UMJAWASIR DEVELOPMENT PROJECT
ADRA SUDAN

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PHASE TWO EVALUATION
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EDGE for consultancy

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1.0 INTRODUCTION: The project context:

1.1 The local Environment

Um Jawasir project falls in the middle of the Bayoda Desert and also subject to the effects of the north easterly strong and dry winds resulting from the seasonal movements of the Inter Tropical Convergence Zone. As a desert climate, the area is extremely hot (over 40°C) during summer and extremely cold during winter nights. The area is underlain by a rich underground Nubian sandstone aquifer that is recharged from the Nile and the seasonal wadis, particularly Wadi Mugadam. Soil in the area is virgin, loamy clay but low in content of nitrogen and organic matter.

The area is part of traditional homeland of the Hawawir nomadic tribe with the smaller Girayat tribe which occupies the southern ridge of the wadi. Prior to the severe droughts of the 1980s, the inhabitants depended mainly on camels, sheep and goats and limited crop production when conditions allowed The droughts of the 1980s desiccated the livestock and caused most of the population to migrate. Hence, Um Jawasir project came as an attempt to rehabilitate the area and secure food for the population, which is currently estimated to be about 200,000 families in Wadi Mugaddam, about 15% of them live within the project vicinity.

In response to the 1984 drought, ADRA Sudan and other national NGO started distribution of food aid to the affected population. Following the receding of the severe droughts, ADRA Norway & NORAD, in response to the requests by the Sudan government and the Hawawir people took the initiative and succeeded to secure necessary finance to implement an irrigated agricultural project as part of the rehabilitation efforts, focussing on Um Jawasir area

1.2 The Project Development:

Since 1992, three phases of the project have been implemented; the pilot phase, known as phase Zero (1992-1994), phase I (1995-1999) and phase II (2000-2004). As indicated by the various evaluation reports conducted (e.g. Noragric and the periodic socio-economic and soil surveys), and the internal M&E reports on the farm and labour productivity and total output indicated observable changes in population livelihood system.

1.2.1 Phase Zero of the Project (1990-1994): Planning started in 1986, but only by May 1990 that four wells with solar pumps were installed. The low water yield (45 M^3/day) of the solar technology (George, 1992) as well as other problems (Johnsen and Larsen, 1997), led to the eventual replacement of all solar units by diesel pumps in 1992 irrigating 44 plots (88 feddans). The responsibility for phase zero farms turned over to the farmers in December1994.

1.2.2 Phase One of the Project (1995-1999): This phase involved the drilling of 6 wells with larger output pumps than those of the pilot phase. A total area of 292 feddans divided into 73 farms each of 4 feddans was cultivated,. The main crops

cultivated were wheat, beans and onions (winter) and sorghum (summer). Other subsistence crops included alfalfa, okra, and vegetables were grown for home consumption and a few date palm trees were planted.

The project review in 1995 concluded that the project was technically progressing well, and that it contributed positively to land rehabilitation and food security. It recommended, among other things, the establishment of (i) a "technical" monitoring program for ground water levels, soil salinity levels, climate data, cropping patterns, irrigation management, fuel and water consumption, and crop yields; (ii) the establishment of windbreaks; (iii), the building up of a revolving fund; (iv) a marketing strategy; and (v) a strategy for women's involvement (Ibid, 1997).

The review by Noragric in June 1997 focused on the project progress and impact and the issue of sustainability (economic, ecological, and institutional). The project achievements were summed in (i) the successful completion of the physical infrastructure; (ii) Formation and training of farmers committee; (iii) initiating a revolving fund; (iv) establishment of monitoring system; and (v) availing of food to human and animal population

1.2.3 Phase Two (2000-2004)

This is the latest phase implemented, expanding the project by establishing 6 new wells for the benefit of additional 90 farmers (households). Production is based on two season cultivation. In winter, wheat (the main stable crop) and beans are the main crops produced, while in summer Sorghum (as a fodder) is the main crop, Alfaalfa and Okra are cultivated and harvested through out the year as supplementary cash crops, The phase experienced a major transformation in its activities, benefiting from the evaluation recommendations and the experience acquired during the previous phases. At the farm level, the project represents a real achievement in the arid zone. The resultant benefits are apparent in the improved livelihoods of the beneficiaries and the observed signs of the new and permanent settlements that are on the increase in the area and the return of many Hawawir migrants to the area.

The most noticeable features of this phase are the integration of women and youth in the program, through the initiation of a gender development component, aiming to empower women and enhance their participation in the project activities, the organization of the community (as opposed to farmers previously) and the capacity building training to farmers and other community members to equip them with necessary skills. Farmers' committees who received appropriate training on farm management, repair and maintenance and administration, seemingly succeeded (compared to previous phases), in raising beneficiaries' sense of ownership and awareness about their future responsibilities, as indicated by the performance in the collection of the revolving fund and tendency for application of the agreed rules and regulations.

2.0 BACKGROUND AND CONTEXT

2.1 Objectives and terms of reference

The main objective of the evaluation is to examine the course of development of Um Jawasir project to assess the impacts of its main components and to identify the lessons learnt from the experience. For practical reasons relating to the time factor, emphases were laid on Phase II of the project with the objective of serving the handing over process. According to the TOR, however, the specific objectives were:

1. Identify the project achievements vis-à-vis the preset objectives and assess its impacts on the project primary and secondary beneficiaries and partners.
2. Critically examine the strategies that guided the course of the project and identify the lessons learnt and how they were incorporated in the project responses to the arising needs.
3. Examine the methods adopted by the project to involve beneficiaries in the project activities and to build their capacities to manage and sustain the project and its benefits
4. Assess the validity of the phasing out process and the adequacy of the arrangements undertaken for a smooth phasing out.
5. Make recommendations based on evaluation outcomes and lessons learnt to inform project stakeholders and donors future planning.

2.2 Methodology

Several methods were adopted in the evaluation including:

- Consulting project documents, reports and records
- Individual and group meetings with project staff, beneficiaries (men and women), officials and people residing in the area but not directly linked to the project
- Field observations at farm and home levels and in the area around the project
- A small-scale survey was also conducted to generate quantitative information on cultivated area, production and productivity and marketing

3 EVALUATION OVERVIEW; MAIN FINDINGS:

3.1 The activities for phase II were successfully implemented according to the plan. The six wells and ninety farms established and allocated to beneficiaries are operational, except for one well which encountered some problems related to the volume and quality of the water, which was solved last year by drilling a new well, and the attitude and relationship between the beneficiaries of the well. All other farms are under cultivation and productive.

3.2 The objectives set were reasonably achieved, particularly in the agricultural and women components of the programme

3.3 The interviewed beneficiaries valuated their benefits from the project and affirmed its positive impact on their economic and social life, which they considered would not have been attainable without the project. They consider themselves far better than before and most of them are not only able to secure their family food for the whole year, but are able to extend support to their families. Wheat now represents a main diet replacing durra and vegetables diversified their meals. Another benefit the beneficiaries highly appreciated is the fodder they are able to produce to feed their animals, which receive their utmost concern. In addition, interviews with inhabitants living outside of the project confirmed their reliance on the project to obtain fodder for their animals and casual labour opportunity.

3.4 The beneficiaries, who were nomads, are changing to settled farmers and residing in distances much closer to each other than before in a manner that hold great promises to develop into villages of permanent settlements in the near future. As the distances between farmers houses are much less than those observed between the houses of the inhabitants of the project outskirts. Other signs of development are witnessed in the population density, number of shops, cars and carts moving around, the mosque, the school, the clinic and model village are visible positive signs.

3.5 Beneficiaries think that their vulnerability is strengthened and that they are no longer vulnerable to droughts and can find food for their families and animals in the years when there were no rains.

3.6 The social interaction between the different clans is enhanced and clans no longer constitute the major factor for judgment. Farmers meet more often, particularly at well level and a level of development orientation and self-reliance is emerging.

3.7 The shelter belt is yet far from reality and encounters severe irrigation problems. The creeping sand is still threatening the farm and the problem seems to exceed the farmers as well as the project capacity. The remaining few shelter trees effect is minimal or doesn't exist. On the contrary, the earth embankments effects on protection of farms are more obvious. Although farmers confirmed improvement in the micro climate in terms of temperatures and amount of rains fall and the absence of the wind storms during last three years, the overall impacts are minimal and difficult to trace and predict due to the breakdown of the metrological station.

3.8 The trend towards settlement is also observed in the efforts exerted by farmers to establish the model village, where some permanent houses, school, youth club and drinking water source started to emerge. In addition to this, some of the farmers are witnessed cultivating areas outside the project area near the water wells to

overcome the irrigation problem, while many are planning to resume cultivating their plots in the previous phases after they gained experience and realized the benefits of the project.

3.9 The introduction of the improved goat breed has contributed to the improvement of food intake and nutrition and secured an alternative source of food to the community, both within and outside the direct project beneficiaries' community

3.10 The high mal-nutrition rate among children has been remarkably reduced, as a result of the availability of diversified food stuffs e.g. beans, wheat, vegetables and milk, increase in women cooking skills and improved hygiene attributed to the gender programme.

3.10 In general, a positive change in the initially raised hopes and aspirations of local inhabitants and their displaced relatives, when poor and destitute perceived the project as a solution to their sufferings is felt shifting towards self reliance.

4.0 ACIVEMENTS

Agriculture

4.1 The pervious studies estimated a typical farm size for a household to be 5.74 feddans grown as shown bellow:

Crop	Area	Yield sack/fed	Straw yield pounds
Sorghum	2.0	5	200
Okra	0.5	10	
Onions	0.25	20	
Alfalfa	0.5		2000
Wheat	2.0	7	34
Broad beans	0.5	5	

4.1.1 During phase 11, six wells and ninety farms are established out of which 90 farms are allocated to beneficiaries, including 15 women benefiting directly a total population of 856 persons. Each farmer was allotted an area of four feddans each to be grown with wheat and sorghum, which represent the main crops grown during winter and summer respectively and mixed with okra, onion, alfalfa and broad beans. A level of flexibility is availed by the project regarding the type of crop and area for these crops inside the farms.

Phase	No of pumps	Pump capacity	Land area	Total No of farmers	No of women plots	Duration of phase
Pilot	4	$50M^3/h$	96	36	1	3 years
Phase I	6	$100M^3/h$	298	73	6	5 years
Phase II	6	$180M^3/h$	364	90	15	5 years
Total	16		758	211	22	

4.1.2 Analysis of the project statistics indicated that, almost all farmers were unsuccessful with wheat during the first year and recorded a loss, however, with the project progress farmers started to make profits and the number of farmers who made profits increased from about 3% in the first year to about 67% last year. Other crops exhibited similar patterns of profitability, except for sorghum, which was often infested with birds and farmers make use of the straw as fodder. Productivity of farms varies widely and ranges between 7.5 sacs per feddan as highest to less than one sac as lowest for wheat. This wide difference in wheat productivity, which is regarded as the main cash crop has adversely affected the repayments of the revolving fund installments. In addition the efficiency of land utilization in terms of the area cultivated is still low and the average area actually cultivated hardly exceeded 2 feddans.

4.1.3 On the other hand, the soil fertility, particularly when mixed with sands is good and the agricultural operations were timely, hence, the poor productivity in the first years could be attributed mainly to the lack of experience among beneficiaries and soil aridity, the selection process that consider the clan and brought farmers who were originally not resident in the project area and to some extents to the difficulties associated with irrigation.

4.1.4 The poor performance of some wells, e.g. well number 12, drew the attention to some technical aspects as the problem later proved to be the improper location of the casing filters i.e. on the good aquifer layer where water is abundant and with good quality.

4.1.5 The value of the project to animals is beyond doubt. Not only to the animals kept in the project area, but the interviewed indirect beneficiaries residing outside the project area indicated their reliance to some extent on the fodder produced in the project to feed their animals. The possession of animals is steadily growing and is currently estimated at averages of 18 goats, 8 sheep, 4 camels and 2 donkeys per farm. Those figures are highly correlated to the improvement in the beneficiaries' livelihoods. Farmers also learnt to fatten animals and records indicated regular selling of animals, which served to diversify farmers income and meet their basic needs. It can be stated that integration of the animals in the farming system and considering the value the Hawawir give to the animals could be one of the motives behind the success of the project. Although no conflicts were recorded due to farms damage by animals, it is obvious that some farmers abandoned growing of some beans to avoid grazing of the fodder by animals.

4.1.6 No problems are encountered regarding land ownership and beneficiaries consider the land is theirs, which is a motivating desired element at this stage of the project. However, as the project develop and need for accountability and rules arise, such attitude may hinder application of such attempts particularly those related to land ownership.

4.1.7 The associated cost and revenues for randomly selected farms revealed that, an average farm generates an income that enables the farmer, meets his family needs as well as the agreed contribution to the revolving fund, and in most cases support his extended family. Accordingly, the current size of the four feddans seems appropriate taking into consideration the current inefficiencies attributed to unfavorable climatic conditions and the limited beneficiaries experience in agriculture. However, in the future and as beneficiaries accumulate experience; it is possible that a farm size of less than four feddans will sufficiently meet the household needs.

***The project has secured food needs for all direct beneficiary households involved with the project and many families produced a surplus which they sold and some of it is distributed to relatives. Wheat is ranked as the most important staple crop by all farmers, and okra, alfalfa and broad beans, respectively, represent the major source of* cash. Sorghum, because of its fodder, ranked second.**

4.1.8 In the light of the current level of productivity, the numbers of animals for each farmer and the statements of beneficiaries, it is concluded that the project has successfully attained food security objective and that the food gab among direct beneficiaries is absolutely met and farmers are able to save or purchase their grains for the whole year. In addition, some beneficiaries are able to assist their relatives and agricultural laborers.

Organization and management

4.1.9 As a participatory project, the management has been carried in close collaboration with community through the project-fostered and other community organizations. At the local level, there is a popular committee composed of representatives of nine of Hawawir sub tribes, in which women are also represented. The committee has a planning responsibility and accountable to local authority. Internally, the committee is divided into women, services (education and health), and agricultural sub-committees. The agricultural committee is further divided into wells committees beside the women development committee.

4.1.10 Inside the project, farmers are organized at 3 levels: 2 elected well representatives at the base of the structure, who are promoted to phase 11 agricultural committee, the representatives from each phase are then promoted to Um Jawasir Development Committee.

4.1.11 The UJDC is one of the new developments in phase II. Its membership includes, in addition to farmers and women representatives, local leaders and some educated Hawawir from out side the project area. Its main function includes the overseeing of the project progress and pursuit of other development functions and initiatives in the area.

4.1.12 This is regarded as an ideal set up that permits organized participation of beneficiaries in the project activities. To enhance this, farmers at the level of the agricultural committee received short training doses on committees' formation, structure, administration and management of the revolving fund. More subjects were addressed by the project staff and included farm management and marketing and literacy. As expected with newly established committees, fewer are still shouldering the responsibilities and work is generally carried through informal meetings, irrespective of the fact that the agricultural committee is divided into specialized offices for agriculture, maintenance and development, but is inactive.

4.1.13 It is obvious that farmers are accumulating agricultural knowledge and experience and expressed willingness to develop their skills. This is indicated by the number of beneficiaries observed attending a training session delivered by the project staff and. Training results reflected on beneficiaries' attitude and performance, as most beneficiaries are able to calculate costs associated with agricultural operations and appreciate the importance of the revolving fund. Some farmers, on their own initiative approached commercial banks to obtain improved seeds and loans to finance their agricultural operations. In general a trend of self reliance is felt replacing the relief oriented thinking. The latter should serve as a basis for designing future interventions.

4.1.14 Women are represented as farmers as set in the project plan, yet they are not represented proportionately in the farmers committees, although they have started to assume more roles, separate of men, in managing their farms and in performing their activities in the women centers.

The Revolving fund

4.1.15 In the light of the limited state and beneficiaries capacities, the revolving fund stems as the most appropriate method to sustain the project activities, financially. The current system adopted by the project to determine the loan size and installments are based on real estimations of costs and revenues that ensure success of RF. The inefficiencies and the poor performance that accompanied the previous phases and led to depletion of the capital fund, provided the project and beneficiaries with valuable lessons to manage the current phase RF as shown in the repayment rates, compared to previous phases. The previous phases suffered some problems including:

- The lack of experience regarding rational use of resources to carryout the different agricultural operations
- The flat rate applied previously caused some farmers to desert their farms to escape repayments.
- The relief orientation towards the project increased farmers' reluctance on the project and self welfare focus
- The repayment in kind led to some losses due to storage waste and prices fluctuations
- Weak monitoring and marketing skills hindered timely collection of installments
- The tribal basis of land allocation seems to have softened the resolve to collect RF contributions and ensure good farming practices

4.1.16 However, during phase 11, more attention has been paid to the RF procedures and farmers were able to repay 75% of the total installments. The failure to achieve full repayment has primary been caused by the problems in well 12 that went out of production for some time. Also the project, during this phase, did not overcome or address all the weaknesses of the previous phases, e.g. not being involved in farmers' selection (no criterion) and the distribution of plots on tribal lines. In addition to the awareness generated among beneficiaries as a result of the training and the accumulation of experience from the previous phases, some flexibility was maintained permitting enough time for farmers to sell their harvest and repay in cash, which contributed to the overcoming of the problems associated with the repayments in kind. Also, some attempts were made to review the farmers' actual productivity and consider the reasons that go beyond the beneficiaries' control.

Environmental Rehabilitation

4.2 The fragile environment of the area has been experiencing slow but significant changes during the last three decades manifested in:

- The systematic drop in rainfall levels and its temporal and spatial variability during the past few decades

- The disappearance of some indigenous grass species due to over grazing
- Increase in the intensity and velocity of the dry winds and the wind-blown sand
- Depletion of flora and fauna
- Environmental degradation as a result of miss use of natural resources

4.2.1 Accordingly, environmental rehabilitation has been one of the two major objectives behind the initiation of the project. The major achievements here are:

(a) The reclaiming of 400 feddans of desert land and its transformation to productive land, with a substantial improvement in soil conditions (reduced salinity).

(b) Several internal shelter belts surrounding farms were constructed during this phase to protect farms from sand creep. The earth embankments were also expanded. However, the shelter is facing a severe irrigation problem and the control of moving sands seems beyond the capacity of the project and the beneficiaries.

(c) The utilization of what was an untapped huge underground water resource.

(d) The project fodder crops, crop residues and woodlots have reduced tree cutting rates and overgrazing. On the other hand, farms and irrigation canals has positive effect on the micro climate.

(e) Revitalizing biodiversity in the area through the gradual rebuilding of livestock in the area and the reappearance of some wild fauna such as birds, rabbits and mice as well as some flora that disappeared in the past.

(f) Compared to the surrounding area, a noticeable micro climatic change has been observed, particularly in temperature levels and velocity of wind. The wind storms have disappeared for the last 3 years.

(g) Supply of renewable crop residues from the project's farm provided an alternative fuel wood and construction materials which has reduced the pressure on natural vegetation and on women who used to seek firewood from distant areas

(h) The earth embankment and the two shelter belts north and south of the farm were constructed during phase I, with a substantial contribution from the local community in manual labour and irrigation. A smaller internal belt has also been planted by some farmers around their farms. Sand movement has been reduced. However, the thinness of the shelter belt (one row), particularly from the northern side and due to the exposure of the area and the strong velocity of wind, has allowed sand to creep on the pilot farms of phase Zero, leading to its abandonment by many farmers.

(i) Environmental awareness has been a basic part of the agricultural extension programme and there are sufficient indicators that it is working. Particularly during phase II, when no direct intervention was made in environmental protection, all efforts were concentrated on awareness raising for both men and women. That rise is indicated by:

- Farmers' contribution to planting, watering and protecting the shelter belts and cultivation of shelter belts around their farms.
- Economic/rational use of crop residues.
- Women's interest in energy saving techniques.
- Locals refraining from cutting of green trees or the collection of standing dead trees

New water conservation techniques such as drip irrigation need to be attempted in farms and shelter belts and the system of plots distribution needs to be based on merits of beneficiaries rather than the tribal affiliation as farmers efforts are expected to go beyond their plots to protection of the shelter belt.

within the project area, in adherence to a Popular Committee decision and in line with the traditional customary laws

4.2.2 During the training workshop on local resource management, organized in Um Jawasir June 2003, participants were able to identify the problems that led to desert creep and resource degradation in the following.

- Clearance of trees.
- Overgrazing
- Lack of respect to the law
- Lack of awareness
- Natural factors - drought and desertification

4.2.3 The following were suggested as a remedy

- Awareness raising of population
- Prohibition of tree cutting
- Introducing alternative sources for wood for cooking such as, steel bars, mud and grass for construction
- Committing farmers to plant shelter belts around farms
- Prohibition of grazing before the right time and place (to allow it to produce seeds)
- Cultivation of drought resistant tree species near settlements
- Expanding the shelter belt protecting the agricultural scheme
- Excavation of hafirs (man-made water pond) & construction of terraces to harvest service water to plant trees
- The initiation of resource protection committee to draw policies and follow up implementation, with sub-committee to supervise the tree plantation programme and the agreed measures of protection at local levels
- New legislation, in collaboration with government authorities (Popular Committee and the local court), to protect the environment
- Training of local committees to implement the agreed policies within a specific time frame
- Supply of seedlings by the project

The Project interventions made significant positive environmental impacts. Sstrengthening and expanding the shelter belt and the earth embankment, availing alternative energy sources and continued awareness' raising, are the key pillars for environmental rehabilitation. To expand environmental awareness beyond the project vicinity requires the mobilization of traditional institutions and tribal leaders, customary laws and traditional cultures that prohibit trees cutting.

However, the key activity to the realization of that, as perceived and practiced, was the reduction of sand creep on productive lands.

4.3 Environmental impacts outside the project area

4.3.1 The environmental impacts of the project extended beyond it territories. The pastoralists benefited from the availability of fodder, especially during the last three seasons, when the amounts of rains did not allow the growth of traditional pastures. Also, farming in the project provided food for people and their animals.

Most of the animals in the area are kept under traditional pattern. However, this season, animals are brought closer to the project to be fed on crops residues.

4.3.2 This feature changed the pattern of movement for a large number of Hawawir nomads. Hence, instead of moving to Kordofan state, large numbers, especially goats and sheep owners preferred to move closer to the project where water and fodder are available. Farmers are investing more money on animals for fattening. All these have positive impacts on the natural range lands.

4.4 Women programme

4.4.1 Initially, the Hawawir / Um Jawasir community was treated as a unified and uniformed group of people without considering the specific needs of women or the gender relations within neither the household, nor the variations among the various sub-tribal groups with regard to women roles, rights and needs.

4.4.2 The 1995 review also noted the project's strong male bias, in staffing as well as beneficiaries and it recommended working out a strategy for women's involvement in the project (Johnsen, et. al., 1996). In response, a women program was initiated in June 1996, but the lack of adequate financial resources kept the programme isolated, lacking a working plan, any specific objectives or qualified staff to lead it.

4.4.3 During this phase, women were perceived and treated as assistants to their husbands and fathers. Land and other production inputs were allocated to men with the assumption that women will assist and will benefit like other family members. But, nevertheless, a Women's Training Centre was constructed and activities were started through home visits by the project staff and mostly volunteers who started some training activities in nutrition, health and cooking.

4.4.4 By the end of phase I a few sewing machines and other training materials were provided by the project and a collective farm was designated for the women. Some basic training in agricultural operations was also provided to women farmers, especially in vegetable production. The most important development was the great interest in the programme expressed by both women and men.

4.4.5 Encouraged by women interest and enthusiasm, their positive attitude towards the project and their good performance in agricultural activities, the women component received more attention and more resources during phase II. Though, still the programme remained constrained by poor funding and lack of professional (specialized) leadership, it started to gain some momentum, particularly after the allocation of 15% of the project farms to women. A small number of women started to participate regularly in the centre's training activities, which included nutrition, food making, hygiene, environmental awareness, handicrafts and IGA such as soap making and sewing.

4.4.6 Although the training activities were classical and stereotyped, the generated high interest and positive results, primarily because of women backward stage of development so indicated by the gap between them and men in personal hygiene and general awareness etc..

4.4.7 After the completion of the women centre, the project began to address the women's reproductive role (nutrition and child care) and recognized their productive role more seriously by allocating them agricultural plots, expanded the IGA

activities and diversified training sessions and a specific budget was allocated to the programme, all leading to the gradual increase in the number of women joining the centre, from 8 women from one sub-tribal group in 1996 to 55 by 2004 from various sub-tribal groups in the area. (Table 1). By

4.4.8 In 2003, two new centres were established at Amasheen and Um Remeila in response to community demand, and because of the long distance from the main centre. Literacy classes became one of the most popular components of the programme.

Table 1: Women Trainees at the Centre 1996-2004

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
No	8	19	20	21	30	34	36	41	55	264

Impact of the Women Programme:

4.4.9 The direct and visible results of the introduction of the women programme include:

1- Compared to women in the surrounding area outside the project, there is a noticeable improvement in health and hygiene conditions at personal and home levels (clothing, utensils, furniture, Etc...)
2- Women are practically involved in the production and marketing processes, both as buyers and sellers.
3- Incomes generated from project-supported activities, contributed to women empowerment by sharing in the decision making process both at home and community level, though the latter is still weak
4- Women became more visible at the community level, though their membership in joint project committees is still not that effective
5- Women are more organized and social interaction across sub tribal lines has been enhanced by the centre
6- The rise in awareness level is indicated by the women interest and demand for programmes in reproductive health, STDs, interest in leadership, all were untouchables when the project started
7- Socially, according to some interviewees, married (earning) women became more recognized by husbands and their roles appreciated and husbands are staying home for longer periods than before
8- Economically, more women are benefiting from the presence of new goods and choices in the market, in both food and non-food stuffs. Urban goods are regularly coming in by traders and for the first time by women vendors who exchange goods for crops and accept instalments
9- Literacy standards started to improve, particularly among young girls and mothers are sending more of their children (boys and girls) to schools.
10- All women, inside and outside the project, admitted reduction in physical efforts they used to perform in pursuit of water, fuel wood and caring for animals and enjoying more free time at present.
11- Men became more interested and supportive to women programme as opposed to the

The social component of the project, including the gender, although it came late, it scored faster growth rate; women possessed farms and participated in the decision making. Irrespective, more efforts are needed to realize development goals that go beyond food security.

initial resistance and antagonism towards it

4..4.10 Weaknesses:

1. The programme, like other non-agricultural components, was not preceded by an in-depth study of Hawawir women status and actual needs. This prevented the development of a specific time-bound and objective oriented work plan/s. All activities were ad hoc and not linked. Most of the positive elements and results came as a result of a trial and error and individual initiative approach. It also lacked the specialized leadership that could have professionally guided the programme.
2. From an absolute and a gender equality perspective, the programme came late, on piece meal basis and remained under funded. The women centres are poor in equipment, training materials and running budgets
3. For most of the time, the programme was dependent on part-time volunteers who were continuously changed (partly because of the harsh physical environment), causing instability in the programme. It was not until 2003, that some professional full-time staff was recruited, which produced very quick results including the two new sub-centres, the women revolving fund, the women farmers Committee etc..
4. As a result of the above, it is difficult to identify any specific approach or methods adopted in implementing the programme.
5. In terms of resources allocated, staffing and follow up, the programme remained isolated from other project components, with no ear-marked funds or time-specific plans.

4.5 Contribution of the project to conflict reduction:

4.5.1 Prior to the project conflicts were caused or heated by (a) competition among Hawawir originating from scarcity of resources; (b) conflicts of interest between farmers and herders in displacement areas, which sometimes involve other non Hawawir groups, and (c) changes in gender roles at household levels, caused by the increasing burden on women due to loss of accessible resources, migration and/or unemployment of males etc..;

4.5.2 The initiation of the project in itself has contributed to conflict resolution in several ways that goes beyond the project area. For example, at the wider level, the feeling of loss of identity as a result of loosing resources and assets (the basis of the pastoral life) and the feeling of relative deprivation (vis-à-vis other relatively better off national communities in the region, e.g. riverine groups) was also a real threat and a time bomb, if we compared it to the developments that occurred in areas that passed through similar situations in other parts of Sudan. The project has effectively diffused that threat

4.5.3 The participatory and partnership approach adopted in the implementation of project has helped locals gain confidence in their collective ability to diffuse and/or resolve problems. This is particularly important under the conditions of collapse of traditional mechanisms and the evident failure of central authorities' attempts to resolve them in western and eastern Sudan.

4.5.4 Within its immediate vicinity, by availing of more resources and through organization and training of community members, the project contributed to minimize principle causes of conflict (competition for water and pasture). The project transformation of local life from being competitive and conflictive between individuals and groups (over resources) to an interdependent and complementary one appears in:

a. the introduction of activities that, by nature, demand collective decisions, collective work and cooperation such as shelter belts construction, irrigation, canalization, women collective farms etc.. and bound them together with the Revolving Fund and the management committees.

b. the introduction of self-regulating mechanisms, through selection and training of local community members, with representation of all sub-tribal groups and handing them the authority to allot land, terminate leases and settle disputes at the project level

c. the reformulation of the tribal court to settle disputes at the community level.

4.5.5 As the project introduced a new form of production with no inherited social gender division of roles (that died away with the loss of livestock), it contributed to gender equality and reduction of disputes at household and community levels. New phenomena such as women participation in public life, direct access to resources contributing to production and participation in decision-making, in addition to awareness raising, all asserted women rights and gender equality in the area and enhanced acquisition of rights that were largely denied in their pastoral past.

4.5.6 By enhancing the home return of Um Jawasir population from the riverine area (Shigiya tribe homeland), an inevitable problem was averted (though some clashes did occur). The problems relate to cultural behavior and emanate from the Hawawir use of resources (more than antagonism), e.g. allowing camels to browse fruit trees, or rooming around settlements over their camels exposing women. This behavior: misuse of private property and trespassing are both questions of honor and could have led to violence and bloodshed

The project contributed to mitigation of conflicts through revitalized project structure and cooperation among beneficiaries as opposed to individualism as a result of direct interaction between beneficiaries and achievement of identity

4.5.7 The project also provided a model for development interventions that could prevent or reduce resource-based conflicts, for other areas with similar environmental conditions and scarcity of resources.

5.0 PROGRAM IMPACTS AND LESSONS LEARNT

Economic and social dimensions

5.1 The Hawawir are the principal inhabitants of Wadi Elmugadam. They pursue nomadic economy with cultural and customary imprint in the past. In fact large portion of the tribe still occupies parts of Northern Kordofan where the tribal leader resides. In recent years large number moved to the Northern state creating a drift between those living in North Kordofan and those a long the Nile valley. The tribal cohesion received another set back. The drought years of the 80s forced large sectors of the tribe to migrate to the Nile valley and to Omdurman and live as environmental refugees in the out skirts a long Nile strip between Merawe and Dongola. Thus, maintained their social links with the communities inhibiting the wadi and providing potential experienced agricultural labors to any further farming development. The migration from Wadi in search of employment opportunities is observed in the dominance of women and children in the population structure.

5.2 At this stage and before phasing out the degree of impact indicates that the project has succeeded to meet its obligations regarding food security and environmental protection. This is attributed to the improving productive capacity, on going Institutional capacity building activities and the developing revolving fund and financial stability

5.3 The different studies carried in the area revealed that the Hawawir are pastoral groups keeping camels, sheep and goats. They also used to practice limited traditional agriculture in selected places in the wadi whenever soil receives additional water from the surface run off

5.4 Such farming activities are practiced in good rainy seasons only, however the pastoral economy is in a stage of drastic transformation as a result of the ecological decay leading to migration and displacement. A small portion is still practicing nomadic movement in North Kordofan which the majority may be described as decentralized livestock. This transformation took place in two stages.

5.5 The first stage resulted from the prolonged ecological degradation leading to a large scale migration and displacement that alarmed the tribal leaders and Hawawir elites. The second stage resulted from the first stage leading to semi nomadic, which is changed to agricultural settled life.

5.6 Despite these changes the coping mechanisms developed revolved around the basis for their livelihoods supplemented by employment as agricultural labor and remittance to families staying in the wadi

The implementation of Um Jawasir project reaffirmed the second stage of coping strategies where income generated from farming is converted to animal raising. Observations showed rapid increase in the livestock specially sheep. This constitutes a challenge to the environment, but from another angle it may not be

like that. Since animals are usually fattened and a process of continuous off take is taking place. Regarding fodder production, farming practices show improvement in grass and fodder production which support the population in the area. Irrespective, the current rate of livestock building necessitates a need to establish a balance between the growing number of animals and the capacity of the project.

The associated Challenges here are:

- Large scale return and settlement of Hawawir in the area
- Rehabilitation and construction of basic infrastructure particularly transportation, health and education infrastructures.
- Youth employment
- HIV/AIDS threats

6.0 SUSTAINABILITY CONCERNS AND RECOMMENDATIONS

6.1 Phasing out process

6.1.1 The phasing out process is crucial to the successful resumption of project activities by the beneficiaries. Meetings with the farmers indicated they were informed about the date of the project end and expressed their desire to take over. However, it is of paramount importance to mention that handover involves not only the physical assets, which should be handed in good working condition, but also the transfer of knowledge and skills. As for the first handover component, practical arrangements are taken to ensure handing over to a representative and legal bodies accepted by the beneficiaries. Discussions with Agricultural committee and Um Jawasir development committee chairpersons indicated that suitable membership is selected and registration of the development committee is on going and is expected to be completed before handover date.

6.1.2 Concerning the other part of the handover that deals with the transfer of knowledge and skills and in spite of the beneficiaries experience and the training delivered, it is anticipated that they will encounter managerial and administrative problems that may threaten the future of the project. Therefore, it would be necessary to strengthen committees' managerial and administrative abilities through mentoring and on job training during the first months of beneficiaries' takeover. A backup to be provided by the project management will also be necessary to provide prompt on site advice to the farmers when necessary.

6.1.3 Also, more attention needs to be awarded to the youth to increase their involvement and participation in the project activities to assist and support beneficiaries committees and further project impacts by addressing new areas of relevance to youth

6.1.4 An extension of the project, would also improve the handover. It will avail a chance for the project management to address specific issues related to capacity building, Hence, a core focus of this extension would be to facilitate attempts of farmers to resume cultivation in the previous phases of the project, rehabilitation of the shelter belt and consolidate work of committees, which would entails orientation of the extension towards an integrated rural development approach.

6.2 Farmers committees

6.2.1 Judging the level of achievements made by these committees so far demonstrated a level of group solidarity and capacity in mobilizing farmers to negotiate their concerns with the project administration, especially in phase 2. They are learning to seek outside help of leaders to strengthen their image and implement their decisions. Nevertheless, commitment and performance are below required level. The poor performance of phases 0 and 1, which are managed by the beneficiaries independently, is a demonstration of this shortage, as committees didn't succeed to rebuild sufficient revolving fund or take effective decisions regarding the un cultivated plots.

6.2.2 Performance of committees would be the sole determinant factor of the sustainability after phasing out. The current situation depicts a level of difference in the interest among beneficiaries attributed to the large number of clans involved,

illiteracy and weak awareness and individualism. Such differences may develop into conflicts that threaten the future of the project in the lack of efficient and strong management that is able to make fair and sound decisions. Hence, strong committees are indispensable and all efforts should be exerted to build their capacities.

6.3 Revolving fund

6.3.1 Financial capacity is a top priority to the project sustainability. Realizing the importance of RF, the project management established the RF to gradually transfer responsibilities to trained farmers. RF which is made of farmers contributions in kind from their products initially was shifted to cash repayments. This latter approach is more convenient as it overcome some of the marketing and storage problems besides it suits more the type of individual account that is adopted in the management of the RF.

6.3.2 Viewed from the perspective of realization of objectives, the revolving fund has probably been the weakest component in the project. There were several factors behind that

1. The delay in funding the project, that negatively affects the cropping seasons in the first year.
2. The failure to appreciate the predominance of the relief mentality in general, that was dependent on external support for a number of years before and the fact that the idea is new for both farmers and community.
3. Estimates included in most submissions and proposals were based on the calculations of the total crop market value and annual family food demand , without the consideration to the acute poverty situation in the community that force the farmers to share the farm out puts with their extended families,
4. fluctuation of market prices, in several seasons, there were differences between the anticipated market value of the crops and production costs and the actual costs and prices obtained, in addition to some fluctuations in yields.
5. The absence of appropriate training to farmers' committees in managing the funds leading to using it as a property not as a resource. The result, irrespective of the ratio collected was the diminishing value of the money due to inflation and the devaluation of the Sudanese currency. Also the rules set, to avoid abuse, prevented the utilization of the money or its investment.
6. The distribution of irrigation wells on tribal basis and the selection of farmers by the tribe itself, reduce the level of seriousness in collection and reduced the effectiveness of the regulations set.
7. The absence of legal State institutions and the weakness of local/traditional institutions in the area also contributed to the low rates of contribution to the revolving fund

6.3.3 Serious attempts must be taken to address the current defaults, as unsolved debits will remain as an obstacle that would face the farmers committee and a possible source of conflict in the future.

6.4 Authorities

6.4.1 The official role will be necessary in the coming period to assist farmers committees and provide possible support to fill the gab created by the project phasing out. The provision of technical support would be a priority issue to be

discussed with the authorities in order to link the project with the concerned technical departments to carry extension and maintenance, or hire cadres motivated by the committees on full or part time bases.

6.4.2 Authorities have also an important legal aspect in recognition of the Development committee and facilitation of its work through subsidies on inputs and exemption from taxes and registration fees.

6.4.3 Authorities can also intervene to set and clarify the land tenure system in the project area. Land ownership will motivate farmers and in addition to the power it gives to the development committee in making decisions pertaining to land use and allocation, it will enable the committee to obtain loans from financial institutions

6.5 Agriculture

6.5.1 More investment in irrigation is necessary to reduce current waste in water and irrigation time and consequently cost of irrigation. Efforts need to be focused on the main irrigation ditches which are long and often covered with sands and the shelter irrigation system which is proved difficult to manage.

6.5.2 Geophysical survey should be sought later to examine the underground water level and assess its sustainability

6.5.3 Reducing the farm size might increase the current efficiency of the farm area use and maintain a sufficient level of produce to meet beneficiaries' basic needs. This also seems feasible in the light of the nature of the desert area and the difficulties and high costs associated with irrigation.

6.5.4 Strengthen farm supervision, set target sawing dates and use of improved seeds though intensive extension to ensure productivity and recovery of incurred costs

6.5.5 Adoption of a marketing strategy to increase returns on by promotion of products, increase of the marketing abilities and opportunities and protect farmers against selling at periods of sufficiency or being exploited by capable traders.

6.5.6 With the consideration of experience acquired from the former phases, and if a new phase is to be established, and through discussions with farmers groups, the following suggestions were raised:

1. Farmers should be selected according to ability and interest
2. Establishing more shelter belts and embankments
3. Plough the lands to mix sand with clay
4. Construction of shorter canals and dividing plots so as to over come irrigation problem
5. Use of more efficient and easy-to-use techniques for irrigation (e.g. drip irrigation)

6.6 Environment

1. Production of seedlings for the construction of the new shelter belts and production of wood lots.
2. Supervision and guidance of farmers' strengthening and irrigation of the old shelter belt
3. Strengthening the shelter belts by: (a) thickening the old northern shelter and adding new ones to the east and south to avoid the possible effect of wind deflection on to the farms

4. Introduction of new drip irrigation system to conserve water and reduce physical efforts needed for irrigation of the shelter belt
5. Continued training and awareness campaigns on environmental issues.
6. Encouraging use of alternative energy sources, on credit basis. For example a women revolving fund could be established to support supply of gas cookers.

6.7 Gender

1. A study on Hawawir Women changing Roles and status (Preferably as apart of a comprehensive socio economic study of the area)
2. Allocation of adequate resources to the programme
3. Developing a gender programme with an appropriate approach, work plan and specific objectives and targets (possibly with the assistance of an specialist)
4. Designing activities, not only on the basis of women interest and needs, but also on relevance, compatibility with the local environment and economic viability
5. Increasing the number and building the technical capacity of the programme staff through training and exchange visits
6. Increasing women direct access to economic resources (proportionate to their numbers and responsibilities), particularly land, livestock and marketable skills
7. Some issues such as violence against women, particularly FGM, early marriage and awareness about HIV/AIDS (in view of the high male mobility) need to be introduced.