommended minimum calories requirement of 2,431 kcal a day. In 1999 the country imported 7.9 million tons of grain or 50 percent of its needs.

Officially estimated unemployment is rated at 8%, with over half a million employment job seekers entering the labour market annually, out of which youths of age between 15 and 24 make up 74 percent of the unemployed. Egypt is nevertheless in a strong position to launch a job creating initiative and the International Labour Office (ILO) has been assigned to prepare the framework.

3.5 Relationship of the Program to Government Plans/Strategies on Environment

The principal objective of the Egyptian-Italian cooperation in the environmental sector will be to pursue the strengthening and improving the capacity of the EEAA and its partner institutions in addressing environmental issues in an effective manner through the execution of specific interventions in the sectors of nature protection, biodiversity, sustainable development, solid waste management, legal framework, and protection of historical and cultural heritage. *This objective is totally consistent with the new NEAP (2002-2017).*

Environment is a field that cuts across the activities of all ministries and institutions, public and private. A successful integration of environmental dimensions in relevant national policies, plans, programs, Projects and practices, requires close cooperation with all stakeholders.

It is expected that addressing priorities in close association, keeping roles and responsibilities of stakeholders well defined, as it is the case of the program under consideration, will produce added value results by means of reinforced synergies and integrated approach.

The information generated by different program's components, the multidisciplinary expertise involved, both expatriate and local, and the links established among key governmental and non-governmental players will likely provide grounds to stakeholders for expanding the achieved results towards further opportunities and challenges, strengthening common interests, encouraging commitments and minimizing conflicts.

3.6 Previous Italian aid in the sector

The EIECP has put the Government of Italy among the donor agencies providing significant support to the nature conservation efforts in Egypt. While considerable resources have in fact been allocated, and strong results have been achieved by bilateral and multilateral donors mainly on the Sinai and Red Sea regions, the EIECP has given Italy a prominent role in the support to initiatives in the Central and Western sector of the country. Owing to this effort, considerable experience has been gained through the collaboration between Italian cooperation and the implementing institutions. The Wadi Rayan Protected Area experience has showed that, as in other part of the world, nature

conservation efforts in Egypt can only be successful if they are accompanied by a large spectrum of initiatives ranging from actions at the institutional level to undertakings involving local communities.

3.7 Activities of Other Donors

Egypt has begun to attract consistent international assistance in the field of environment and conservation. A number of funded donor Projects are being implemented by EEAA. Among the activities focussed on conservation, besides Italy might be mentioned: (i) the European Union, which is supporting two protected area Projects in South Sinai, (ii) USAID, which is contributing to the protection of the Red Sea islands and reef, (iii) Global Environmental Facility (GEF) – UNDP – Med Coast Project, which is working to preserve biodiversity in three protected areas along the Mediterranean coast.

3.8 The Egyptian Italian Environmental Cooperation Program within the context of Italian Cooperation

Since the beginning, Italy supported Egypt in launching the environmental plan. All activities undertaken are consistent with present priorities of Italian Cooperation. In particular, environment is an interdisciplinary subject on which the different prevailing fields of action characterizing the general Italian strategy of the cooperation to development are represented. Namely: (i) strengthening the institutions, (ii) strengthening the management capacity for natural resources, and (iii) intervening on preventing, halting and rehabilitating the environmental degradation.

Furthermore, the Protected Area sub-component conforms to GOI's overall cooperation strategy, which includes among its objectives the support to environmental protection and sustainable use initiatives, and can contribute to the fulfilment of its obligations deriving from the adherence to international agreements related to the conservation of biodiversity and natural resources.

Therefore the aim of the program and its objectives are totally consistent with the mandate of DGCD.

4 PROJECT DESCRIPTION OF PHASE II

4.1 Approach and scope

The architecture for the second phase of the SEAP is based on four components reflecting the proposed widening of the Project's scope. These components are: Development of Sustainable Agriculture; Strengthening the Siwan Association; Strengthening the Protected Area; and Solid Waste Management.

Though functionally and strategically linked, the individual components will be implemented semi-autonomously by different operators and finely tuned to their priorities. This would enhance the efficiency and render them more directly accountable to the different stakeholders.

4.2 Objectives

4.2.1 Overall Objective

The overall Project objective is to contribute to the conservation and sustainable use of natural and cultural resources in the Siwa region.

4.2.2 Specific objectives for each sub-component

4.2.2.1 Development of sustainable agriculture

The development objective of the sustainable agriculture component is to improve the present productivity and to select suitable cropping patterns, enabling the diversification of the agricultural production while enhancing water use efficiency, thus to make better use of natural resources and to increase the household income, including creation of job opportunities for new graduates.

Specific objective 1. Refine the production technologies introduced in respect to soil, water and crop management.

Specific objective 2. Develop organic farming and introduce less known crops.

Specific objective 3. Monitoring of natural resources: changes of soil properties across the years, water management, and crop production. Perform the financial evaluation of the intervention proposed for dissemination.

Specific objective 4. Develop income-generating initiatives linked to sustainable agriculture: raising of small and large animals, fish farming, small agro-industry.

Specific objective 5. Implement training and extension activities.

Specific objective 6. Sign collaborative agreements with specialised Institutions/Organizations.

4.2.2.2 Strengthening of the SCDEC/Siwan Association

The development objective of the strengthening the SCDEC / Siwan Association is to contribute to the improvement of living standards conditions in Siwa Oasis by promoting local structures and mechanisms through which low-income Siwans, including women, can ameliorate their economic situation in a socio-economic and environmental sustainable way.

Specific objective 1. Strengthening the institutional capacity of the local community - represented by SCDEC - to plan, manage and monitor credit activities, which are aiming at the improvement of the economic, social and environmental living conditions in Siwa Oasis.

Specific objective 2. Firmly establish a self-sustaining micro-crediting mechanism managed by SCDEC

Specific objective 3. Establish a Window service of technical assistance for Siwan community

Specific objective 4. Establish agro-industrial processing units (on its own or in partnership with the private sector) and develop marketing and sales opportunities for the Siwan community

Specific objective 5. Support the empowerment of low-income Siwan women and marginalized groups in order to enhance their social status as well as their families' living standards conditions.

4.2.2.3 Strengthening the Siwa Protected Area

The development objective is to firmly establish a well managed Protected Area, contributing to the development of the region as a leading tourism site, while strengthening the mandate and institutional capacity of EEAA in the Governorate.

Specific objective 1. Firm establishment of a collaboratively managed protected area in the Siwa region, aiming at the protection of biodiversity and cultural heritage resources, their sustainable and equitable use, and acting as a focus for regional planning and development of innovative, environmentally-friendly, economic activities.

Specific objective 2. Contribute to the development of the Siwa region as a leading ecotourism site in the Western Desert of Egypt, by engaging the local communities, the private sector and other key stakeholders in the diversification and development of non-intrusive ecotourism facilities and services.

Specific objective 3. Strengthen the mandate and institutional capacity of EEAA to plan, implement, monitor and enforce environmental policy in the Siwa region with the support of a dedicated Environmental Management Unit (EMU) in Matrouh Governorate.

4.2.2.4 Solid Waste Management

The development objective of the Siwa Project SWM Task is to develop and implement a SWM scheme in Siwa oasis (which includes the town of Siwa and the surrounding villages), based on the need of the Siwan community and in line with EEAA policies. These are the specific objectives of the Project Task:

Specific objective A: Establish a database to support the SWM decisions in Siwa by gathering new data and refining of the available data.

Specific objective B: Develop and implement a solid waste management scheme that includes a new set of quality standards for the solid waste practices in Siwa.

Specific objective C: Develop needed institutional capacity for the planning, managing and monitoring the implementation of the SWM scheme.

Specific objective D: Introduce a mechanism for sustaining, updating, and monitoring the SWM scheme activities within the Siwa institutions.

While achieving these objectives, other results will be obtained:

- Protection of the health of the Siwan population including the health of the waste workers.
- Improvement of the environmental conditions of the oasis.
- Spreading the population awareness of waste problems and its negative effects on the public health and the environment.

Thus, the Project Task will ultimately improve solid waste collection practices, transportation and disposal, provide Siwan community with a cleaner environment and enhance the public health conditions. Furthermore, the Project Task will strengthen the Siwa institutional capacity in managing solid waste efficiently.

The Project Task will draw from the SWM Project, implemented in El Minya Governorate under EIECP umbrella, its findings.

4.3 Outputs/Results

4.3.1 Development of sustainable agriculture

Based on the sub-component's six specific objectives, nine key outputs have been tentatively identified, each arising from a series of targeted activities.

- *Output 1.* The production technologies introduced in respect to soil, water and crop management have been refined through the cropping, monitoring and follow-up of 188 plots (equivalent to 202 fed.) completed within the 3 years Project period, and 22 plots (22 fed) planned for the extension period, for a total of 210 plots covering 224 fed.. With the establishment of a new area of 32 fed. put under adaptive research Modules, the total area cropped and monitored results of 256 fed..
- *Output 2.* Organic farming technology has been developed and at the end of the conversion period the harvests have been certified as organic over an area of 10 fed. Less known crops have been tested and monitored over an area of 20 fed. for their introduction in the cropping patterns.
- *Output 3.* The changes of soil properties across the years have been monitored through 600 soil samples. The water management has been monitored through installation of about 230 piezometers, 50 V-Notch and measurements taken from the micro irrigation system. Landscape changes have been monitored through photo-documentation.

- ❑ *Output 4.* The crop production has been evaluated in term of suitability of the crops in the prevailing conditions in term of some growth parameters. The development of crops in different modules (individual and intercropped) has been monitored. The cropping patterns in term of rotation/soil fertility/pest, diseases and weeds control have been assessed.
- ❑ *Output 5.* The economics of various cropping patterns have been assessed through financial analysis of inputs/outputs ratio, taking into account marketing opportunities and prices throughout the year. These analyses have been compared with the traditional farming system. The socio-economic impact of the new cropping patterns/farming systems on family income and the changes likely taking place on family labour force and livelihood, market labour force, etc. has been assessed.
- ❑ *Output 6.* Income generating initiatives linked to sustainable agriculture have been developed: a Livestock Demonstration Farm for sheep and goat has been established, which also provides balanced rations and other services to local market; 100 sheep/goats and 40 buffalo/cows have been distributed to participating farmers, partly women; a nursery and 10 poles have been established for fish farming. The existing animals from the first phase will be followed-up and monitored.
- ❑ *Output 7.* Women beneficiaries have been trained and provided with 10 spinning wheels to introduce the utilization of the wool by processing it into yarns and then into carpets. Equipment to better utilize the milk produced from buffalo, cows and goats for processing to products such as yoghurt, cheese, and butter for household consumption and possibly for marketing has been distributed to 10 trained women.
- ❑ *Output 8.* The level of knowledge of local community members and Project staff, young generations and women has been enhanced through training done in the field, homes and demonstration farms giving high respect to local traditions and customary habits. The training has covered various Project activities.

The participatory approach adopted has facilitated the effectiveness of the advices and recommendations given to beneficiaries and the transfer of his findings and problems to the specialists.

- ❑ *Output 9.* Collaborative agreements with specialised Institutions/Organizations have been signed and implemented. The specific scientific support has been provided to the Project, while the Institutions have been benefited from the fieldwork implemented with the participating community. Thus the findings are based on solid basis, more reliable and reflecting the prevailing conditions of the Siwa region. Siwan community has been provided with a well-equipped Laboratory, able to respond in time and reliably to all the needed information required for an effective sustainable management of natural resources.

4.3.2 *Strengthening the SCDEC/Siwan Association*

Based on the sub-component's five specific objectives, five key outputs have been tentatively identified, each arising from a series of targeted activities.

- *Output 1.* SCDEC effectively manages and monitors the local credit scheme that supports socio-economic and environmental sustainable development initiatives.
- *Output 2.* Establishment of a well-functioning and self-sustaining micro-crediting mechanism managed by SCDEC
- *Output 3.* The Window service has been established, delivering technical information, technical booklets and preparing feasibility studies. There is also broad awareness within the community about the existence and the opportunities offered by the micro-crediting mechanism and the window for technical assistance.
- *Output 4.* Agro-industrial processing units (on its own or in partnership with the private sector) are established. Marketing and sales opportunities for the Siwan community are enhanced in a coordinated manner.
- *Output 5.* More social equity and empowerment of Siwan women and marginalized groups are pursued through their access to micro-crediting scheme. Women and marginalized groups become important actors, within Siwan association framework structure, of initiatives promoted by NGOs in cultural heritage preservation, handicraft production and ecotourism.

4.3.3 *Strengthening the Siwa - Protected Area*

Based on the sub-component's three specific objectives, seven key outputs have been tentatively identified, each arising from a series of targeted activities.

- *Output 1.* Institutional capacity for field conservation enabled through legal, human resources and infrastructure development
- *Output 2.* Collaborative management of the Protected Area is operational based on the adaptive, equitable and sustainable use of biodiversity resources
- *Output 3.* Monitoring and evaluation of biodiversity resources, their utilisation and management has been tested, and a system is operational
- *Output 4.* Information Education Communication (IEC) efforts are building local and national constituencies for biodiversity conservation
- *Output 5.* Ecotourism is managed to demonstrate innovative, environmentally-compatible, economic activities meeting sustainable livelihood needs
- *Output 6.* An overall biodiversity strategy and action plan for the Siwa region is developed and biodiversity conservation is firmly inscribed on the local development agenda

- *Output 7.* The management capacity of the Environmental Management Unit of the Matrouh Governorate is enhanced

4.3.4 *Solid Waste Management*

In order to achieve the objectives of the Project Task, the following outputs/results will be produced:

- *Output A-1:* An updated solid waste related database that will include general attributes of the Siwa Oasis and the solid waste specific attributes. It will also include a map of Siwa showing available routes and their traffic capacity, population concentration and growth trends, and the location of commercial and industrial activities.
- *Output B-1:* An executive, ready-for-implementation plan for the establishment of a comprehensive and sustainable SWM scheme for the entire Siwa Oasis.
- *Output B-2:* An improved and implemented SWM scheme. Depending on the outcome of B-1, this new scheme will improve the existing collection system and making it more comprehensive. Collection systems might include household and commercial waste containers, collection vehicles and equipment upgrade, and the organization and equipping of collection workers, (such as the provision of protective clothing). The scheme might also include the addition of temporary waste storage and transfer points, equipment for waste transfer, and the procedures for operating and maintaining these facilities and equipment. Furthermore, the SWM scheme will improve the operation of the existing dumpsite located 10 km north of the town of Siwa (on Marsa Matrouh road).
- *Output C-1:* A framework for an Operations Unit (OU), which will assume the responsibility of planning, managing and monitoring the execution of the SWM scheme. On the basis of this framework, the following will be set: job descriptions, training needs assessments, and work force development plans.
- *Output C-2:* Operating the OU after being supported with qualified staff and workers.
- *Output D-1:* A set of documents and reports as a part of a mechanism that will assure the sustainability and functionality of the Siwa SWM Project. These documents will also emphasize the continuous updating of the data related to solid waste and the continuous measurement of the outputs of the Project task.
- *Output D-2:* Bi-annual follow-up reports addressing the outputs of the task implementation and monitoring the sustainability of the operations.

4.4 **Activities**

Details of Project activities are reported in the following sections, subdivided per Project component. The relevant budget of each activity is shown in the overall SEAP budget

4.4.1 Activities for the Development of Sustainable Agriculture

Based on the results and experience gained from the Demonstration Plots, Extension Plots and Trials established in Phase I, the Project will refine the production technologies introduced in respect to soil, water and crop management. The field interventions identified for Phase II take first of all into consideration the work already carried out, and in particular the updated situation assessed through Project records and field survey. The first guiding principle will be to establish the new demonstration/extension activities following the modules that were originally tested in limited number or have been only partly adopted by the farming community. These plots will be established in new lands to be reclaimed and shall benefit, in particular, the new graduates in order to reduce the unemployment.

The activities will be developed with the following technical support:

A. International Centre For Advanced Mediterranean Agronomic Studies (IAM-Bari)

The International Centre For Advanced Mediterranean Agronomic Studies (IAM-Bari) is already involved in the provision of technical assistance services for the DSS Project in EIECP, executed by the National Water Research Center (NWRC). IAM-Bari has expressed its willingness to provide international technical assistance, technical services and training opportunities. As the Centre has a long-lasting partnership with Egypt, in particular with the Ministry of Agriculture & Land Reclamation and the Ministry of Water Resources & Irrigation, the Project will benefit from the results gained in the country as well as from the Mediterranean basin. In this latter context, IAM – Bari is dealing with the areas of irrigation and organic farming, providing all along specialized training for all the Mediterranean countries selected trainees. In addition, the experience acquired as partner of the DSS Project could facilitate the collaboration between the Project and NWRC as far as the water management related matters concern.

B. Specialized National Institutions

Specialized national institutions, such as Desert Research Centre (DRC), Agriculture Research Centre (ARC), University of Alexandria, etc. will be systematically involved. The Project, which cannot afford to handle the scientific part of the activities, will benefit from the scientific support and relevant experiences gained by these institutions. It goes without saying that the assistance of these scientific institutions to the Project is also essential for all the activities aimed to monitor and evaluate the field interventions. The collaboration between the Project and these institutions would be agreed upon their specific mandate and field of expertise. Their possible presence in Siwa with field units/research sub-stations will also be of great importance, both during the Project period and after its conclusion, in order to ensure continuity of assistance and updating of findings and results. It is important to underline that the involvement of the above mentioned institutions would not reduce the contribution of the relevant Departments operating in Siwa with to Project activities; the Departments will continue to provide their essential collaboration in term of extensive and qualified field expertise. This personnel will extensively benefit from the institutions in terms of new acquisition and professional development.

The Project will guide the planning and provide support, through the micro-credit managed by the SCDEC Association, for the execution of the plots following the cropping modules tested in first phase. An overview of the experience acquired and Modules tested is reported in Annex 3.

□ Module type 2: area of 4 fed with micro irrigation system (MIS)

It consists of a group of 4 farmers, each one holding 1 fed; they are sharing the micro-irrigation-system (MIS). The individual cropping pattern includes half fed fruit and half fed vegetable.

The suggested cultivation of the 4 fed would be as hereunder indicated.

- 2 fed fruits including:
 - Grapes 1/2 fed, with distance of plantation 2.5 x 1.5 m;
 - Guava 1/2 fed, with distance of plantation 5 x 5 m;
 - Pomegranate 1/2 fed, with distance of plantation 5 x 5 m;
 - Apricot 1/2 fed, with distance of plantation 5 x 5 m;
- 2 fed vegetables, having two crops per year with following patterns: Tomato (25 %), Cucumber (25 %), Potato (25 %), Squash (25 %), Green pepper (25 %), Water melon (15 %), Cantaloupe (10 %), Lettuce (25 %), Eggplant (25%).

The cultivation is done in twin rows with drip lines placed at 30 cm.

The cost of the module is estimated at about LE 30,000 including: land reclamation and preparation for cultivation (about LE 6,000); MIS, with irrigation pump (about LE 22,000); cultivation for annual crops (about LE 1,100); and planting of fruit trees (about LE 900).

The proposed number of modules type 2 to be established is two, equivalent to 8 fed, for an amount of LE 60,000

The module type 2 was implemented with one DP. Though the demonstration activity was limited, it appears that the module has not been properly appreciated by the farmers, in spite of the good technical design, due to their individualist attitude (it is recalled that 4 farmers have to share the irrigation system, which implies investment and operational costs to be shared). It is believed that by additional demonstration activity, the support of the appropriate staff and adoption of deeper participatory approach methodologies, these constraints may be reduced or eliminated.

The suggested fruit and vegetable crops may be replaced by another according to their adaptability to prevailing conditions and to their profitability. It is essential that the crops should match with the property of soil and water. As far as the salinity concerns, some of these crops are ranging from sensitive (apricot and citrus) to moderately sensitive (grape, tomato, cucumber, egg plant, potato and watermelon) to moderately tolerant (squash). Therefore the module should be located where water quality and soil salinity are suitable for these crops. However, taking into account these limitations, the Project will adopt the appropriate changes in cropping pattern in order to maximize the sustainable productivity of the module and its dissemination. In this respect the financial analysis of this module together with socio-economic study of its impact will be of

utmost importance to the household beneficiaries and ultimately to the local community.

□ Module type 3: area of 2 fed with MIS

The Module type 3 was introduced by the Project through two DP and one EP. This Module is technically similar, by design, to that of type 2, but different in term of number of participating farmers (2 instead of 4), farm size (2 fed instead of 4 fed) and unit cost (LE 11,000 per fed instead 7,500). The lower cost of Module type 2 is due to the share of the cost of the pump and other components of the MIS among 4 farmers instead of 2. As previously mentioned it is believed that the Project can motivate the farmers towards a more cooperative attitude among themselves. Therefore the Project will concentrate its effort on Module type 2, which is more economical and can enhance the participation of farmer community to common decisions.

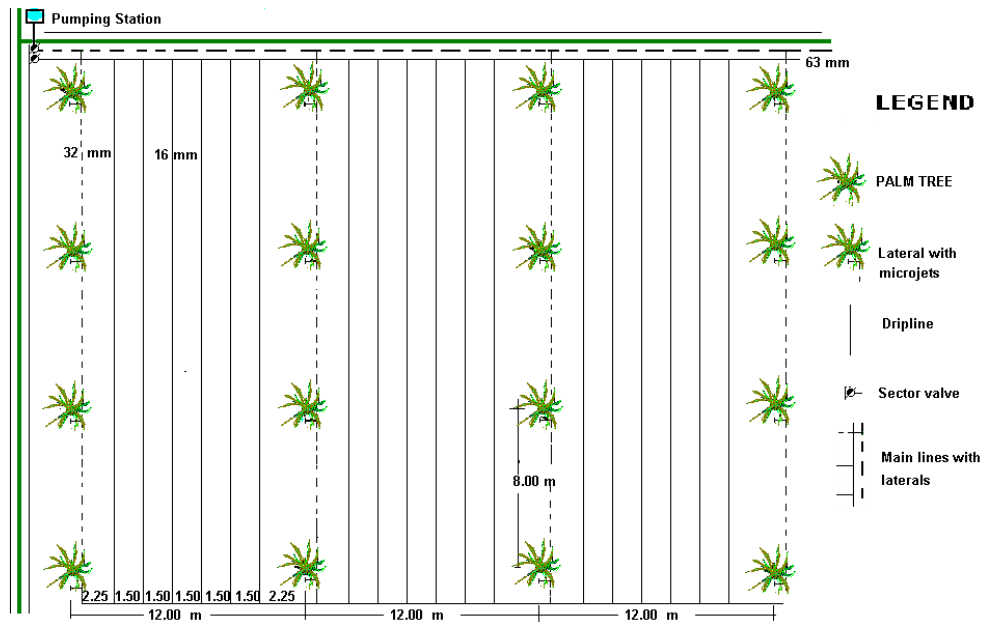
□ Module type 4: area of 4 fed with MIS

This module introduced by the Project was characterized by using micro-irrigation system shared by two farmers, each one holding 1 fed, and cultivating the traditional perennial crops (date/olive) intercropped with vegetables. Against one DP, the farmers have implemented five extension plots. This means that the rate of adoption of the model has been remarkable. Nevertheless, for Phase II the Project will introduce a Module of 4 fed (with 4 farmers), instead of 2 fed (with 2 farmers), in order to reduce the cost of the MIS, for the same reasons as mentioned before.

The 4 fed would be designed as hereunder:

- 2 fed of date palms intercropped with vegetables, as follows:
- Palm trees (pre-rooted) planted at a distance of 8 x 12 m, micro-irrigated;
- Vegetables, cultivated in rows at a distance of 1.5 meters, between the palm rows, irrigated by drip lines at distance of 30 cm.

Fig. 5 - Scheme of date palm and olive twin modules with MIS



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- 2 feddan of olive trees intercropped with vegetables, as follows:

- Olive trees (pre-rooted) planted at a distance of 8 x 12 m, micro-irrigated;
- Vegetables, cultivated in rows at a distance of 1.5 meters, between the olive rows, irrigated by drip lines at distance of 30 cm.

The proposed vegetable cropping pattern will allow to grow 2 crops per year: Tomato 50 %; Cucumber 50 %; Potato 25 %; Squash 25 %; Green pepper 25 %; Eggplant 25%.

The palm and olive trees are well tolerant to salinity and represent the traditional crops in Siwa. The introduction of vegetables in these modules provides cash incomes during the years, including the first years when the perennial crops are not yet productive. As mentioned for the previous modules, the different vegetable species may be replaced by other according to their adaptability to prevailing conditions and their profitability.

The cost of the module is estimated at about LE 32,000 including: land reclamation and preparation for cultivation (about LE 4,000); MIS with irrigation pump (LE 22,000) cultivation of annual crops (about LE 4,000), and perennial crops (about LE 2,000).

The proposed number of module type 4 to be established is two, equivalent to 8 fed, for an amount of LE 64,000

□ Module type 9: annual crops with improved irrigation system

It consists of 1 fed aiming at diversifying the production with cultivation of different annual crops and amelioration of water management system with construction of cement canal.

The Project established 3 DP. These will be regularly monitored and evaluated throughout the Project period. The Project will provide technical assistance to the farmers to adopt the best cropping patterns, which will include fodder, vegetable and field crops.

- Module type 10: improvement of old gardens of olive trees with amelioration of the irrigation system

The Project introduced 2 DP of one fed each. In spite of the fact that no Extension Plots had been established, the farmers have shown interest on this module. It is believed that it would be effective to intervene with simple practices that could rehabilitate the existing gardens. The intervention might also help in reducing the trend to reclaim more land. It is estimated that 40,000 olive trees, out of a total 90,000 plants, could be substantially benefited from rehabilitation practices. The main activity identified for the rejuvenation of old trees will be the pruning. This will be done by renewing the entire canopy using two methods as follows:

- cut off the old branches to give a new framework,
- cut off the old tree at the base and re-grow new sprouts.

Other cultural operations that will be executed include: ploughing, manuring, digging pits for replacing damaged trees with new seedlings, etc.

The Project will encourage the cultivation of fodder, vegetables and field crops (wheat, maize, sorghum, etc.) as inter-cropping, particularly in the first years of the re-growth period. The pruning will be regularly done on the new plantations, to regularize the production. As far as the irrigation improvement concerns, the lining of existing canals will improve water use efficiency and reduce water losses. Where seepage occurs, concrete canals will be constructed.

The total cost of the Module (of 1 fed) is estimated at about LE 2,300 if pruning and improvement of irrigation system are to be carried out (Module 10/a), while it is estimated at LE 4,300 if the damaged trees are to be pulled out, the irrigation system has to be improved and cultivation of annual crops is carried out (Module 10/b). It is expected that in most of the cases the pulling out of the damaged plants will partly occur. However, for budgetary purposes the intervention can be subdivided in two groups, as hereunder specified.

The proposed intervention will be implemented in 6 plots of 1 fed each, 3 with Module 10/a and 3 with Module 10/b, at a total cost of LE 19,800.

- Module type 10/c: improvement of old gardens of palm trees, with amelioration of irrigation system

The Project will adopt, for the old gardens with palm trees, an approach similar to the one followed for the olive trees. The main difference will be about the management of the plants; in case of palm tree no pruning will be executed. Instead, care will be given to pollination, through some relevant improved practices (use of bag, etc.). The damaged plants, to be pulled out, will be replaced by new seedlings. It is expected that a significant number of trees will be removed. The cost of the intervention has been estimated including about 50% of trees removed from the plots.

The proposed intervention will be implemented in 6 plots of 1 fed each, at a total cost of LE 27,000

- In addition, a lump sum amount of LE 122,000 will be disbursed, through SCDEC, to support the rehabilitation of old gardens and establishment of plant nurseries.

This activity, which would allow the rehabilitation of more than 100 fed. in three years time (the initial area, estimated at 40 fed. will be multiplied before the end of the third year, through the repayment of the loans), will be essentially considered an extension activity, rather than an applied adaptive research. The Project will devote its human resources accordingly.

More technical attention and expertise will be dedicated to the establishment of nurseries. The negative experiences learned from the 1st phase indicate that this business requires high commitment of the farmer, good soil and water conditions and high level of skill. Therefore, the Project will support the establishment of plant nurseries only if the beneficiary will fully respond to the above-mentioned criteria. It will be advisable, anyway, to start with the support to one nursery only.

The initial amount dedicated to each of the two above mentioned activities will be decided upon the requests of the beneficiaries, technically and financially assessed by the Project and SCDEC.

- Module type 11: Sand dunes fixation with forest wood trees, using irrigation water from drainage

The Project established one plot of two fed as Demonstration Plot, with the aim to stabilise sand dunes using biological measures, pumping water from drainage canals as irrigation. Thus reduction of water table level by re-using drainage water is also an objective of this module.

The salinity of drainage water is ranging between 3,000 to about 10,000 mg/L. Though sand dune fixation was not set as the first priority for the Project, yet sand dunes represents a threat for the Oasis, thus additional plots will be implemented in Phase II.

Before starting biological stabilization, some mechanical measures should be carried out to protect the young seedlings from the sand drift and the hazards of wind. These activities will include the building up of fences, utilizing local material such as palm leaves, around the plots or perpendicular to the prevalent wind conditions (from south and west) or building up a check board with the same material. Another measure includes covering of dune surface, in patches where the activities of sand movement is very high, by some chemicals such as bitumen, lubricated oil or cement. Such measures should be carried out at the source of the sand dune.

The Module, of two fed, will be prepared with MIS and equipped with pumping station, to pump water from the drainage canals to the sand dunes.

The selection of plant species for the agro-forestry system to be established will aim to enhance the environmental conditions and to be a source for wood and fodder. The plantation will be established according to the consolidated methods already in use in

the country. It is foreseen to grow the following species: *Acacia tortilis*; *A. saligna*; *Prosopis spp.*; *Tamarix spp.*; *Casuarina spp.*; *Atriplex spp.*, and *Eucalyptus*. The density will be around 460 plants/fed (3x3m between seedlings). The selection of the species will also be guided by the results and findings from the DP currently implemented.

It is proposed to implement two Demonstration Plots, of 2 fed each, managed directly by the Project. The location will be selected according to availability of drainage water and demonstration value. The estimated cost for the establishment of one DP of 2 fed is about LE 18,000. The operational costs, including two workers, diesel and maintenance cost of the equipment, are estimated at LE 25,000 over the Project period. Thus, a DP of two fed will cost about LE 43,000 over the Project period.

The activity over the 2 DP, for a total area of 4 fed, will cost about 86,000. Reduction of costs could be obtained by combining the plots.

□ Development of Organic Farming

Some organic farming techniques were introduced by the Project and a training course was also held on the subject. According to the general understanding, most of the olive and date production in Siwa are already chemical/pesticides free. This is not however sufficient for having a certified organic production, to be sold as such. Moreover, organic farming should be extended to annual crops and in particular to aromatic herbs. Certified organic products can earn a reasonable market in Egypt; of particular interest for Siwa could be the possibility of exports. The SCDEC association has already undertaken, with the support of the Project, steps to promote traditional Siwan products in Europe, initiating with the dates. The results have been encouraging and for the next cropping season it is expected that there will be a consistent export of dates, as well as aromatic herbs (karkade' and meant in particular). The possibility of having organic production will enhance the marketing possibilities and benefits.

Organic farming methods are location specific and require a period of adaptive research and planning before they are defined in full. Agricultural practices are considered with reference to specific local, ecological, economic and socio-cultural context. It is therefore proposed that 10 plots of 1 feddan each should be established as demonstration for organic farming. It is important that the selected farmers own some livestock, since organic manure is essential for organic methods.

During the three years of the Project, the Plots will be under "conversion" period, which will require specialised assistance and supervision from IAM-Bari, as well as the competent control and certification body will perform regular inspections.

The estimated cost for the implementation of the 10 plots/fed. over three years is LE 35,000, excluding irrigation costs as well as any other cost that is not related to the usual crop production.

□ Introduction of less known crops

Some crops like wheat, barley and maize are not cultivated in Siwa region. According to the tables of Maas and Hoffman (1977) and Maas (1984) wheat and barley, the

latter in particular, have a more interesting potential being tolerant to soil and water salinity. It has been reported that some plots of wheat (durum) have been cultivated, but the results were discouraging. It may be mentioned that both crops are less tolerant during germination and seedling stage and that could have been the reason for the failure. In fact there is a serious need to conduct some adaptive researches on these crops, before possible introduction on a large scale.

There is a possible potential for the introduction of non-traditional cash crops, in particular the Medicinal and Aromatic Plants (MAP). These crops are generally well suited to limited irrigation and organic management techniques. MAP are highly marketable, both domestic and internationally. Furthermore there exists high potential for adding value to MAP through post-harvest processing such as drying and packing. This could provide income-generating activities for the women. MAP are easily cultivated under organic methods. It may be recalled that Siwa is already renowned for the production of karkade, molokeya and mint.

Fruit trees are not tolerant to salinity, except date palm and olive. There are, in Siwa, two grape varieties (Siwa white and Siwa black) considered original from the oasis and well tolerant. These varieties could be propagated and possibly improved.

The plots will be implemented with the participatory farmers. However, the costs of the establishment will remain with the Project.

The proposed area for these trials is 20 fed. to be implemented over the three years, for an estimated cost of LE 100,000.

➤ **New Crop Production Activities for Phase II: synopsis.**

The new area proposed for demonstration purposes, adopting an applied adaptive research approach, amounts to 32 fed. with a total cost of LE 256,800. The participatory farmers will be 28, implementing four types of Modules; one Module will be managed by the Project.

The activity proposed for developing organic farming and new crops, adopting an applied adaptive research approach, covers an area of 30 fed. with a total cost of LE 135,000.

The activity proposed for the improvement/rehabilitation of old gardens and establishment of nurseries, adopting an “extension” approach, will cover an approximate area of 100 fed. comports an initial total cost of LE 122,000

The total new area proposed for crop production, to be established and reclaimed in new lands benefiting in particular willing and committed new graduates, will be of 162 fed. comports an estimated cost of LE 513,800.

The participatory farmers will share the cost of production. The level of the contribution and modalities of repayment will be decided in due time, taking into account the demonstration type of the activity, It is nevertheless essential that the selection of the farmers (in particular new graduates) should be done in a participatory

way with the community, and that **the SCDEC Association will disburse and administer the funds, collecting the micro-loans repayment.**

In addition, the Project will continue to provide technical assistance services to the established Demonstration and Extension Plots, in coordination with the SCDEC in relation to loans repayment. The Project will in particular facilitate the monitoring activities that have to provide the regular flow of information.

The Project cannot afford to support with its own resources large-scale investments on land reclamation schemes, as this is not within its scope. The Project will, nevertheless, provide technical assistance to the local community when aimed to undertake new land reclamation, adopting the improved models demonstrated by the Project.

It is worth to recall that the above-proposed plan of action has been prepared based on the best available information and the field situation found in 2002. However, the implementation of the plan will be subject to a prior assessment of the field situation that will be carried out at the Project inception time. The plan will be adjusted, in close coordination with the beneficiaries and the Implementing Agency, on the ground of the results and findings of the assessment.

4.4.1.1 *Monitoring of Natural Resources*

An internal monitoring system of natural resources system, which was not originally foreseen in the Project structure, was established during the last year of the Project. This internal monitoring system was designed to:

- Evaluate the impact of Project activities on the economical development and conservation of natural resources of the Siwa Oasis;
- Evaluate the impact of the economical development in the Siwa Oasis on the natural resources of Siwa;
- Evaluation of the biological diversity in Siwa.

Though the above targets have not been achieved, presumably due to the fact that the Project management had to put the monitoring system in force haphazardly, yet the monitoring has been initiated.

In Phase II, more emphasis will be paid to the internal monitoring system which will be acting from the very beginning of the activities in order to follow-up the previous treatment packages and the new activities. It goes without saying that the focused approach on adaptive research of Phase II calls for the adoption of an efficient monitoring system.

The monitoring of natural resources includes: *changes of soil properties across the years, water management, and crop production*. Besides monitoring natural resources, *financial analysis* will be done in order to evaluate the economic of the various interventions and their impact on the daily life of Siwan community.

- *Monitoring the changes of soil properties across the years*

The monitoring will be done by collecting soil samples from surface and sub-surface layers after the harvesting of each crop for annual crops and twice a year for the perennial crops, to be compared with the initial state of soil (before cultivation or at reclamation) to identify the effects of management practices on soil properties. Doing the analysis on the different seasons of the year, the effect of climatic changes is also incorporated.

Composed samples will be taken for each plot, from surface and sub-surface-soil layers, to be analysed. Soil properties will be determined such as available nutrients (total N, available P and K, micro-nutrients Zn, Fe, Mn, Cu) organic carbon, soil pH, EC, and exchangeable sodium percentage (ESP).

This will be done on 4 plots representatives of each modules. The total number of samples will be around 200/year. The estimated cost is LE 125/sample, with an estimated total cost, for the three years, of LE 75,000.

□ Monitoring water management

The monitoring will be done through the following activities:

- To observe the level of water table, through installation of piezometers, and to determine the salinity and pH of water table, through collection of water samples to be analysed with electro conductivity meter, pH-meter and soluble cations and anions. Recording of the level of water table will be done once a week, while the others will be analysed once a month.

The Project has already installed 30 piezometers in the area from East Timera to West Bahaildin while Desert Research Center (DRC) previously installed 33 piezometers. More piezometers will be installed to cover all the Project area in a rate of at least two piezometers at different depth per three fed. The monitoring will be conducted in close collaboration with DRC.

Data would be collected every two weeks by two persons (Bsc level) employed full time for piezometer reading and collection of water samples. The cost of the new piezometers to be installed (nr. 160) is estimated at LE 4,000.

- To measure the quantity of irrigation water applied using flood system, V-Notch, to be installed at the head of the fields. A quantity of around 40 V-Notch is required. The estimated cost of their installation is LE 5,000.

For micro irrigation system (MIS) the amount of water will be recorded using the counter at the source of water.

It is worth mentioning that it is also important to calculate the leaching requirements for each type of irrigation and crop. Leaching is an important technique to reduce soil salinity, therefore should be taken carefully under consideration, particularly for the micro irrigation system. Reference will be made, in order to calculate the estimated requirements per crop, to the relevant tables which will take into account the salinity of the applied irrigation water and the average soil salinity tolerated by the crop.

- To calculate water use efficiency from the amount of water applied during the growing season and the crop yields.

□ Monitoring Crop Production

This monitoring will include following activities:

- To evaluate the suitability of the crops in the prevailing conditions in term of some growth parameters (such as: plant high, number of leaves, number of fruits, growth period, harvesting time, etc.), pest and diseases resistance, and crop yields;
- To evaluate the development of crops in different modules (individual and intercropped);
- To evaluate the cropping patterns in term of crop rotation/soil fertility/pest, diseases and weeds control.

□ Monitoring Landscape Changes

In order to monitor the major changes on the landscape of Siwa Oasis, the photo-documentation method by taking photos from selected fixed points at regular intervals was introduced. The activity will continue.

□ Performing Financial Evaluation

- To assess the economics of various cropping patterns through financial analysis of inputs/outputs ratio, taking into account marketing opportunities and prices throughout the year. These analyses should be compared with the traditional farming.
- To assess the socio-economic impact of the new cropping patterns/farming systems on family income and the changes likely taking place on family labour force and livelihood, market labour force, etc. This will also consider the integration of livestock activities that will be emphasized as a source of organic manure and income for household.

➤ Monitoring of Natural Resources: synopsis

The direct costs to be met for performing the above-described activities are amounting to **LE 84,000.**

As it can also be depicted from the above description, to perform such activities it is required a skilled and trained Project staff. In addition, Collaborative Agreements will be signed with the specialized institutions already mentioned at point 4.4.1.

4.4.1.2 Income generating activities linked to Animal Production

The Project has supported income-generating initiatives from rural activities. During the first phase those were limited to animal production at household-level. Phase II will focus on more diversified and specific activities linked to animal production:

□ Livestock development

The development of livestock in Siwa Oasis is important as it provides the households with their animal protein requirements such as meat, milk, eggs, etc. It can also be integrated with other agriculture activities to increase the efficiency of utilizing the cultivated crops and their residues. Livestock production can play an important role as income generating activities such as milk and wool processing, to provide cash income throughout the year. The farmyard manure produced by livestock is of primary importance for the development of sustainable agriculture, particularly under the soil conditions of Siwa and in newly reclaimed land. At present considerable quantities of organic manure are purchased from Marsa Matrouh.

The most common livestock species in Siwa are goats, sheep, cows, buffalo and chickens. According to the recent information about livestock population, there are approximately 2,000 goats, 1,500 sheep, 1,000 cows and 100 buffalos, as well as small number in each household such as chickens, rabbits, pigeons, etc. These figures are much lower than those reported in 1991, which indicates that the livestock production has been progressively neglected. The animals are usually raised in a small number in/nearby the houses. These species are usually of low productivity and from the Project documentation it hasn't been mentioned of any improvement trials had been done up to date. Livestock in Siwa suffers from many constraints affecting its productivity such as heat stress, shortage of food, scarcity of good water, diseases, etc. Poor management and lack of experience are also affecting the livestock productivity.

It is felt that the Project did not pay the required attention to the livestock sector in the 1st phase. Nevertheless, the activities carried out by the Project were of a certain impact, in particular for the women. In fact, animal production has represented for the Project an income generating activity mainly based on the work of women, and primarily directed to the landless households, especially those without an active male breadwinner.

The implementation of this activity started during the second year. To contact and follow up the women, a lady extensionist was contracted by the Project while sporadic support was given by the local veterinary department. The limited support provided to the beneficiaries in terms of technical assistance was the main reasons of failures and poor management observed in many cases.

The Project supported a total of 45 beneficiaries in Siwa by giving them groups of animals in different number according to species. The Project provided the animals as follows:

- As much as 120 heads of goats were distributed to the beneficiaries. That number increased to 190 heads after the first breeding season. Out of 96 female progenitors, 11 died during the first period of breeding. On the other hand, the number of deliveries was 104 with a total of 153 offspring. Some beneficiaries have already approached the market with their animal production (27 heads have already been sold in the local market).
- As much as 40 heads of sheep were distributed to the beneficiaries. That number increased to 67 heads after the first breeding season and no mortality was recorded. The number of deliveries was 33 with a total of 37 offspring. Out of them 25 heads were sent to the market.

Both sheep and goats are appropriate to the prevailing conditions of Siwa, however it appears, from the foregoing observations, that raising sheep might be more suitable than raising goats. That probably due to the wool, which helps in the adaptability of sheep.

The livestock activity was extended, during the 3rd year, in El Gara where 44 beneficiaries received 23 cows and 170 goats (6 beneficiaries with 3 adult cows, 5 beneficiaries one cow each and 34 beneficiaries with 5 goats each). The distance from Siwa and the constraints mentioned above are seriously affecting the follow-up. The Project also distributed a group of 25 chickens to each of 12 selected beneficiaries. At present 4 beneficiaries still have 20 chickens; another 4 have about 10 chickens and the rest have 2 or 3 chickens. These data confirm that there is lack of follow-up activities.

It is deemed necessary to focus, in Phase II, on livestock production to respond from one hand to the willingness of the community, and on the other hand to achieve a proper integration between livestock production and sustainable agriculture development in the Siwa region

Some households are asking support for raising cows and buffaloes. These are more expensive (about LE 3,000 per head) compared with sheep and goats (about LE 400 per head), so the risk of losing the capital is much higher. On the other hand, raising cows and/or buffaloes requires much higher feed requirements in terms of quantity and quality compared with the small ruminants. Moreover, water requirements are often higher for milk producing animals and the quality of water in Siwa may affect milk produced from cows and buffaloes.

Sheep and goats are capable for surviving on crop residues and dry roughages. It is also possible to improve the milk producing capacity of goats by introducing Damascus goats to satisfy the household consumption.

However, the Project may also provide some cows and buffaloes. It would definitively be a challenge for the Project to indicate to the beneficiaries the most useful and profitable ruminants to raise in the prevailing conditions of Siwa.

The proposed strategy to be adopted to revitalize the livestock component, in collaboration with specialized institutions upon same guiding principles and on the same basis already mentioned at point 4.4.1 second paragraph, will include the following activities:

c) Establishment of a Livestock Demonstration Farm

Sheep and goat seem to be the most interesting animals to be raised in Siwa from the point of view of adaptability to the prevailing conditions. Taking into account the constraints previously mentioned, the Project will establish a Livestock Demonstration Farm (LDF) in order to test and demonstrate different animal husbandry techniques aiming to improve the management of these breeds. In addition the LDF will be also used for training purposes. The LDF will distribute improved male sheep (rams) and male goats (bucks) for improving the existing breeds of the shepherds and household beneficiaries. The LDF will also: (i) demonstrate the importance of adopting veterinary care packages to look after animal health and productivity, (ii) used to propagate economic and balanced rations utilizing the local forages and by-products, and (iii)

demonstrate some income generating activities such as milk and wool processing in a simple way, suitable to the capabilities of the inhabitants.

The LDF will be established to contain 50 ewes and 5 rams for sheep flock and 50 does and 5 bucks for goat flock. The Project will purchase improved local Barki sheep and goats from the local market as well as some Damascus goats from research institutes to increase milk production. These animals will be subject to the improved management in terms of lambing, weaning, fattening and mating (artificial insemination could also be introduced, as it has proved to be a cheaper and an effective method for introducing new blood to increase the productivity of the local breeds).

The expected development plan of the farm would be as follows:

- 1st year: establishing flocks of sheep (50 ewes and 5 bucks) and goats (50 does and 5 bucks).
- 2nd year: the flocks will be increased up to 60 ewes, 60 does, 5 rams, 5 bucks in addition to fattening of 30 animals.
- 3rd year: the flocks will be increased up to 75 ewes, 75 does, 5 rams, 5 bucks in addition to fattening of 50 animals. The increment will be continued thereafter.

As above mentioned, part of these animals will be sold to the farmers.

The LDF will be established over an area of 1 fed, which will include a sheltered area of 200 square meters to protect the animals. Two rooms of about 10 x10 meters each will be constructed as meeting and training halls, to demonstrate various Project activities such as formulation of rations, wool and milk processing, etc.

The following are the estimated costs for the LDF during the three years:

Cost of animals: LE 400 x 110 =	LE	44,000
Cost of medicines, vaccination, etc.	LE	6,000
Cost of Renting land	LE	15,000
Construction	LE	30,000
Farm Equipment	LE	15,000
Feeding requirements	LE	60,000
Manpower (4 persons) x LE 200/month	LE	28,000
Miscellaneous	LE	25,000
Total	LE	<u>223,000</u>

Feeding of animals will be mainly on local forages, crop residues and by-products. Alfa alfa is the most common forage grown and available throughout the year. Valorised palm dates and seeds could also be used in animal feeding, in addition to other crop residues from olives, cereals, etc. Some treatments will be introduced to increase the palatability and nutritive value of this feedstuff. These techniques, in addition to the other managerial practices adopted in the LDF, will serve as a demonstration and training to the interested farmers in order to disseminate the appropriate technologies. In

addition the LDF will provide, at reasonable price, rations, medicines, salt blocks, etc. to Siwan community.

The administration of the LDF will be entrusted to SCDEC association. The association could also provide these services, including animals, under the micro-credit conditions. Under the SCDEC administration, the LDF is poised to sustain on the long run.

d) Distribution of Small and Large animals to Beneficiaries.

The Project will procure some improved sheep and goats to be distributed. The only aim of this activity is to demonstrate directly to the households how to raise the animals on better conditions.

The number of animals to be distributed, on a flock of 10 females, will be 100 (to 10 farmers), for an estimated total cost of LE 40,000.

As previously mentioned the Project will also procure some improved buffalos and cows. Firstly, training will be done to transfer the required knowledge to the beneficiaries involved in this activity that will be carried out mainly by women. According to the prevailing conditions of Siwa, each household raising the animals in the house or near the house can manage one or two cows. However, if they have enclosed yards near the house with considerable quantities of fodders available, they can keep 5-15 cows or buffaloes.

On the grounds of above situation it is proposed to distribute some buffaloes/cows for demonstration purposes to the households beneficiary, selected from the community and providing that they have a proper place and feed stuff to keep the animals. The follow up and monitoring will be carried out regularly and has to provide the feed back for all community and the technical services.

The proposed number of cows/ buffalos to be distributed is 40, for a total estimated cost of LE 160,000.

The beneficiaries receiving the small as well as the large ruminants will reimburse to the SCDEC association part of the costs met by the Project. The financial conditions will be agreed between the Project and the Association.

c) Development of Small Agro-Industry for Income Generating Activities

An important aspect of livestock development is the processing of some products such as milk and wool. The Project, through the Association, will provide small loans to buy animals and small capital inputs such as hutches or small-scale equipments for milk, wool and food processing activities. These loans will be repaid into the revolving fund that will be allocated for similar activities to more beneficiaries. The following are some small-income generating activities envisaged:

- *Making carpets.* The Project might help the beneficiaries to better utilize the wool available to them by processing it into yarns and then into carpets. Spinning wheel is regarded as a simple and effective machine to produce yarns from the raw wool.

The Project will conduct training courses for the women beneficiaries to enable them to carry out this activity.

The cost of one spinning wheel is about LE 2,000 and a number of 10 will be distributed to the selected women beneficiaries at the total cost of LE 20,000.

- *Milk processing.* The Project will provide small equipment to better utilize the milk produced from buffalo, cows and goats for processing to products such as yoghurt, cheese, and butter for household consumption and possibly for marketing. At present only few practices are known to deal with such processing. The Project will conduct training courses for the women beneficiaries to enable them to carry out this activity.

The cost of such equipment is about LE 3,000 and a number of 10 will be distributed to the selected women beneficiaries at the total cost of LE 30,000.

d) Development of Species like Poultry, Rabbit, Pigeon

The Project will technically assist the Association on carrying out the activities related to these species, which are characterized by requiring less capital compared to large animals and faster repayment of the loans, but require a capillary follow-up activity directly to the household.

□ Fish Farms development

The Project has undertaken, in the last year of the activities, some fish farming. Training was imparted and the implementation was undertaken during the extension period. It is anticipated that a priority need for Phase II will be the establishment of a nursery, for Tilapia and other species. Some new poles may also be established, to extend the demonstration activities around the oasis. Fish farming could represent a new interesting activity for Siwa. Fish farming will likely be part of the core development of economic activities and the cost-sharing participation of the beneficiaries (micro-credit) will be agreed with the Project and SCDEC. To cover the expenditure for nursery (LE 50,000) and 10 poles (LE 70,000), an amount of LE 120,000 has been budgeted.

➤ *Income generating activities linked to Animal Production : synopsis*

The cost of the income generating activities originated from animal production has been budgeted at LE 593,000. As it can also be depicted from the above description, to perform the activities, a skilled and trained Project staff is required. In addition, Collaborative Agreements will be signed with the specialized Institutions already mentioned at point 4.4.1.

4.4.1.3 Training and extension activities

Training activity is an important component of the Project. This will be addressed to both Project staff and local community members, to provide the proper level of knowledge in order to ensure an adequate transfer of technologies and the long-term

sustainability. The training activities will be extended to the younger generations of Siwans, with particular care to gender. In order to be more effective, the majority of the training will be conducted in the field, demonstration farms and homes, giving due respect to local traditions and customary habits. Training will cover various subjects, such as soil and water management, crop and animal production, socio-economic and agro-industry.

Extension will go as close as possible to the field. The active participation of the farmers will be sought giving advices and recommendations in one hand, while on the other hand; findings and particular problems will be transferred to the specialists. As far as the small income generating activities concern, the lady extensionists will act as organizers and trainers because these activities are mainly carried out by women.

A Need Training Assessment will be carried out at the inception stage, with the guidance of MAI-Bari, in order to plan the use of resources, both human and financial. The cost of the training activities has been estimated at LE 100,000.

4.4.1.4 Collaborative Agreements with Specialised Institutions/Organizations

As previously mentioned, Collaborative Agreements will be signed with specialised Institutions, Universities, Research Centers, etc. in order to acquire the required scientific support. Similarly, these institutions will avail the opportunity to operate at field level with the participating community, assisted by the qualified human resources of the Project.

The amount allocated to cover the expenditure of the Collaborative Agreements to be signed with the Institutions/Organizations for the development of sustainable agriculture activities has been estimated at L.E. 180,000.

In addition, a Laboratory will be established at the cost of LE 76,500. While qualified technicians of the Desert Research Center (DRC) will ensure its technical and operational management, the financial administration will be handed over, totally or partly, to SCDEC association.

In order to ensure the sustainability of the Laboratory, the Project and the beneficiaries will pay the services received, at preferential rates. The rationale of this operation is that the Project, the various Departments and DRC will take great benefit of an essential facility, which is not available today in Siwa. The detailed list of the equipment and estimated costs of the Laboratory are shown herewith:

Units Number	Item	Unit Cost LE	Total Cost LE
2	PH Meter Direct readout of pH Range 0-14 pH Resolution 0.1 pH Accuracy 0.1 pH Auto calibration with 4,7, 9 buffers 220-240v, 50HZ	5,000	10,000
2	Conductivity Meter Automatic temperature compensation Five measurements range (0- 20, 0 – 200 micro siemens) (0- 2, 0- 20, 0-200 millisiemens)	5,000	10,000
1	Electronic Balance Max. 3kg d=0.1g	2,500	2,500
1	Soil Sampling kit Core sampler for surface and subsurface sampling, including hammer attachment	10,000	10,000
1	Shaker with flask holder	3,500	3,500
1	Electronic Field Tensiometers Kit for different depths (15,30,45,60 cm) 20 units each.	20,000	20,000
1	Oven with fan Temperature range from 0-200 C	4,500	4,500
1	Vacuum Pump	2,500	2,500
1	Hot Plate	3,000	3,000
1	Distilled Water Apparatus 10 Lt./hr.	5,500	5,500
1	Stabilizer	5,000	5,000
	T O T A L L.E.		76,500

4.4.2 Activities for the strengthening of the SCDEC/Siwan Association

4.4.2.1 Introduction

To promote and to support the development of sustainable agriculture, in particular for reclaiming the land, diversifying the production and undertaking livestock activities, the Siwa Environmental Amelioration Project (SEAP) established a Revolving Fund (RF) that was initially implemented through the traditional local entities (Tribal Committees and Village Councils). Under this arrangement, the 13 tribal/village committees of Siwa Oasis received a fund consisting of agricultural kinds. The beneficiaries, selected by the committees, signed loan contracts with the tribe of their origin. It was conceived that the

funds, replenished through the repayments of beneficiaries, should be managed as self-sustaining revolving funds among the tribes/villages of each committee.

In August 2000, the Steering Committee revised the approach adopted for the management of the Revolving Fund. Due to the fact that the tribal/village committees are not recognized as legal entities by the law, it was decided that the SEAP has to:

- support the creation of a local NGO to manage the RF on a legal basis,
- re-structure the operational mechanisms of the RF,
- establish a specific unit within the SEAP to deal with the RF as an interim solution.

It is against this background that a Revolving Fund Unit (RFU) took up its activities in September 2000. By January 2001 the Siwa Community Development and Environmental Conservation Association (SCDEC/Siwan Association) was created and registered as a NGO, at the Ministry of Insurance and Social Affairs (MISA). The association was therefore eligible to take over the RF.

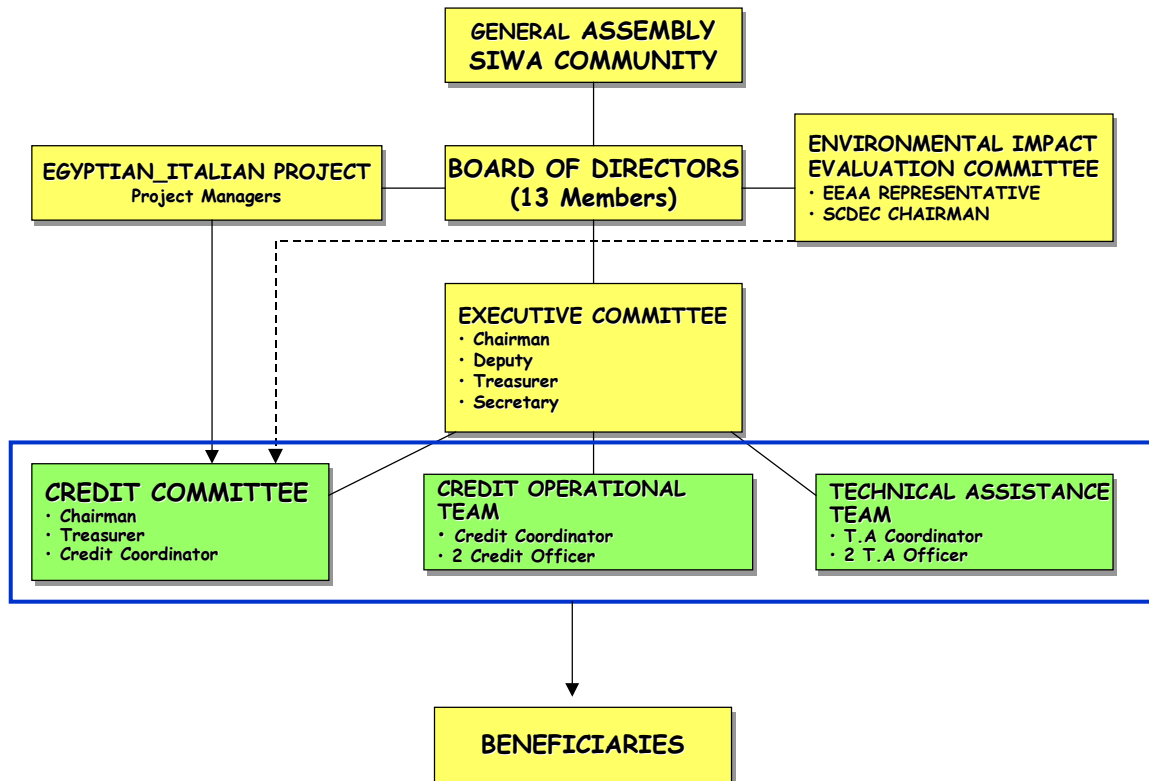
While the Association was entrusted to mainly deal with the management and the administration of the 13 Revolving Funds, inter-acting with the beneficiaries and the Committees, it was also deemed essential to formalize the links between the Association, acting as a central body, and the 13 Committees To this end, a General Agreement was signed between the Association and the Committees, which substantially states that the Committees entrust the management and the administration of their Revolving Funds to the Association.

Besides the functions of administrative body mentioned above, SCDEC has also been entrusted, on the basis of the priority needs identified, to promote and to handle the following services for the benefit of the Siwan community through:

- provision of credit for establishment of micro-enterprises,
- provision of technical assistance, monitoring and follow-up,
- development of trading for the agricultural production, and
- creation of agro-industrial joint ventures with private sector.

The institutional structure of the SCDEC is shown below:

SCDEC FLOW-CHART



Intensive capacity building has been provided to the Association on the institutional, operational and management fields, involving its staff, the Board of Directors, the Executive Committee, and the tribal committees. Regarding financial matters, training was imparted in the design and use of an accounting system for the credit scheme. This included the production of a manual on the administration and management procedure of the micro-credit system in Siwa, as well as training courses on computers to effectively utilize the "Loans Manager 2000" software.

It is also worth to mention that the initial training focused on NGO advocacy, mission and purpose, facilitating the understanding of the Association about empowerment of local community. Another important training was provided to Association and SEAP staff, and to the Committees, about implementing and monitoring the field activities related to the loans. A total of 115 days of training have been held, with a total attendance of 554 persons from the Association and beneficiaries.

Through the training received, the skills of the NGO/RFU staff/Tribes in the fields of administration and management of micro-finance operations has been strongly enhanced. The trainees perceive the credit system as an efficient tool in the hands of the Association to support the development of Siwan Community. An evaluation of the training was assessed checking:

- the positive reaction of the trainees to the training contents.
- the acquisition of relevant knowledge through the training experiences.
- the change in the behavior of the trainees.

4.4.2.2 Repayment of the loans

With regards to the repayment of loans received by the participating farmers for establishing the demonstration plots, the nurseries, the extension plots and to implement livestock activities, the Project faced an intricate situation.

Originally, it was envisaged that repayments of loans should start with the first harvest of agricultural produce, or the first income generated after the provision of loans. These loans were provided in cash and in kind, but the repayments had to be in cash (excluding the special case of animal husbandry contracts for El Gara, to be repaid in kind). There was a general consensus among beneficiaries and tribal/village committees that the first harvest would provide insufficient resources to start the repayment. The initial repayment schedules were consequently postponed. It is worth to mention that the collection of installments from beneficiaries falls under the responsibility of the tribal/village committee, which had chosen the beneficiaries. The RFU organized systematic meetings with the beneficiaries through the monitoring and follow-up system, but did not possess any direct leverage to influence them for the timely repayment of loans. Thus, RFU was only informed by the tribal/village committees about payments or failures.

The majority of beneficiaries have been unwilling or unable to repay the installments, even after the rescheduling. Production and/or marketing problems are the most frequent reasons claimed by the farmers to justify their inability to pay. While it is evident that the tribal/village committees failed to adequately press the beneficiaries when those were simply unwilling to fulfill their commitment and/or to involve the Project/RFU in a more close way of collaboration, in certain cases the tribal/village committees directly cashed the repayment.

Repayments have only started for Demonstration Plots, Nurseries and for Animal husbandry contracts in Siwa. Out of 88 beneficiaries under these contracts, 21 have repaid the full amount and 11 part of this. The total maturity loan overdue under these two modules amounted (year 2000) to LE 54,117, out of which 13,648 LE have been repaid and LE 40,469 was due, that means a repayment rate of 25%. The situation remains almost unchanged, as shown in [Annex 4](#).

4.4.2.3 Constraints encountered managing the Revolving Fund

Several constraints have hampered the establishment of a self-sustaining Revolving Fund. The obstacles were mainly related to the original design of the funds, their management at the level of tribal/village committees, and the cultural traditions in the Siwa Oasis. It is essential to analyze them, in order to properly plan the Phase II of the intervention.

While managing the portfolio of the RF, several constraints were encountered: (i) technical problems affecting the yields of the crops resulted in borrowers claims to withhold the repayments, in accordance with Art. 8 of the loan agreement, (ii) receipts were not signed by the beneficiaries at the delivery of further inputs, (iii) most of the borrowers refused to undersign either the revision or any modification to the original contract, including the demonstrations completed using less inputs.

At the time of the preparation of the present document, only few erratic financial analyses were available on the crop production modules and related issues linked with the loan repayments. Thus the Task Force has conducted an *Economic Study* analyzing the data made available in Siwa by the Project officers. It is worth to mention that as far as the assessment on Crop Economic Balance concerns, the work has been done following the guideline structure of the Socio-Economic Report prepared at the inception of the Project, updating the data with the actual inputs and outputs. The Study attempts to understand also the reasons for the low recovery rate of the loans. The Economic Study is enclosed in Annex 5.

As previously mentioned, it falls within the responsibility of the tribal/village committees to collect the repayments. Thus, in case of failure to repay, the concerned tribal/village committee should act, as it considers appropriate. The collateral for loan agreements concerning sustainable agricultural activities is, according to Article 9, the land on which the agricultural intervention took place. But depriving the farmer of his land in order to enforce repayments would be, within the Siwan cultural context, a measure considered too drastic. It is also believed that due to the fact that several members of the tribal/village committees were among the beneficiaries, the pressure put by the committees on the defaulters was more or less symbolic.

Another difficulty was the time spent on discussions for reaching final agreements. This was experienced at different levels: among and between members of the Committees, among the members of the Association and between the Association and the Committees. Furthermore, it has been experienced that even after signing the agreements some issues were repeatedly reopened. Though these lengthy discussions are part of the decision-making process among the Siwan community, it become sometime difficult for the Project to accept such behaviors when they are linked to managerial and administrative obligations.

Finally, the Project staff didn't work always in close coordination, as required, and some shortcomings were not tackled as needed.

4.4.2.4 Approach to be adopted for Phase II

It is within the above described institutional framework and situation that the SCDEC association has taken over, at the end of the three years Project, the Revolving Fund and related activities. SCDEC has been provided with an independent office and it is managed as an autonomous entity within SEAP, which will only provide external support. The Association should express the needs and concerns of the whole community, as well as should serve as a focal point for the Siwan community.

The target groups of the crediting scheme also comprises low-income persons working in different sectors of the Siwan economy who want to improve the quality and quantity of their productive outputs. Successful applicants for a credit will be those who will demonstrate their capacity to efficiently manage their limited resources and who will show a commitment to use credit facilities for improving their economic conditions.

The promotion of socio-economic and cultural development of the Siwan community also require further efforts for enhancing social equity and empowering marginalized group. Within the hierarchical, male dominated structure of Siwan society, the women are largely excluded from access to financial services. The micro-crediting scheme could therefore pay particular attention to gender issues, aiming at supporting low-income women in developing sustainable productive activities.

The Siwan community has, so far, little institutional capacity and experience in countering the adverse environmental and socio-economic trends it is facing. SCDEC has received initial training, assistance and equipment in order to fulfill its tasks. The Association is handling a small fund for micro-credit activities released by the Project during the extension period.

4.4.2.5 Activities

A tentative and non-exhaustive list of key activities is outlined below according to the specific objectives and outputs identified for the Project:

Specific objective 1. Strengthening the institutional capacity of the local community - represented by SCDEC - to plan, manage and monitor credit activities, which are aiming at the improvement of the economic, social and environmental living conditions in Siwa Oasis.

Output 1. SCDEC effectively manages and monitors the local credit scheme that supports socio-economic and environmental sustainable development initiatives:

(1.1) Within the framework of the Committee Portfolio Management (CPM), following main activities will be conducted: (i) administration and management of the outstanding loans, (ii) support to each Committee in organizing and implementing the recollection of the outstanding installments, (iii) management of the new disbursing cycles.

The line of action will be the following:

(i) According to the General Agreement signed between the SCDEC and the Committees, the Association will manage and administrate the outstanding revolving funds that the Project has granted to each Committee through the implementation of agricultural interventions (establishment of demonstration plots, extension plots, and nurseries, and animal production activities). The total amount of this fund is LE 1,880,815, shared among the 13 tribal/village Committees, depending from their size (numbers of beneficiaries belonging to the tribe/village). The Association will provide a management and administrative service to each Committee for their revolving funds, which will include the following operations:

- Availability for each Committee of a regular postal account for deposits and withdrawals of the funds. The SCDEC bank/postal account is organized into 13 sub-accounts in the name of each Committee. Therefore the Committees have the possibility to have a safe and regular place where to keep their funds;

- Administration and management of the outstanding loans. SCDEC will support each Committee in organizing and implementing the recollection of the outstanding loans' installments. This means that SCDEC will undertake, jointly with the Committees boards, all the necessary steps for the compliance to the loan agreements. This activity will be done on a systematic manner by a monitoring and revision system of all the outstanding loans, through:
 - regular visits to Committees and borrowers;
 - record-keeping, both at central level (SCDEC) and local level (Committees' Boards): SCDEC will train each Committee on how to keep and up-date records on the position of each borrower, providing and using functional formats for record keeping. SCDEC will periodically monitor this activity of all the Committees.
 - assistance for solving the problems both of technical nature (i.e. agricultural technical problems, since the loans have been granted in agricultural inputs strictly linked with particular activities introduced by the Project) as well as of administrative origin (i.e. the revision of loan agreements according to revised value or quantities of the inputs provided), in order to adjust all the pending situation according to the rules stated in the signed contracts;

(ii) Awareness and information activities directed to the borrowers, concerning the installments maturity schedule to be respected, the “rules of the game” of the outstanding loans (i.e. if they do not pay, they will be excluded from future new loans), the procedures of repayment and access to the services of SCDEC, the recollection of installments, through the Committees, and their deposit on the postal account and sub-accounts.

(iii) Management of new loans granting cycles: SCDEC will manage the instalments gradually recollected into the 13 funds. According to the availability in each Committee fund, SCDEC will grant new loans to applicants belonging to the correspondent Committee. The new loans will be granted according to the normal micro-credit principles (small amount and short-term loans, with narrowed instalments maturities, for working capital)

Specific objective 2. Firmly establish a self-sustaining micro-crediting mechanism managed by SCDEC

Output 2. Establishment of a well-functioning and self-sustaining micro-crediting mechanism managed by SCDEC:

(2.1) Perform all the operations required to establish and operate the Micro-credit Association Service (MAS).

SCDEC will provide a micro-credit service to credit-worthy Siwan micro-entrepreneur applicants. This new credit portfolio, generated through a fresh capital injection belonging to the whole SCDEC, will be granted through micro-lending operations, independently from the tribe or village of origins.

The introduction of new capital and consequently of the new credit service is desirable for two main reasons: firstly, Siwan micro entrepreneurs still do not have an appropriate micro-credit service, which supplies working capital in an efficient and sustainable way.

This is an evident need for them and it is an effective tool for economic development of private micro-enterprise in Siwa, and secondly, it is very much synergic for the restoration of long-term outstanding portfolio.

The SCDEC's basic methodological approach for the administration and management of micro-crediting services to Siwan beneficiaries will be based on three main guiding principles:

- effective operational and functional organization,
- provision of demand-driven micro-credits. This means that the Association aims at satisfying the real needs of the community, through appropriate services,
- pursuing the self-sustainability.

Loan methodologies and procedures

For both credit services the Association should adopt the same management methodology. The Project has already designed loan disbursement procedures that have to be considered as a starting-point for the new activities implemented by the Association.

The micro-credit services will have the following characteristics:

Location of Services: Siwa Oasis

Target Group: Micro-entrepreneurs (1-5 employees)

Typology: individual loans in cash for working capital

Interest: none

Administrative charges: on each loan SCDEC will charge an administrative fee to cover the administration costs. The fee covering the period of the loan must be paid in advance (at loan disbursement).

Loans typology

Cycle	Loan size	Length	Administrative fees
1	350 – 2,000 LE	12 months	1% monthly
2	350 – 3,500 LE	12 months	0.9% monthly
3	350 – 5,000 LE	12 months	0.8% monthly
4	350 – 7,500 LE	12 months	0.7% monthly

Criteria for eligibility: (i) positive credit history, (ii) existing enterprises or activities in the following sectors: agriculture, livestock raising/breeding, manufacture, services, and retail business trade.

For both the CPM and the MAS, loans will be strictly linked to socio-economically sustainable and environmentally friendly activities; only those activities which do not

have a negative impact on the socio-economic structures of Siwa and its environment will be financed. Special attention will be paid to these conditions during the evaluation and inspection of loan requests and follow-up activities. Furthermore, SCDEC activity is subject to periodical general assessment of the Environmental Impact Evaluation Committee (EIEC).

Requirements for loan applicants: (i) identity card, (ii) lease or ownership contract for the enterprise site (if available), (iii) work permit, license (if necessary), (iv) guarantee and collateral.

Specific objective 3. Establish a Window service of technical assistance for Siwan community

Output 3. The Window service has been established, delivering technical information, technical booklets and preparing feasibility studies. There is also broad awareness within the community about the existence and the opportunities offered by the micro-crediting mechanism and the window for technical assistance:

(3.1) Perform all the operations required for the establishment of an efficient Window (technical assistance) service.

Besides offering micro-crediting services, the Association will also provide technical assistance for beneficiaries, as well as for the Siwan community at large, in support of socially, economically and environmentally friendly sustainable development activities.

In the field of sustainable agriculture, Window represents the end-result of the systematic collection and dissemination of the findings, experiences and lesson learned from the activities carried out by the SEAP. Window will be the best means to assure the diffusion of useful information and consultancies on production methodologies and new agriculture patterns, tested on the field and proved to be successful from socio-economic and environmental point of view. In addition to the support received by the staff of SEAP, the Association will also avail the full time service of two experts on sustainable agriculture made available from the Department of Agriculture of the Governorate of Matrouh. The organization of Window service is envisaged as follows: provision of technical assistance on productive activities to applicant micro-entrepreneurs of Siwa, delivering technical information and technical booklets, preparing feasibility studies on request.

Through the Window service, it will also be possible for applicant micro-entrepreneurs to book consultancies on the field, which will be provided through a network of extensionists contracted by SCDEC. Seminars and public events on particular issues (of particular interest to the micro-entrepreneur's community, sensitized by the front-line officers) will be organized. Thus, the main knowledge built through the Project will be spread in Siwa in an efficient and sustainable way, since it will be demand-driven.

To have access to Window services, an annual "membership fee" (indicatively 20 LE) will be charged to the applicants. Though Window will be "cross subsidized" by the credit functions of SCDEC (CPM and MAS), the fee would mainly represent a symbolic charge towards sustainability.

Specific objective 4. Establish agro-industrial joint ventures with the private sector and develop marketing and sales opportunities for the Siwan community

Output 4. Agro-industrial joint ventures with the private sector are established. Marketing and sales opportunities for the Siwan community are enhanced in a coordinated manner:

(4.1) Perform all the activities required to establish agro-industrial joint ventures and to develop trade and marketing initiatives.

A fund of LE 300,000 was earmarked to the Siwan community during the first phase of the Project with the purpose of establishing an olive-table pickling processing unit. Eventually it was concluded that a joint venture should be established with a private entrepreneur in order to build a processing unit of a larger size. However, the agreement could not be finalized with the identified entrepreneur. Meanwhile alternative agro-industrial endeavors were identified and may be implemented during Phase II. The Association will reinvest the incomes generated through such activities in a Community Investment Fund, which will provide the financial resources for further activities.

Representing the Siwan community, the Association will organize and maintain economic relations with the private sector to enhance the marketing and sales of Siwan agricultural produce. In co-operation with specialized NGOs the Association will also develop “fair trade activities” aimed at enhancing the sale of Siwan products in Egypt, as well as abroad, in an equitable way. Moreover, this kind of trade would give the opportunity to SCEDC of further support in terms of business opportunities and professional enhancement. This trade, which could consider at first instance products like palm date, mint, karkade which are well renowned, could also be interested in the marketing certified organic fruits and vegetables.

Up to the present, Siwan farmers have rarely been organized in the sale of their produce, in Siwa as well as outside. This appears to be an essential requirement, as it has been experienced that certain fresh products in certain periods can saturate the local market. It is worth to mention that provision of fruits and vegetables is essentially made by Siwa market from the delta region, at usually reasonable prices, and the Siwan farmers have to compete with these imports.

Specific objective 5. Support the empowerment of low-income Siwan women and marginalized groups in order to enhance their social status as well as their families' living standards conditions.

Output 5. More social equity and empowerment of Siwan women and marginalized groups are pursued through their access to micro-crediting scheme. Women and marginalized groups become important actors, within Siwan association framework structure, of initiatives promoted by NGOs on handicraft production:

(5.1) The activities to be performed for achieving the objective are similar to the activities already described at point 2.1. However, particular care will be placed in handling the issues as gender sensitive, which requires more efforts in understanding the problems and more flexibility in dealing with the administrative and financial

procedures. It is nevertheless believed that the results from these categories of beneficiaries will definitively be impressive if the Project will be able to deal the matter with the required competence.

The women will also benefit from the new interventions that have been planned, in particular the processing of milk and wool described at paragraph 4.4.1.2 as Income Generating Activities linked to the development of small agro-industry.

4.4.2.6 Support required for strengthening the Siwan association

On the basis of above facts, lessons learned and considerations, the following measures will be undertaken:

- 1) The SCDEC association will be strengthened through support on human, physical and financial resources. The Association, which will administratively and managerially relay on its own operative structure, will be assisted by SEAP as well as by the other relevant Departments in order to respond to all specific technical needs in term of expertise and physical coverage. The Association will have also access to vehicles managed by SEAP, when its own simple means of transport will be insufficient.
- 2) The Association will receive initial financial support to cover its running expenses such as the incentive scheme for the payment of its credit operational team, WINDOW services, etc. until these costs are covered through the administrative charges levied for the micro-crediting services and trading activities.

According to the estimates prepared by RFU (Annex 4 - Income Statement Table) the amount needed to cover the operational and running costs for the first years of the Project are estimated at LE 86,000, which will be accordingly provided.

- 3) The RFU also estimated (Annex 4 - Balance Sheet Table) that SCDEC will need a fresh capital injection of LE 650,000 for the Micro-credit Association Service (MAS) and the Community Investment Fund (CIF). It is the firm opinion of the Task Force that fresh capital should not be granted unless the repayment of overdue is regularized. The claims of the borrowers should anyway be objectively assessed, if they are pending. By repayment of the overdue, a significant amount of revolving fund will be available for disbursing the new grants. The tribal committees should anyway allow the Association to utilize this capital for micro-credit operations.
- 4) It is instead proposed to utilize the amount of about half million LE expected from the recovery of exchange rate losses already approved by DGCD, in support of agro-industry and marketing.

As priority measure, a date factory under full control of SCDEC will be established, in consideration of the export opportunity represented by the

European market. The plant will be eventually equipped with cold-room facilities that can be also utilized for fresh vegetables.

If overdue loans will be collected by SCDEC, the funds could also be devoted as new capital for establishing either processing plants or marketing facilities. The processing plant units that can be established include: dairy milk (for butter and cheese), olive oil, olive pickling and date syrup.

With the collection of overdue, market facilities could be provided to the Association for commercializing fresh vegetables for the summer markets of Marsa Matrouh and Mediterranean coast, which are recording huge presence of tourists. In this case, cold trucks, selling points and other related facilities could be provided.

- 5) As it has been anticipated above (under the section “Development of Sustainable Agriculture”) all the new activities executed under demonstration/extension purposes will financially benefit the SCDEC association. As it has been clearly pointed out, the cost-sharing percentages of micro-credit disbursed and modalities for recovering the contribution from the participating farmers should be agreed between the beneficiaries, the Project and the Association. The rigidity that was applied during the first phase of the Project shall be avoided. It must be recalled that the new activities are principally implemented with an adaptive research approach, though they will also satisfy the demonstration and extension purposes.

For indicative purposes only it is worth to mention that the total value of the above-mentioned activities, which would be transferred to SCDEC portfolio, is of the tune of *L.E. 1,108, 000*.

- 6) SCDEC has been identified by the Italian NGOs (R&C and COSPE) as the local organization for managing the micro-credit component of their project, that mainly focuses on handicraft (women in particular) and ecotourism. This component is worth an amount of about one million LE. In order to avoid duplication and overlapping, the Project will direct its efforts to other priorities, such as Sustainable Agriculture as above detailed.
- 7) Training

In addition to the general training provided by the Project, the Association and the tribal/village Committees will receive specialized training courses relevant to the financial management. A lump sum amount of LE 30,000 has been allocated for the purpose.

4.4.3. Activities for the strengthening of the Siwa Protected Area

4.4.3.1 Overview on Key Sites of Siwa Region (Biodiversity)

An overview of the biodiversity of the region and key sites is given in Annex 6.

4.4.3.2 Activities

A tentative and non-exhaustive list of key activities is outlined below according to the specific objectives and outputs identified for the Project.

Specific objective 1. Firm establishment of a collaboratively managed the protected area in the Siwa region, aiming at the protection of biodiversity and cultural heritage resources, their sustainable and equitable use, and acting as a focus for regional planning and development of innovative, environmentally-friendly, economic activities.

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

(1.1) Legal definition of the mandate, functions and organizational chart of the PAMU and design of legal procedures to allow (i) the PAMU to enter into collaborative management agreements with local stakeholders, (ii) the licensing of economic activities within the protected area and the associated adjacent area, (iii) the development and endorsement of PA by-laws and regulations.

(1.2) Recruitment of the full complement of technical and administrative core staff of the PAMU, according to the human resource requirements, staff profile and key functions defined in the approved organizational chart.

(1.3) Build the capacity of the permanently recruited, core staff of the PAMU by supporting (i) customized courses on basic PA management principles emphasizing social outreach, participatory learning and action skills, (ii) on-the-job training undertaken through external technical assistants and advisers collaborating with the Project, (iii) work attachments and internships in other Egyptian protected areas, (iv) the attendance of relevant workshops and meetings by selected PAMU staff.

(1.4) Development of clear guidelines and procedures regulating all key PAMU administrative functions such as (i) staff recruitment and management of human resources; (ii) estate development and management; (iii) procurement, maintenance and inventories of vehicles, tools and equipment; (iv) financial control and records, budget, bank accounts, financial statements and audits.

(1.5) Produce and implement plans for basic protected area infrastructure including PA headquarters and associated interpretation facilities, two outposts, tracks, signposting etc.; procurement of vehicles, office and technical equipment; establishment of HF/VHF radio-communication links between PAMU headquarters, outposts and mobile units.

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

(2.1) Establish and mobilize an interdisciplinary Collaborative Management (CM) team composed of a technically competent and dedicated group of professionals including biodiversity and participatory appraisal specialists and experienced facilitators, in order to assist the PAMU staff with assessing the feasibility of possible

partnerships, as well as with the preparation, development and implementation of pilot CM agreements.

(2.2) Negotiate CM pilot agreements based on the: (i) identification of territory or set of resources; (ii) evaluation of the range of functions and sustainable uses provided; (iii) stakeholder analysis; (iv) determination of functions, responsibilities, benefits and rights of stakeholders; (v) formulation of management priorities and/or site management plan; (vi) establishment of conflict-resolution procedures for implementing collective decisions; (vii) agreement on specific rules for monitoring, evaluating and reviewing the partnership.

(2.3) Accord usufruct and stewardship rights to local communities over areas and/or resources stipulated in CM pilot agreements; formalize, publicize and support the implementation of CM pilot agreements.

(2.4) Build-capacity of local conservation-enabling institutions such as management committees by convening regular intra-community forums to facilitate informal exchanges and resolve outstanding problems between community-based groups.

(2.5) Support the establishment and functioning of a Protected Area Management Board (PAMB) with strong authority on legally sanctioned communal natural resource regimes and facilitate periodical meetings among representatives from local management committees and other key stakeholders to share experiences and co-ordinate management activities.

Output 3. Monitoring and evaluation of biodiversity resources, their utilization and management has been tested, and a system is operational

(3.1) Design a biodiversity monitoring program in collaboration with other agencies and institutions by building consensus on monitoring priorities and establishing a central Biodiversity Monitoring Unit for the Siwa region.

(3.2) Develop simple participatory methods for data collection and train PAMU staff, so that information may be collected by different teams and results compared with confidence.

(3.3) Outsource initial treatment of remote sensed data and the design of an integrated database and information system with final output to be adapted for a PC platform using a user-friendly GIS package.

(3.4) Training of selected PAMU staff to input data and use the integrated GIS system in order to generate data sets and reports that contribute to management decisions.

(3.5) Support the implementation of the M&E system based on monitoring of: (i) habitat and land use through remote sensing and ground surveys; (ii) a manageable number of keystone / flagship species; (iii) utilization of biodiversity within human impact zones using participatory techniques; (iv) PA management effectiveness through standardized methods of reporting with measurement of achievements against time-bound targets.

(3.6) Co-ordinate the flow of data from the GIS / M&E system in order to synthesize information and disseminate results ensuring that information is shared with all serious stakeholders in Egyptian biodiversity conservation

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

(4.1) Develop with local stakeholders a comprehensive Information, Education, Communication (IEC) strategy based on (i) the clear identification of target audiences; (ii) the definition of a simple message emphasizing the links between the natural and cultural heritage of the Siwa region; (iii) the design of media-specific IEC tools and activities; (iv) a detailed operational work-plan.

(4.2) Support the implementation of the approved IEC strategy through (i) field-based environmental education activities and tools complementing formal education programs; (ii) interpersonal communication activities and tools such as familiarization tours, thematic workshops, the realization of information portfolios for specialized audiences; (iii) coordinated public relations with the local and national press and media; (iv) production of a high-quality TV documentary and internet-based products to make available in the public domain information on the protected area and its activities.

(4.3) Support advocacy functions of NGOs to monitor development operations and provide early warning of conflicts and malfeasance

Specific objective 2. Contribute to the development of the Siwa region as a leading ecotourism site in the Western Desert of Egypt, by engaging the private sector and other key stakeholders in the diversification and development of non-intrusive ecotourism facilities and services.

Output 5. Ecotourism is managed to demonstrate innovative, environmentally-compatible, economic activities meeting sustainable livelihood needs

(5.1) Sensitize tourism operators, potential investors and other concerned parties about desert conservation and environmentally sound, sustainable desert tourism.

(5.2) Provide technical assistance to facilitate local private sector initiatives in obtaining usufruct rights and leases for the development of ecotourism facilities and services, as well as supporting access to existing micro-credit schemes.

(5.3) Conduct training programs for interpretation and guiding services and the management of visitor interpretation facilities.

(5.4) Formulate and publish best practice guidelines for the development and diversification of ecotourism facilities and services in the Siwa region.

(5.5) Strengthen the capacity of the PAMU and other regulatory bodies to license ecotourism activities according to procedures set out in the best practice guidelines and

monitor ecotourism activities according to procedures set out in the licenses and related EIAs.

(5.6) Design in collaboration with the private sector and other stakeholders, and support the implementation of a finely targeted marketing strategy to promote the Siwa region as a leading ecotourism site in the Western Desert of Egypt.

Note. A number of additional and complementary outputs and activities in Ecotourism are included in the project to be implemented by R&C and COSPE.

Specific objective 3. Strengthen the mandate and institutional capacity of EEAA to plan, implement, monitor and enforce environmental policy in the Siwa region and support the establishment of a dedicated Environmental Management Unit (EMU) in Matrouh Governorate, as a permanently staffed, technically autonomous and financially sustainable unit.

Output 6. An overall biodiversity strategy and action plan for the Siwa region is developed and biodiversity conservation is firmly inscribed on the local development agenda

(6.1) Desktop survey and review of all available information on the Siwa region, and field surveys to complete the collection of baseline data on biodiversity resources, their utilization, and associated threats to their long-term conservation.

(6.2) Synthesis of information on the resource profile and technical description of the protected area, including the production of baseline and thematic maps for the PA through the services of the GIS system.

(6.3) Participatory planning through extensive interaction and negotiations with key stakeholders as initiated through the CM process (output 2)

(6.4) Draft zoning, based on stakeholder consultations and information from specialist missions, and the integrated GIS and M&E systems.

(6.5) Formulation of management guidelines, and based on an initial implementation and testing phase, update and operate necessary revisions according to key steps outlined under activities 6.1 – 6.4.

(6.6) Formulation of a comprehensive biodiversity strategy and action plan covering the five-year period following Project termination.

(6.7) Regional and national review of the biodiversity strategy and action plan by relevant institutions, government departments and key stakeholders and official adoption for implementation.

Output 7: The management capacity of the local EEAA office in the Matrouh Governorate is enhanced

(7.1) Support the ongoing decentralization of EEAA functions by providing technical and logistical assistance to the EEAA local office in the Matrouh Governorate.

(7.2) Focus enabling and training activities on selected staff in order to strengthen the capacity of the office to exchange information and co-ordinate activities with technical, administrative and security services of the Matrouh Governorate, while optimizing the capacity of the EEAA local office to provide effective backstopping for the PAMU.

(7.3) Clarify and define the functions of the EEAA local office in implementing procedures for the licensing and regulation of economic activities in and around protected areas.

(7.4) Reinforce the EEAA local office in order to (i) adequately handle legislative and institutional matters; (ii) design and operate a simple environmental monitoring system based on the regular collection of environmental data and standardized site inspection and environmental auditing protocols; (iii) effectively implement legal procedures against offenders.

(7.5) Sensitize the private and public sectors to innovate and incorporate emerging best practices from biodiversity conservation initiatives by developing resource materials and hosting local workshops.

(7.6) Negotiate and sign memorandums of understanding with partner agencies, establishing a joint programmatic framework for conservation and community development interventions ensuring that conservation objectives are fully incorporated into regional development plans, including infrastructure and sector plans.

(7.7) Support the EEAA local office to capitalize on intermediate results in the Siwa protected area by replicating appropriate activities in other protected areas under the jurisdiction of the Matrouh Governorate.

- The present situation of EMU, established in 1987, is the following:
 - The staff is constituted by (i) Director, University Graduate in Veterinary Medicine, and High Diploma in Wildlife Management; (ii) Director Assistant, Agronomist; (iii) a Sociologist, and (iv) one Secretary.
Both the assistant and the sociologists have little background about the environment.
 - The department has no logistics, no means of communications and other facilities.
- The Governorate of Matrouh, which occupies the northern western corner of Egypt, extends from Alexandria to El Sallum, 250 km from Marsa Matrouh and close to Libyan border. The total area is 220,000 km. square and the total population is 2.3 million. The urban centers are distributed in 8 towns, surrounded by 54 villages.
- The process of supporting the EMU will includes:

1) The improving of the Administrative Organization of the EMU, its modes of operation and the staffing

The general organization and operation modes of the EMU should be upgraded.

Upgrading needs include:

- The recruitment and training of new specialized EMU employees
- The development of an operations guidelines document such that new employees may be oriented on how to perform delegated responsibilities
- The development and reorganization of the ways and means through which employees are recruited, trained, and compensated for their services, including a suitable performance incentive system and a clear definition of responsibilities for every position

2) Provision of suitable equipment

The equipment provided to the EMU should enable the office to:

- Effectively Monitor and Inspect the environmental aspects from different activities within the Governorate and their impact on the state of the environment
- Document and disseminate data and information on the state of the environment and the status from different activities within the Governorate
- Provide suitable working environment and supporting resources to the employees to ensure the productivity

3) Training and Capacity Building

The EMU employees will be trained on:

- Inspection and monitoring
- Environmental Impacts identification and assessments
- The regulatory standards for compliance
- The use of equipment provided

4.4.3.3 Provision of technical assistance, technical services and Agreed Consultancies

For the Wadi Rayan Protected Area project, implemented in 1st phase, the Egyptian and Italian sides agreed that the technical assistance services, including transfer of technology, training and scientific dissemination shall be performed by a competent international organization, which was identified and accordingly appointed: the IUCN.

For Phase II, IUCN has expressed the willingness to continue the partnership also for the strengthening of the Siwa Protected Area.

4.4.3.4 Physical and non-physical means

The main infrastructure to be built consists of the headquarters, the Visitor Center/interpretation facilities and visitor facilities, two outposts, tracks and signposts. The equipment to be procured will include vehicles, communication, scientific, office and field equipment.

The operational and maintenance expenditure should cover the different items implemented that will mainly consist of: headquarters and outposts, vehicles, office and scientific areas. Incentives/allowances will be provided to local staff, as per consolidated procedure and agreed ceilings.

The main expenditure for the activities will basically concern: the training and production of resource materials; the support to collaborative management agreements; the information, education and communication; the monitoring, evaluation and research; the ecotourism and marketing; the support to the Environmental Management Unit.

Project personnel

Two co-managers will head the PAMU:

- National Manager, who will be responsible for the management of the GOE inputs and their integration with the Project, and the co-management of Project funds.
- Expatriate Manager, funded by the Italian Cooperation, who will have the duty to provide the required technical advice and will be jointly responsible for the co-management of Project funds.

The PAMU will have the required technical and support staff, as hereunder detailed and:

- The Egyptian personnel, to be recruited by EEAA, is constituted by the Manager, 12 Rangers, 12 Community Guards, 1 Accountant, and 6 Support staff.
- Support from local Technical Assistance (TA) is estimated at 45 men/months (m/m), covering following fields of expertise: infrastructure, legal and EIA, ecotourism, information-education-communication, collaborative management, etc.
- The presence of Expatriate TA has been estimated at 46 m/m, out of which 36 m/m will be ensured by the resident PAMU co-manager.

4.4.4 Activities of SEAP Solid Waste Management Task

4.4.4.1 Activities

Based on the objectives listed previously and the outputs derived from these, the following activities are outlined as follows:

Activity A-11: Data collection and refinement of already available data. The scope of this data will be such as:

- Districts' characterization: (number of households, commercial shops, services, resident and quantity of waste generated per district),
- Exciting collection trucks characteristics: (number, type, capacity and condition),
- Exciting containers characteristics: (number, type, capacity and condition),

- Manpower currently involved in solid waste collection,
- Streets sweeping activities (streets lengths, means of waste collection and characteristics of waste collection equipment)
- Industrial waste characteristics (locations, quantity of waste generated and existing waste collection methods)
- Construction waste characteristics (number of establishment built every year, quantity of waste generated and existing waste collection methods)
- Characteristic of the available dumpsite.

Activity B-11: Evaluation of the current practices and operations structure related to SWM in Siwa along with an assessment of the outcome of these practices. This will be done through meetings with the concerned stakeholders such as the City Council, commercial stores, hotels owners, water factories, olive and dates factories, current solid waste collectors, and local community leaders. Also, solid waste management facilities and equipment will be evaluated in regards to their operating characteristics, performance, maintenance requirements, and expected life cycle costs.

Activity B-12: Evaluation and identification of feasible alternatives to improve the current practices.

Activity B-13: Design of a comprehensive SWM scheme for the whole Siwa oasis. This will include, but not limited to, collection routes, storage, collection frequency, transfer stations and improvement of the operation of the dumpsite.

Activity C-11: Identifying the responsibilities, reporting lines and administrative and financial structure of the OU. Also, identifying the qualifications and training needs for the OU's staff.

Activity B-21: Upgrading of the existing collection, transport and disposal system and implementation of the new SWM scheme based on the outcome of Activity B-13.

Activity C-21: Establishment of the OU enforced with the required capacity to manage and operate the SWM scheme.

Activity D-11: Developing a set of documents, checklists and reports to assure the continuous and effective operations of the SWM scheme.

Activity D-21: A monthly visit and bi-annually reports to assess the efficiency and the sustainability of the new SWM scheme.

Activities A-11, B-11, B-12, B-13 and C-11 are considered as “development activities”; whereas B-21, C-21, D-11 and D-21 are considered as “implementation and monitoring activities”.

4.4. 4. 2 Beneficiaries

The SWM Project Task will have a direct, apparent and fast effect upon its implementation on a wide spectrum of the Siwa community. First, the Siwan population will be the first beneficiary, as their quality of their health and living conditions will be

improved. Also, industrial sectors will benefit from the outcome of this project task. These are such as the art-crafting, water bottling, oil and dates factories. Finally, the commercial and touristic sectors will be positively impacted.

4.4.4.3 Organizational Framework for Project Task Implementation

The SWM Task will operate within the organizational framework of the Siwa Environmental Amelioration Project (SEAP). In particular, the SWM task will utilize logistics and some support staff from the SEAP, involving mainly the municipality. A local expert will operate the project as a Task Manager whose duties are, but not limited to:

- Manage and contribute to the activities of a team of experts to achieve the set of objectives and to produce the required outputs.
- Be responsible for the production of a progress report, after the completion of the development activities, to be submitted to the Project Executive Committee that will include:
 - Outputs achieved and expenditure to be met,
 - Detailed budget proposal for the implementation activities,
 - Terms of reference for the experts for the implementation activities,
 - Timetable for the implementation activities.
- Be responsible for the production of quarter-annual reports during the implementation activities to be presented to the Project Executive Committee.
- Be responsible for the production of bi-annual monitoring reports after the completion of the implementation activities to be presented to the Project Executive Committee.
- Draw upon the experience of the international experts in El Minya project.

4.4.4.4 Inputs

The following table depicts the experts' input (in man/days) for the activities previously listed. The Project Task will be executed by local experts and will, as mentioned previously, benefit from the international experts working on El Minya project.

Professional Profile/Activity	A-1	B-11	B-12	B-13	C-11	B-21	C-21	D-11	D-21	Total
Task Manager	1	2	2	2	1	3	2	2	6	21
SWM expert	3	4	4	5	2	5	2	5	25	55
Land fill expert			4	6	2	8				20
GIS Expert	15									15
Institutional Management Expert					4		3	3	3	13
Total (man/days)	19	6	10	13	9	16	7	10	34	124

4.4.4.5 Assumptions

To be able to efficiently achieve the objectives set for this Project Task, the following assumptions are outlined as follows:

- Commitment and support from the involved Siwan institutions and Matrouh Governorate throughout the project activities,
- Commitment of the Egyptian Ministry of the Environmental Affairs,
- Willingness to improve the institutional capacity and initiate the OU,

- Involvement and support from the rest of the stakeholders in the Siwa community.
- Medical solid waste is to be collected, transported and disposed separately from the residential and industrial waste.

4.4.4.6 Budget

The budget allocated for the SWM Project Task will be directed toward the actual implementation of the scheme (upgrading the current collection, storage, transportation, and disposal system).

During the development activities (activities A-11, B-12, B-13, and C-11), the limit of the budget available for implementation will be, indeed, taken into consideration. After completing the said activities, a more detailed budget proposal will be submitted by the Task Manager identifying the expected investment during the implementation activities.

The budget will be revised later on to include the commitment for additional support expressed by H.E the Minister of State for Environmental Affairs during the meeting held with H.E the Governor of Matrouh and HE the Italian Ambassador on December 16, 2002.

4.4.4.7 Time schedule

The Project Task activities have been scheduled as follows:

- Development activities (activities A-11 to C-11): 4 months
- Implementation activities (activities B-21 to D-11): 8 months
- Monitoring activity (activity D-21): 24 months

Details of proposed project schedule are shown in Attachment.

5 JUSTIFICATION

As previously mentioned in this document, the reasons for implementing a second phase of the SEAP are several and well consistent. Those are particularly described at Section 3.2.5. It is the firm opinion of the Task Force that the design of Phase II of the Project is in line with the fundamental principles of the environmental Projects, which envisage people participation in both decision-making and activities planning. Keeping in mind the existing situation in the field, the Project should represent, at its completion, a good example of an integrated intervention which has progressively build upon the results achieved and the new needs arisen. While the development models proposed have been tested and adopted in a consolidated way at the Project completion, community participation had progressively taken charge of its future by involving new entities, like NGOs, scientific institutions and organizations, and by widening their horizons on managing and conserving the fragile system of natural and cultural resources of the region.

6 FACTORS ENSURING THE SUSTAINABILITY

Among the objectives of the proposed Phase II is consolidating the results achieved, thus ensuring greater sustainability to the efforts undertaken and to initiate new activities to be integrated within the existing working framework. These activities are nevertheless an evolution of the ones achieved, involving actors that are already key-stakeholders of the Project.

Given the nature of interventions and the prevailing conditions of the area, the main factors that will contribute to the sustainability of Project achievements can be ascribed to the continued commitment and capacity of the Implementing Agencies to sustain, in one side, the operations in the long term and, in the other side, the co-operation and sharing of intents from the local Departments.

As far as the first aspect is concerned, the main requirement after the Project ends will be the full adoption by the Implementing Agencies of the operational costs of the structures put in place. In this respect it will also be important that recurrent and extraordinary field expenses can be promptly and timely met.

As far as the Governorate of Matrouh is concerned as Implementing Agency, the activities related to the development of sustainable agriculture would be looked after by the SCDEC Association, supported with some technical assistance by the existing local Ministries/Departments, as well as all initiatives linked to micro-crediting services and income generating would be under the direct management of the Association. SCDEC should be, at the end of the three years, fully autonomous and self-sustaining, thus the involvement of the Matrouh Governorate should then be focused on institutional support rather than financial, which would not be required. The Solid Waste Management component would be handled by the Municipality of Siwa, and it is expected that some financial support will be needed if the beneficiaries of the service will not be able to cover all the costs. Financial support will instead be needed to cover the Environmental Management Unit's operations. The commitment of the Governorate on this subject should be firm, since a well-staffed and trained unit will be put in place. It is however essential that a good coordination will be maintained with EEAA, and in particular with the Regional Branch Office of Alexandria, from which the EMU of Matrouh depends.

As far as the NCS/EEAA is concerned as Implementing Agency of the Siwa Protected Area, one of the main requirements for ensuring sustainability to the Project is related to its capacity of assuming the recurrent and extraordinary costs related to the operations and maintenance of the infrastructures, equipment and operations. The EEAA increasing commitment in achieving the country targets, as well as the funds availability and allocation for nature conservation activities, constitute the most important guarantee in this sense. It is not possible at the moment to evaluate the possible contribution of the Project activities in providing revenues which could support conservation efforts. The fact that Siwa region is interested by a relatively important tourist flow suggests that a good potential exists for income generation from eco-tourism and hand-craft, and that will certainly represent, with the specific activities undertaken in this field, another factor in ensuring sustainability to PA component.

Funds allocation for operational costs, however, will not be the only factor ensuring sustainability of achievements after the Project's end. Especially when efforts aimed at conserving natural resources are carried out in areas with well-established traditional communities such as in Siwa, much of the efforts will depend on the integration of conservation objectives with community interests and aspirations. To this end, the PA component of the Project is well positioned, being developed in the framework of a broader intervention directly involving the local community. Moreover, the approach of the PA component itself, which emphasizes participatory and collaborative management, will contribute to the long-term sustainability of proposed undertakings.

Another strong factor contributing to the sustainability of the undertakings would be the involvement of the Italian NGOs in SEAP. Mainly for two reasons: the approach adopted by NGOs, deep-rooted in the community's life, and the kind of initiatives developed, which will be supported by micro-credit.

7 IMPLEMENTATION

The SEAP is a component of the EIECP umbrella Program. As such, the Egyptian Environmental Affairs Authority (EEAA) will serve as the central coordinating and competent body for implementing the project. It will be responsible for coordinating the activities performed by the other concerned institutions and participates in assessing and evaluating the impact of the project. To facilitate the management of the Project and its sister component in EIECP, Phase II, a program organizational and management structure will be used to integrate the many relatively independent activities that have diverse objectives but ultimately a common goal.

The EIECP and the SEAP will be executed through an organizational structure that is composed of a Program Steering Committee (PSC), a Program Coordination Unit (PCU), Project Executive Committees (PECs), Project Management Units (PMUs), and UNDP Program Support Team (PST).

The support provided through the Project is aimed to effectively address environmental issues using the national execution model of the United Nations Development Programme (UNDP).

The partner institutions or Implementing Agencies for particular projects in the Program are listed below. The Implementing Agencies will ensure the execution of the projects and contribute financially to the investment as well as to the operational maintenance and other relevant project in-kind costs, including provision of staff, suitable office space and physical infrastructure, such as phone, fax and modem lines. The EEAA and the Implementing Agencies, on behalf of the GOE, will:

- Ensure that the Project Management Units (PMUs) within their mandate receive the support of line ministries and relevant institutions in the implementation of the projects.
- Ensure that the appointment of National experts and staff meet the Terms of Reference set by project documents, or specified by the minutes of Project Executive Committees/Program Steering Committee, and that will last for the duration of the Program (or as defined) in order to secure sustainability.

- Ensure that the correct communication path and technical communication mechanism is adopted and sustained between concerned line ministries, institutions, and NGOs whose information, inputs and support is considered essential or beneficial to the Program implementation.
- Facilitate access to all statistics, maps, aerial photographs, remote sensing imagery and other relevant data, essential to appraise, study and analyze sector activities.
- Make available the land belonging to public Authorities or private farmers, defined in the project documents /or agreed by the Project Executive Committees (PECs), for implementing the Projects in Siwa, Wadi El Rayan, Gabal Elba and Minya.
- Facilitate the access to all areas to be visited for the implementation of the Program.
- Ensure that the appropriate measures are taken to retain trained personnel upon the completion of the Program.
- Ensure exemption from custom duties and taxation for all imported equipment, contract services, supplies to be imported in connection with the Program implementation, including expert's personal belongings.
- Ensure access to technical and financial information pertaining to the Program to DGCD representatives, provided two weeks notice in advance is given. GOE will maintain Program records for a time span of five years after completion of Program.

Implementing Agencies for EIECP projects

Implementing Agency	EIECP Project
EEAA	Institutional and Legal Framework
EEAA/ Nature Conservation Sector	Capacity Building of the Nature Conservation Sector/EEAA
	Wadi el Rayan Protected Area – Phase II
	Siwa Environmental Amelioration, Phase II – Protected Area
	Gabal Elba Protected Area
Governorate of Matrouh	Siwa Environmental Amelioration, Phase II
Governorate of El Minya	Solid Waste Management in El Minya
National Water Research Center	Decision Support System for Water Resources Planning, Phase II
Supreme Council of Antiquities	Environmental Monitoring and Management of Cultural Heritage Sites: application to Fayoum oasis and North Saqqara necropolis

B. Program Steering Committee (PSC)

The Program Steering Committee (PSC) will operate under the chairmanship of the EEAA. The PSC will provide the Program with guidance and overview, general policy and follow-up on strategic issues, sharing of experiences and facilitation of linkages and networking, and integration with other activities developed within the framework of the NEAP. In addition, the PSC will review and approve the Overall Program Work Plan, Annual Work Plans and Budgets, and the Annual Project Progress Reports of the

Program Coordination Unit (PCU). The PSC will meet annually or as needed. The composition of the PSC is shown in Annex 7. Representatives from other projects/activities/relevant institutions could be invited by the Chairman on an ad-hoc basis to attend PSC sessions as Observers.

C. Program Coordination Unit (PCU)

The Program Coordination Unit (PCU) will be established to assist the Donor and the Recipient Government, including the PSC, to coordinate the Program and its component projects. Headed by the EEAA and supported by international experts and the UNDP Program Support Team (PST), it will operate as an autonomous body that serves as the “driving force” behind the entire EIECP. The PCU will serve as the Secretariat for the PSC and link with local and national institutions, especially the Implementing Agencies and the Project Management Units (PMUs). The PCU will support and organize seminars and workshops in order to ensure “cross-fertilization” between EIECP projects and to promote and disseminate the results achieved by the individual projects and the Program, as a whole.

The PCU will be co-managed by an Egyptian professional seconded by EEAA and an Italian expert appointed by DGCD. A limited number of specialized staff, focused to perform specific duties on permanent or temporary basis, will be part of the structure. The International co-manager of the Siwa Environmental Amelioration Project, appointed by DGCD, will be attached to the PCU as far as the Italian financing is concerned.

The PCU will provide inputs of technical assistance, capacity building, and professional development; coordinate the monitoring and evaluation process at the project and Program levels; and prepare and update the consolidated program logical framework and the overall progress reports based on individual project reports. The Terms of Reference for the PCU are attached as Annex 8.

D. United Nations Development Programme - Program Support Team (PST)

The UNDP Program Support Team (PST) will facilitate the implementation of the Program and ensure the timely and responsive provision of support from the Donor. The PST will assist the EEAA, the PSC and the PCU by providing managerial and operational support to the projects to ensure proper use of funds to assigned activities, timely reports of implementation progress, monitoring the implementation of the projects, as well as ensuring that mandatory and non-mandatory evaluations are performed. PST will review Work Plans and Project Progress Reports prepared by the PMUs before submission to the relevant Project Executive Committee. The focus will be on support functions, such as capacity building and professional development, monitoring and evaluations, performing secretariat functions and facilitating the preparation of work plans, budgets and progress reports by the projects. PST will manage the procurement, subcontracts, supplies and services, recruitment of personnel and handle the finance activities, where requested. The Terms of Reference for the UNDP-PST are attached as Annex 9.

Such a role is fully in keeping with UNDP's mission statement to "support Egypt in its goal to protect and regenerate the environment as an important means to achieving sustainable human development".

E. Project Executive Committee (PEC)

A Project Executive Committee (PEC) will be established for the SEAP project, as per the organizational framework of the Program. The PEC will oversee the implementation of project specific activities and coordinate the inputs from the different departments and agencies. The PEC will meet on a six-month basis or as required and will be chaired by the Implementing Agency. The PEC will also review and approve the following documents submitted by the Project Management Unit: Overall Work Plan and Budget; Yearly Work Plans and Budgets; Mid-year Progress and Financial Reports; Annual provisional financial reports; Annual Progress and Financial Reports; and the Final Progress and Financial Report. Representatives from other projects/activities/relevant institutions could be invited by the Chairman on an ad-hoc basis to attend PEC sessions as Observers.

The composition of the PEC is shown in Annex 7. Despite the fact that two Implementing Agencies namely the Governorate of Matrouh and NCS are entrusted with the execution of the Project, one single PEC will be constituted under the Chairmanship of the Governorate. The PEC will be Co-chaired by the Director of NCS.

In addition, in order to better integrate both the implementation and the monitoring activities of the Siwa-PA with Wadi Rayan Protected Area, Capacity Building and Institutional Support to the Nature Conservation Sector and Gabal Elba Protected Area, the PAMU of SEAP will be invited to PEC meetings of the other projects and vice-versa.

To achieve an appropriate level of flexibility, the PEC will have the authority to modify all necessary activities, physical targets, project requirements, staffing and budget for the on-going year. The PEC's modifying authority is limited to remain within the overall capital cost of the project and its qualitative objectives. The modifications may be reported in the Annual Progress and Financial Reports for the endorsement of the involved Authorities.

F. Project Management Unit (PMU)

As per the organizational framework of the Program, the Project Management Unit (PMU) of any project will be designated by the relevant Implementing Agency to execute the project on a daily basis with a full range of autonomy and responsibility in all matters concerning day-to-day operations. The PMU will implement the approved work plans, being fully responsible technically, financially and operationally to the Project Executive Committee and will be fully accountable to UNDP and to the Implementing Agency.

The PMU will also prepare all documents related to the project. These documents include the work plans, progress reports and financial reports, to be submitted to the Project Executive Committee via UNDP-Program Support Team according to the modalities and schedule specified in Annex 9. The required technical, administrative

and support staff for the PMU will be provided as per the approved budget of the project.

As far as the SEAP Project concerns, the different sub-components will be handled by separate management structures, namely: the PMU, in charge of the sustainable agriculture activities including the support to the SCDEC association, which will also ensure the general coordination; the Protected Area Management Unit (PAMU); and the Task Manager of the Solid Waste Management.

The PMU will be headed by two co-managers: a National Co-Manager (NCM) appointed/seconded on a full-time basis by Matrouh Governorate and an International Co-Manager (ICM), selected and appointed by DGCD. The National Co-Manager will be responsible for managing the GOE inputs in-kind and ensuring their integration into the project. The International Co-Manager will provide the required technical advice. Both will jointly co-manage the project funds. The two co-managers will report directly to the PEC. The Terms of Reference for a typical PMU are attached as Annex 10. The specific Terms of Reference of the NCM and ICM are included in Annex 11.

The PAMU will be headed by two co-managers: a National Co-Manager (NCM) appointed/seconded on a full-time basis by NCS and an International Co-Manager (ICM) selected and appointed by IUCN (the Agreed Consultancy), in consultation with UNDP and EEAA.

The Task Manager of the Solid Waste Management sub-component will have, for his short stay, a counterpart from the Municipality.

Moreover, a Planning Unit (PU) constituted by key personnel of Matrouh Governorate and Siwa Council will facilitate the coordination between the Project and the Governorate, the local administration, the government departments, institutions and all other stakeholders.

G. Agreed Consultancies

For Phase I of the EIECP, the Egyptian and Italian Parties decided that the technical assistance services, including transfer of technology, training and scientific dissemination shall be performed by competent consultancies (Agreed Consultancies/AC). On the grounds of the excellent results achieved by the Program and in order to ensure technical continuity, the Parties have agreed to appoint for Phase II the same organizations/institutions of Phase I to implement the same type of activities in the same fields of expertise. The Agreed Consultancies will be contracted by UNDP.

For the SEAP Project, Protected Area component, the Parties have appointed the International Union for the Conservation of Nature/ World Conservation Union (IUCN) as Agreed Consultancy. IUCN will be contracted by UNDP on pre-agreed Terms of Reference.

UNDP will also sub-contract MAI-Bari for technical assistance and training related to the activities for the development of Sustainable Agriculture.

UNDP will manage the SWM Project Task component, as well as the SWM project in El Minya Governorate.

H. Physical and non-physical means

New infrastructures will be built; vehicles and equipment will be procured, as previously mentioned. However, it should be considered the necessity of re-adjusting budget lines, in order to satisfy the basic needs, in particular vehicles. This will depend upon the availability and condition of the vehicles inherited from the 1st phase and the ones provided by the Implementing Agencies. In addition to these variables, the instability of the conversion rates of the local and international currency will provide room for a compulsory revision of the budget, which will be done at the inception stage.

The operational and maintenance expenditure will cover the different areas implemented, in term of vehicles, equipment, office, infrastructures and travel allowances.

The activities have been detailed in the relevant sections of the different Project components and budgeted accordingly.

I. Project personnel

The personnel of SEAP will operate within the following structure:

Project Management Unit (PMU)

The PMU staff will be preferentially constituted by the core structure of skilled personnel who worked with SEAP. The PMU will receive scientific support, needed for executing the adaptive research activities, from the specialized Institutions and Organizations earlier mentioned. Some specific expertise of short-term specialists will also be hired from the local market.

The staff will perform following tasks:

- **Management.** Performed by the Project Co-Managers (Egyptian and Expatriate), which will be responsible for the day-to-day operations, including the financial management.
- **Local Technical assistance for development of sustainable agriculture.** Will be performed by three Senior Agronomists Engineers, seconded by the Department of Agriculture, and by three extensionists, headed by one Agronomist Engineer, full contracted by SEAP. At least one extensionist will be a female.
- **Technical assistance for development of livestock.** Performed by a Veterinarian seconded by the Department of Agriculture, and two lady extensionist.

- **Monitoring team.** Constituted by two persons having Bsc level, headed by a skilled technician. The team will perform the monitoring described at Section 4.4.1.1
- **Scientific and technical assistance services.** Provided by specialized Institutions/organizations and short term national/local specialists.
- **General administration and accounts.** Performed by an Accountant Administrative Officer, who will be in charge of the functioning of the office operations, including vehicles and personnel, and all the accounting.
- **Support staff.** Will be constituted by one Project Officer, two secretaries, one office attendant, a storekeeper and five drivers.

Protected Area Management Unit (PAMU)

The permanent staff of Rangers is put in place by EEAA/NCS. Community Guards and support staff will be partly contracted by the Project.

SWM

The personnel is all contracted on consultancy basis, due to the short assignment, as shown in the relevant section.

Planning Unit (PU)

The PU has been constituted at the later stage of the Project (extension period) by the Implementing Agency to act as the executive arm of the Governorate, in order to provide full and timely support to the Project management in its important planning and executive decisions. With the following Members:

- Siwa Council representatives (the Mayor and his assistant). The Mayor is acting as the general coordinator of the Unit. The assistant is also covering the legal matters.
- Governorate officers (the Director Planning and his assistant). Being in charge of all development activities of the Governorate, they are acting as representatives, under the direct line of command of the Governor.
- Environmental Management Unit (EMU) Director. He represents the technical branch of the Governorate on environmental issues, and the EEAA antenna in the region.

For Phase II, it is proposed that the Planning Unit should enhance its role as focal point of the local administration in planning, enhancing and promoting the sustainable development in the Siwa region. To this end, the PU should have the required flexibility for including other members, primarily the co-managers of the PMU, of the PAMU, the Task Manager of the SWM and the Italian NGOs, and the most representative operators of the local development, including the government institutions and community representatives: in one word the key-stakeholders. The PU should represent an open

forum, where there is the opportunity to present and discuss ideas, analyze lessons learned and reach conclusions. In order to be effective, the PU should operate at two different levels:

1. providing full and timely support to the Project management in its planning and executive decisions, and in responding to the urgent needs in the most suitable manner. This function is strictly linked to approved Project Work Plans and the membership of the Unit could remain as it is;
2. as a forum for the coordinated sustainable development of Siwa, the PU should include some more permanent members, might be those suggested above, and the invited members according to the subjects. The meetings will be called as required.

Expatriate Technical Assistance

The contribution of Expatriate Technical Assistance is detailed in the overall Project budget.

8 MONITORING AND EVALUATION

Based on the UNDP format, progress reports will be prepared by the PMUs every six months and presented for approval to the Project Executive Committee. Based on the individual project reports, the Program Coordination Unit will prepare the consolidated Program progress reports and financial statements to be submitted to the Program Steering Committee.

Key indicators for participatory monitoring and evaluation will be developed in coordination with an overall programmatic M&E strategy for the EIECP and in line with UNDP's Results-based Management procedures. The PCU, with assistance from the UNDP Program Support Team, will coordinate and facilitate development of M&E capacity within the project and also at the Program level.

The Italian Cooperation, EEAA and UNDP will organize participatory mid-term and final external evaluations based upon the project indicators and means of verification. The results are submitted to the PEC and the PSC.

9 RISKS

One of the main risks to Project success will be the lack of co-operation among the different key-stakeholders involved. Coordination and co-operation among the Project components, namely PMU, PAMU, SWM and SDEC should always be kept transparent and credible. Similarly, the Italian NGOs should be active and involved stakeholders, and vice-versa.

Besides the participation of local communities, it will be very important to solicit the understanding and support from the various institutions having jurisdiction over the area or operating in the area.

The lack of a common vision for the future of Siwa is one of the most important factors that could undermine the success of the Project. To counteract this risk, the actions at

the local level should be adequately backed by political and institutional support at Governorate, national and donor level.

For what concerns other key factors impacting the overall Project implementation process, it is important to mention the timely disbursement of Project funds to all the operators.

10 ASSUMPTIONS

The main assumptions for an effective deployment of all Project resources, and the consequent successful achievement of relevant objectives, are shown, for each objective and set of activities, in the Project Logical Framework. The main assumptions are listed hereunder:

- All key stakeholders are willing to actively participate to the development of Siwa region, taking into consideration the environmental issues
- There is a fruitful coordination and collaboration between the Institutions and entities working within the framework of SEAP
- The cooperation between the SEAP and the community is progressively based on responsibility sharing rather than on benefit sharing
- The activities of the Italian NGOs in the fields of cultural heritage, ecotourism and handicraft are starting in parallel to Phase II
- There is continuity in Project core staff
- Protected Area Management Plans are shared by key stakeholders

11 COST AND FINANCIAL PLAN

This information is not available at the website.

ANNEX 1

Objectives, Results and Lessons Learned

Minutes of the meeting held
on 23/09/2002
c/o the Egyptian Ministry of Foreign Affairs premises
Department of International Cooperation
Quartet Meeting

Subject: Evaluation Committee for the first phase of Siwa project of the Egyptian/Italian Environmental Programme

Participants

Egyptian Side

- | | |
|-------------------------|---|
| 1. Dr. Moustafa Fouda | Director of Nature Conservation Sector – EEAA - Ministry of Environment. |
| 2- Dr. Kamal Shehab | General Manager of the Bilateral Relations with Western Europe, International Co-operation Sector Egyptian Ministry of Foreign Affairs. |
| 3. Dr. Mohammed Soliman | Egyptian Co-manager of Siwa project – Governorate of Matrouh. |
| 4. Dr. Said Dahroug | Programme Coordination Unit |
| 5 Mr. Aly Metrash | Manager of Siwa Protected Area |

Italian Side

- | | |
|-------------------------|---|
| 1. Eng. Guido Benevento | The Cooperation Attaché of the Italian Embassy. |
| 2. Dr. Marco Marchetti | Programme Coordination Unit |
| 3. Ms. Cinzia Kokias | Ex. Secretary to the Cooperation Attaché. |

Dr. Kamal Shehab welcomed all the parties and stated that this meeting should conclude the evaluation. He also referred to the possibility of commissioning a field visit to the project if it deemed necessary. Dr. Fouda also introduced Mr. Aly Metrash as the person in charge of the Protected Area in Siwa; pending a decree to be issued by the CEO of EEAA.

Dr. Fouda anticipated that this meeting has to continue what already started in the first meeting of 21st of July 2002. All participants have reviewed the reports related to the projects; both Italian and Egyptian sides agreed to take into consideration the lessons to be learned.

The evaluation meetings have specifically the scope to conclude:

- Evaluate the first phase
- Lessons to be learned
- Handing over certificate of the first phase
- Preparation for the second phase

Eng. Guido Benevento referred to his letter to Dr. Fouda dated 27/08/02 and to the attachment that summarizes the status of the project's first phase and achievements, as well as the lessons learned relative to the activities of the project and the need for consideration into the second phase.

All participants started the evaluation according to the document attached to the above-mentioned letter. (Copy attached in these minutes for convenience).

The Evaluation was as following:

1. Planning Activity and Studies:

- 1.1 Socio-Economic Study, Water resource in agriculture and Agronomic Study: Agreed to consider the continuation of Socio Economic Studies for the second phase.
- 1.2 Soil and land suitability study, geomorphologic study, land use maps study: Agreed to update during the second phase, the study has to be considered as an important project asset.
- 1.3 Complementary Studies planning process: In this point the problem was the lack of human resources: Agreed to consider it as a lesson learned. Solution for the second phase is: to consider human resources and availability of technical resources.

2. Sustainable Agricultural Development:

2.1 Soil, water management and crop diversification activity

2.1.1 40 - demonstration plots -

2.1.2 149 plots of extension of the demonstration:

All parties agreed on the success of these activities. Dr. Mohamed soliman Reported to the committee that the non-proper selection of beneficiaries led to the non sustainability status of these activities. Dr. Fouda and Eng. Benevento referred that the statement that Dr. Soliman made is connected with the revolving fund and has to be discussed under the revolving fun. They also referred to the fact that the research did not provide enough experience to deal with this kind of socio-economic infrastructure.

Eng. Benevento admitted the failure in this point, but also stated that other Social and Environmental factors intervned in this failure. All parties agreed that this activity has to be reconsidered for the second phase, to study all factors influencing on this component, and to do a completely new plan for it.

3. Income generating activities:

- 3.1 Small animal production 45 beneficiaries of women heads of households in Siwa; 44 beneficiaries in El Gara: Agreed that this activity achieved its goals with 80 %, and that improvement on gender issues shall be considered for the second phase.
- 3.2 Establishment of an olive processing unit: not done due to the fact that the proposed unit scale required funds much more than what was approved for this activity. A recommendation is made to concentrate on other small business development for the second phase.
- 3.3 Establishment of fish farms: 30 % of achievement in this point. Agreed to increase research activity confirming that Siwa requires specific fish farming technology, considering this activity as a pilot research for the second phase.

4. Establishing of a revolving fund (RF) mechanism:

- 4.1 Establishment of Siwa Association: Agreed that this point achieved its goals.
- 4.2 Set-up of mechanism for the management and administration of Revolving Fund:

Agreed that the RF system did not consider proper measures for repayments and thus didn't achieve its goal of sustainability (repayment for old loans 10-20%), however the system that is currently used for new loans is successful (100% repayment). The meeting recommended the continuation of the RF in the second phase using the more successful mechanism, reviewing old loans and considering swapping part of the loans from beneficiaries who did not achieve success.

5. Involvement of local Authorities of Villages and Siwa Town:

5.1 Collaboration Agreements (Taamir, MoA, Education and HRI)

5.2 Community Participation (meetings with community leaders)

Agreed that the activities related to this component achieved a good collaboration with the Agricultural district (MoA) while didn't achieve good collaboration with the other Authorities. From the other side it was acknowledged that a lot of meetings have been done with the society and this helped in increasing the environmental awareness in Siwa.

6. Training and extension activities:

6.1 Courses – 6.2 Seminars – 6.3 Study tours

Agreed that these activities achieved a reasonable success and could be extended in the second phase.

7. Environmental Campaign and Demonstration awareness:

7.1 Production of awareness materials Brochures, Posters and Documentary Film

7.2 Events: Siwa Workshop 2000, Photo Exhibition and Siwa Seminar

7.3 Demonstration: Waste Management and restoration of important Natural Springs

Agreed that these activities achieved good success and shall be extended in the second phase.

8. Internal Monitoring System:

8.1 Project Activities

8.2 Impact of Economic Development of Siwa on Natural Resource

8.3 Biodiversity in Siwa region

Agreed that the internal monitoring was not sufficient and there is a need to establish a well-designed system of monitoring and reporting in the second phase.

9. Siwa protected area:

9.1 Training of rangers and establishment of management unit

9.2 Support to the process of Protected Area declaration

Agreed that these activities were successful.

10. Management:

10.1 Project Management Unit

The meeting agreed that the project has suffered throughout its management history from instability, which had impact on the overall performance and achieving the optimum objectives. Examples were given as the absence of a national co-manager of the project for several months and the lack of adequate involvement of implementing agency especially at the beginning of the project. The meeting agreed to co-operate in establishing and agree on a system for the selection of the personnel for management and to agree on a more solid system management.

At the end of the meeting Dr. Fouda proposed the final evaluation statement can be as follows
"Despite of the project drawbacks that the Committee has observed, and due to which the project failed to ensure sustainability, and considering that the project is a pilot and research project, It can be stated that the project have scored some goals and success, many lessons are learnt, drawbacks are highlighted and should be avoided during the second phase, we can propose that the Governorate of Matruh proceed with the handing over and review the relevant documents, and to co-operate with all parties to overcome the drawbacks and to proceed for the second phase".

All participants approved the statement.

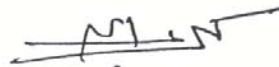
Finally, it has been given to Dr. Mohammed Soliman the draft of the Handing over certificate, already submitted to the Governor of Matrouh, to be reviewed in light of the above and to process for its signature.

Accordingly it has been decided to resume all the Project activities having Dr. Marco Marchetti as a temporary co-manager from Italian side, until the handing over is concluded, and Dr. Mohamed Soliman as per the Governor appointment.


All parties have agreed this minute.



Prof. Moustafa Fouda
Director, Nature Conservation Sector
MSEA/EEAA



Kamal Shehab
General Manager
Ministry of Foreign Affairs
Int. Coop. Dept.



Eng. Guido Benevento
Cooperation Attaché
Italian Embassy

Dr. Mohammed Soliman
Representative
Governorate of Matrouh



ANNEX 2

Responsibilities of EEAA (Law 4/1994)

EEAA responsibilities according to Law 4/1994 for the protection of the Environment

- Preparation of draft legislation and decrees relevant to the protection of the environment.
- Preparation of studies related to the state of the environment of the country, and formulation of the national plan for the protection of the environment.
- Carrying out field follow-up on compliance with norms and conditions to be followed by agencies and establishments.
- Setting necessary norms and standards to assure compliance with the permissible limits of pollutions and to ensure that these norms and standards are followed.
- Setting principles for environmental impact assessment of Projects.
- Preparation of the Environmental Contingency Plan as stated in Article 25 of Law 4 and coordination with the competent agencies for the preparation of programs for confronting environmental disasters.
- Preparation of periodical reports on the main environmental indicators.
- Preparation of programs for environmental education of the public and cooperation in their implementation.
- Coordination with other competent authorities for the handling and management of hazardous materials.
- Management of natural protectorates.
- Follow-up on the implementation of the international and regional conventions related to the environment.
- Implementation of the pilot Projects for the preservation of natural resources and for the protection of the environment.
- Coordination with concerned agencies and ministries for the preparation of a national integrated coastal zones management plan for the Mediterranean Sea and the Red Sea coasts.
- Preparation of an annual report on the state of the environment to be submitted to the President of the Republic.

ANNEX 3

Overview of Sustainable Agriculture Activities

Phase I

1 Introduction

The main environmental issue was considered, by the original Project document, the advancement of sand dunes from the south, in the edge of Great Sand Sea. During Project inception, sand dune encroachment was reconsidered as a lesser problem, while two issues were identified as major environmental treats: (i) a rising water table, on the order of 4 cm per year, favoured by the excessive quantity of water used in irrigation and associated with drainage difficulties (due to the depression), causing the progressive subsequent enlargement of superficial lakes of salty water, and (ii) the salinity of the soils.

In particular Siwa, Aghourmi and Zeitun lakes have been progressively invading cultivated *karsheef* land, though recent data indicate that the efforts deployed by water authorities and concerned ministries on better controlling the irrigation from shallow wells and improving the drainage system have scored encouraging results.

The oasis has abundant water resources from ground water tables at three different depths. The deepest is the Nubian aquifer, of extremely low salinity and widely thought to be non-renewable. Over the long-term, the most serious environmental threat is the potential exhaustion of water for irrigation through over-exploitation. However, there are conflicting theories about the dynamics of the Nubian aquifer and no accurate estimate is currently possible of how long the water may last at any given rate of extraction.

Nonetheless, the availability of water and land attract also investors from other areas of Egypt that are bringing under production new areas depleting the water and further deteriorating the soil resources.

In order to attain a sustainable agricultural development in Siwa Oasis with a rational use of the natural resources, the Project has undertaken with the local community the main following activities:

- Improvement of soil, water and crop management measures, through establishment of Demonstration and Extension plots;
- Establishment of micro-nurseries;
- Establishment of field trials;
- Holding of training courses.

These activities have been developed through the Project staff, which has also undergone professional capacity enhancement, and with the cooperation of relevant Directorates and local institutions. Collaborative agreements have also been signed with the Ministry of Agriculture (MoA), the Ministry of Education and the Agricultural Research Centre. Staff from these institutions has been appointed to the Project on part-time basis. In this respect, it is worthy to note that during the 3rd year all the agriculture technicians of the MoA's department in Siwa have been assigned to the Project (9 technicians) to benefit from the experience and take over the follow-up of field activities.

The measures envisaged to attain the sustainable use of natural resources for the agricultural development in Siwa are based on the following guiding principles:

- The preservation, conservation and appropriate management of existing natural resources (soil and water).
- The improvement of soil fertility, water use efficiency and adoption of suitable cropping patterns.

1.2 Soil and water management

The major agricultural limitations to the development of an economic and sustainable agriculture are: soil salinity, irrigation water salinity, water logging and presence of sub-surface hardpan. It is worth to mention that the climatic conditions are interacting with the above factors, and therefore the seasonal changes should also be considered while evaluating these constraints.

Agricultural potentiality is affected by the dominant presence of salty crust soil surface (karchief/korchief) i.e the salt affected soils, ranging between 4 to 12 and over deciSiemens per meter (dS/m or mmohs/cm). However, adding adequate amounts of organic manure mixed with sand after removing the korchief layer, and proper fertilization, soil properties can be considerably improved.

The sandy soils, which represent the remaining part of the land and constitute the soils which characterise the new reclaimed areas on the desert margins, are poor in fertility and have low water holding capacity. By addition of organic manure and proper fertilization they can also be remarkably improved. Both salty and sandy soils differ in their depth (deep and shallow soils).

The establishment of the plots were planned taking into account the proportion of the two types of soils, as shown in Fig. 1.

The water salinity is ranging on an average from 1,500 to 4,000 mg/L (or ppm by old terminology). The source for plots irrigation is mainly represented by the shallow aquifer (see Fig.2). Therefore 84% of the plots are irrigated from the shallow wells (new and old wells containing salinity ranging between 1,500-4,000 mg/L) while 13% of the plots are irrigated from the deep well (fresh water). A traditional spring supplies water for 4 plots, while re-use of drainage water, having an average salinity of 5,000 mg/L, supplies irrigation for two plots, one for palm trees and alfalfa. On forest trees the average salinity reaches 10,000 mg/L.

Table 1 shows the distribution of the Demonstration and Extension plots by soil types, water source and geographic location.

Fig. 1 Soil characteristics (203 fed)

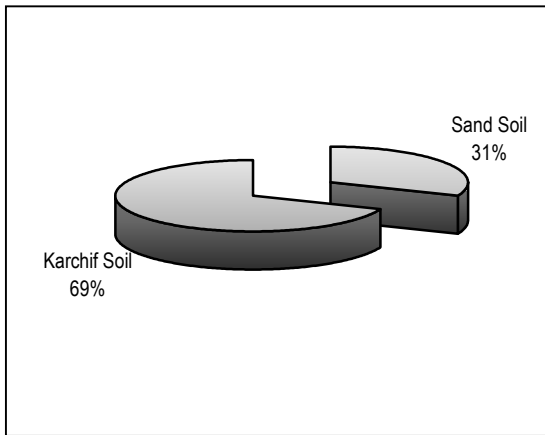
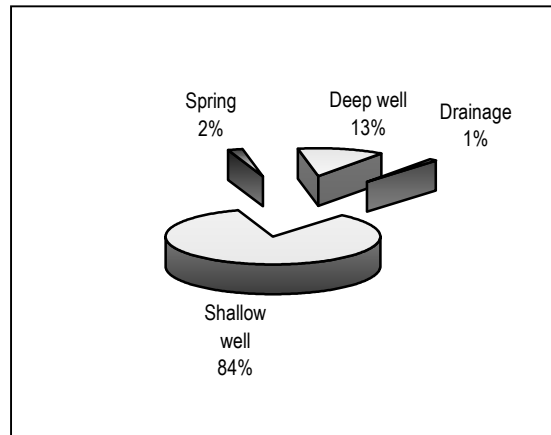


Fig. 2 Water sources (189 plots)



Note: One extension plot (at Maraki) was abandoned. Thus the total number of existing plots is 188

Table 1 Distribution of Demonstration and Extension plots (soil, water source and geographic distribution)

Area	Location	No of plots	No of fed	Soil (fed)		Water source (Plots)				
				Sand	Karchef	Shallow well	Deep well	Spring	Drainage	
Siwa Oasis East	<i>El Gara</i>	3	3	0	3	3	0	0	0	
	<i>Abu Shuruf</i>	23	27	2	25	8	13	1	1	
	<i>Korshit</i>	5	5	0	5	0	5	0	0	
Siwa Town	Siwa East	<i>Agoormy</i>	15	18	6	12	15	0	0	0
		<i>Dakrour</i>	8	8	8	0	4	4	0	0
		<i>Alkaf</i>	7	7	7	0	7	0	0	0
	Siwa center	<i>Intfer</i>	17	18	4	14	17	0	0	0
		<i>Intbo</i>	17	17	1	16	17	0	0	0
		<i>Shalihat</i>	6	6	6	0	6	0	0	0
	Siwa West	<i>Tegzarti and Shahaïem</i>	43	46	19	27	40	1	1	1
Siwa Oasis West	<i>Maraki*</i>	24	24	2	22	23	1	0	0	
	<i>Bahi El Dien</i>	21	23	8	15	18	1	2	0	
Total		189	202	63	139	158	25	4	2	

Note:

*) one plot (code 241) has been eliminated

In order to facilitate the selection of the land for the establishment of the plots and to design the suitable cropping patterns some measurements of water properties were taken. Among these the significant ones are the water source and the water table.

The data in Table 2 show that the potentiality of most of the areas is limited.

The Table also shows that the average salinity of water source is about 2500 mg/L and that the pH is in the range of 8-9. i.e. from moderate to severe alkalinity. This high pH value may accelerate the changes of the soil to alkaline which would lead to soil degradation and desertification. To correct such process the proper amount of gypsum as soil amendment should be applied.

About the quarter of the plots is characterized by a shallow water table (less than 100 cm) coupled with high salinity (in the range of 5,000-10,000mg/L) and a pH of 8-8.5. Such conditions accelerate soil degradation.

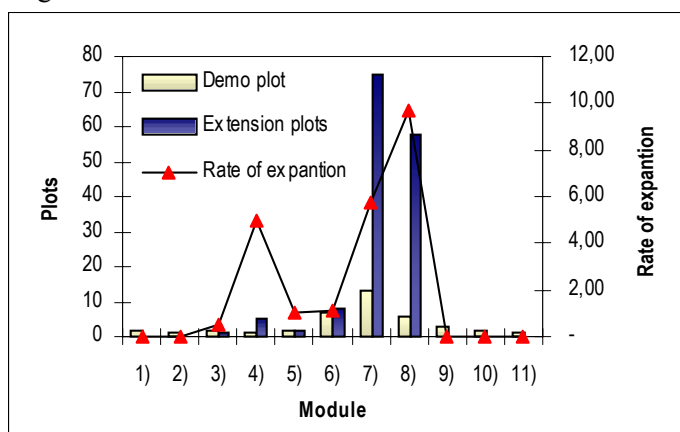
Table 2. Characteristics of water in the plots

Data Analysis on:		171 Demonstration and Exstention plots before implementation					
Water Source:		Water Salinity		Water pH			
Plots	171	EC ppt range	%	pH range	%		
		< 1.50	10%	< 8	9%		
		1.50 > 2.00	9%	8 > 8.5	32%		
		2.00 > 2.50	19%	8.5 > 9	58%		
		2.50 > 3.00	16%	> 9	1%		
		3.00 > 3.50	19%				
		3.50 > 4.00	20%				
		> 4.00	7%				
Water Table:		Water Salinity		Water pH		Level of Water Table (h)	
Plots	48	EC ppt range	%	pH range	%	Cm	%
		< 5.00	27%	< 8	6%	< 70	10%
		5.00 > 10.00	38%	8 > 8.5	33%	70 > 100	14%
		10.00 > 20.00	21%	8.5 > 9	58%	100 > 200	4%
		> 20.00	15%	> 9	2%	> 200	72%
	123	No Water table	72%				
Drainage:		Water Salinity		Water level in drainage (h)			
Plots	164	EC ppt range	%	Cm	%		
		< 3.50	13%	< 100	14%		
		3.50 > 5.00	23%	100 > 150	37%		
		5.00 > 10.00	45%	150 > 200	31%		
		10.00 > 20.00	18%	> 200	18%		
		> 20.00	1%				
	7	no water	4%				

Table 3

<i>Module</i>		<i>Total Plots</i>	<i>Demonstration</i>	<i>Extention plots</i>	
<i>n</i>	<i>Type</i>	<i>Units</i>	<i>Units</i>	<i>Units</i>	<i>Rate of Replication</i>
1	Rehabilitation of micro-irrigation system in Dakrou: Olive trees with inter-crop vegetable; Palm trees with inter-crop vegetable	2	2	0	-
2	Modules with water management MIS group: 4 fds fruits, grape and vegetable	1	1	0	-
3	Twin modules with water management MIS: 2 fds with fruits, grape and vegetable	3	2	1	0.50
4	Twin modules with water management MIS: 2 fds with palm olive trees and vegetable	6	1	5	5.00
5	Greenhouse module: 720m2 - 1000m2	4	2	2	1.00
6	irrigation system: 1 fd with 0.5 perennial crops and 0.5 annual crops	15	7	8	1.14
7	system (1 fd)	88	13	75	5.77
8	system (1 fd)	64	6	58	9.67
9	Annual crops modules with amelioration irrigation system (1fd)	3	3	0	-
10	Olive trees pruning with amelioration irrigation system	2	2	0	-
11	Sand fixation with forest wood trees using drainage water (2fds)	1	1	0	-
Total		189	40	149	

Fig. 3. Plot modules



As shown in above [Table 3](#), the Project implemented 11 different technical solutions (modules) on water, soil and cropping patterns, for a total of 40 plots as demonstration and 149 plots as extension.

It may be mentioned that the farmers preferred to adopt, in the immediate extension phase, those technical solutions having the

traditional crops such as olive and date palms (see [Fig. 3](#)). As far as the irrigation is concerned, the farmers sowed interest in both traditional (flood) and modern (micro-irrigation system) techniques.

1.3 Crop Production and Cropping Patterns

The Project has introduced, through implementation of Demonstration and Extension plots, different cropping patterns including annual and perennial crops, either individually or intercropped.

Annual crops

During the winter 2000-2001, the farmers supported by the Project implemented a total area of 38 fed of vegetable crops. Furthermore they have established 0.84 fed of greenhouse (equivalent to 14 units of 450 meter square each).

The overall area cropped with vegetables and annual crops is shown in [Table 4](#).

The diversification of cropping patterns - today limited to olives, dates and alfaalfa - can have a significant impact for the development of the oasis. Similarly, cash income can be generated throughout the year by growing vegetables, for which appropriate crop calendars should be adopted. In [Table 5](#) are shown some harvesting periods of vegetables grown in Siwa.

However, in practical terms soil and water conditions should be appropriate for vegetable production. Since the majority of the plots are not suitable, the economic production of vegetables could be obtain only if improvement practices for soil and water are adopted by the farmers.

Table 4. Area cultivated by annual crops and their estimated production in Demonstration and Extension Plots.

- *Watermelon* - Super Phosphate should be applied at the rate of 150 kg/fed (instead of 75 kg/fed) and Potassium sulphate at the rate of 100 kg/fed (instead of 85kg/fed) for sandy soil and karchief soil after land reclamation.
- *Tomato crop* - It has been noticed that the Potassium sulphate rate recommended is too high. It can be reduced to 50 kg/fed (instead 300 kg/fed).
- *Super Phosphate* (15.5% P₂O₅) must be added, in fact, as nutrient supply, and as amendment for soil structure under alkaline and saline conditions because it contains gypsum. It must be added during the land preparation.
- *Sulphur*, which has been used in very low quantities or not at all, must be added as amendment to all crops in all soils at the rate of 100-150 kg/feddan as elemental sulphur and mixed with soil, before one month of cultivation. Sulphur will improve soil conditions particularly soil aggregate as a result of changing sulphur to sulphuric acid by microorganisms. The sulphuric acid then reacts with calcium in the soil to produce calcium sulphate (gypsum). Organic manure is also recommended at the rate of 10 to 20 m³/fed.
- Under flood irrigation system (FIS) *nitrogen and potassium* fertilizers are applied on 2-3 doses after germination.
- Under micro irrigation system (MIS) the application of *nitrogen* can be done in many more doses. For tomato the subdivision can reach 8 doses.
- It is observed that no *micronutrients* were added for any crop. This needs accurate investigation to identify the status of available form of these nutrients in the soil because the high soil pH changes the form of these nutrients to unavailable form, which cannot be absorbed by plant roots. Soil tests and leave analysis should also be carried out during growing season using recommended methods. In the prevailing conditions of Siwa, the sandy soils are characterized by low level of these micronutrients, in particular zinc, copper, iron and manganese. These elements should be added in a form of chelat compounds by foliar application.

According to Final Project Report all plots showed evidence of *deficiency in calcium* due to the high pH of the soil, and it is recommended to spray Calcium chelat on leaves. This statement is not shared. However, verifications are needed before reaching straightforward conclusions, in order to clarify the causes of the deficiencies appeared in the plants by plant analysis and soil test. There is a possibility for micronutrients deficiency.

Perennial crops

- Palms trees

As much as 89 fed have been planted with Palm trees (over 50% of total demonstration and extension plots) using two local varieties, Feraki and Saidi, which are well adapted to the prevailing conditions of Siwa. The micro-irrigation system showed encouraging results.

- Olive trees

Olives have been planted in 68 fed with different varieties: Piqual, Manzanello, Kalamata, Aogazi and the local Hamed. They were irrigated with flood and micro-

irrigation system. No remarkable differences were observed between them, and the growing was regular. Olive tree is known to be tolerant to salinity.

- Fruits trees

The Project introduced, as trials, some new species for Siwa such as apricot and apple. Seedling growth is satisfactory. Nevertheless, the potential area for fruit culture will remain limited due to the fact that many species are highly susceptible to soil and water salinity.

The total area planted on perennial crops is shown in Table 6.

Table 6 Perennial crop plantation progress in the Demonstration and Extension plots

Perennial crop	Winter 99-00	Summer 00		Winter 00-01		Summer 01		Total trees
	fed planted	fed planted	fed cumulative	fed planted	fed cumulative	fed planted	fed cumulative	
Palms	15.50	10.00	25.50	42.50	68.00	21.00	89.00	4,163
Olives	10.50	-	10.50	43.50	54.00	14.00	68.00	3,656
Grapes	3.00	-	3.00	-	3.00	3.50	6.50	4,988
Citrus	0.50	0.50	1.00	0.50	1.50	-	1.50	239
Pomogranade	2.00	-	2.00	-	2.00	0.75	2.75	470
Apricot	0.25	-	0.25	-	0.25	-	0.25	44
Apple						0.50	0.50	130
Eucaliptus		1.00	1.00	-	1.00		1.00	460
Casuarina		1.00	1.00	-	1.00		1.00	933
Total	31.75	12.50	44.25	86.50	130.75	39.75	170.50	15,083

Demonstration Plots

The Demonstration Plots (DPs) were established as a guide for local community indicating the various production technologies introduced by the Project using appropriate land size and representing the various conditions of Siwa.

The 40 DPs realized have been used with the aims of reclaiming and rehabilitate lands under different conditions of soil and water, adopting various cropping patterns and water-soil management techniques, as shown in Table 3.

Extension Plots

With the aim of disseminating the various production technologies already introduced by the DPs, the Project supported the local community by implementing such technologies through establishment of Extension Plots (EP)s. The total area of the 149 EPs, selected and implemented during the 2nd and 3rd years of the Project, is about 141 fed., excluding the greenhouses. It is worth to mention that both the DPs and the EPs were established with a substantial contribution from the beneficiaries who received credit loans from the Project.

Experiments and Trials

Keeping in view the “lack of knowledge and investigation activities, concerning the agricultural crops suitable for profitable development in particular circumstances of Siwa” (Final Project Report), the Project carried out some trials. However, the results are not clearly documented.

Village Micro-Nurseries

Three micro-nurseries have been established in the villages of Siwa town, Agoormi and Bahi El Din. According to Project assessment, the production of seedlings was limited due to inexperience.

ANNEX 4

SCDEC Income Statement and Balance Sheet

ANNEX 5

Economic Study

REVOLVING FUND

Background

The project started its activities in 1999 with 11 agricultural modules proposed to the farmers. The first set of modules to be implemented at that time are known as “**demonstration plots**” as a demonstration of the 11 proposed cropping patterns. After setting up the demonstration plots, the project extended the support for implementation of newly cultivated areas (**extension plots**). To establish the plots, the farmers receive support from the PMU of the project through their tribal committees in two forms. The first is in the form of in-kind and the second is in the form of cash. From reviewing the data available for each plot, it has been found that the in-kind support actually given to the farmer was usually considerably less than the sum stated in the contract available in the files. Therefore, in conducting a study on the real situation of the project, the in-kind support was reevaluated, as was the farmer’s schedule of payment. To this date, farmers implementing demonstration plots should have paid their first installment in December 2000 and the second one is due in December of this year.

Methodology

The study was conducted in the project offices analyzing data made available by the project officers. The documents upon which this study has been carried out were referred to as the latest and most updated information. Due to the fact that the study was carried out at time when the final/annual report was being prepared, we fear a discrepancy in the information. Using the same structure for the crop economic balance as that of the Socio-Economic Report (written during the inception phase), the data has been updated according to the actual inputs and outputs incurred by the farmers. The Socio-Economic Report (by Alistair White, February 1999) has taken into account the financial analysis of the original feasibility project document.

The new data is derived from the schedules of the plots that show the crops that have been cultivated, the inputs used for each crop, and the yield. The inputs and outputs have been calculated according to the type of irrigation system used on the different plots. For example, tomatoes are grown in flood irrigation, micro-irrigation, and greenhouses. The input costs are similar, yet the yields are different for each irrigation system. The re-evaluated figures are then put as a benchmark for comparison with the actual inputs and outputs of several examples of the demonstration and extension plots.

To project into the future, a projection of the expected output of the perennial crops is made. The harvests for the second five years are then put in comparison to the installments that have to be paid to show the capability of the farmers to pay the installments in the future.

RFU:

Evaluation

The re-evaluation of the future annual and perennial crops shows that the farmer should be able to make reasonable profits throughout the ten years during which he is indebted to the project. After this ten-year period, the farmer will be able to cultivate the land as he pleases and the perennial crop will be producing at high levels. The plot's rate of return is a bit higher than 3 times and $\frac{1}{2}$ meaning that the return on inputs is three times as much. Technically, the farmer would be able to repay his installments and maintain a reasonable profit. In the sixth and seventh year, the plot seems to realize a loss, but this figure does not include the produce of the annual crops. Considering that the yield of the annual crop was included, the farmer would definitely be able to repay the installments for the ten years.

However, this particular farmer, among many others has not paid his first installment due last December. It has been mentioned in the IUCN Expert; Aldo Moauro's; "Review of the Micro-Credit Service" that the new association (SCDEC) created by the project to handle the revolving fund via the tribal committees (that actually constitute the members of the association) and new capital injections needs to be strengthened as an institution in order to be able to carry out its functions more effectively and with more assertiveness. Other examples show that the farmers using Module 5 (greenhouses) are the most profitable of the modules, yet only one of them has paid the installment due in December 2000. On the other hand, there are other plots that have been realizing losses and have also been able to pay back the installments. Plots 1, 4, 7, and 8 are all from the Sanahna tribe and they have been able to pay the installments even though some of them realized losses. This is an indication that the tribe is a strong institution that acts as an obligation to pay the installments on time and at the same time it would provide for those making losses and help them to pay their installments.

The harvests

The majority of the beneficiaries have implemented modules 7 and 8 with a plan to cultivate perennial crops (dates, olives, grapes) inter-cropped with annual crops such as vegetables and alfalfa.

Alfalfa is the most commonly grown annual crop because of the farmer's acquaintance with how to cultivate the plant and the common use of alfalfa as fodder for the animals. The alfalfa is theoretically a good source of income too, as its benchmark is 8 harvests/annum and each yield is sold at approximately LE250 per feddan. However, few of the farmers have actually utilized a whole feddan in the cultivation of alfalfa, and have added other annual crops such as vegetables. Therefore, the data would show that the farmer had two or three yields of alfalfa, but they were sold at only LE60 each, because it was only $\frac{1}{4}$ of a feddan. Other farmers realize that the feddan of alfalfa would produce more worth of livestock than the price available for alfalfa in the market. Therefore some farmers may be producing alfalfa but not for direct income to pay off installments. Others who cultivated vegetables as the annual crops have come across different problems with regards to marketing and proper cultivation, which will be discussed below. It was found that even after the adjustments to the contracts were made, the installments were still found to be higher than the harvest revenue many of the farmers were making per year.

Extension plots are currently facing the same problem of having harvests that reap revenues lower than the expected installment. This is a more prominent problem in the extension plots due to their greater numbers and to the fact that very few of them are able to make such great profits. This deduction should not, however, be taken as final fact due to the first installment deadline not passing yet and exact harvest data for many of the plots was not available due to the fact that they are just harvesting during the time of the research.

Reasons for delayed paying

There have been several reasons given by farmers regarding why they have been unable to pay their installments. The most prominent of the reasons is that the harvest was not good. Other reasons expressed by the extensionists were that even if the land produced any crops, they did not produce enough income to cover the farmer's personal expenses, let alone the installments that they have to pay.

The isolation of the Siwan market is a source of problems for the farmers when it comes to selling their crops. The vegetable vendors in the market have been used to having big trucks of vegetables and fruits brought in from Alexandria and Marsa Matrouh, loaded with large quantities of each crop. Therefore the sellers get the vegetables from outside Siwa in big quantities and at a cheaper rate. Siwan farmers then have to accept the

prices that the sellers offer due to the competition coming from outside Siwa and since there is no other outlet. As most of the farmers are not able to sell their crops out of Siwa and have to accept the conditions of the market in Siwa, they in turn do not reap enough to cover their expenses or the installments. For most farmers concerned, agriculture is their only source of income; even if they make a profit from their harvest, they have to use this money for personal expenses as well. This is another problem facing farmers, making them incapable of paying the installments.

According to extensionists at the project, another problem regarding the cultivation of annual crops other than alfalfa is that they are new type of cultivation in which the farmers are not yet proficient. They are not well qualified in the lifecycle of vegetables, and so for many, the yield does not turn out at the maximum production possible. Even though the farmers get advice and help from the experts in the project, this still seems to be a problem: The Siwan farmer is more experienced in the cultivation of olives and palms than he is in growing vegetables.

According to the farmers, a salinity of 2000 mg/Lt can destroy up to 20% of the tomato crop. The average salinity in the water in Siwa is estimated at 2500 mg/Lt.. The soil in Siwa also contains a degree of salinity that affects the crop production.

With regards to perennial crops, which the participating farmers have not yet harvested, the following problems might lie ahead of them. The prices for the dates and olives have been facing a decrease and are no longer as profitable for the farmer as they used to be. The problem in the current market is that the prices of the olives and dates have dropped greatly from approximately LE1.5 per 1kg (6-7 years ago) and has now reached an average of LE0.5 per 1kg. The prices for dates have also been decreased greatly. Once again the isolation of the Siwan market is a problem leading to the forced acceptance of the low prices.

To overcome their debts and financial problems, the farmers resort to selling their dates and olives before harvest time at very low prices, which pulls them into a cycle of indebtedness where they will always resort to this solution to their financial problems. When harvest time arrives, the dealer takes the yield regardless if the price has risen or not.

Another common reason expressed for the inability to pay the installments is that the people have taken the money thinking of it as a grant, and thus do not have the sense to feel the real need or benefit in paying back the money. It is worth mentioning that out of

all the demonstration plots, according to the revised and adjusted data, only five plots were making a loss after the first year, while the rest were making profits. On the other hand, there are some who actually cannot pay back the money due to their financial situation, but these are known to the extensionists, and do not include all those who have not paid. This is besides the fact that it is known that the first few year of cultivation for a plot of land does not always produce at the land's utmost productivity. Unfortunately, information was not available with regards to the percentages of the farmers who claimed each excuse, making it hard to identify a single reason as the main reason behind the low rate of payment.

Payments

Only 11 out of a total of 40 of the beneficiaries of the demonstration plots have paid their first installment; 4 of them from the same tribe (Sanahna), two of which are implementing module 8. Four of those who have paid the installment due in December 2000 are implementing module 7. For others who have not paid, it is not necessarily true that their harvests have been considerably less than the required installment. The highest yield for the first year was for plot 61 using the greenhouse, however, the plot owner has not paid the installment due last December.

Suggested Solutions

A solution that could overcome the problem of low prices is the creation of outlets for the farmers associated with the project through which they can sell their produce for higher prices. Instead of selling to the vegetable sellers in the market at low prices at the farmer's expense, the outlet would give the farmer a higher price for the crops and at the same time provide the crops to the consumers at reasonable market prices.

The initiative taken by the association (SCDEC) for the establishment of an olive pickling processing plant will be lead to an increase in the price for the olives and prevent their sale before harvesting. A similar initiative would be required with regards to the dates and other food industries.

For a few of the farmers incurring losses in the first few years, they are in need of a rescheduling of their installments to allow for the problems faced during that period. It has been realized that a few of the farmers face problems with regards to the

management of the micro-irrigation system. Such issues must be taken into consideration when evaluating the productivity and the ability to pay the installments.

CROP ECONOMIC BALANCE / FINANCIAL ANALYSIS

Methodology

The study was conducted in the project offices analyzing data made available by the project officers. The documents upon which this study has been carried out were referred to as the latest and most updated information. Due to the fact that the study was carried out at the same time as the final/annual report was being prepared, we fear a discrepancy in the information.

Using the same structure for the crop economic balance as that of the “Socio-Economic Report” (written during the inception period), the data regarding the costs and revenues has been updated according to the actual inputs and outputs incurred by the farmers. The financial costs that were calculated in the original project document had already been updated by White.

The new data inserted in the updated crop economic balance (Annex I) is derived from the schedules of the plots that show the crops that have been cultivated, the inputs used

for each crop, and the yield. Each farmer fills in a form for each crop he is cultivating with the amounts of fertilizer, seeds, and manure used, and the amount of crop cultivated.

The inputs and outputs have been calculated according to the type of irrigation system used on the different plots. For example, the inputs and outputs of the tomato crop are calculated once for land with flood irrigation system, again for a micro-irrigation system and finally for a greenhouse.

The figures in Annex I show the following crops:

- Tomato under flood irrigation, micro-irrigation system, and greenhouses
- Cucumber under flood irrigation, micro-irrigation system, and greenhouses
- Potato under flood and micro-irrigation systems
- Squash under flood and micro-irrigation systems
- Watermelon
- Alfalfa

The above-mentioned crops are the ones for which data is available on the schedules of the farmers. There are other crops being cultivated such as mint, beans and green pepper, however, information for these crops was not available.

The figures in the updated crop economic balance shown in Annex I are put in comparison with the actual inputs and outputs of some of the plots and used as a benchmark value as shown below (referred to as the *estimated* value in the tables below). The figures used from the updated crop economic balance is the figure for net income of each crop assuming the average price. The plots are subdivided into the type of crop being cultivated, the irrigation system used, the type of soil and the salinity of the water to show the effect of any of the cultivation conditions on the outcome. However, the data shown below evaluates the costs of the crop independently of the type of module being implemented. It is also worth noting that the plots shown in comparison to the *estimated* values are not all of the plots are cultivated by project beneficiaries.

ALFALFA

<i>Plot No</i>	Type of crop	Area fd	Irrigation method	Kind Of Soil	Water Salinity	Total input	Total output	Balance
1	Alfalfa	1	Flood	Karchef	Salty	1,242	2,000	758
6	Alfalfa	1	Flood	Karchef	Salty	1,113.75	1,600	486.25
7	Alfalfa	1	Flood	Karchef	Salty	1,147.75	1,200	52.25
42	Alfalfa	1	Flood	Karchef	Salty	1,205	1,120	-85
43	Alfalfa	1	Flood	Karchef	Salty	1,137.75	1,760	622.25
131	Alfalfa	1	Flood	Karchef	Salty	1,267.25	1,800	532.75
173	Alfalfa	1	Flood	Karchef	Salty	1,378	2,400	1,022
221	Alfalfa	1	Flood	Karchef	Salty	1,147.25	1,680	532.75
Estimated	Alfalfa	1				1,162	1,800	638
52	Alfalfa	1	Flood	Sand	Salty	1,265	2,248	983
130	Alfalfa	1	Flood	Sand	Salty	1,270	1,600	330
135	Alfalfa	1	Flood	Sand	Medium	1,230	2,000	770
157	Alfalfa	1	Flood	Karchef	Medium	849.60	2,000	1,150.4

This table shows the actual cost of input and revenues of the outputs for a few of the plots in comparison to the updated average from the crop economic balance shown in Annex I. The only plot realizing a loss is plot 42 even though the monitoring made by extensionists shows that it is a good plantation, only needing more manure and sand. The problem with alfalfa is that its excess supply over demand in the market has affected its price and not all harvests are sold at the benchmark price. Therefore some of the plots realize higher revenues than other.

TOMATOES

Plot No	Type of crop	Area fd	Irrigation method	Kind Of Soil	Water Salinity	Total input	Total output	Balance
25	Tomatoes	1	Flood	Sand	Medium	1,361.96	2,400	1,038.04
130	Tomatoes	1	Flood	Sand	Salty	1,878	2,800	922
194	Tomatoes	1	Flood	Karchef	Fresh	1,678.9	4,396	2,717.1

247	Tomatoes	1	Flood	Karchef	Salty	1,838	3,000	1,162
Estimated	Tomatoes	1	Flood			2207	6750	4543
28	Tomatoes	1	MIS	Karchef	Medium	1,231	400	-831
111	Tomatoes	1	MIS	Sand	Fresh	1,970.25	9,000	7,029.75
181	Tomatoes	1	MIS	Karchef	Fresh	2,599	14,000	11,401
182	Tomatoes	1	MIS	Sand	Medium	1,683.87	7,000	5,316.13
Estimated	Tomatoes	1	MIS			2537	9000	6463
61	Tomatoes	1/10 fd*	Flood	Sand	Medium	800.05	3,500	2,699.95
19	Tomatoes	1/10 fd*	MIS	Sand	Medium	730.79	2,700	1,969.21
Estimated	Tomatoes	1/10 fd*				744.2	2700	1,956

With regards to plot 28 in particular, the project monitoring shows that the farmer is inexperienced in the management of micro-irrigation systems, and that is apparent in the discrepancy between his total output and those of other similar plots. Other plots are in line with the estimated sums of total inputs and total outputs. The failure of plot 28 to manage the micro-irrigation system is also clear in the cultivation of the potatoes where the output is considerably lower than the estimated average and that of the other plots.

POTATOES

Plot No	Type of crop	Area fd	Irrigation method	Kind Of Soil	Water Salinity	Total input	Total output	Balance
28	Potatoes	1	MIS	Karchef	Medium	2,426.6	800	-1,626.6
183	Potatoes	1	MIS	Karchef	Fresh	2,972.8	2,250	-722.89
54	Potatoes	1	MIS	Sand	Salty	2,272.5	3,150	877.5

110	Potatoes	1	MIS	Sand	Fresh	6,882	9,600	2,718
111	Potatoes	1	MIS	Sand	Fresh	2,083	1,400	-683
182	Potatoes	1	MIS	Sand	Medium	3,442	1,800	-1,642
Estimated	Potatoes	1	MIS			3096	3,750	654
52	Potatoes	1	Flood	Sand	Salty	1,785	1,500	-285
71	Potatoes	1	Flood	Sand	Fresh	2,933.5	4,200	1,266.5
130	Potatoes	1	Flood	Sand	Salty	2,827.8	3,120	292.2
216	Potatoes	1	Flood	Sand	Medium	2,611.7	1,560	-1,051.7
73	Potatoes	1	Flood	Karchef	Medium	2,479	3,750	1,271
103	Potatoes	1	Flood	Karchef	Salty	2,385.5	3,000	614.5
180	Potatoes	1	Flood	Karchef	Fresh	1,856.9	1,500	-356.95
247	Potatoes	1	Flood	Karchef	Salty	2,857.9	1,680	-1,177.9
Estimated	Potatoes	1	Flood			3177.7	3500	322.3

The cultivation of potatoes in general realizes a higher rate of loss than the cultivation of any of the other crops. The estimated average balance is lower for potatoes than it is for any of the other crops and the actual balances of the plots are more liable to be negative than the other crops. This could be attributed to a couple of reasons: the inexperience of the Siwan farmer in the cultivation of vegetables, and the salinity of the water that affects the potato crop more than other crops.

Potatoes are not grown in greenhouses.

SQUASH

Plot No	Type of crop	Area fd	Irrigation method	Kind of Soil	Water Salinity	Total input	Total output	Balance
9	Squash	1	MIS	Sand	Salty	1,009	1,950	941

111	Squash	1	MIS	Sand	Fresh	2,182	6,000	3,818
183	Squash	1	MIS	Karchef	Fresh	807	1,200	393
110	Squash	1	<u>MIS</u>	Sand	Fresh	951.2	1,200	248.8
Estimated	Squash	1	MIS			1,678	2,250	572
47	Squash	1	Flood	Karchef	Medium	1,920	2,400	480
61	Squash	1	Flood	Sand	Medium	1,786	3,600	1,814
247	Squash	1	Flood	Karchef	Salty	1,274	2,100	826
Estimated	Squash	1	Flood			1916.5	1875	-41.5

WATERMELON

Plot No	Type of crop	Area fd	Irrigation method	Kind of Soil	Water Salinity	Total input	Total output	Balance
9	Water melon	1	MIS	Sand	Salty	1,687.4	1,600	-87.4
59	Water melon	1	MIS	Sand	Medium	1,579	3,333.3	1,754.3
71	Water melon	1	Flood	Sand	Fresh	1,167	4,000	2,833
108	Water melon	1	Flood	Sand	Medium	868.5	100	-768.5
Estimated	Water melon	1				938	1800	862

CUCUMBER

Plot No	Type of crop	Area fd	Irrigation method	Kind Of Soil	Water Salinity	Total input	Total output	Balance
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110	Cucumber	1	MIS	Sand	Fresh	957.2	1,400	442.8
183	Cucumber	1	MIS	Karchef	Fresh	604.06	562.5	-41.56
Estimated	Cucumber	1	MIS			824	1075	251
Plot No	Type of crop	Area fd	Irrigation method	Kind Of Soil	Water Salinity	Total input	Total output	Balance
19	Cucumber	1/10 fd*	MIS	Sand	Medium	683.27	2,000	1,316.73
61	Cucumber	1/10 fd*	Flood	Sand	Medium	817.75	2,250	1,432.25
166	Cucumber	1/10 fd*	MIS	Sand	Salty	958.5	2,812.5	1,854
Estimated	Cucumber	1/10 fd*	MIS			1036.7	2000	963.3

The original estimated figures for greenhouses* shown in the table of economic data are ten times the figure shown here. The figure has been adjusted for reasons of comparison with the other greenhouse plots. Generally, the greenhouses give high yields of the crops cultivated in them. The table above shows a slight difference in the yield between plots using medium salinity water and that using salty water in favor of higher salinity water. Overall, the greenhouse modules are the most profitable and safe cultivation method for their higher yields regardless of the level of salinity.

PERRENIAL CROPS

OLIVES

year	Hamed olives sa'a of 2.25 kg	1998 prices gross £E (LE4)	2001 prices gross £E (LE1.125)
5	150	600	168.375
6	200	800	225
7	600	2400	675
8	1000	4000	1125
9	1050	4200	1181.25
10	1100	4400	1237.5

The prices estimated for the returns from the olives were based on 1998 prices, which are no longer valid in the market. Using present day prices as provided by extensionists, the sa'a (2.25 kg) is sold at approximately LE 1 (LE 1.125 exactly). For many, the harvest is sold before it is picked to be able to overcome individual financial problems. The presence of the project and the funds does not guarantee that the harvest will be sold at any estimated price. It is, therefore, beneficial that the project further promote the development of outlets for the crops, taking for example the initiative of an olive pickling plant that will be established soon. Others such as a food processing plant may follow soon.

The following table shows the contract of one of the farmers (Plot 25) growing olives and inter-cropping alfalfa and tomatoes showing a comparison between the harvest and the installments due. The figures for profit and loss disregard the cost of input incurred by the farmer in the cultivation of the crops and show only if the harvest can cover the installment. It must be kept in mind that the balance between the installment and the harvest must go toward the inputs used in the cultivation and harvesting as well.

The contract also shows that the economic balance of year 6 and 7 is negative; given that there is no longer any production of annual crops. The farmer should therefore be encouraged to continue cultivating the land with annual crops following a suitable crop rotation/cropping pattern.

DATES

Information provided by the project shows the following projection of the production of the date palms. The tables (regarding Plot 6 and an overall projection) show that the palms will not start producing until the ninth year. Given that the alfalfa stops producing after the fifth year and the farmer does not cultivate any other annual crops, the plot will be realizing a loss for years 6-9. Once again, the information in the installment schedule does not include the cost of inputs that the farmer incurs in the cultivation of the crop, which in this particular case is a worse situation, as the harvest will not be sufficient to cover the installments required for the last five years.

Having reviewed the outputs of the olive and date trees, it can be said that the farmer should be encouraged to continue the cultivation of annual crops as a source of income for him.

ANNEX 6

Biodiversity of the Siwa Region and Key Sites

Overview on Biodiversity of Siwa Region

The great variation in landscapes and geomorphology, and the relative abundance of water, has resulted in the occurrence of a wide range of habitats in the Siwa region:

Sandy habitats. Dunes, sand sheets and undulating sand are well represented in the southern Great Sand Sea. Close to the oases there are sparse patches of *Cornulaca monacantha* and in depressions, where the water table and salinity are relatively high, richer associations dominated by *Alhagi maurorum*, *Zygophyllum album*, *Nitraria retusa* and *Tamarix nilotica*. The latter may form huge phytogenic mounds, providing a crucial microhabitat for small vertebrates and invertebrates.

Plains and plateaus. Open gravel plains, such as the northern El Diffa plateau, where vegetation is dependant on scant winter rains, often restricted to shallow, silt-rich depressions. Drought resistant species such as *Zygophyllum coccineum*, *Salsola tetrandra*, *Fagonia arabica* and *Capparis spinosa* dominate the plant community.

Cliffs and wadis. The cliffs and ridges fringing many of the region's depressions provide nesting sites for birds of prey and safe refuges for gazelles and other mammals, protected from motorized hunters by the relatively inaccessible terrain. The short and shallow wadis are characterized by rainfall dependent plant associations dominated by *Zygophyllum coccineum*, *Acacia raddiana* as well as several annuals germinating after the rains.

Oases. Occurring in depressions where the ground water reaches the surface, they provide humans and wildlife with the only permanent source of water and vegetation in the hyper-arid Siwa ecosystem. Except in areas cultivated by man, the natural vegetation is associated with wetlands and salt marshes dominated by *Nitraria retusa*, *Tamarix nilotica* and *Phoenix dactylifera* (Date Palm). Uninhabited oases represent key habitats for the large fauna.

Sabkha and salt marshes. Many oases feature considerable areas of Sabkha, mostly devoid of vegetation and encrusted with a thick layer of salt, formed through widespread salinization and prevailing arid conditions. Areas of more moderate salinity are characterized by salt marsh vegetation typically dominated by *Arthrocnemum macrostachyum*, *Juncus rigidus* and *Alhagi maurorum*.

Wetlands. Small or medium brackish or hyper saline lakes occur in the lower basin of many oases. These may be fringed by dense swamp or salt marsh vegetation often dominated by *Phragmites australis* and *Typha domengensis*.

Acacia groves. Scattered *Acacia raddiana* groves, occurring in shallow basins where rainfall collects, are of crucial ecological importance for extant mammal populations and for possible future ungulate reintroduction programs. These unique relicts of Sahelian habitat are concentrated in Talh El Fawakheir, north east of Qara Oasis, and to a lesser extent along the western edge of the Qattara Depression and on the northern fringes of the Siwa Depression. Common floral associates include *Zygophyllum coccineum*, *Z. simplex*, *Cornulaca monacantha* and occasionally *Pregularia tomentosa*.

Species

The diversity in habitats and landscapes of the Siwa region support a similarly diverse fauna and flora. Detailed species lists, including their status and a comprehensive bibliography are given in Baha El Din (2000).

Flora. In addition to the unique *Acacia raddiana* groves, the species of special botanical interest include *Populus euphratica*, a naturalized tree introduced during Roman times probably to help stabilize dunes; the endangered Wild Cotton (*Gossypium arboreum*) whose distribution in Egypt is confined to Siwa and Baharya oases; unique varieties of Date Palms likely to be of significant genetic value.

Reptiles and amphibians. A total of 32 reptiles and two amphibians have been recorded from the Siwa region. Most species are widespread arid-adapted Saharan forms while a few are primarily associated with the oases (e.g. *Bufo viridis*). One species of gecko (*Tarentola mindiae*), first described two years ago, may be endemic to the Siwa region, extending westwards as far the Jialo Oasis in Libya. The presence of *Mesalina pasteuri* and *Rana (saharica)*, taxa with a primarily west Saharan affinity, seemingly restricted in Egypt to the Siwa region, further indicate the unique biogeographic position of the area.

Birds. Of the 164 bird species so far recorded in the Siwa region, 26 are thought to breed locally, 68 are winter residents and the rest are passage visitors. Most species are associated with cultivated lands and wetlands and are widespread in Egypt's Western Desert, while a few desert species inhabit the fringes of the oases. Two endangered migrant visitors have been recorded in the area: Lesser Kestrel (*Falco naumanni*) and Corn Crane (*Crex crex*).

Mammals. Twenty eight species of mammals have been recorded from the Siwa region which is probably the last refuge for several highly endangered species in Egypt such as the Dorcas Gazelle (*Gazella dorcas*), the Fennec Fox (*Vulpes zerda*) and the globally threatened Slender-horned Gazelle (*Gazella leptoceros*). Several globally threatened mammal species, previously distributed in the Siwa region have become extinct, largely as a result of indiscriminate hunting : Scimitar-horned (*Oryx Oryx damah*), Addax (*Addax nasomaculatus*), Barbary Sheep (*Ammotragus lervia*) and North African Cheetah (*Acinonyx jubatus*).

A specialist mission commissioned by EEAA has identified the Western Qattara as the area with the highest potential for a major wildlife restoration Project in the Western Desert. This is due to the presence in the region of extensive areas of relatively undisturbed habitat and of significant numbers of Slender-horned and Dorcas gazelles (Wacher, 1997). Whereas a pre-condition for such a Project would be the establishment of a legally defined and effectively managed protected area, a follow-up study would help orient future investments in terms of *in situ* conservation and/or captive breeding. The initiative, potentially of international significance, could be designed to supplement extant gazelle populations and perhaps re-introduce some key species in the Western Desert (Wacher, 1997). Such a follow-up study, which would contribute to the Egyptian National Strategy and Action Plan for Biodiversity Conservation (EEAA, 1998), could be supported with inputs from the IUCN Re-introduction Specialist Group.

4.4.3.2 Overview on Key Sites of Siwa Region

Siwa Oasis

An outline of Siwa has been given at Paragraph 3.2.

Northern El Diffa Plateau

Traditional hunting ground for national and foreign hunters, its large mammal populations appear to have been largely decimated, except for small pockets that have taken refuge in the more inaccessible cliff areas. The plateau is dissected by the main asphalt road to Marsa Matrouh, the key artery connecting Siwa to the outside world, supporting trade, the development of external investment and tourism. Some representative elements of this extensive plateau should be encompassed in any conservation area established in the Siwa region in order to maintain at least stepping-stone connectivity between the western and eastern flanks of the ecosystem.

Western oases

Shyiata, Um El Ghuzlan and Hatiyet El Kheiba form a cluster of extremely picturesque, small, uninhabited oases to the west of the Siwa depression. These sites are of great conservation value as one of the last strongholds in Egypt for the highly endangered Slender-horned Gazelle. Patches of undisturbed natural vegetation are interspersed with large dunes and low limestone outcrops. Shyiata features a small brackish lake and has great potential as an ecotourism destination.

Great Sand Sea

Southern and eastern oases

The loose cluster of abandoned oases lying to the east and south-east of the Siwa Depression, uninhabited except for small numbers of seasonal herders, would form the core of a future protected area in the Siwa region. The oases span from the breathtaking landscapes of Sitra, Nawamisa, and the two Bahrein lakes, embedded in the dunes of the Great Sand Sea; through Watia and Hatyat El Ghardaqa to the imposing limestone cliffs surrounding the oasis of Arag, with its unique archaeological relics and ancient paintings. Further north lies the spectacular elongated oasis of Tabaghbagh with its lush swamp and salt marsh vegetation and the wadis of Naqb Tabaghbagh with their secular *Tamarix* phytogenic mounds, sloping towards the barren floor of the Qattara Depression. The oasis of Qor El Hamra lying to the southeast of Sitra, though part of the same network, may be too far to be effectively incorporated in a future protected area.

This complex network of oases should be regarded as a single ecological unit supporting freely moving wildlife populations which rely on its extensive vegetation and water resources. High levels of utilization by gazelles were documented during the course of recent missions. The area constitutes the focal point for threatened ungulate populations and carnivorous mammals in the Siwa ecosystem and was one of the

locations where North African Cheetah was last recorded in Egypt. Indeed, it may represent the key potential site for future reintroduction programs.

Qara Oasis and outlying areas

Qara-Umm-el-Saghir or Qara (El Ghara), 130 km north-east of Siwa and connected to Marsa Matrouh by a recently paved road (2,5 hours away), is the only other permanently inhabited oasis in the Siwa region (350 inhabitants) and the smallest in Egypt. The relatively unaltered oasis, with the unique remains of its ancient fortified town built in *karsheef* (a mixture of earth and salts), still retains much of its original character and provides a glimpse of the past in a pristine environment.

Close by, the Qattara Depression with its distinctive geology and morphology, is one of the most prominent landscape features of the region. As one of the largest and deepest depressions on earth, it represents a strong attraction for visitors. To the north-east of Qara, perched on the limestone ridge which forms the northern edge of the depression, Mingar Abd El Nabi overlooks the wild palm groves and salt marsh vegetation of the small oasis of Bir Abd El Nabi.

Along the western margins of the Qattara Depression, the outlying areas of Talh El Fawakheer, Talh El Eskandar and Talh Haddona, encompass some of the densest and most important *Acacia raddiana* groves in the region. This rare habitat adds significantly to the diversity of the Siwa ecosystem and is of crucial ecological importance for wildlife, particularly ungulates. To date, however, the formerly widespread gazelle populations in the area appear to be on the verge of disappearance. According to representatives from the Qara community, they have been decimated by decades of indiscriminate hunting.

ANNEX 7

Composition of Steering Committee (SC) and Executive Committee (EC)

Composition of EIECP Program Steering Committee

- Chair: Chief Executive Officer, EEAA
- Members: Representative of El Minya Governorate
Representative of Fayoum Governorate
Representative of Matrouh Governorate
Representative of Ministry of Water Resources & Irrigation
Representative of the Supreme Council of Antiquities
Head, Nature Conservation Sector, EEAA
Legal Representative, EEAA
Representative of the General Department for International Affairs and Technical Cooperation, EEAA
Representatives of Italian MAE/DGCD/Italian Embassy/UTL
Representative of UNDP Country Office
Project Management Units (PMU) s
Representative of UNDP Program Support Team (PST)
Program Coordination Unit (PCU), also acting as Technical Secretariat
- Observers: Financial and Technical Managers of the Technical Unit (TU) of the Debt-for-Development Swap Management Committee

Composition of Project Executive Committee (PEC) of the SEAP

- Chair:* Representative of Matrouh Governorate
- Co-chair* Director, Nature Conservation Sector, EEAA
- Members:* Director of EMU, Matrouh Governorate
Representative of the General Department for International Affairs and Technical Cooperation, EEAA
Representatives of Directorate General of Cooperation for Development, Italian Foreign Ministry (DGCD/MAE) and Italian Cooperation in Cairo
Representative of United Nations Development Programme (UNDP)
EIECP Program Coordination Unit
Representative of UNDP Program Support Team (PST)
Protected Area Management Unit (PAMU)
Task Manager, Solid Waste Management
Project Management Unit, SEAP (acting also as Technical Secretariat)
- Observers: Debt/Swap Technical Unit (TU) Financial and Technical Managers.
PAMUs of Wadi Rayan Protected Area, Capacity Building & Institutional Support to NCS, Gabal Elba Protected Area

ANNEX 8

Terms of Reference of the Program Coordination Unit

Terms of Reference of the Program Coordination Unit

- Coordinate and guide the implementation of the whole Program assisting the Program Steering Committee, the Executing Agencies, Project Executive Committees and the Project Management Units (PMUs), in close coordination with MSEA/EEAA, Italian Embassy and UNDP;
- Prepare PCU overall Program Work Plan, Annual Work Plans and Budgets, to be submitted to Program Steering Committee for approval;
- Prepare PCU Annual Progress and Financial Reports, to be submitted to Program Steering Committee for review and approval;
- Ensure to DGCD/Italian Embassy and EEAA the proper management of the PCU in accordance with the approved Work Plans and Budgets, rules and regulations, and the consolidated procedures;
- Prepare, based on the individual project reports, the consolidated Program progress reports and financial statements, to be submitted to the Program Steering Committee;
- Provide to DGCD/Italian Embassy and EEAA the required assistance in terms of monitoring and control over the activities and expenditures agreed with UNDP on the cost/sharing arrangements, progress assessments and financial statements;
- Develop with the institutional partners a common perspective of the Program, capitalizing on the results achieved and lessons learnt during the first phase;
- Develop and update an overall Program log frame and a monitoring system based on the project logframes, defining the key indicators and means of verification, in close coordination with UNDP and the PMUs;
- Identify, coordinate and channel needed program-related policy support to the Implementing Agencies;
- Prepare publications and information material for dissemination;
- Promote and organize events, seminars, and workshops for the dissemination of the results achieved by the Program;
- Provide information and feedback to the PMUs on relevant events and facts pertaining to Program interest, including opportunities of participation to meetings, seminars, workshops, round tables, conferences, etc;
- Represent the Program in: seminars, workshops, round table conferences, donor sub-group meetings i.e. Environment and Energy, Environment/ European Union, Solid Waste Management, etc.;

- Track training, capacity building and professional development opportunities, for the staff and key-stakeholders of the Program, linking with the General Directorate for Training and Development of EEAA and other national/international institutions;
- Establish and maintain the WEB site of the Program, linking with EEAA, Italian Cooperation, UNDP and the individual projects;
- Develop methodologies, procedures and network of relations to facilitate the identification, preparation and start-up of new initiatives under the Program;
- Identify, coordinate and channel needed Program related policy support to the Implementing Agencies;
- Assist the Italian Embassy, MSEA/EEAA, the Implementing Agencies and UNDP in the process of assets handing over.

ANNEX 9

Terms of Reference of UNDP-PST

Terms of Reference

United Nations Development Programme, Program Support Team (PST)

The purpose of the agreement with UNDP country office of Egypt is to provide an efficient and sustainable mechanism for the implementation of the activities of the Egyptian-Italian Environmental Cooperation Program (EIECP), in an integrated manner as foreseen by the relevant Project Documents. The EIECP, jointly financed by the Government of the Arab Republic of Egypt (GOE) and the Government of the Italian Republic (GOI), will be implemented by the Ministry of State for Environmental Affairs (MSEA) and its executive arm, the Egyptian Environmental Affairs Agency (EEAA), with participation by other Ministries and Governorates, renowned Italian and International Organizations, Scientific Institutions, NGOs and conservation experts.

The EIECP II is implemented through a Memorandum of Understanding (MOU) signed between the GOE and GOI and the UNDP Project Document signed by all parties concerned. Accordingly, UNDP will support EEAA in the execution and implementation of the Program within the framework of UNDP National Execution arrangements, in compliance with the Project Documents (which are an integral part of the Terms of Reference),

UNDP will work in close association with the Program Coordination Unit (PCU) that is entrusted with assisting the Program Steering Committee, the EEAA and the Italian Cooperation on the coordination, guidance and control of the program.

UNDP will be responsible, in accordance with UNDP guidelines and procedures, for ensuring proper use of funds to assigned activities, timely reporting of implementation progress, monitoring the Program as well as ensuring the undertaking of mandatory and non-mandatory evaluations. In this context, UNDP, in coordination with PCU, will provide support and backstopping to the projects to ensure proper implementation progress, convene periodical meetings with project managements, provide the needed flexibility for feedback and revision to products and documents, and review program results to ensure that project results are achieved in line with set objectives and work plans. UNDP will also provide operational support related to recruitment, procurement, administration, and finance as requested.

More specifically, UNDP managing both the bilateral Italian funds and the Counterpart funds, will provide the following services based on National Execution (NEX) procedures:

- The implementation arrangements, which will be differentiated on project-by-project basis according to the needs. These arrangements will allow for: (i) Centralizing purchase of equipment and supplies; (ii) Standardizing sub-contracts of all institutions involved in the program; (iii) Standardizing program staff fees and other administrative procedures; (iv) Assuring central accounting and auditing as well as control and monitoring; (v) Centralizing technical and financial reports; and (vi) Standardizing monitoring, review and evaluation procedures.

- The operational services, related to recruitment, finance, procurement, etc., in accordance with the Implementation Protocols (IPs) – namely (i) the Memorandum of Understanding (MoU) between the Government of Italy and the Government of the Arab Republic of Egypt (ii) the UNDP Project Document and annexes, (iii) the Cost Sharing Agreement (CSA) between the Government of Italy and UNDP, and (iv) the Project Implementing Agreement (PIA) for Debt Swap management funds between the Ministry of State for Foreign Affairs, Italian Embassy, EEAA and UNDP - signed between the relevant partners that will direct and regulate the implementation of the Program.
- The administration of Program funds and their timely disbursement to the Project Management Units (PMUs) for project operational expenses in accordance with the approved work plans and budgets.
- Procurement of equipment and material upon request from the PMUs, in accordance with the approved work plans and budgets.
- Provision of technical assistance services, in accordance with the MOU, the Implementation Protocols (IPs) and the TORs, either sub-contracted independently by UNDP or provided directly by the appointed Agreed Consultancies.
- Sub-contracting International and Local Consultants on the basis of the TORs that will be included in the work plans approved by the Project Executive Committees.
- Review of overall work plan, and annual work plans and budgets prepared by each PMU according to the agreed time schedule, to be submitted to the relevant Project Executive Committees.
- Review of Progress Reports based on the UNDP format prepared by each PMU, and according to the agreed time schedule, to be submitted to the relevant Project Executive Committee.
- Preparation of project financial statements, according to the agreed time schedule, to be submitted to the relevant Project Executive Committee.
- Assist PCU in preparing consolidated Program Progress Reports and Financial Statements, on a yearly basis, to be submitted to the Program Steering Committee.
- Assist PMUs in preparing project logical framework matrixes (logframes), defining the key indicators and means of verification. Review the updated logframes prepared by the PMUs to be presented to the relevant Project Executive Committees along with the Progress Reports.

- Assist PCU in developing and updating the overall Program logframe, to be presented on yearly basis to the Program Steering Committee, based on the individual project logframes made available by the PMUs.
- Prepare TORs for the mid-term and final evaluations, which are to be organized in close coordination with the Italian Cooperation and EEAA. Ensure the findings of the review missions are submitted to the Program Steering Committee and to Project Executive Committees and that the projects receive and adopt the findings of the evaluations that pertain to the particular projects.

In addition, UNDP will ensure the following general administrative and reporting features, in close coordination with the PMUs which are entrusted the responsibility of preparing the hereunder documents:

- a) The regulations, rules and directives of UNDP, and in compliance with the MOU directives, shall govern program management and expenditures.
- b) The contribution shall be administered by UNDP in accordance with UNDP regulations, rules and directives, applying its standard procedures for project execution. UNDP headquarters and country office shall provide to the Donor and to EEAA, for all the components of the Program, the following plans and reports prepared by the PMUs in accordance with UNDP accounting and reporting procedures. The schedule for the submission of the plans and reporting documents to the Project Executive Committees is set in order to meet the requirements and procedures defined by both the Donor as per the Memorandum of Understanding and the Management Committee for Debt Swap Counterpart funds.

Project Work plans

- a) *Overall work plan and related budget*, to be submitted within five months from the beginning of the Program activities.
- b) *Yearly work plans and related budgets*. The first work plan should be submitted within five months from the beginning of the Program activities; the second and third work plans should be submitted one month before the end of the previous financial years. The Donor cannot release the second and third year instalments unless the work plans and budgets are approved by the relevant Project Executive Committee.

Project Progress and Financial Reports

- a) *Mid-year progress and financial reports*, to be submitted not later than two months after the end of the relevant semester. These reports will include the progress of the activities and a detailed statement of expenditure by budget lines.
- b) *Annual provisional financial reports*, to be submitted one month before the end of the relevant financial years. These reports will be based on actual

expenditure from January to September and the expected expenditure from October to December. The second and third year instalments cannot be released unless the annual provisional financial reports are approved respectively by the Project Executive Committee for Italian multi-bilateral funds, and by the Management Committee of Debt Swap for the counterpart funds.

- c) *Annual progress and financial reports*, to be submitted not later than two months after the end of the relevant financial years. These reports will include the progress of the activities and a detailed statement of the expenditure by budget lines.
- d) *Final progress and financial report*, to be submitted not later than three months from the date of financial completion of the relevant project. This report will include the progress of the activities and a detailed statement of accounts showing income and expenditure by year and by budget lines. The final report should illustrate the results of the monitoring and evaluations activities, highlighting the lessons learned and recommendations.

ANNEX 10

Terms Of Reference of Project Management Unit

Terms of Reference of the Project Management Unit (PMU)

- Provide the day-to-day management directing all implementation activities.
- Manage the allocated financial resources in accordance with the regulations, rules and directives of the UNDP and the Executing Agency.
- Manage and supervise the staff and their performance.
- Manage and coordinate all technical and scientific resources.
- Prepare an Overall Work Plan and Budget, the Yearly Work Plans and Budgets; Mid-year Progress and Financial Reports; Annual Provisional Financial Reports; Annual Progress and Financial Reports; and the Final Progress and Financial Report, to be submitted for approval to the Project Executive Committee, via UNDP, as per modalities and schedule described at Annex 4. The plans will include at minimum the following items:
 1. The defined outputs to be achieved,
 2. Ways and means to achieve the above outputs,
 3. The human resources needed, as well as the detailed Terms of Reference of the technical assistance to be contracted,
 4. The time schedule for the deployment of the technical assistance,
 5. The identification of milestones of the planned activities, as well as definition of all the reports (contents, time and task distribution, etc.) in order to monitor the project implementation status.
- Prepare the technical documents related to procurement for services and supplies, to be provided to UNDP for completing the bidding process.
- Develop, in collaboration with the relevant departments, the training need assessment of the staff in order to upgrade their level through selected courses.
- Prepare, with the assistance of the Program Coordination Unit and UNDP, the project log frame, defining the key indicators and means of verification.
- Liaise with the Executing Agency, EEAA, UNDP, PCU and the relevant local institutions in order to ensure inter-departmental cooperation at field level for the best implementation of the project
- Attend the Program Steering Committee meetings
- Act as Technical Secretariat for the Project Executive Committee.

ANNEX 11

Terms of Reference for NCM and ICM of PMU

Terms of Reference for Project Co-Managers

National Co-Manager

Position: The National Co-Manager (NCM) is appointed/seconded by the Implementing Agency (NCS)

Duties: The NCM will manage the project activities and funds in coordination with the International Co-manager (ICM). They will both have signature authority for activities and for expenditure of project funds. Activities whose expenditures are above a certain pre-determined amount will require the signature of both co-managers. Moreover, the National Co-Manager will be responsible for the management of the GOE inputs in-kind and their integration with the project with particular attention paid to the staffing and facilities.

International Co-Manager

Position: The International Co-manager (ICM) is the full time, senior international staff person of the project. The ICM is selected and hired by the Agreed Consultancy (IUCN), in consultation with UNDP and EEAA/NCS.

Duties: The ICM will jointly co-manage project activities and funds in coordination with the National Co-Manager. Both managers have signature authority for activities and for expenditure of project funds. Activities whose expenditures are above a certain pre-determined amount will require the signature of both co-managers. The ICM also will provide the required technical advice and will be responsible for training and transferring technology to Egyptian staff. In addition, to assisting the NCM in fulfilling his responsibilities, the ICM will develop the training and technology transfer activities of the project and serve as the principle key contact for the technical assistance international agencies, including the Agreed Consultancies (IUCN).

Joint NCM and ICM Responsibilities

Manage the project office at the project's main premises and at outposts.

Prepare TORs and job descriptions for project staff, international, national and local consultants and subcontracts and coordinate the hiring and firing of staff and the execution of contracts.

Prepare the necessary reports required under the EIECP and UNDP Project cycle, including Project Operation Plan (POP) for the project cycle to be updated on annual basis, Project Annual Work Plans (AWP) reporting on implementation on quarterly basis, Annual Project Reports, financial reports, and other reports as needed.

Develop and propose the work plans according to the context of the outputs and activities given in the project document with clear targets and a meaningful sequence.

Prepare reports to the PEC and the PSC on project performance and follow up on implementation of committee recommendations.

Ensure timely and cost effective implementation of the project activities and work plans and monitor the project results against set targets.

Monitor the use of project resources, request UNDP for purchase of equipment, office supplies, site materials and necessities, and arrange for its distribution.

Ensure that all facilities and equipment are maintained in good serviceable condition.

Supervise staff activities, evaluate their performance and conduct staff performance appraisals on a regular basis.

Supervise and follow up on contracts for all project activities to ensure that inputs of consultants are coordinated and to ensure the high quality of their deliverables.

Brief the Implementing Agency on a regular basis about routine activities and problems; and submit periodic financial and technical reports or as requested.

Organize the Project Executive Committee (PEC) meetings and attend Program Steering Committee (PSC) meetings.

Establish and ensure synergies with the other components of the Program implemented under NCS (NCSCB, Siwa PA and GEPA; the Legal and Institutional Framework Project, and the Cultural Heritage initiative (ISSEM).

Circulate information concerning the project, its activities and the wider activities of other institutions with activities specifically concerning the project.

Assist and advise local stakeholder agencies in the implementation of their activities under the project.

Provide necessary information and needed assistance to the evaluation missions to be conducted.

Represent the project in relevant seminars and meetings and disseminate project information.

Ensure that local experience, success stories, lessons learned and other useful information are collected systematically and distributed.

Mobilize additional resources for the project and develop linkages with similar initiatives and concerned parties.

NCM and ICM Jointly Supervise:

Drivers, Secretaries and Office Support Staff
Accountant
International and National Technical Staff
Scientific, advisory or technical committees

NCM & ICM will liaise with:

PCU
UNDP-PST
Executing Agency (EEAA)
Implementing Agency (NCS)
Italian Cooperation
Local Project Stakeholders
Project Beneficiaries
EIECP other components
Financial and Technical Managers of the Technical Unit (TU) of the Debt-for-Development Swap Management Committee

NCM & ICM both report directly to the Implementing Agency and the Project Executive Committee.