Back Donor Project No (if any):
Name of your Organisation: Norwegian Church Aid
Local Partner(s): Ministry of Agriculture

ABOUT THE EVALUATION
Evaluation year: 2006
Conducted by: WEKITA Consulting Office
Country: Eritrea
Region: Eastern Africa
Theme / DAC sector:

SUMMARY OF THE EVALUATION (maximum 2 pages)

Title of Evaluation Report:
Shebah Demas Integrated Development Project

Background:
The Shebah Demas Development project (SDDP) was initiated in year 2000 based on experiences gained from the Zula Development Programme. The project was identified by the Ministry of Agriculture based on national and sector specific priorities set by the Ministry of Agriculture. Following the decision to implement the program in the current project site a detailed baseline study was done to identify major problems, set strategies and define priorities; the baseline survey was conducted in 2000. The baseline survey was detailed and covered large geographic areas. It suggested that targeted and intensive intervention should be implemented in the Plains (with villages Shebah, Metkelabiot, Adi-Shuma, Ghahtelai & Demas).
The survey has identified the following problems to be prevalent in the plains:

- Low agricultural production
- Low level of men farmers know-how in farming
- Increased environmental degradation
- Low health facility and services
- Low level of education
- Low level of women's participation in economic activities

To solve the above-mentioned problems the following Strategies were rightly identified by the baseline survey:

1. Water development
2. Crops and livestock development
3. Infrastructure development
4. Environmental protection and development
5. Gender issue, women's welfare promotion

The above strategies were further broken down into component development and immediate objectives based on a detailed six-year project implementation plan.

Purpose / Objective:
The purpose of evaluation as provided in the TOR is:

- Consider whether the project objectives are being achieved.
- Consider whether the project is effective in both educating and training the community with the desired impact.
- Review the use of funds.
- Give recommendations to guide future decision making and project development
- Document lessons that are being learned

- Provide a basis for accountability to concerned implementing, financing institutions and project beneficiaries.

The TOR has further outlined the focus areas that should be critically examined when doing the evaluation. These areas include:

- Efficiency
- Effectiveness
- Impact
- Sustainability and
- Gender Sensitivity

Methodology:

Relevant data collecting instruments were developed and enriched through discussions and expert opinions. As much as possible all relevant questions were included and reviewed so that they do not threat the integrity and confidentiality of all concerned parties and individuals. Three different instruments were used: Individual Interview Questionnaires, Key Informant Questionnaires, and Focus Group Discussion.

Key Findings:

- The project is relevant, effective, efficient, and sustainable.
- The need for pure water and irrigation canals are answered with satisfactory results. Young girls and boys are now able to concentrate on their educational assignments due to reduced time required to fetch potable water. Women are able to carry out the productive, reproductive and community management roles more easily, and to attend training on home economics and other relevant training (e.g. adult literacy program).
- Another impact is on the changed attitude and practice of the project beneficiaries towards FGM. This change has ensured the safeguarding of the human rights of women, and also protect female from physical and mental harms that would have been inflicted on them.
- There are some tangible positive results of the crop and livestock development intervention, but many farmers are yet not able to harvest crops due to lack of adequate rainfall in the highlands that form the running water to be used for spate irrigation.
- The project is found less successful in the activity of environment protection.

Recommendations:

- There is a need for extension of the project, new boreholes need to be drilled, new water points to be established, latrines to be built, and embankments to be constructed.
- The creation of income generation activities for women after home economics training is important. Accordingly, market outlets should be created by establishing marketing pools in Ghindae and Gahtelay.
- The distribution of best seeds for food crops and commercial crops (for example, watermelon) should be among the priorities.
- Better provision of water for livestock within an easy reach of the villages.
- The project should have taken initiative for the introduction of individual lending.
- There is a need for provision of nursery area for the growing of seedlings compatible to the climate.
- There is a need to replace iron tubes with plastic tubes.
- Water lifting mechanism using diesel powered engines should be replaced by solar and/or wind powered mechanism.

Comments from Norwegian Church Aid (if any):

Consultants Report on the End Evaluation of The Shebah Demas Integrated Development Project Implemented In Five Administrative Areas of Ghindae Sub Zone in Northern Red Sea Zone

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August 25 2006

ACKNOWLEDGEMENT

First of all, we would like to express our gratitude to all management staff of the Shebah Demas Integrated Development Project (the Project Management Unit) for providing us unreserved support to conduct the end evaluation study. Mr Tecle Gebremedhin (the SDDP/PMU project manager) deserves special tribute for guiding the study team, providing all logistical support as well as driving the study team to all the project sites. Likewise, our deepest appreciation goes to the core of key informants namely, Tecle Gebremedhin (SDDP), Tadesse Gebregiorgis (Ghindae Sub Zoba Administrator), Solomon Girmai (MoA Sub Zoba Head-Ghindae), Talke Salih (village Administrator-Demas), Ahmed Sheblela(village Administrator-Gahtelay), Afa Abir(village Administrator-Shebah), and Ibrahim(village Administrator-Metkel Abiet)

We wish to convey our sincere gratitude to the Norwegian Church Aid (NCA) which funded the evaluation study.

We would like to express our deepest appreciation to the Team of Experts who played important role in preparing the Study Protocol and Study Tools and gave guidance in doing the End Evaluation Study. We would also like to give our thanks to the SDDP for giving us prompt feedback and valuable comments on the first draft report.

We also acknowledge the support of all government organizations in the study areas and the local administrators who helped us to carryout our field study according to our plan and for providing valuable information.

Finally yet importantly, we would like to thank the people of the study areas and the individual interviewees who allowed us not only to interview them but also to delve into their daily lives and gave useful contributions so that we can have better understanding of achieving our objectives of the SDDP end evaluation study.

List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ECDP	Early Childhood Development Program
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
FGM	Female Genital Mutilation
GSZ	Ghindae Sub-Zoba
HIV	Human Immunodeficiency Virus
ILO	International Labor Organization
IYB	Improve Your Business
LCC	Local Community Committee
MoA	Ministry of Agriculture
MoE	Ministry of Education
MoH	Ministry of Health
MoI	Ministry of Information
NCA	Norwegian Church Aid
NFA	Nakfa – name of Eritrean currency
NORAD	Norwegian Agency for Development Cooperation
NUEW	National Union of Eritrean Women
PM	Project Manager
PMU	Project Management Unit
PPM	Percolation Per Minute
PRA	Participatory Rural Appraisal
PVC	polyvinyl chloride
REU	Rural Enterprise Unit
SDDP	Shebah-Demas Development Project
SMCP	Saving and Micro-Credit Program
TOR	Terms of Reference
UNDP	United Nations Development Program
UNICEF	United Nations International Children's Emergency Fund.
VA	Village Administrator
VDC	Village Development Committee

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0. EXECUTIVE SUMMARY

i. This document reports on the results of the study conducted for the end evaluation of the Shebah Demas Integrated Development Project. The study was conducted in July-August 2006 by WEKITA Consultancy Office.

ii. The Shebah Demas Integrated Development Project (SDDP) is a development Intervention launched in 2001 in five administration areas namely Shebah, Metkel Abiet, Gahtelay, Adi-Shuma, and Demas. The village of Asus, which is in the administrative area of Metkel-Abiet, is also within the domain of the project area. Before the on set of the project, a baseline study was conducted by WEKITA Consultancy office to identify problems, prioritize activities and draw intervention strategies. The project was implemented in 2001-2006.

iii. Project implementation plan was developed on the basis of the baseline survey. The process of developing a project design involved directly the key stakeholders mainly the community and the Ministry of Agriculture. Key responsibilities, roles and contributions of all partners were clearly defined and documented.

iv. The Integrated approach was selected where a combined intervention that is, (1) improved water supply schemes (2) crops and livestock development (3) infrastructure development (4) environmental protection (5) women's welfare promotion were taken as a package to get better impact on rural community's income, nutrition and health. The project was designed to improve access to food and utilization as well as increased access to clean water for domestic consumption. The integrated approach of development was coupled by extensive training and demonstration in food production, home economics and nutrition. The integrated approach was well received by the community in that people understood that the impact from the combined components would be better than isolated projects could deliver.

v. **Planning and coordination**: the baseline survey, the project implementation plan and supplementary implementation processes were all participated by relevant stakeholders. The baseline survey and the project implementation plan identify measurable impact indicators for the monitoring and evaluation of the project. The clear assignment of responsibilities and roles coupled with a clear implementation structure has given to smooth work coordination between the partners. There was a bottom-up flow of information which has expedited timely resolution of problems and smooth communication. Local Community Committee was established to facilitate communication and identify early signs of problems. Water Committees were also established to manage and control water use. These committees were serving as anchors of communication between the Project Management Unit and the target communities.

vi. **Management of resources**: managerial capacity, human resources, competencies, facilities, and equipment, finances and their use, selection of project site, monitoring and evaluation, as well as time management are all resources needed in every project. In the case of the SDDP the following findings reflect our evaluation results.

- The SDDP and other project partners are properly qualified to manage the SDDP. The SDDP did invest in the capacity of development of its own staff and that of partners through trainings of different durations and scopes.
- There was enough pool of expertise to guide the various activities of the project (the pool of experts from SDDP, MoA, and local administration)

- Facilities and equipment were adequately provided; though at certain instances a significant delay in the provision of facilities and gabions was observed. But it was beyond the control of the SDDP.
- Financial management and control is done as per standard procedures and regular reporting requirements.
- Project site selection is done on the basis of priorities put by the MoA head quarters and on the basis of relevance to the target areas. But participation of community was ensured during the baseline survey and implementation plan.
- The baseline survey and the implementation plan have provided measurable indicators for the purpose of monitoring and evaluation. There were adequate field supervision, monitoring from SDDP Management Unit, follow-up from the MoA sub Zoba offices and the local administrations. We could also observe that the project manager, the MoA sub Zoba office and the local administration authorities in the area know very well all their project activities and make biweekly meetings with the different village committees established.

vii. **Relevance**: considerable segment of the Eritrean population remains food insecure. This is further complicate by erratic rainfall, persistent drought and war. The Northern Red Sea especially is one of the areas severely hit by drought and food security problems. Hence, considering this background we can generally conclude that the SDDP is relevant to the area. Specifically, the baseline survey has clearly shown that the communities were desperately looking for the facilities provided under the SDDP. Problem identification during the baseline survey has revealed that clean potable water was the first priority of the communities. This was again confirmed during the FGD and individual interviews conducted for the purpose of evaluation. All respondents (100%) confirm that the SDDP has responded to the most pressing needs of the community members.

viii. **Effectiveness and impact of project components:** in general, the project was effective in implementing the various project components. The impact that certain project components have created was more vivid than others and the impact of certain components might be realized after some years to come.

a. **Water development**: the project has provided potable water facilities in all the project sites as planned. Four boreholes have been drilled in four project sites while hand dug wells are constructed in the other two project sites. 10 fenced distribution centers are constructed in all the villages. Except the one in Gahtelay all other water facilities are supported with a solar pump. The one in Gahtelay is an electrical motor pumps. Four motor pumps are also provided in four of the project sites. The facility in Asus is only a solar pump. One water committee is also established in each of the project sites. All the water distribution centers and facilities are properly fenced and protected. The construction of these facilities have greatly reduced the total hours traveled and saved sufficient time, resources and labor which can now be deployed to other economic and development activities. During the baseline survey water was mentioned the most outstanding problem for the communities. The villagers report that they used to travel long distance to fetch water. They used to share the same water sources with their livestock certainly risking their health and hygiene. Seventy two percent of the respondents report that they used to travel for two to four hours to fetch water before the SDDP. At the present 74% of the respondents' report that they are traveling for less than ten minutes to fetch water. The price of a jerrycan of potable water is Nakfa0.25 which is also affordable for most of the beneficiaries. Money collected from this is used to pay salary for watermen and fuel for the motor pumps. However, none of the water

committees has been able to collect surplus amount and save it to the village account. Moreover, user fee arrangements are not introduced in one of the sites (Adi Shuma). Although, the SDDP has trained individuals on basic maintenance and repair services villagers might not be able to cover/afford serious maintenance services. The maintenance service for the motor pump in Shebah was for example close to Nakfa50,000.00 which is quite high compared against the wealth of the villagers. Most of the boreholes are more than 40 meters deep except the hand dug well in Demas which is only 12 meters deep. The capacity of this water well to percolate adequate water has been decreasing from time to time as there are a number of hand dug wells just adjacent to the one dug by the SDDP. Unless this excessive exploitation of available water resources is immediately regulated the very continuity of the water well will be endangered and essentially the village as a whole. Before such events happen, alternatives of conserving water from flooding by way of underground reservoir needs to be introduced.

b. **Crops and livestock development**: the SDDP has constructed water diversion canals to increase the quality and quantity of crop and livestock and livestock products. Consequently, water runoff is conserved leading to development of improved spate irrigation practices in the project target area. The villages, have now, witnessed their capability of being breadbasket to the residents of the project area. The floods are not only the source of water, but also a source of fertile soil and hence a source of livelihood to the target beneficiaries. The semi permanent water diversion structures are constructed with the involvement of relevant technical experts from stakeholders. The active involvement of these experts has enabled the construction of reliable and effective diversion structures. Three years after their construction the structures are still intact. Moreover, internal embankments and contour ridges were also constructed with the help of oxen and earth mover machines. The combined effect of these structures have improved and boosted the yielding capacity of the farmlands. The lands under cultivation have grown exponentially. The monthly income of the households in the project area earned from the sale of agricultural products such as *dura*, watermelon, pepper, and okra increased from Nakfa293.00 to Nakfa438.00 on average. The positive change in the amount of income amounts to 49% of the income earned before the SDDP intervention. Fifty seven percent (57%) of the respondents stated that crop production have increased, while 35% stated that it has not. Similarly, 54% of the respondents agree or partly agree to the increase on the quality and quantity of livestock and hence livestock products due to the SDDP intervention. Constructions of the diversion structures have also contributed to positive impact on environment especially the conservation of trees and soil. This being the case, there is still concern over the cost of maintenance. The structures are exposed to breaching every medium to heavy floods incurring heavy cost for maintenance. Farmers alone can not essentially afford the costs required. Hence, some concerted organization of cross-village committees is required to bring all required force at one time.

c. **Gender and human resource development**: The project was not only gender sensitive but also strived to address women's outstanding problems in the area. Moreover, gender was streamlined within each activity of the project objectives. Women were represented in all project activities from planning to implementation phases. The PRA group is, for example, formed among informal men and women community members and women constitute at least around 40% of the Village Water Committees. It needs to be noted in that the model latrines constructed were handed over to women-headed households, clearly indicating the SDDP's gender sensitiveness and inclusive strategic approach.

Essentially, in the SDDP at least two women from each village should be included in the water committee of the village. These examples are tangible evidences that the project was effective in creating a positive impact on the communities to promote women's decision-making power. More importantly the increased awareness of both men and women villagers, about the importance of providing village administrative tasks to women and their inclusion in development committees responds effectively to the strategic needs of women. Since the year 2003, two hundred eighty three (283) women were trained in home economics. Eighty six percent (86%) of the respondents confirmed that the training was instrumental in improving women's living standards. The training on home economics has helped women to assume not only a reproductive role in the household, but also to be recognized as breadwinners in the community. Awareness creation program on Female Genital Mutilation (FGM) was also effective in improving women's attitude. An overwhelming 87% of the respondents (who are both men and women) report that they do not support the practice of FGM and hence do not want to circumcise or infibulate their young girls. This result attests to the positive impact the SDDP has created on the beneficiaries. Overall, the project was rightly directed to the most outstanding problems of women. The cumulative impact of the activities; by and large of the program in widening women's attitude, improving their quality of life, and above all echoing their voices in decisions that directly affect their lives are evidences that attest the positive multiplier effect of the program.

d. **Social service rendering facilities:** the SDDP has purchased one ambulance to support the community and especially women in transporting them to the health centers during delivery. The provision of the ambulance has helped the community especially women and children arrive to the health centers timely and be treated accordingly. Before the SDDP patients used to arrive to health centers after long hours which of course further complicating health conditions and creating unnecessary referral pressures to the hospitals in Massawa, Ghindae and even Asmara. Sometimes, laboring mothers were left at the mercy of Traditional Birth Attendants who are not always reliable. Now, as they are arriving on time, delivery has been simplified and the project has helped the big referral hospitals from receiving in-patients that could otherwise be handled in the health centers around their villages. Around fifteen model latrines have been already constructed in Demas and Shebah and handed over to women headed households. These latrines have already received wide acceptance and villagers are keen to construct similar latrines in their homesteads provided they are financially supported. The latrines have been constructed as per the specification and standard of the MoH. The estimated total cost to build one latrine is Nakfa 2,000.00. This seems quite expensive considering the living standard of the villagers. As a result of the rehabilitation work done to Demas primary school students and teachers are able to comfortably attend classes. Earlier, the school was damaged by sand storm leaving students attend classes in makeshifts. The clinics in Demas and Gahtelay were also fully rehabilitated. The rehabilitation of these clinics has definitely created a knock-on positive impact on the health of the communities. To mention the least, the clinics have become more hospitable and convenient for patients to stay in after their renovation.

ix. **Evaluation Indicators:**

1. Efficiency: The evaluating team identifies four variables to assess the efficiency of the SDDP intervention. These variables are the methods of work (ways of doing things), analysis of materials used, and cost-benefit analysis. The focus will be on allocative efficiency.

a. **Implementation methods of the SDDP**: The SDDP has been participatory which ensures its efficiency of doing things. The participatory process is bottom – up, with the villagers getting first chance to interact with the Development Committees about their most pressing development needs and priorities. While the partner organizations assume their responsibilities and carryout their duties as per the role specifications laid, the management staff of the SDDP engages in planning, implementation, budgeting, reporting and dealing with elements in the external environment and strengthening of SDDP's linkage with the aforementioned development agencies and partners. The organization and management of the project was also very helpful to control costs. Expenditures were done within limits. Over all the participatory nature of the project combined with qualified project management staff has helped in ensuring the efficiency of the project partly. The project cost paid by the SDDP for each subsequent year covers 100%, 75%, 50%, and 25% of the total project cost. Where as, the involvement of the beneficiaries in kind and labor is to constitute to the remaining portion of the project cost. This participation policy has a rigor of transferring full ownership of the project to the beneficiaries.

b. **Materials used for the provision of project output**: The SDDP mainly used locally available materials to construct the diversion canals, and embankments. The construction materials used include gravels, gabion nets, clay and sand. This has also increased the efficiency of project activities. The use of locally available materials and resources does not reduce only the cost of construction, but also the cost of maintenance of the irrigation facilities.

2. Benefit-Costs Analysis of the Project: The prevention of various diseases that are usually caused and communicated by polluted or unclean water, the amount of financial resource, time, and energy saved to fetch water from distant locations of water sources, and the positive multiplier effect of providing young girls and women sufficient time and energy to attend training and development programs amounts to higher benefit than the cost of providing the potable water facilities. Moreover, the total cost incurred by SDDP to construct the various diversion canals and all embankments is Nakfa 9,721,000.00. This figure is obtained from Appendix 1. Therefore, comparing the total income of Nakfa 13,530,000.00 with the cost of Nakfa 9,721,000.00, the evaluators found out that the benefit is much larger than the cost of providing the physical irrigation infrastructure. In monetary terms the gain after covering the cost of the diversion canals and embankments is Nakfa 3,809,000.00 per year. Therefore, undertaking the cost-benefit analysis, the evaluating team found out that the SDDP project has achieved high degree of efficiency.

3. Sustainability: The following elements of effective sustainability promoter partially reflect the strength of the SDDP in ensuring sustainability.

a. Project concept has its origin within the national, sectoral and development plans, food security policy objective in this regard.
b. Outcomes from the project could easily be incorporated into the national and sectoral as well as development plans (the construction of structures, water wells and other facilities).
c. Relevant institutions and partners were actively participated in the project design, planning and implementation.
d. Social and economic infrastructures that enhance project promoted activities are partly in place. Some of them are village bank accounts, home economics training, repair and maintenance training as well as training on general agriculture.
e. Another factor that ensures sustainability is the presence of complementary and supplementary development interventions by various government and non-government organizations in the area.
f. The presence of well-organized VDCs will have a strong basis for the proper administration and sustainability of the project outputs.
g. The trainings given on maintenance and repair are also an asset in creating project output sustainability.
h. The institutionalization of user fees where villagers are obliged to pay Nakfa0.25 for a jerrycan where income from the sale of water is used to cover cost of fuel for the motor pumps, salary expenditure for the watermen (who are also in charge of maintenance), and other operating expenses. Surplus income is saved to the village account via the local administration. However, no village has reserved adequate fund for serious maintenance problems (Cf. Maintenance cost in Shebah reached up to Nakfa 52,175.00). The evaluation team is of the opinion that the community might not have adequate resources to afford costs like the one incurred in Shebah. In Adi-Shuma there is no user fee arrangement scheme. Instead there is only a monthly exaction of payments which is only adhered by 50% of the villagers at the present.
i. Some of the villages are characterized by inequitable institution of land distribution, lack of mutual farming interactions that is exemplified by the individuals, un-consulted actions of digging numerous wells in the village to water irrigation land of individuals, or lack of vegetable growing and marketing practices. Examples of villages characterized by this type of weak social institution are Demas, Gahtelay, and Asus. Thus, the existence of less developed grassroots social infrastructure may not serve as a good basis for the sustainability of the irrigation physical infrastructure. The SDDP should, therefore, allocate sufficient human and material resources towards the creation and strengthening of the social infrastructure before it phases out its operations.
j. Finally it is recommended that the SDDP be extended for additional three years in the Shebah-Demas area. Moreover, the project should be replicated in the upper escarpments as provided by the 2000 Baseline Survey. However, it is recommended that the baseline survey be updated to reflect current socio-economic condition of the area.

1. INTRODUCTION

Eritrea has a variety of agro-ecological zones, but most part of the country experiences recurrent drought, which is the major constraint to agricultural production. With regard to potentiality, in 2001 the World Bank estimated that the arable area in Eritrea to be about 2.1 million hectares, that is, 17 % of the 12.2 million hectare of the total land area of the country. It is thought that 1.5 million hectares are suitable for rain-fed agriculture and 600,000 hectares for irrigation. Currently, it is estimated that less than 15% of the total land area, that is 45 % of the arable total is under cultivation. Yield is in the range of 0.2 to 1.5 metric tones per hectare. The potential of getting water by boreholes and wells is extensive which cover large areas of the plains of the central highlands and southwestern lowlands. Small dams and reservoirs existing in different parts of the country provide water for small-scale irrigated schemes, which could be a source of substantial income from sales of vegetable and fruits.

Agriculture is the main stay of the majority of the inhabitants in Eritrea in that about 80% of Eritrea's population earns its livings from the land either in settled agriculture composed of crops growing and livestock keeping, pastoralist system of livestock production and fisheries. But, Eritrea has remained a food-deficit country; even in years of good rainfall and less pest incidence. From previous assessments made by different institutions such as the World Bank with existing capacity and in good rainfall year Eritrea was only able to cover on the average about 75% of its needs.

The root causes of low agricultural production in Eritrean are lack of effective extension services in the transfer of research-originated technology that resulted in inappropriate management practices of livestock and crops production. This is further exacerbated by shortage of improved farm inputs; and shortage of skilled manpower. Likewise, the existing land tenure system in the country might need revisiting and verification of its effectiveness. These problems were coupled by wars and inappropriate policies with its devastating effects over many years. These lumped problems call for broad-based approach of rural development that encompasses investment in human capital creation, provision of basic infrastructure, provision of rural credit, promotion of land management, water conservation and irrigation and technology generation and transfer to produce higher income and employment.

With the policy objective of food security at hand, the aims of the government are to promote livestock production, so as to increase the supply of animal nutrition, encourage small and large scale processing of livestock products and promote the supply of draught power along side crops production and promote irrigation based agriculture to the extent possible.

In Eritrea, the first step towards attaining national food security must be ensuring that the rural poor households are food secure. Introducing small-scale irrigation technologies that are affordable and compatible to the local, physical and social setting could be one of the means of realizing household food security in Eritrea. Traditional spate irrigation is common in many parts of the Eastern Lowlands in Eritrea. However, although this

traditional spate irrigation system seems elementary and generally productive it is labour intensive and environmentally unfriendly. Hence, focused assistance is required to improve these traditional spate practices. The government (through the MoA) has taken a number of initiatives to improve these traditional spate irrigation facilities since the date of the country's independence. However, the Ministry of Agriculture alone cannot bear the resource required to improve these traditional spate schemes. To bridge this problem the Ministry has formed several cooperation networks with a number of international organizations and Non Governmental Organizations. As a result of the cooperation programs it has launched a program called "Shebah Demas Integrated Development Program (SDDP)" in Zoba Semeinawi Keih Bahri and specifically in the Sub Zoba of Ghindae. Since it started implementation in 2001 the project has accomplished notable achievements. The 2001 PIP stipulates that an end evaluation should be conducted by an independent local consultant as the project phases out in 2006. Hence, this document reports on the result of an independent evaluation conducted by WEKITA Consulting Office from July-August 2006.

2. PURPOSE OF THE EVALUATION

The SDDP has been implemented since 2001. As the project phases out in 2006, the SDDP sought to document the lessons learned from the implementation and identify strength and weaknesses of the program. The proper documentation of the results of the SDDP will lead to proper resolution of unmet objectives (if any) and suggest for activities that can be further replicated in similar contexts. Hence, the purpose of evaluation as provided in the TOR is:

- Consider whether the project objectives are being achieved.
- Consider whether the project is effective in both educating and training the community with the desired impact.
- Review the use of funds.
- Give recommendations to guide future decision making and project development
- Document lessons that are being learned
- Provide a basis for accountability to concerned implementing, financing institutions and project beneficiaries.

The TOR has further outlined the focus areas that should be critically examined when doing the evaluation. These areas include:

- Efficiency
- Effectiveness
- Impact
- Sustainability and Gender Sensitivity

3. BACKGROUND TO THE SHEBAH DEMAS INTEGRATED DEVELOPMENT PROGRAM (SDDP)

The SDDP was initiated in year 2000 based on experiences gained from the Zula Development Programme. The project was identified by the MoA based on national and sector specific priorities set by the Ministry of Agriculture. Following the decision to implement the program in the current project site a detailed baseline study was done to identify major problems, set strategies and define priorities; the baseline survey was conducted in year 2000 by WEKITA Consultancy Office. The baseline survey was detailed and covered large geographic areas which included the following areas:

Table 2.1: Geographical distribution of the population in the baseline survey

AREA	THE VILLAGES (KEBABIS) IN THE AREA	POPULATION	PERCENTAGE
The Plains	Shebah, Metkelabiot, Adi-Shuma, Ghahtelai & Demas	12,026	27
Middle	Dongolo, Ghindae, Tsirat, Embatkala	23,039	51
Upper	Nefasit, Maihabar, and Fitche-Merara	9,740	22
Total		**44,805**	**100**

Source: SDDP baseline survey-WEKITA project documents

The baseline survey suggested that targeted and intensive intervention should be implemented in the Plains (with villages Shebah, Metkelabiot, Adi-Shuma, Ghahtelai & Demas). The survey has identified the following problems to be prevalent in the plains.

- Low agricultural production
- Low level of men farmers know-how in farming
- Increased environmental degradation
- Low health facility and services
- Low level of education
- Low level of women's participation in economic activities

To solve the above-mentioned problems the following Strategies were rightly identified by the baseline survey.

1. Water development
2. Crops and livestock development
3. Infrastructure development
4. Environmental protection and development
5. Gender issue, women's welfare promotion

The above strategies were further broken down into component development and immediate objectives based on a detailed six-year project implementation plan. The SDDP implementation plan (2001) has clearly stated that the overall objective of the program is "to improve the living standard of the Shebah-Demas community". While the immediate objective was stated as "to improve the food security and health status of the community through increased agricultural production, improved access to safe potable water and improved sanitation". Accordingly, a total of Nakfa18,279,651.00 was expended to implement the project components in the six year implementation plan. Budget breakdown for each component is provided in Appendix-1

4. PROJECT AREA DESCRIPTION

The Shebah-Demas area is located in the Northern Red Sea region under the Ghindae sub-Zoba. The climate of the project area is characterized as hot and semi-arid with annual temperatures of 24-47 degrees Celsius; while rainfall varies from 50mm-200 mm. Precipitation is very low in the project area. Normally, the rainy season is from October-March. The area depends on irrigation for agriculture from floods of the highland area between July and September; and from the relatively small run-off from the escarpments, commonly known as the 'green belt' from October-March.

The eastern lowlands have been recognized as potential areas for intensive arable production by virtue of seasonal flash floods from the eastern escarpments of the central highlands.

The area can be a potential real breadbasket for the inhabitants in that it is suitable for the production of variety of crops and vegetables. In spite of the rich soil available in the project area, the settlers practice only subsistence agriculture by raising goats, sheep, cattle, and camels and by cultivating crops comprising mainly sorghum, maize and some vegetables.

Livestock rearing is an integral part of the livelihood of the people in the project area. The common livestock types kept are sheep, goats, cattle, camels and donkeys. The livestock are owned by both men and women. Oxen are vital in land preparation such as embankment construction and plowing. In many cases goats and sheep are regarded as an assurance against crop failures. Camels are useful in transportation of grain and fodder.

5. TARGET GROUPS

The general population in the plain areas of Ghindae sub-Zoba which includes the communities of Shebah, Metkel-Abiet, Adi-Shuma, Gahtelay and Demas are the direct beneficiaries. However, the general population in the adjacent districts with whom the population of the plain area of Ghindae Sub Zone interacts has also benefited from the SDDP activities.

Table 4-1: Population size in the project area

VILLAGE	HOUSEHOLD	MAIN SIZE	MALE	FEMALE	POPULATION
Shebah	415	4.95	1080	975	2055
Metkel-Abiet	644	5.01	1564	1667	3231
Adi-Shuma	609	4.59	1350	1447	2797
Gahtelai	443	4.76	962	1150	2112
Demas	246	4.39	530	540	1070
Total	**2357**	**4.74**	**5486**	**5779**	**11265**

Source: SDDP project document

6. COOPERATING PARTNERS

The Ministry of Agriculture (MoA): The MoA has the formal responsibility for planning, implementation, and reporting of the project activities, achievements and failures. This responsibility is exercised through the organizational line from the head office, via the regional branch in Massawa and the Ghindae sub-Zoba office.

Project Management Unit (PMU) - This unit has a separate office established in Ghindae by the MoA to coordinate the activities of the project. The coordination also includes other elements besides those under the formal MoA responsibilities, including the required contracts with the local community structures. The PMU is headed by a project manager who reports to the MoA and other relevant support staff. The project manager is also responsible to the MoA/SDDP for proper planning, documentation and reporting on the project. The PMU comprises two men and two women.

Local Community Committee (LCC) - This committee includes both men and women and is responsible for community coordination and contributes towards suggestions for the overall priorities of future project plans. It also has the responsibility for coordinating the mobilization of the required labor force from the community in the practical work input.

Participatory Rural Appraisal Group (PRA Group) - This is an informal group of men and women established at village level to discuss local community problems and the initial setting of priorities for future activities. They are the consultative body for determining the community's problems, identifying the causes and suggesting the most relevant solutions. PRA is helpful tool in enabling the local people to conduct their own analysis, and often to plan and take action. It puts the local people in the center of problem identification and priority setting. The use of PRA in the project area, therefore, ensures more share and ownership of relevant information by the target beneficiaries.

7. OVERVIEW OF PROJECT COMPONENTS

It was earlier mentioned that the SDDP is a six year program. It started operation in 2001 and is expected to phase out in 2006. The main project components of the SDDP were

7.1 Spate irrigation

Spate irrigation, introduced by the Yemenis at the beginning of the nineteenth century, was first practiced in the Zula area of Northern Red Sea Region (Haile, 2006). The area get runoff floods from the highlands during the months of July-September, and in some places a small runoff during the months of October to March. The Shebah Demas area is almost similar to the Zula area topographically and geographically. Hence, based on the experience gained from the Zula Development Program, the Shebah- Demas Integrated Development Project was started in 2001 to supplement the water requirements of various crops under rain fed agriculture.

Spate irrigation is the term for floodwater farming. In the context of Eritrea, it can be defined as a pre-planting system that uses short duration floods from the highland catchments areas to irrigate low-lying land where rainfall is insufficient for crop cultivation (Haile, 2000). The term spate irrigation is applied to systems of earthen or stone bunds designed to spread water over the ground to moisten it and/or to trap wet silt that can then be planted with crops (Barrow, 1987).

In the SDDP floodwater is diverted into canals by constructing water diversion structures using brushwood, riverbed materials, stones or combination of them. The system which is applied in the SDDP is the one commonly practiced as "fields are bordered by earthen bunds, thus allowing inundated water to infiltrate into the soil" (UNDP/FAO, 1987). Water is conveyed from higher to lower fields by intentional breaking of the earthen bunds, to attain the desired level of irrigation water. Depending on the water holding capacity of the soil, one or two deep applications are enough for crop cultivation and the crops grow using the retained moisture of the soil profile. In spate systems, irrigation is performed before planting to avoid water logging in the development of crops due to flooding. Due to deep spate soils, most farmers are flooding their fields only once or twice and are able to grow two or even three crops in sequence from the residual moisture of the soil.

To date, large areas have been covered with embankments, diversion structures with gabions and long distance canals. The construction of these structures has increased the total area cultivated and the productivity of the farm fields.

7.2 Water and sanitation

SDDP documents infer that water was the most pressing problem in the Shebah-Demas area. Often the villagers were traveling long distance to fetch water for households. Even then the water sources they used to fetch were not well protected often exposing them to contamination and health complications. Livestock and humans were usually sharing the same source of water and with this the little unclean water was not even sufficient for both of them. Before the SDDP most reported illnesses were water borne diseases. Hence, to alleviate the problem boreholes were drilled and motor and/or solar pump facilities were installed in the six villages (Shebah, Demas, Metkel-Abiet, Asus, Gahtelay, Adi-Shuma) as appropriate. The construction of these potable water facilities has enabled the communities to get access to drinking water within easy reach and contributed to the improved health of mothers and children.

As part of the sanitation program more than 15 model latrines were constructed in Demas and Shebah. Before the SDDP, the communities of the area were not well aware of latrines and hence were defecating in the open area. This was creating health problems and often mothers and children were having the trouble of moving long distance to dispose off their excrements. The construction of these latrines has received wide acceptance and more community members are requesting for assistance to build similar facilities.

7.3 Farmers training in general agriculture

Training on general agriculture was also another component of the SDDP. As per the plan the SDDP aims to train 100 farmers a year and improve their knowledge on various topics of interest. Accordingly, the SDDP has trained a number of men and women farmers on general agriculture topics. As a result of the training farmers' knowledge on topics that directly affect their production capacity has grown exponentially. The training was provided by the branch of the Ministry of Agriculture of Ghindae Sub Zone.

7.4 Women training in home economics

The number of women is higher than the number of men in the area. However, women's participation in the development activities of their village is by far less than their men counterparts. This is for the conservative tradition and sundry beliefs that is predominant in the community. One strategic option that empowers women's participation and decision making

power is to enable them engage in some income generating activities. To this effect, the SDDP provided women with training on home economics. The training in home economics has enabled women to widen their horizons and have outward outlook of acquiring ways of improving their lives. Partly, the training has helped to break the conservative tradition that was dominated by men for a long time. Up to the time of evaluation a number of women have attended the training course in home economics.

7.5 Strengthening health facilities

The SDDP was not only integrated but also responsive to community needs through PRA Group discussions. Health is one of those given top priority in the government's effort to ensure social security. Hence a number of health facilities have been constructed in different corners of the country since independence. Some health facilities are well built and equipped while others are not. During a PRA Group discussion community participants have expressed that health is becoming a major problem for pregnant women as there is no efficient transportation services in the area. Hence, considering the need the SDDP has purchased a new ambulance for the communities of the area. Moreover, the Gahtelay Health Center was deplorably worn-out hence the SDDP has taken the initiative to make full renovation work of the center. Committed to respond to the pressing needs of the target beneficiaries, the Project has also rehabilitated the clinic in Demas. These health support schemes have helped greatly to improve the health condition of the community members at large.

7.6 Rehabilitation of a school in Demas

Demas School was severely damaged with sand storm leaving students and teachers to attend classes in makeshifts. In an initiative to improve school attendance the SDDP has fully renovated the school. The renovation of the school has contributed to reduced dropout rate and less truancy incidents.

8. RATIONALE FOR SELECTION OF THE PROJECT AREA

The SDDP has been designed for and implemented in the project areas that extend from Shebah to Demas. The length from Shebah to Demas is estimated to be 60 kilometers.

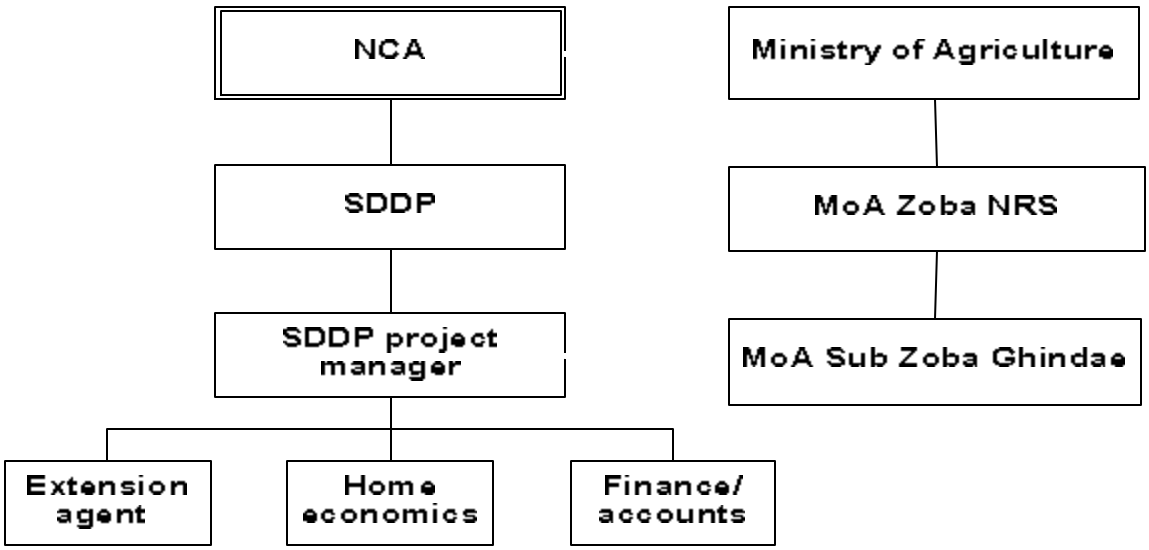
Project area identification was done by the MoA. The MoA had some experience on spate irrigation in the Zula area which is similar to the Shebah - Demas in terms of being dependent on spate irrigation agriculture and topographic structures. In its quest to expand and replicate the Zula Project, the MoA requested for a project area where developmental activities could be carried out over the medium-term. The MoA selected the area pursuant to the priorities set by the Ministry to develop agricultural infrastructures and looking at the relevance of the project to the context of the intervention area.

Furthermore, within the Ghindae sub-Zoba, the selected project area (Shebah-Demas) is the only one that practices spate irrigation and has the potential of harvesting crops two to three times a year. Therefore, it is evident that the implementation of the SDDP in this area is the right choice and decision. The right selection of the area is the major factor that justifies the relevance of the development intervention.

8.1 Implementation Structure of SDDP

The SDDP clearly formulated a structure as depicted in following diagram which illustrates the functional implementation procedure.

Figure 8.1: Implementation structure of the SDDP



8.2 Capacity of the Project Implementing Unit (PMU)

Capacity of an organization means its ability to achieve stated objectives effectively and efficiently. Bearing this concept in mind, SDDP has deployed part of its resource for training and staff development. Since the start of the intervention, to enhance the skill of the management staff, the SDDP provided various training packages.

The trainings given focused mainly on rural resource management, project planning and evaluation (participatory approach), and agriculture-related topics. The trainings were not only relevant to the purpose of the project but also responsive to individual training needs. As a result of the training activities, the management personnel are now well aware of the techniques of allocative efficiency of the existing resources. This has been essentially attained through rational and participatory processes of problem identification, priority setting, and allocation of resource according to the identified needs.

The existence of the six-year implementation plan, the ability to derive action plan for each fiscal year, and the skill of managing the contingencies in the project context are all strengthened by the trainings provided by the SDDP. Thus, the trainings provided made significant positive contribution to the building of the management capacity of the SDDP. The capacity of the SDDP management staff is significantly reflected by the fact that they were capable to effectively and efficiently discharge their responsibility as per the implementation plan and the strategies set in the baseline survey.

8.3 Monitoring and reporting mechanisms

The SDDP has developed a clear procedure of monitoring and reporting. The various project partners mentioned earlier have different monitoring and follow-up roles.

The experts from the line ministries and the field staff of SDDP conducted rigorous follow-up of activities at the project site to check if work is progressing as per the plan. The management staff of the SDDP along with the sub-Zoba administrator visited the site bi-weekly on a regular basis. This regular and continuous follow-up and monitoring of activities essentially helped them to control unfavorable deviations from plans and reconcile discrepancies before they become recurrent and more costly.

The monitoring activity of SDDP focused on two basic monitoring benchmarks or measures. The first is measuring the efficiency of resources that are utilized to discharge activities while the second is measuring effectiveness by regularly monitoring the activities accomplished against implementation plans and timeframes. However, the main aim of the monitoring activity was naturally to solve community and beneficiary concerns as implementation unfolds. By design, the project was output oriented which had literally helped project partners to contribute for effective implementation of their share of tasks. The output-oriented design of the project combined with the regular monitoring of activities has in turn facilitated smooth implementation and prompt resolution of discrepancies.

Institutional arrangements for the monitoring of activities were also in place. The SDDP project manager is responsible to prepare a written report on activities and achievements at the end of every fiscal year. The report is submitted to MoA and NCA head quarter in Asmara, Eritrea. Results generated from the PMU's report are used as yardsticks to determine whether or not SDDP resources are deployed for the right purpose and the extent to which inputs are used to meet intended outputs. Furthermore, results obtained from FGD, Key informant Discussion, individual beneficiary interviews, and document review indicate that the monitoring and reporting functions were carried out as originally planned to benefit the residents of the project area.

9. METHODOLOGY

9.1 Information gathering instruments

The primary step taken when doing the evaluation study was the development of "research protocol". This protocol exhaustively explained the methodology to be applied when doing the evaluation. The protocol of research was submitted to the SDDP manager for comments and improved based on the comments made.

Relevant data collecting instruments were developed and enriched through discussions and expert opinions. As much as possible all relevant questions were included and reviewed so that they don't threat the integrity and confidentiality of all concerned parties and individuals. Three different instruments were used: Individual Interview Questionnaires, Key Informant Questionnaires, and Focus Group Discussion.

The evaluation team was composed of experts from different disciplines. A team leader was assigned to coordinate information consolidation. The team members have a common framework to record information collected through field observation.

The process of collecting data was not only limited to administering the questionnaires. Desk Review Techniques and observations were also an integral part of the process. Many of the progress reports and planning tools including the baseline study has been reviewed. Moreover, not all instruments were used in all the project sites. In certain sites only the observation technique is used while in others only the FGD is used. Still in other sites all instruments are administered as appropriate. Bottom-line, different instruments are applied for different purposes considering the homogeneity and heterogeneity of information from the beneficiaries and respondents.

9.2 Sampling

The evaluation covered all those who were directly or indirectly involved in the implementation of the project. The focus was on the key evaluation parameters given in the TOR. However, it was assumed that representative samples be drawn from selected project sites. As explained earlier, relevant information gathering methodology that fits with the unique nature of each project site was applied. As the SDDP covers five administration areas and six project sites and given the time and homogeneity of activities it was preferred to take sample respondents from each administration area. Representative samples were drawn randomly with the help of the SDDP Project Management Office. Numbers for FGD and individual interview were balanced but emphasis was on FGD. Except in Adi-Shuma and Asus, FGD were conducted in each project site. The total number of FGD participants was around 55 against a plan of 40. One FGD was conducted in each of the four project sites (Gahtelay, Shebah, Metekel Abiet and Demas). Moreover, representative farmers were interviewed individually. The number of farmers who were included in the individual beneficiary interview was 35 as planned. The representation of the farmers for individual interview from each project site is as illustrated in Table 9-1. The total number of beneficiary respondents (both FGD and individual interview) was, therefore, 90 against a plan of 75.

One FGD session lasted for one hour and fifteen minutes while the individual interview took 30 minutes per interviewee.

The FGD was led by one facilitator and one note taker. There were 2 teams each comprising two experts from WEKITA. FGD participants were a combination of men and women in all sites.

Table 9-1: Sample representation from each project site

PROJECT SITE	NUMBER FOR FGD	NUMBER FOR INDIVIDUAL INTERVIEW	TOTAL
Demas	11	5	16
Adi-Shuma	Observation	Focused informal discussion	
Asus	Observation	Focused informal discussion	
Shebah	15	11	26
Metkel-Abet	10	12	22
Gahtelay	19	7	26
Total	**55**	**35**	**90**

Key informant discussion was also conducted. Key Informant Discussions were much focused and were instrumental in reconciling information discrepancies occurring from results of FGD and individual beneficiary interviews. The total number of key informant discussion is six. Table 9-2 provides the details of key informant discussions conducted.

Table 9-2: key informant discussants

NAME	ORGANIZATION/VILLAGE	POSITION	TYPE OF DISCUSSION
Mr. Tekle Gebremedhin	SDDP	Project Manager	Key informant
Mr. Tadesse Gebre-Ghergis	Administration of Ghindae Sub-Zone	Acting Sub Zoba administrator	Key informant
Mr. Solomon Ghirmay	MoA Sub Zoba Ghindae	MoA Sub Zoba Head	Key informant
Mr. Talke Salih	Demas	Village Administrator	Key informant
Mr. Ahmed Sheblela	Gahtelay	Village Administrator	Focused informal discussion
Mr. Afa Abir	Shebah	Village Administrator	Focused informal discussion
Mr. Ibrahim	Metkel-Abiet	Village Administrator	Focused informal discussion

10. EVALUATION RESULTS OF PROJECT COMPONENTS

In the preceding pages evaluation results are presented appertaining to institutional arrangements, management functions and tools, structural as well as capacity assessment overviews.

In the subsequent sections of this report results obtained from individual beneficiary interviews, FGD and key informant discussion are presented. The evaluators have attempted to desegregate results as they apply to component project activities. The focus of the evaluation report is on project outputs compared to project objectives as opposed to activities.

10.1 Demographic information

10.1.1 Village, age, and gender composition of respondents

The project area where development intervention took place by SDDP covers five administrative areas namely, Shebah, Demas, Gahtelay, Adi-Shuma, and Metkel-Abet. The village of Asus, which is in the administrative area of Metkel-Abiet, is also within the domain of the project area. As noted earlier there were similarities in project components and almost similar activities were undertaken in each of the project areas. Understandably, there is a high level of homogeneity in social and economic characteristics of the beneficiary communist of SDDP too. The homogeneity of the beneficiaries and similarity of activities leads one to use small sample size from each area. Taking this underlying factor into consideration respondents were randomly selected for individual interviews from four sample beneficiary project sites. Accordingly, 31%, 14%, 37%, 17%, of the individual respondents were interviewed from Shebah, Demas, Metkel-Abet, and Gahtelay, respectively.

The age and gender composition of the individual respondents were also designed to ensure fair representation of all age groups and gender classes. Persons between the age cohort of 31-50, and 51-69, constitute 29% and 46%, respectively. This shows that the majority of the respondents are the economically productive and hence active participants in the developmental affairs of the villages. Table 10.1, also shows that 71% of the respondents are males while 29% are females.

Table 10.1: Respondent composition by gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	25	71.4	71.4	71.4
	Female	10	28.6	28.6	100.0
	Total	35	100.0	100.0	

10.1.2 Economic activity, educational level, and marital status of respondents

Table 10.2 demonstrates that the respondents are engaged in various economic activities. However, the majority, that is 80%, are farmers. Since most of the beneficiary communities in the project depend on farming activities and the major intervention activities of SDDP are related to farming, this size of proportion of farmers to the other types of respondents is justifiable.

Table 10.2: Major economic activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Farmer	28	80.0	80.0	80.0
	Livestock breeder	1	2.9	2.9	82.9
	Trader	2	5.7	5.7	88.6
	House wife	1	2.9	2.9	91.4
	Daily worker/laborer	3	8.6	8.6	100.0
	Total	35	100.0	100.0	

Furthermore, the data on the education level of the respondents reveal that 80% of the respondents have completed primary school (1-5 grades); whereas 11% have reached junior level education. This information indicates that the respondents have the ability to understand and comment rationally on the activities undertaken by the SDDP.

Ninety four percent of the interviewees are married, and 86% have children. Hence, their views and answers is believed to attest the relevance and tangible contributions of the SDDP to the problems of medium-size, or large-size households in general, and multiple roles of women in particular – that is the productive, reproductive, and community management roles – of married women.

10.1.3 Farmland and livestock possession,

Table 10.3 reveals that 86% of the respondents possess farmland. In other words, majority of the respondents depend on irrigation activities which increases productivity of farm resources and thus promote their livelihoods. Therefore, the representation of farmland owners as largest proportion of respondents gives adequate data and information on the impact and effectiveness of spate irrigation facilities provided by the SDDP.

Table 10.3: Farmland holdings

Do you have farm land?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	30	85.7	85.7	85.7
	No	5	14.3	14.3	100.0
	Total	35	100.0	100.0	

It is also worth mentioning that 51% of respondents do not possess livestock. Almost equal proportion of respondents from those who own livestock and those who do not are represented in the interview.

11. WATER DEVELOPMENT

Generally the project sites are characterized with inadequate rainfall and semi-arid conditions. Like in many other parts of the country ground water, though apparently limited, is often the most dependable source of fresh potable water in the area. However, the unregulated digging and drilling of wells and the continuous pumping of water from the wells has led to a decline in water levels since the recent past (Negash, 2006). Hence, food security and by implication 'water security' are the major issues confronting the communities of the project area.

Water development was one of the five major project components of the SDDP. Before the SDDP the communities of the project area were suffering from acute shortage of potable water and long distance of travel to fetch water. Not surprisingly enough, water problem was ranked first during the baseline survey conducted by WEKITA on behalf of the SDDP in the year 2000.

11.1 Effectiveness and impact of the water intervention

When the SDDP was launching the SDDP in 2001, it has identified five project components that should be implemented in the project sites. The project components were prioritized based on their importance and relevance as well as relying on the baseline study conducted earlier in 2000. Project prioritization helped to the drawing of six year implementation plan which essentially marked water development to be as the uppermost project component.

During the implementation of the plan, the SDDP managed to provide borehole drilled potable water facilities in four villages of the project area. In general, as of the evaluation date, the project had installed potable water facilities in the villages of Shebah, Demas, Adi-Shuma, Metkel-Abet and Asus. PVC and an electrical pump have been installed to the drilled borehole in Gahtelay also. A summary of water development outputs is presented in Table 11.1.

Table 11.1: Summary of water development program

Village	Drilling borehole	Water committee	Fenced distribution points	Pump		
				Motor	Solar	Electrical
Demas	-	1	1	1	1	-
Gahtelay	1	1	4	-	-	1
Adi-Shuma	1	1	2	1	1	-
Metkel-Abet	-	1	-	1	1	-
Asus	1	1	1	-	1	-
Shebah	1	1	2	1	Soon to be installed	-
Total	4	6	10	4	4 + 1	1

Source: SDDP/PMU Management

As part and parcel of the water development program, motor houses are constructed for all of the water pumps, and the solar pumps are fenced by galvanized fencing net. These protective structures contribute to the minimization of breakdowns and hence maintenance costs. The SDDP does not focus only on the creation of protective physical devises; it also mobilize the residents of the villages to create water committees that take responsibility to preserve and regulate the utilization of the water facilities. In addition to its implication for building the administrative capacity of the local people at the grassroots level, the creation of the committee assured the sustainability and proper use of the Project outputs.

A fenced fiber glass water reservoir in Shebah will last for long before it is worn-out. At the back post of the picture we witness people (most children and women) waiting their queues to fetch potable water. What a relief the project has created to the long distance they were traveling and the hassles done away with just few years back.

Water reservoirs and distribution centers are put in place in all the project sites. However, lifting of water from boreholes with a motorized water pump is difficult considering cost for fuel and discharging capacity of the wells. This problem was solved in four of the villages (project sites) by installing a solar pump. Solar pump is proposed to be installed in Shebah this year but was not completed until the time of evaluation. Along with the solar powered pumps it could have been possible to use wind powered ones as well.

At present all the boreholes in all of the project sites are fully and effectively discharging adequate water for the dwellers. However, it is possible that they yielding capacity of some of the borehole, if not all, could decline through time. Before such problem comes, other means of alleviating it could be in place. One that can be suggested is enabling the community to conserve floodwater by means of underground reservoir rather than merely depending on the boreholes.

The boreholes are more than 40 meters deep except the one a hand dug well in Demas which is only 12 meters deep. The water discharging capacity of the hand dug well in Demas is gradually declining since the recent past. This is because the groundwater sources are excessively exploited for irrigation and that the well is dug shallow since the beginning. A few distances away from the water well dug by the SDDP, there are other hand dug wells which are even deeper (reaching up to 20 meters deep) than that constructed by the SDDP. This excessive use of groundwater resource has led to the drying-up of a former old water well which was serving the community of Demas for a long time before the on set of SDDP. Hence, unless some mitigation measures are taken to regulate water resources utilization in the area (in fact as a matter of urgency!!!) the intended objectives of providing adequate potable water to the community of Demas will not be fully met. This problem was not initially identified with the possible "killer assumptions" because it was not manifested during the planning time. The problem is an external one, as it has come to the surface only after the substantial number from the military units has started to exercise irrigation farming by digging water well in the vicinity. Hence, unless this problem is regulated within the immediate time through continuous discussions with the higher authorities the problem might aggravate further.

The storage depots in most project sites are positioned high to make water flow to the distribution centers through gravity. The pumps have only to work to fill the depot. This is important to save fuel consumption.

Water committees are also established in each village. These committees are responsible to coordinate, manage and operate the water supply facilities. From a planning point of view the establishment of these committees is highly appreciated because it is very effective instrument to curb possible resource conflicts among the beneficiary communities of the villages. The evaluation team has learned that 40% of the committee members are women indicating that the project is gender sensitive.

Fenced and protected water facility in Shebah: long distance and unclean water are history. A donkey pulled cart waiting to carry many litters of water in one go!!! Could this be a relief to commuting several times to fetch a few litters of water?

In most of these villages the water facilities constructed by the Project are located at a central position of the villages and have significantly reduced the distance traveled to fetch water. This was substantiated from FGD results in which beneficiaries has expressed their delight to the tremendous time; labor and resource save they have made after the SDDP. Results (see the following table) from individual beneficiary interviews also confirm that the project was more than effective in reducing the distance traveled to fetch water. However, an integrated drain water management system is still required. It is imperative that some ancillary income generating activities such as village nursery be implemented to utilize the drained water from the water distribution centers. In Shebah and Metkel-Abet we witnessed vegetable production plots adjoining the water distribution centers.

Table 11.2: Hours traveled to fetch water before SDDP intervention

Minutes traveled		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-10	1	2.9	2.9	2.9
	11-30	4	11.4	11.4	14.3
	31-119	5	14.3	14.3	28.6
	120-240	25	71.4	71.4	100.0
	Total	35	100.0	100.0	

Table 11.2 shows the number of minutes traveled to fetch water. The figures in minutes, are mentioned by the respondents both men and women. As presented in the table, 86% of the respondents used to travel for more than half an hour. On the flipside the figures indicate that around 72% of the respondents report that they used to travel for two to four hours to fetch water. These figures analytically reflect the severity of the problem in one hand and the effectiveness as well as the relevance of the water development component of the SDDP on the other hand.

Before the SDDP, water problem was more pressing for the women as traditionally it is assumed that women are responsible to fetch water and attend whatever distance is required to bring it. For this reason, they have to travel long distance carrying water-pots and then bring it back on their back or shoulder. Not only was the responsibility physically demanding (not to mention the hassle done away with) but the social opportunity cost to transport the water was also higher than required. Many girls and young women were sacrificing precious time and grand opportunities that could have otherwise been used to attend prevailing education and training programs. The evaluation result analyses leads to the implication that the SDDP water development scheme has not only reinforced the "equal opportunity of education for males and females" policy of the government but also played significant role in saving sufficient time for the girls to study equally like their male counterparts.

Without digressing from the remit of this evaluation, it was found out that after the SDDP, opportunities of attending self-development programs for young members of the community are higher than before. The long term effect of this could even be higher than the direct benefits. The time, labor, and resource save done by the SDDP could now be effectively used to attend self and community development programs. The following table shows the distance traveled to fetch water after the SDDP.

Table 11.3: Hours traveled to fetch water after SDDP intervention

Minutes travelled		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-10	26	74.3	74.3	74.3
	11-30	9	25.7	25.7	100.0
	Total	35	100.0	100.0	

As shown in Table 11.3 the distance traveled is reduced significantly after the SDDP as confirmed by 74% of the respondents who report that they are traveling for less than ten minutes to fetch water. The positive effect of this achievement is particularly remarkable on young girls, old women, and women who do not have domestic transport facilities (donkey); they are now relieved of the long distance traveled and the daily hassles they used to face to fetch water.

Statistical analyses generated from the following table also corroborate the above findings. The table illustrates that, after the SDDP the average number of minutes traveled to fetch potable water is reduced from 122 to 11 minutes only.

Table 11.4: Average number of minutes traveled

	Minutes traveled to fetch potable water before intervention	Minutes traveled to fetch potable water after intervention
Mean	121.71	10.63
Mode	120	10

Undoubtedly the water development scheme of the SDDP realizes positive short-term and long-term effects on both, the livelihoods of women and the project area communities. The short-term effect is related with, the time value aspect of the water development scheme. After the SDDP women have started to get sufficient time to accomplish home activities as the amount of time required to carryout their reproductive role is reduced greatly. This time-save result of the water development scheme was also a supportive push for enabling women to attend the handcraft training provided by the SDDP. All these, effects combined could in turn be instrumental in raising the financial assets of women at their disposal.

The long-term benefit of the provision of potable water within the villages, can help promote the health and thus the productivity of each members of a household and thus the wider community. The availability of sufficient time for school-age girls and boys renders a good opportunity for enhancing their interests and accomplishments in the academic field. Negligence in education and dropouts from school decrease significantly. This means enhancing the creation of human capital – the most important asset for development – through formal education. Undoubtedly, this will have a significant positive impact on the livelihoods of the community at large.

The long-term effect of the development intervention will also have significant contribution on the livelihood of the communities. As defined by Mathema (November 1999), a livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable only when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. Hence, as women get more formal education and training their ability to recover from shocks and to cope up with changes without losing their capabilities and assets increases. This leads to sustainable livelihoods.

At present, more than 12,000 community members are getting access to clean and potable water. Ninety-seven percent of the respondents stated that the price of potable water is affordable. On average the price charged per jerrycan of twenty liters is Nakfa 0.25. FGD participants indicate that before the SDDP, water for household and livestock consumption was obtained either from hand dug wells or seasonal streams which are not literally well protected from contamination at any time. Often the families had to travel long distance to fetch insufficient, polluted and unhealthy water. For instance, the residents of Metkel-Abet used to drink water with their livestock from river *Terkaba*. As all of the water sources constructed by the SDDP are well built by cement, stone foundations and water is supplied through stand-pipes one can see that the cleanliness of water is certain.

Since the health and education facilities are the two most important services that contribute to sustainable human capital development, the availability of potable water in the villages has enabled the beneficiaries to protect themselves from communicable diseases, which in turn have significant positive effect on individuals' health and productivity.

To wrap up, the main objective of constructing the water wells was to provide the project area communities with safe, adequate and accessible drinking water as well as to reduce water borne diseases, improve the hygienic and sanitary environment in the community (SDDP, report 2003). This objective was fully met at the present. The water development component is very effective in engendering short and long-term positive impacts. This conclusion can be substantiated by the fact that 100% of the respondents indicated that they benefited from the water development activities; among these respondents, 86% are very satisfied with the benefit of potable water; whereas 14% are moderately satisfied. See Table 11.5, below.

Table 11.5: SDDP's potable water supply evaluated as

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very satisfactory	30	85.7	85.7	85.7
	Moderately satisfactory	5	14.3	14.3	100.0
	Total	35	100.0	100.0	

11.2 Water Resource Around the Project Area

The following table shows the water resource available in the eastern lowlands and around the sea-shore stretch.

Table 11.6: Water resource at the Eastern lowlands and coastal stretch

Altitude range	**< 0 – 500 m**
Annual rainfall	< 200 mm
Evapotranspiration	> 1900 mm
Drainage	Drained by seasonal ephemeral streams and perennial hot springs
Ground water depth	3 – 70 m
TDS*	> 3000 PPM*, locally fresh ground water TDS 500 – 100 PPM along alluvial fan areas and river-beds.
Ground water recharge	< 50 mm, mainly from flood run-off, in small quantity from rainfall.
Problems	Low rainfall, inadequate recharge, saline and hot spring water, salt water intrusion

Source: Pilot study of the Environment Report, Department of Water Resource 1997. Eritrea. Unpublished Report 42. Cited in Kiflemariam (2001:147).

The less than 200mm of water recorded from the annual rainfall signifies the arid climatic condition of the project area. In an arid area, the more reliable source of potable water is the underground water. The data in the table indicates that in this area, groundwater can be found from the depth of 3 to 70 meters. Taking this situation into account the SDDP dug its wells to a depth of 40 to 60 meters in most of the villages. These deep boreholes are believed to provide reliable source of potable water for the target communities for the long time to come. However, since the recharge rate of ground water in the area is estimated to be less than 50mm per second, mainly from flood run-off, during continued drought, the peculation rate may drop significantly and water supply may become insufficient. Thus, there is a need for digging more than one well in order to ensure adequate water supply for the communities in the project area. Even then such practice can result in total depletion of groundwater in the long run. Therefore, to ensure sustainability, the community should be enabled to conserve water from flooding by means of underground reservoirs as well.

12. EVALUATION OF CROP AND LIVESTOCK DEVELOPMENT EFFORTS

A second major project component of the SDDP is crop and livestock development. In implementing this project component the SDDP has applied a rather different approach. Instead of directly engaging in the provision of crops and livestock the project has attempted to primarily assess what measures can be taken to strengthen the quality and quantity of livestock in the project area. During the baseline study, it was found out that the people in the project area were suffering from lack of irrigation facilities, lack of fodder, as well as water for livestock. Subsequent expert opinions and PRA sessions has suggested that the traditional irrigation structures should be harnessed as preferential steps to maximize livestock and crop production potentials.

The Eastern Lowlands of Eritrea are endowed with regular flooding from the summer rain (zinab kiremti) of the highlands. In the project area there are many rivers with the potential to feed and irrigate the agricultural fields through spate irrigation.

Spate irrigation is the use of short duration floods from mountainous highland catchment area to irrigate low lying land where rainfall is insufficient to crop cultivation. It has been practiced for decades now at the alluvial plains of the Eastern Escarpment of Eritrea. Spate irrigation was first adopted by the Aflanda tribe at Wekiro from the Arabian Peninsula introduced spate irrigation to the locality and then came to Shieb and the Project area.

The project area enjoys three potential growing seasons if irrigated properly. One is the time when they plant maize from the rainy season of the highlands (July-October), the second is from the rainy season of the eastern escarpments (*Bahri*) where they are able to grow maize and other crops (November-February), and the last is when they grow *durra* for their animals (April-July) from the minuscule rains of the area itself and the moisture residues of the above rainfalls. However, despite these endowments the farmers were short of resources to irrigate their farmlands by properly diverting the flood runoffs. For this reason, combined with the persistent drought over the past few years, crop and livestock production was very low to ensure food security.

The inhabitants were increasingly migrating to the highlands in search of fodder and forages for their livestock. Not only was the migration exhaustive and laborious, but also it was negatively affecting young boys and girls not to attend formal education programs. Hence, this problem was also one of SDDP's targeted intervention activities.

The third major problem affecting livestock raring in the area was lack of water. Most of the inhabitants of the project area (e.g. in Demas and Metkel-Abet) used to share the same source of water with their livestock and hence offering very little amount for themselves and their livestock. This was in turn forcing them to travel far away from their villages in search of water for their livestock.

In general, before the SDDP intervention, due to the inability to direct flooding water to their fields, the farmers were highly vulnerable to impoverishment and lived in a constant fear of running out of food; they had to become indebted or dispose of their animals including their draught animals.

12.1 Effectiveness and Impact of the SDDP for Crop and Livestock Development

Irrigation contributes as a direct source of livelihood to the people of the Project area. The spate irrigation has the effect of relieving the target beneficiaries from poverty.

As explained earlier the main constraint to food security in the project area was the limited capacity of farmers to harness the limited floods and irrigate the land. Given this problem the SDDP has constructed three water diversion canals in the project target areas. Consequently, water runoff is conserved leading to development of improved spate irrigation practices in the project target area. The villages, have now, witnessed their capability of being breadbasket to the residents of the project area. The floods are not only the source of water, but also a source of fertile soil and hence a source of livelihood to the target beneficiaries.

During the construction of these semi-permanent water diversion canals relevant experts including civil engineers, agriculturalists from the MoA, and the Infrastructure Department at the regional and sub-regional administration level had actively participated. The active involvement of these experts from the line ministries has enabled the construction of the right quality of diversion canals in most of the villages.

A newly constructed Gabion in Demas benefits target beneficiaries in Gahtelay to irrigate their plots of land distributed to rehabilitate them after they return back from the Sudan.

The embankments and contour ridges constructed have helped to improve and boost the yielding capacity of the farm fields. Many farmers are now able to harvest crops twice a year at least. The common crops growing in the project area using the new spate irrigation facilities include sorghum, watermelon, pepper and okra. Coincidentally, during our evaluation study some plots of land in Adi-Shuma were grown with forage crop, sorghum or *durra* as locally known. This forage crop grows up to two meters high and is believed to be nutritious animal feed. The team has learned that first cut is already done and second cut, which is obviously also the last one, was on progress during the visit.

The growing of *durra* has multiple benefits for the farmers. Farmers who own livestock are able to feed their livestock or sell the surplus to other users in the nearby markets. Those who do not have livestock can simply generate cash income from the sell of durra and feed themselves and their families. The evaluation team casually explored that a bundle of *durra* plant (which is almost equal to 3 kilograms) is sold for Nakf20.00 in the local markets for animal feed. From this it was easy to realize that the SDDP intervention was effective in enabling the farmers produce better quality and more quantity of feed for their livestock. This has been further confirmed with about 77% of the respondents who own livestock, stating that they have benefited from crop and livestock development intervention of the Project. This is presented in Table 12.1 below.

Table 12.1: Benefit from crop and livestock development

Do you have livestock	**Benefited from crop and livestock development**		**Total**
	Yes	No	%
	%	%	
Yes	76.5	23.5	100.0
No	50.0	50.0	100.0

However, technical assistance is still required especially in improving overall farm productivity including the livestock component. Case in point, the team has learned that *dura* was for sale to the markets. Hence, as far as production and marketing is concerned some technical integration is required by encouraging farmers to either raise or fatten cattle and link them with some market outlets to create value addition on their outputs.

Maize grown as a result of the diversion canals constructed benefits the target beneficiaries

The growing and selling of watermelon is common in the area for long time. Although it is a common practice; the amount grown was declining from time to time. Hence, the SDDP has further expanded the growing and selling of watermelon among many farmers. Watermelon is sold on average for five Nakfa a kilogram. Moreover, pepper and okra are also starting to flourish in quantity and quality as a result of the intervention. These vegetables are used for household and sale in a nutshell. The evaluation team was able to learn that as a result of the SDDP, the farmers of the area are made to moderately increase their income generating capacity. This is confirmed from evaluation results in that food crop harvest has increased from 240KG to 370KG per annum for a household on the average which is equal to 54% increment. Notwithstanding the lack of adequate rain in the highlands for the last two years the increase in crop food production is statistically significant.

Villagers Produce watermelon (cash crop) as a result of the diversion canals constructed by the SDDP

Table 12.2: Amount of crop harvest

	Number of '*meshemae**' food crops harvested per year before SDDP	Number of 'meshemae' food crops harvested per year after SDDP
Mean harvest	4.80	7.40

* Synthetic plastic bag.

Furthermore, Table 12.3 shows that the monthly income of a household in the project area earned from the sale of agricultural products such as *dura*, watermelon, pepper, and okra has increased from Nakfa 293.00 to Nakfa 438.00 on average. The positive change in the amount of income amounts to 49% of the income earned before the SDDP intervention.

Table 12.3: Monthly income from sale of agricultural products (crops)

	Income received from sale of agricultural products without SDDP	Income received from sale of agricultural products with SDDP
Mean	292.71	437.63

Eighty-three percent of the respondents state that the SDDP intervention has contributed positively to food security of the households while 11% are not sure how it has affected food security. Similarly, it is realized that the Project is effective in responding to the short-term and long-term food security needs of the targeted beneficiaries. It is known that food security includes variables such as crop productivity, income earning capability, and availability of social and physical infrastructure facilities. It is explained before that the SDDP gave adequate attention and

made satisfactory progress as planned in the provision of irrigation facilities, and increasing the capability of beneficiaries to harvest more crops and earn more income. Based on these facts and considering the integrated nature of the components, it can easily be concluded that the SDDP is an effective intervention with actual benefit in the short-term and potential for long-term positive impacts.

The construction of embankments, gabions, and diversion structures has allowed for a very large increase in the cultivated land of the project target areas as indicated in Table 12.4. This benefit was also a source of great appreciation by the community members during the focus group discussions.

Table 12.4: Area under cultivation in 2003/2004 and 2004/2005

village	Area planted (ha) 2003-2004	Area planted (ha) 2004-2005	Increase in ha
Demas	2100	2250	150
Gahtelay	-	300	300
Shebah	516	516	-
Metkelabiet	500	500	-
Adi-Shuma	350	350	-
Total	**3466**	**3916**	**450**

Table 12.5: Production of crops after SDDP intervention

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Increased	20	57.1	57.1	57.1
	Remained the same as before	11	31.4	31.4	88.6
	Not sure	4	11.4	11.4	100.0
	Total	**35**	**100.0**	**100.0**	

Table 12.5 shows that 57% of the respondents stated that crop production has increased, while 35% stated that it has not. Similarly, 54% of the respondents agree or partly agree to the increase on the quality and quantity of livestock due to the SDDP. See appendix 2. However, it should be noted that these responses are documented in a context where there has been little rainfall from the highlands for spate irrigation. On the contrary, the project area is not yet harvesting crops as expected in the short-term. This is because there was lack of adequate rainfall in the highland, which is essentially the source of floodwater for irrigation of their farmlands in the project area. Moreover, due to the recurring drought and erratic rainfall the communities are still depending on the sale of livestock to buy food crops for their consuption. This is shown by 77% of respondents stating that there is still a high rate of livestock sales by the farmers in the project area.

With the exception of Demas most of the diversion structures in the project areas are complete and are in good condition. The sustainability of the diversion structure (*agum*) built in Demas has been questioned as it is only a meter high structure instead of the required 2 meters. Consequently, about 10 meters long of it was damaged as a result of heavy rain in the adjacent highland areas that caused flooding. As there was shortage of gabion, delay was created in repairing the breached structure; however, the team learned that gabions had arrived just at the time of evaluation and the work is reported to be completed promptedly. In Asus the diversion structure was just completed and the village has greater potential for crop and animal production

provided the spate irrigation structure put in place is sustained. Farmers call for an assistance in expanding the irrigable farmland beyond the already developed level.

The SDDP was not directly involved in providing water for livestock. However, as a spin off effect of the potable water facility, livestock are able to get sufficient water from the abandoned water sources formerly used for household purposes.

Box 12.1: The case of Asus

Asus is a village that is found in the SDDP project area and is administered under Metkel-Abet administrative catchment. It is to be recalled that the area, extending from Sheib to Asus was put under the brutal and merciless atrocity and mass killing by the Haile-Selassie regime and later by the Dergue regime of the then colonial Ethiopia.

When in early 1970s the colonial administrators and soldiers of Ethiopia burned the houses and killed many children, women, and men, all of the remaining residents of Asus fled for other parts of the country and outside the country. This unwelcome event forced them to reside as migrants in other parts of the world, like the Sudan. Until the SDDP undertook its development intervention, the natives of the village were not encouraged to come back to their homeland to start a steady life there again. This is because there was no physical infrastructure that would enable them to cultivate their fertile and vast agricultural land. There was also no pure water for them to drink. During the observation movement of the evaluating team, Ato Ahmed, a resident of Asus, said with delight that now the village is reinstated as anew.

SDDP has constructed a large diversion canal with *gabion* and especially this year the dwellers of Asus are expecting to get running flood assisted by the diversion canal to undertake spate irrigation and grow crops. Since most of the residents of the area are sedentary farmers, the construction of the spate irrigation facility will enable the natives of the village to return home from the Diaspora. Ato Ahmed said in his words "now many people have returned home and many others are going to join us in the near future."

The SDDP has not only provided us with the diversion canal, but also it has provided us pure water through stand-pipes, and also added a few number of class rooms and a football ground for the elementary school that is located in Asus.

The case presented in Box 12.1 clearly shows not only the effectiveness of the Project in responding to the most pressing needs of the targeted beneficiaries, but also the far-reaching impact and indicating that the Project has achieved results beyond plan.

The lessons learned from Asus shows that the major factor for the rehabilitation of the village and the re-creation of a community that was once upon a time seen as a destroyed identity is the water and crop development component of the SDDP.

Another benefit realized as a spin off effect of the SDDP is the awareness created on the need of soil and water conservation among the target beneficiaries and the resulted direct impact on conservation of trees and soils due to some practices of SDDP. Before the SDDP the farmers used to destroy considerable amount of trees in process of making diversion structures year in year out. It was a system based on inefficient, ineffective and unsustainable procedure. This is solved

rationally as the construction materials applied by the SDDP are more effective and efficient and durable than the traditional ones. FGD participants agree that they have realized the benefit of improved means of soil and water conservation and the importance of conserving trees. However, as there is persistent pressure on animal feeding, it is still difficult to avoid destruction of trees and shrub.

The evaluators are of the opinion that the project could have done more to directly address deforestation problem in the area if aforestation measures were to be included as a component of the project activities. This was confirmed by field observations of the evaluators as there are no trees that are planted by the project around the homesteads in all the sites. Further, FGD participants have explained and confirmed that the project did not implement any activity directly related to aforestation activities. But they further said that this does not mean awareness of the farmers for the needs of trees and soils conservation is not there.

It is known that before the SDDP the communities were practicing the traditional diversion ways of stone and brushwood *agums*. These structures were weak and prone to washing a way by floods of even low intensity, and was environmentally damaging. But the construction of the diversion structures by the SDDP has definitely ensured reliable and relatively durable water diversion canals and this has helped farmers increase their crop productivity and help them move towards food security. Still, detailed documentation and study on the sustainability of the structures in terms of farmers' capacity to manage and operate them is required. Different studies indicate that the efficiency of diversion structures like the one done by the SDDP is on average 45%; e.g. Halcrow, 1997. This is because during heavy floods these structures are partially damaged or washed away completely. Moreover, the riverbed topography changes after almost every medium to heavy floods because of degradation and deposition making it expensive for farmers to cover expenses incurred. As observed by the evaluation team if floods are high and beyond the capacity of the main diversion canal (*agum*), there will be a danger of breaching the structures immediately as seen in the Demas project site. The diversion structures do not have flow controlling mechanisms. Once they are constructed, the amount of flood entering from the river to the main canal cannot be regulated or stopped when there is a need to do so. But, except in Demas the other project sits did not so far suffer heavy flooding that can threaten the available structures. To date, the area has been witnessing low stage of flow, which is manageable, and the damage to the diversion structure has been so far minimal. Arguably for such small-medium size spates the diversion structures put in place by SDDP are relatively effective (Berhane, 2006). Hence, given the time and resource the SDDP should review and reconsider the possibility of including a breachable bund, fuse plug or head regulator to make it more sustainable.

True to their ends, the embankments and diversion structures are built to raise crop production and hence food security. However, there is still the technical question of whether the crop water requirement of the major crops grown in the area is congruent with the amount of water that comes through the diversion structures in place. The major crops grown in the area are sorghum, maize, watermelon and pepper and studies indicate that the water requirement of these crops is estimated to be as follows (Africare, 2001):

Crop type	*Water requirement in mm*
Sorghum	465
Maize	520
Watermelon	300
Pepper	500-600

The question is, therefore, whether or not the structures put in place would satisfy or exceed the above crop water requirements. There is a danger at both ends of possibility; that is., if the structures are bringing less water than required (which most likely this can not happen) then there will be the problem of drying or if they are bringing excess water then there is the problem of water over precipitation. The first concern (less water than required) is already ruled out but with the second concern a certain figures such as the annual runoff from the floods and catchments, the irrigation efficiency, depth of water per gift and the frequency of irrigation need to be determined. Hence, without underestimating the importance of the structures to raise crop production and promote food security; detailed study of the flood amounts from catchment areas, runoff frequency, and irrigation efficiency (preferably on longitudinal basis) is still required to establish measures for sustainability and efficiency of the structures.

12.2 Administration of spate irrigation

In the case of spate irrigation, water conflict arises usually between the up stream irrigators and low stream irrigators. According to Kiflemariam (2001), the water supplied by spate irrigation is unstable and erratic. The hallmark of spate irrigation is change; there is change in the size and frequency of floods, a change in cropped areas and crop productivity, and even a change in the land configuration itself due to different interacting factors.

Water is delivered on a field-to-field basis. As the flood arrives first in the lower point of the irrigation river, the topmost fields get water before the next field. In other words, if the fields located further from the irrigation river, are to get water, first the topmost fields have to get sufficient water. After filled with sufficient water, one of the topmost field bunds is breached and water is allowed to flow across the top field to fill the next field in an ordered succession of fields. Thus, it is difficult to ensure equity in the distribution of water in spate irrigation in the Project area. As there are no permanent structures to control the floods, during periods of heavy floods the topmost fields get washed away, and during periods of little floods only the topmost fields get water and the far-located fields do not get any.

There are some ways of regularizing distributions closely linked with the location of the field and size of the flood. It is advantageous for upstream farmers to construct low-level field embankments to contain series of minor floods. If they, however, construct high-level field embankments, larger floods easily destroy the upstream field embankments requiring the farmers to construct them again. It is advantageous for lower stream farmers to construct high-level field embankments because the force of large floods has been progressively dissipated and the danger of destruction is less while its water conserving capacity is high.

13. GENDER AND HUMAN RESOURCES DEVELOPMENT (HRD)

Gender is getting an ever-increasing attention and priority from all government and non-government organizations as well as from ethical and human rights perspectives. According to HMSO (1995), gender is the term used to describe the difference in characteristics (social, cultural, and historical) between men and women. Due to the perceived difference in characteristics, usually women assume different gender roles from that of men.

In most developing countries there is a broad pattern of men having a main productive role and other subsidiary roles. Women, on the other hand, have a triple role: a reproductive role; a productive (or domestic) role; and community management responsibilities. The challenge faced by women is, therefore, striking a balance between these different roles. Thus, the evaluation

team has preferred to analyze the effectiveness and impact of the SDDP on gender from these multiple role dimensions. Any gender intervention is deemed effective and with positive effect if it reduces the efforts demanded of women to carry out these different roles and if they are able to accomplish each of the three roles without affecting the other two responsibilities negatively.

Case in point is that in order to help women strike a balance between these roles both in the short-term and long-term, the development intervention must be responsive to the practical needs and strategic needs of women. The practical gender needs are to do with what people need to perform their current roles more easily, effectively or efficiently; usually they can be identified by the people themselves. By contrast, women's strategic gender needs are concerned with changing the position of women. Most governments now endorse the need to improve the status of women and have policies of equity and equal opportunity.

Fundamental to enabling women to meet their needs and help them carry their multiple roles is done through human resource development programs primarily directed towards them.

Hence, when evaluating the gender sensitivity of the SDDP we have based our analyses on the above noted theoretical frameworks.

13.1 The Effectiveness and Impact of the Intervention in Gender Issues and HRD

The SDDP has the objective of effecting positive behavior change in the life style of the target communities, that is, in their approach of solving development problems. For this purpose the project engages itself in the provision of training and conducting of seminars on various topics of interest to the beneficiaries. The major topics of training are general agriculture and gender relations.

Demographic figures of the project area indicate that women outnumber men. The total number of women is 5,779 while that of men is 5,486. Hence it is commonsense to ask "were the project's activities commensurate and responsive to the higher number of women?" The project was not only gender sensitive but also strived to address women's outstanding problems in the area. Moreover, gender was streamlined within each activity of the project objectives. Women were represented in all project activities from the planning phase up to implementation. The PRA group is, for example, formed among informal men and women community members and women constitute at least around 40% of the village water committees. Moreover, the model latrines constructed were handed over to women-headed households that clearly indicate the SDDP's gender sensitive and inclusive strategic approach. Essentially, in the SDDP at least two women from each village should be included in the water committee of the village. These examples are tangible evidences that the project has created a positive impact on the communities to promote women's decision-making power. Culturally and as substantiated by Werku (2001) the participation of women in agricultural and income generating activities is almost non-existent in the area. This is further complicated by strong conservative tradition and sundry beliefs that prohibit women from participating in decisions that directly affect their well-being. One strategic option for gender equality is the empowerment of women by helping them engage in income generating activities. Following a consultant's recommendation the project has given skills training for women to gainfully participate in income generating activities. More importantly the increased awareness of both men and women in the project area, about the importance of providing village administrative tasks to women and their inclusion in development committees responds effectively to the strategic needs of women. The fulfillment of the strategic needs, in turn, guarantees women's empowerment and effective involvement in strategic issues affecting their own interests and that of their children.

Women developing their income generating capacity by attending the training in handcraft provided by the SDDP

SDDP reports indicate that since 2003 a total of 284 women have taken home economics training courses. This tailor-made training of women in home economics has facilitated the breaking of the tradition, which has been for long characterized by the dominance of men. The training has helped the women beneficiaries to expand their life horizons and be outward looking. Their knowledge on nutrition, health and education has been improved. As indicated by individual beneficiary interviews around 86% of the respondents believe that the training has helped women to improve their living standards. See the following Table 13.1.

Table 13.1: SDDP helped women by training on income generating act

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	30	85.7	85.7	85.7
	No	5	14.3	14.3	100.0
	Total	35	100.0	100.0	

The training on construction and use of latrines was also among the most important activities that helped empower women's role in development.

Women are able to improve their lives by attending home economics training program. They are now able to manually sew clothes for their children from worn-out adult clothes.

Thus, as a result of the different types of training and awareness enhancement programs substantial positive change in attitudes has been realized. To say the least, the training on home economics has helped women to assume not only a reproductive role in the household, but also to be recognized as partner breadwinners in the community. This new trends and responsibilities have substantially changed women's position in the Shebah - Demas community; they are now able to echo their voices and influence development programs that directly affect them. Thus, as confirmed by individual beneficiary interviewees the various training and gender inclusive involvements have enabled women to carry out their productive and reproductive roles more effectively and efficiently than before. In short women are emancipated from themselves becoming a problem to only their material needs. See the following three tables on results concerning the contribution of SDDP on the productive, reproductive and community management roles of women.

Table 13.2: SDDP made productive role of women easily accomplished

SDDP eased the productive role of women	**Frequency**	**Percent**	**Cumulative Percent**
Yes	32	91.4	91.4
No	3	8.6	100.0
Total	35	100.0	

Table 13.3: SDDP made reproductive role of women easily accomplished

SDDP eased the reproductive role of women	**Frequency**	**Percent**	**Cumulative Percent**
Yes	33	94.3	94.3
No	2	5.7	100.0
Total	35	100.0	

Table 13.4: SDDP made com. Management role of women easily accomplished

SDDP eased the community management role of women	Frequency	Percent	Cumulative Percent
Yes	33	94.3	94.3
No	2	5.7	100.0
Total	35	100.0	

However, compared against objectives the training was only instrumental in production of items that can only be directly consumed at the household level. Otherwise, FGD reports indicate that apart from those items that can be utilized for household consumption, most of the trained women were not able to market and earn supplementary income. Obviously, it seems training alone could not create the capacity to generate incomes. There may be two important points why this has happened. First, there is shortage of raw materials required for the type of skills taught to enable them to make household items such as broom *Seteta*, basket, prayer mat, mat, chair etc in the project area. More important though, the beneficiaries were not able to breakthrough and get access to the available marketing channels for obtaining doom palm tree leaves from the source, that is Gash Barka region of Eritrea. Such capacity is usually created through the provision of Business Development Services, which is often linked with credit services. Credit was absent in the project context but the stakeholders should have worked to organize the women and create marketing niches. It is also more prudent to incorporate entrepreneur skills training with the skill areas taught. The wealth of experience about entrepreneur training of the ILO (such as the Improve Your Business - IYB hand books) could have been utilized. The IYB handbooks have been already translated in local languages by the Rural Enterprise Unit (REU). Moreover, other prospective skills where the chance of applicability was good such as sewing training should have been included.

Female Genital Mutilation (FGM) is widely practiced in the area. Based on the study made by a gender consultant about the extent of the problem in the area; the Project has provided a number of awareness creation workshops to the target communities. The workshops were attended by village elders, community leaders and other local influencers. Women were the primary targets of the program but it was also inclusive so as to score cumulative result. The program was at first initiated as a pilot program in defined project areas but later it was extended upon the recommendation of the community leaders. This indicates the impact created as a result of the intervention of the SDDP. FGD participants has expressed that the FGM awareness creation program was very important in expanding their knowledge and attitude about the practice and thus should be further extended in scope and coverage. Respondents for individual beneficiary interviewees were asked if they believe or not that FGM is still important in their community. Surprisingly, an overwhelming 87% of the respondents (who are both men and women) report that they do not support the practice of FGM and hence do not want to circumcise or infibulate their young girls. This result attests to the positive impact the SDDP has created on the beneficiaries. See Table 13.5.

Table 13.5: Perception on the importance of FGM

Do you believe that FGM is still important	Frequency	Percent	Cumulative Percent
Yes	4	11.4	11.4
No	31	88.6	100.0
Total	35	100.0	

An elderly man from Gahtelay, has expatiated at the suffering of the girls and the boasting of the youths who wedded to a girl who had been stitched. His memory and comments are boxed as under.

Box 13.1: Comments from the elderly man from Gahtelay

"Welahi, the FGM is a very unwelcome fortune inflicted upon our girls. There are various types of FGM; the one that is done through stitching is very severe and even leads the female to death" lamented the 72 years old man. Furthermore, he pointed out that their fathers and forefathers were practicing it since long years ago, and still his generations until recently have had uncontested preference for FGM. He continued, "…all we have been practicing with regard to FGM is imposed on our girls not because of religious belief or some scientific justifications, but it is due to lack of awareness."

Ato Ali Bekit, a returnee from the Sudan and a 7-years resident of Gahtelay, stated that when a boy wed to a girl with a stitched genital, he mercilessly tries to penetrate the vagina and takes him a week or more to take the virginity of the girl. Many are not able to do that. But if a man manages to take the virginity in less than a week he brags before his peers that he is a real man who could do it in a few days. This shows that regardless of the pain and bleeding caused to the newly wedded bride in 'honeymoon' the man tries to show the strength of his muscles in a bold and unhesitant and un-humanly move.

Now the old man, who is capable of advising many young parents, regrets for what have been done, and concludes, "thanks to Alah, now we have understood the severity of both physical and mental harm inflicted on the girls and women by the relentless effort and awareness raising seminars conducted by the SDDP; we are really thankful to them."

In implementing FGM awareness creation programs, it is highly regarded that the SDDP has used the right type of communication tool to bring effective results. The communication tools applied in the FGM awareness programs were video interactive programs showing the exact pain and loss the young girls endure during the FGM. The use of these communication tools makes very effective because it was then easy for the communities to imagine how much physical and mental pain their girls were sustaining.

The MoH in association with the Ministry of Information (MoI) are broadcasting the FGM video film prepared by the SDDP/SDDP in ERI-TV since July 2006. This attests not only the effectiveness of the communication tool but also the far-reaching impact the SDDP is making on the wider Eritrean society in general.

Overall, the project is rightly directed to the most outstanding problems of women. The cumulative impact of the activities; by and large of the program in widening women's attitude, improving their quality of life, and above all echoing their voices in decisions that directly affect their lives are evidences that attest the positive multiplier effect of the program. It is foregone fact that the number of working men (in terms of economic productivity) in the country as a whole and in the area in particular has been reduced after the latest border dispute with Ethiopia. Taking this circumstance, it is appreciated that the project has decided to focus more on women as they are shouldering more income earning responsibility for households than before.

13.2 Effectiveness of Social service rendering facilities

It is highly regarded that the project was designed to apply an integrated approach. This was rightly targeted; to integrate the "four capitals of sustainable development". These development capitals as identified by Serageldin (1996) are: manmade capital (infrastructure and technology), human capital (education, health and nutrition), natural capital (natural resources base, including climate) and social capital (human institutions and social links that facilitate collective action in favor of the community well-being-Michael, 2006). The SDDP rightly considers that without ensuring a healthy mother (community) the objectives of food security cannot be fully achieved. During a PRA session the participants have expressed that child delivery is often complicated from long periods of labor because of lack of efficient transport services from their villages to the health centers. The communities have hence demanded for an ambulance. In response, the SDDP purchased one ambulance to support the community and especially women in transporting them to the health centers during delivery. Obviously, the provision of the ambulance helpes the community especially women and children arrive to the health centers timely and be treated accordingly. Before the SDDP, patients used to arrive to health centers after long hours which of course further complicating health conditions and creating unnecessary referral pressures to the hospitals in Massawa, Ghindae and even Asmara. Sometimes, laboring mothers were left at the mercy of Traditional Birth Attendants who are not always reliable. Now, as they are arriving on time, delivery is simplified and the project has helped the big referral hospitals from receiving in-patients that could otherwise be handled in the health centers around their villages.

An ambulance provided to the communities helps the target beneficiaries' especially pregnant women, people in need of emergency services and children arrive to the health centers on time.

Health, education, and sanitation are also rightly integrated. A study by the SDDP management office indicates that inadequacy of sanitation facilities is very critical problem in the project target area. Worse than all, sanitation facilities are also not very known by the communities. Health documents indicate that most reported illnesses in the area are the result of poor sanitation. Disposal of excrement is often more difficult for the children, mothers and the elderly. Hence the project has taken the initiative to build model latrines as a pilot program in Demas and Shebah. Accordingly, around fifteen model latrines are already constructed in both of these villages and handed over to women headed households. These latrines have already received wide acceptance and villagers are keen to construct similar latrines in their homesteads provided they are financially supported. The latrines have been constructed as per the specification and standard of the MoH. Construction of latrines was not initially in the project plan. It was only included after PRA has indicated for the need thereof. This shows that the project was more flexible to accommodate local needs and priorities even as implementation unfolds. The estimated total cost to build one latrine is Nakfa 2,000.00. This seems quite expensive considering the living standard of the community members of the project area.

Construction of Model latrines in Shebah and Demas have contributed greatly to reduce sanitation and health problems. The latrine in the picture is a model specified by the MoH.

Education is also one component of the integrated approach. The project was rightly dedicated to enhance educational service, as it is very instrumental not only to sustain the projects activities but also to enhance human resources. The five elementary schools operating in the area are not sufficient to cater for all educational requirements. To make things worse, the elementary school in Demas was damaged by a windstorm leaving students to attend classes in makeshifts. Considering the climatic condition of the area it was difficult for students and teachers to properly attend classes. Therefore, considering the need and urgency of the service the project fully rehabilitated the school. Following the rehabilitation; students and teachers are able to comfortably attend classes.

Full renovation of Demas primary school after it was damaged by sand storm.

The project was more responsive to community needs and requests. Priorities and requirement are always appraised through PRA. A PRA group is essentially established in each project area to discuss local community problems and priorities. Accordingly, the communities of Gahtelay and Demas have requested the SDDP to rehabilitate their clinics. Based on their request the project renovated these two clinics and handed them over to the communities. These clinics haven't been repaired or maintained for a long time. Hence, the rehabilitation of these clinics has definitely created a knock-on positive impact on the health of the communities. To mention the least, the clinics have become more hospitable and convenient for patients to stay in after their renovation.

Beneficiaries getting sufficient health services after the health center in Gahtelay was fully rehabilitated by the SDDP.

14. EFFICIENCY OF THE SDDP INTERVENTION

Efficiency is measured as the ability of a project to produce the desired facility/output with minimum cost within specified time period. Furthermore, it is analyzed in terms of ways of doing things, or methods of work. The evaluating team identifies four variables to assess the efficiency of the SDDP intervention. These variables are the methods of work (ways of doing things), analysis of materials used, and cost-benefit analysis. The focus will be on allocative efficiency.

14.1 Implementation Methods of The SDDP

The SDDP is designed, implemented, and monitored with a participatory approach. The participatory approach involved experts from the MoA, MoH, Infrastructure Department of Zoba Northern Keyih Bahri, and members of the village development committees, village/area administrators, and administrators of the Ghindae sub-Zoba. The participatory process is bottom – up, with the villagers getting first chance to interact with the development committees about their most pressing development needs and priorities. The participation of the partner organizations and participation of beneficiaries is analyzed as follows to examine the efficiency of the SDDP intervention.

14.1.1 The participation of role partners and integration of activities

The SDDP identified several implementation partners; the major ones are the administration of Ghindae sub-Zoba, village administrators (VA), village development committees (VDC), MoA, and NUEW. The role of each of the organizations (partners) was clearly defined.

The VDC and the VA primarily discuss with the community members (people) to identify and rank the needs and development problems of the beneficiaries in a given project area. The needs and development problems of the villagers are clearly articulated and then communicated to the GSZ administration for eventual decision. The GSZ Administration in turn invites PRA participants to prioritize the needs and requests reported by all VDCs and VCs in the project area. This interactive meeting results in the formulation of annual action plan within the general framework of the six-year implementation plan of SDDP.

The role of the branches of line ministries at the sub-Zoba and Zoba levels is to provide technical assistance both during the design and implementation of the project. The MoA was the most active development partner in the implementation of SDDP. The role of the MoA includes the provision of training manual for home economics and general agriculture to the beneficiaries, as well as the provision of technical assistance in surveying, feasibility study, and progress monitoring of the project activities. For example, technical experts (like agricultural engineers, and other technical experts) from the GSZ and Administration of Zoba Northern Keyih Bahri were actively involved in the specification of gabions for water diversion and the monitoring and follow-up of its construction. Furthermore, these experts prepared report to the sub-Zoba administration concerning the progress of implementation and on materials needed for implementation.

Likewise, the Engineering and Infrastructure Department at the Zoba was playing a key role in surveying activities for physical infrastructure project components and led the selection of sites for potable water sources. As a result of these technical assistances failures of water source sites was not only very minimum but recovery activities were accomplished at least cost.

The MoH also participated in the setting of specifications for latrines. The model latrines constructed in the project area are designed to suit the climate and environmental context of the area. This results in the optimum utilization of the facility by the beneficiaries. The growing demand for, and the initiatives of the dwellers to construct their own latrines in their respective house courtyard is a reflection of the right quality of the sanitation facility introduced by the SDDP in the project area.

The primary role of the line ministries was to provide technical support, monitor implementation and make proper specification for items or facilities planned for construction by the SDDP management unit.

The National Union of Eritrean Women (NUEW) and Ministry of Local Government (MoLG), also participated in the selection of trainees for the training and awareness enhancement campaigns about female genital mutilation (FGM), and HIV/AIDS, as well as for home economics, respectively. The participation of these two organizations enabled the SDDP to identify the right beneficiaries, which in turn resulted in the relevance, effectiveness and efficiency of the training activities.

While the partner organizations assume their responsibilities and carry out their duties as per the role specifications laid, the management staff of the SDDP was engaged in planning, implementation, budgeting, reporting and dealing with elements in the external environment and strengthening of SDDP's linkage with the aforementioned development agencies and partners.

The SDDP manager submits budget request for a forthcoming fiscal year to SDDP headquarter during August or September. This shows that budget is prepared five or four months before the start of the new fiscal year. At the time of delay of approval of the budget by the NORAD/SDDP, there is a provision that entitles the SDDP to utilize 20% of the budget of the latest completed year. This provision enabled the implementation of the project activities as planned and ensures that the final result to be effective, efficient and timely in solving local issues of concern.

Even though there are a number of partners in the implementation of the project, the effective coordination activities of the sub-Zoba administration and SDDP's management staff enabled the partners to know their exact role during the planning and implementation phases of the project. Thus, role perplexes which are not uncommon in many projects were not affecting implementation modalities in the SDDP. This again resulted in the unreserved cooperation and assistance from all Project implementing partners.

The partner line ministries and organizations did not charge the SDDP for the technical support they render by deploying their experts in the project site. Thus, at times when experts from line ministries are involved in the Project, SDDP paid only daily allowances. In other words, the cost of expert service received is borne by the line ministries. Thus, the partners did not participate only through deployment of experts, but also in covering the cost of technical assistance. This played a great deal of significance on the efficiency of the project implementation.

Obviously, there was efforts duplication by the stakeholders operating in the area in one hand and some grand opportunities were left unexploited for lack of integration. Credit is one example where the project could have gained some experience from the Small and Micro Credit Program (SMCP), which has village banks in every area; UNICEF was also engaged in some nutrition, and water development projects.

It is well documented that integration helps to maximize the benefit and minimizes costs of project activities when several entities having related activities are present in a project area. Integration at project area has two important advantages. First, any project has limited resources at its disposal earmarked to specific objectives and by integrating its activities with other stakeholders it can maximize the use of its resources and thereby the benefit generated from its activities. For example, in the project area, it was possible to observe that crop-livestock production required more integration than has been done. Case in point, although the farming system produces crop-residues and forage sorghum (*durra*), the opportunity offered by the cropping pattern to produce more feed has not been utilized efficiently. Maize being the main crop, there is a potential to under-sow or intercrop with legumes that could also underpin crop production by enhancing soil fertility. Of course the nature of the flush irrigation has to be considered. Other means of increasing the availability or quality of feed (silage, urea treatment) could also be useful. When availability of feed combined with efficient production management strategies is in place, the productivity of livestock and overall farm productivity could be substantially improved. This improvement could be brought about by designing appropriate animal production system that fits well with the ecological condition; this combination in turn, brings about the highest economic and environmental benefit. This aspect of the integration should have been given due attention to maximize the benefit from the effective utilization of runoff water through the construction of more effective diversion structure. If the project were to lack the necessary resources to do this, it could probably have integrated its activities with other stakeholders. Closure of integration gap by MoA would have generated more benefit from effective utilization of runoff water. Along these lines, the same is true about the credit service, literacy campaign, etc which could have potentially contributed to the effectiveness of the delivery of the project objectives.

Another important advantage of integration with stakeholders is related to what happens to the project benefits once the project is terminated. The reversal of project benefits is a serious problem that happens due to the problem of ownership of follow up. Therefore, any mechanism that ensures the sustenance of project benefits is very important. This is where the integration with stakeholders is useful. The opportunity for integration with stakeholders will contribute to the continuity of the project benefit.

14.1.2 The participation of beneficiaries

The beneficiaries have participated in the Project in various ways. They participate in defining their development problems giving opinions and comments on the proposals of the project, forwarding complaints to the SDDP manager when there is delay in implementation progress, and cooperating with the experts of the line ministries and private sector contractors in the identification of water sources.

Furthermore, the beneficiaries contributed labor either for free or being paid nominally for their labor. Moreover, beneficiaries also provided oxen for the construction of water diversion canals and embankment (*agum*). The amount of money paid by SDDP for an individual participant with his pair of oxen is Nakfa 40.00 per day. For an individual participant without a pair of oxen is only Nakfa20.00; an amount which is much lesser than the price of labor at the market.

Case Box 14.1: Working by the community, for the community, and within the community

A farmer from Metkel-Abet stated that he earns Nakfa80.00 for a half-day work along with his pair of oxen for a private employer. But, usually he had been participating in the construction of water diversion canals and embankment/*agum* for a mere, payment of Nakfa40.00 per day. This farmer, named Mohammed, has a deep-rooted willingness to contribute his labor and materials for the benefit of the people residing from Shebah to Demas. He precisely said that, "this Project [SDDP] is very interesting in its substance and very responsive to our needs. The administration of the GSZ and the management staff of the Project are working hard to bring sustainable solution to the problems we face in this arid part of the eastern low lands. So there is no reason why we should keep ourselves away from the Project activity. We have to contribute our labor, materials, livestock and money to help the project achieve its targets. It is our responsibility to work even for free in order to facilitate the implementation of the Project."

It was found out that the embankment constructed by the help of oxen is much stronger and more condensed and solid than the one constructed with the help of a dozer. This is so, because the oxen pound the clay and sand heaped by their hoofs when they move to and from and up and down.

The participation of the beneficiaries ranges from the contribution of ideas to the making of material contribution. This shows that the beneficiaries believe that the project is very relevant to their needs and in so doing realize eventual ownership of the project.

In consistency with the motive of the farmers to participate, the SDDP drew a participation policy which stipulates that the role of the SDDP intervention (in terms of financial measurement) goes on in a declining trend starting from the second year of the project, while the involvement of the beneficiaries goes on an increasing trend from year to year. That is, the project cost paid by the SDDP for each subsequent year covers 100%, 75%, 50%, and 25% of the total project cost. Where as, the involvement of the beneficiaries in kind and labor is to constitute to the remaining portion of the project cost. This participation policy has a rigor of transferring full ownership of the project to the beneficiaries.

14.2 Materials used for the provision of project output

The SDDP used mainly locally available materials to construct the diversion canals, and embankments. The construction materials used include gravels, gabion nets, clay and sand. The use of locally available materials and resources does not reduce only the cost of construction, but also the cost of maintenance of the irrigation facilities.

As these materials are available locally the cost of acquiring and transporting them is affordable. Furthermore, since the construction of most of the irrigation physical infrastructures depended on labor intensive operations, the project did not face problems for the acquisition and deployment of labor.

The availability of human and material resources in the project area speeds up the implementation of the planned project activities. The early accomplishment of the planned activities again motivated the project management to increase the amount of work and produce more than the planned. This is what happened in the case of the SDDP. Table 14.1, shows the planned and actual outputs of the Project.

Table 14.1: Embankment and diversion construction constructed in each village

Village	Embankment construction with oxen in kms			Embankment construction with the help of bulldozer in m^3			Diversion structures with gabions in m^3			Canals Km
	Plan	Actual	Diff.	Plan	Actual	Diff.	Plan	Actual	Diff.	
Demas	15	24	9	15,000	23,000	8,000	924	924	0	
Gahtelay	20	30	10	25,000	30,000	5,000	2,470	2,470	0	5
Shebah	30	49	19	30,000	48,000	18,000	246	246	0	
Metkel-Abet	45	83	38	45,000	64,000	19,000	1,942	1,942	0	2.3 Asus
Adi-Shuma	20	32	12	20,000	41,000	21,000	840	840	0	
Total	**130**	**218**	**88**	**135,000**	**206,000**	**71,000**	**6'422**	**6,422**	**0**	**7.3 kms**

Source: SDDP/PMU project report.

Table 14.1 shows that the construction of embankment with oxen resulted in output that is 68% more than planned. The construction of embankment with the help of bulldozer also gone beyond the planned level by 53% and the amount of diversion canals with gabions was accomplished exactly as planned.

Since efficiency is commonly defined as the ability to produce more with the given material, labor, and time resources that is (output divided by input) the SDDP is identified as efficient project. This efficiency largely attributes to the dependence of the project on locally available resources that minimize delay or acquisition, transportation and communication.

. 14.3 Costs-Benefit Analysis of the Project

Cost-benefit analysis is one measurement of project efficiency. It is commonly understood that it is very difficult to convert in monetary terms the benefits acquired from clean potable water supplied to a local community. Nonetheless, taking into account the prevention of the beneficiary community from various diseases that are usually caused and communicated by polluted or unclean water, the amount of financial resource, time, and energy saved to fetch water from distant locations of water sources, and the positive multiplier effect of providing young girls and women sufficient time and energy to attend training and development programs amounts to higher benefit than the costs involved in providing the potable water facilities.

The main component of the project where cost and benefit computation becomes practical and reasonable is the crop development intervention. As it is noted earlier, the SDDP undertook various physical irrigation infrastructures to increase crop production. But is it the investment made in this infrastructure worth rewarding benefits that outweigh the cost? To make such scientific assessment of efficiency, the evaluators have collected and tabulated relevant data as indicated in Table 14.2.

Table 14.2: Forage sorghum (dura) production per hectare in the project area

Village	Total land under cultivation (in Hectares)	Cost in Nfa per diversion canals	Total quintals of Durra from one hectare	Income from sales of Durra/price per quintal of Durra	Year
Demas	562	Nfa15,626 per km.	8-10	160	2002
Metkel-Abet	600		8-10	160	2003
Asus	150		8-10	350	2004
Shebah	582		8-10	500	2005
Gahtelay	512		8-10	1,000	2006
Adi-Shuma	300		8-10		
Total	**2,706**				

Source: SDDP/SDDP project documents

When soil moisture level is good and there is no infestation of pest and diseases, the sorghum (*dura*) yield is estimated by the farmers to be in the range of 8 to 10 quintals (1 quintal = 100 kg) per hectare from the first harvest. Half of the first harvest can be obtained from the second harvest bringing the total to 15 quintals per hectare. The 15 quintal total yield level as impressive as it is, it is based on a "good year" scenario, which has often been difficult to come by due to shortage of rainfall in the highlands. Thus, for cost-benefit analysis a normal yield level of 10 quintal per hectare is taken as the amount of *dura* harvest in one year of two harvest.

From Table 14.2, it can be read that the total land under cultivation in the Project area is 2,706 hectare. The level of *dura* harvest per hectare is 10 quintals. Therefore, during a year of normal amount of rainfall in the highlands, the villages in the project area harvest a total of 27,060 quintals. Taking the price of *dura* in the year 2005, to be Nakf500.00, and income earned from one hectare is Nakfa5,000 (500 X 10).

Based on this price figure, the total amount of income obtained from the sales of *dura* in the project area amounts to Nakfa13,530,000.00 per year; that is 5,000 Nakfa X 2,706 hectares under cultivation.

On the other hand, the total cost incurred by SDDP to construct the various diversion canals and all embankments is Nakfa 9,721,000.00. This figure is obtained from Appendix 1. Therefore, comparing the total income of Nakfa 13,530,000.00 with the cost of Nakfa 9,721,000.00, the evaluators found out that the benefit is much larger than the cost of providing the physical irrigation infrastructure. The financial gain obtained after covering the cost of the diversion canals and embankments is Nakfa 3,809,000.00 per year. As the gabion diversion canals are semi-permanent structures that can serve for several years with minor maintenance outlays, they have the characteristics of fixed assets that give benefit for more than one year. Hence, the establishment costs of these structures will be distributed over the number of service years, reducing the cost of the physical irrigation infrastructure much less than stated above, and increasing the computed benefit accordingly.

Therefore, undertaking the benefit-cost analysis, the evaluating team found out that the SDDP project has achieved high degree of efficiency.

15. SUSTAINABILITY OF THE PROJECT OUTPUT

Assessing the sustainability of the SDDP - as a development project - involves more than just asking whether it has succeeded in contributing to the objectives set: it is also important to indicate whether the positive impacts are likely to continue after SDDP's assistances come to an end. Far too many development projects run into difficulties once the implementation phase is over, because either the target group or the responsible parties do not have the means or lack sufficient motivation to provide resources needed for the activities to go further. In the SDDP caution were made since the beginning regarding the sustainability of the program. The following elements of effective sustainability promoter partially reflect the strength of the SDDP project in ensuring sustainability.

- Project concept has its origin within the national, sectoral and development plans, food security objective in this regard.
- Outcomes from the project could easily be incorporated into the national and sectoral as well as development plans (the construction of structures, water wells and other facilities).
- Relevant institutions and partners were actively participated in the project design, planning and implementation.
- Social and economic infrastructures that enhance project promoted activities are partly in place. Some of them are village bank accounts, home economics training, repair and maintenance training as well as training on general agriculture.

The above indicated sustainability promoter factors have been considered as lee way to ensure the that the projects' actual outcomes and potential outcomes will be sustainable even after SDDP's withdrawal.

Another factor that ensures sustainability is the presence of complementary and supplementary development interventions by various government and non-government organizations in the area. For example, ECDP (Early Childhood Integrated Development Program) through the distribution of the energy efficient and smokeless stove named as Adhanet (savvier), MoA through distribution of best seeds and agricultural extension program, MoE through the provision of adult literacy programs, and Mercy Corps (NGO) through other forms of interventions have complemented the development intervention carried out by the SDDP. Moreover, the FAO is preparing to provide selected seeds to the farmers. Thus, in the absence of the SDDP intervention, several other development agencies may play an active role in developmental activities with the beneficiaries and the regional and sub-regional administrative hierarchies. These complementary activities are believed to boost the capacity of the target community to work more to sustain all the achievements attained by SDDP.

It is appropriate as well to note that the presence of well-organized VDCs will have a strong basis for the proper administration and sustainability of the project outputs. This grass-root organization will continue to serve as a reliable and proper channel of communication on developmental issues between the target beneficiaries and the sub-regional administration as well as any other development interventionist. Being active participants in the development activities of the villages, the VDCs in each village/administrative area play as a reliable and basic social set up in linking the village communities to the formal administrative echelons of the government at local level. According to Kiflemariam (2001:215) if investments in physical irrigation infrastructure are going to play a major role in improving rural livelihoods, there must be a well-established social infrastructure in which the physical infrastructures will be firmly rooted. The existence of VDCs at grassroots level, as well as rules and regulations of utilizing village-owned common properties, is indicators of a social infrastructure that has grown up along with the SDDP

intervention. This social infrastructure will undoubtedly yield sustainable stream of benefits to its users.

To ensure sustainability the SDDP provided training to selected men farmers in basic maintenance and repair services. Several men are trained and deployed in the project-villages. There is a system of user fees where villagers are obliged to pay Nakfa0.25 for a jerrycan of potable water. Income from the sale of water is used to cover cost of fuel for the motor pumps, salary expenditure for the watermen (who are also in charge of maintenance), and other operating expenses. Surplus income is saved to the village account via the local administration. However, no village has saved adequate fund for big and serious maintenance problems (Cf. Maintenance cost in Shebah reached up to Nakfa 52,175.00). The evaluators are of the opinion that the community might not have adequate resources to afford costs like the one incurred in Shebah. Ensuing to the prevailing fuel shortage and transport problems fetching of fuel is an outstanding issue that can militate against the sustainability of the water wells in Shebah, Adi-Shuma and Gahtelay.

In Adi-Shuma the sustainability issue of the potable water facility is yet uncertain. Although, there are people trained for basic maintenance and repair; their salary is generated from a monthly exaction of payments collected from households instead of user fee arrangements which is not enough to cover all the basic running expenses of the water facility. Each of the 300 households is supposed to make Nakfa2.00 monthly payment; but only about 50% of them pay their exaction. This monthly payment can only cover salaries for the watermen and part of the operating expenses.

Another danger that might affect the sustainability of the SDDP is the maintenance cost required for the various structures already put in place (embankments, canals, contour ridges, diversion structures ...etc). This is because during heavy floods these structures are partially damaged or washed away completely. Moreover, the riverbed topography changes after almost every medium to heavy floods because of degradation and deposition making it expensive for farmers to cover expenses incurred. As observed by the evaluation team, if floods are high and beyond the capacity of the main diversion (*agum*) there will be the danger of breaching the structures immediately as seen in the Demas project site. The diversion structures do not have flow controlling mechanisms. Once they are constructed, the amount of flood entering from the river to the main canal cannot be regulated or stopped when there is a need to do so. Yet, except in Demas the other villages did not so far suffer heavy flooding that can threaten the available structures. During the implementation period, the area witnessed low stage of flow that is manageable and the damage to the diversion structure was so far minimal. Arguably for such small-medium size spates the diversion structures put in place are relatively effective (Berhane, 2006) than the traditional spates the farmers of the area used to practice. Hence, given the time and resource the SDDP should review and reconsider the possibility of including a breachable bund, fuse plug or head regulator to make it sustainable.

Despite the positive indicators of the social infrastructure in the project area, some of the villages are characterized by inequitable institution of land distribution, lack of mutual farming interactions that is exemplified by the individuals, un-consulted actions of digging numerous wells in the village to irrigate farmlands of individuals, or lack of vegetable growing and marketing practices. Examples of the villages characterized by these types of weak social institution are Demas, Gahtelay, and Asus. Thus, the existence of less developed grassroots social infrastructure may not serve as a good basis for the sustainability of the irrigation physical infrastructure. The SDDP should, therefore, allocate sufficient human and material resources towards the creation and strengthening of the social infrastructure before it phases it operation.

Sustainability of a facility is usually affected by the operation and maintenance activities and procedures that it entails on the users. In the project area, the irrigation physical infrastructure – gabion supported diversion canal - is semi-permanent in nature, and the embankment made within the agricultural fields is strengthened by more of labor intensive work and less of capital facilities; thus, the operation and maintenance of the spate irrigation facility in place demands more labor and less financial resource. Since one of the main assets of the rural poor is labor, the labor-intensive operation and maintenance is affordable by the target beneficiaries. This affordability of the cost paid in kind (labor) will gradually enable the beneficiaries to strengthen their financial asset and even enable them to think of changing the semi-permanent structure to permanent one. Even though, this labor intensive operation is essential for sustainability of the project outputs, the cutting of trees and shrubs to strengthen the agums will have adverse effect on the environment. The beneficiaries tend to emphasize on short-term benefit of growing forage sorghum, maize, watermelon and other vegetables ignoring the long-term negative effect of destroying the forest. Thus, in order to ensure the sustainable development in the project area, there is a need for rigorous aforestation program and stop cutting of trees for the purpose of maintenance of broken *agum.*

16. LESSONS LEARNED AND RECOMMENDATIONS

The following are summary of the lessons learned in the SDDP implementation.

A. Integration

Integration could be considered at several levels. The most obvious integration is that of a synergistic combination between the components of the farming system (crop and livestock). The other integration, which usually goes unnoticed, is the integration of various stakeholders working in the area. Opportunities should have been more used to cover resource limitations and prioritize activities that could not be at all met by other stakeholders. Examples of this include credit provisions and fuel-efficient stoves (*Adhanet*).

B. Crop-livestock integration

Livestock are integral part of the farming system in the project area. In this arid area where crop failure is becoming more and more frequent; livestock deserve greater attention to enhance their role in sustaining the target farmers' household food security. The area has been hit by erratic rainfall and persistent drought over the past years leaving farmers to only depend on their livestock, if at all they have. In technical terms this means effective integration of the livestock into the farming system could help them assure their food security in either one or both ways. Principally, this involves enhancing the capacity of the system to produce adequate feed supply on farm. Although the farming system produces crop-residues and forage sorghum (durra), the opportunity offered by the cropping pattern to produce more feed has not been utilized efficiently. Maize being the main crop, there is a potential to under-sow or intercrop with legumes that could also underpin crop production by enhancing soil fertility. Other means of increasing the availability or quality of feed (silage, urea treatment) could also be useful. When availability of feed is combined with efficient production management strategies the productivity of livestockl production and overall farm productivity could be substantially improved. Such an improvement could be brought about by designing appropriate livestock production system (with the option of dairy cow, or beef, or goats or sheep) that fit well with the ecological condition to bring about the highest economic and environmental benefit. This aspect of the integration should have been given due attention to maximize the benefit from the effective utilization of runoff water through

the construction of more effective diversion structure. If the project lacked the necessary resources to do this, it could probably have integrated its activities with other stakeholders.

C. Integration with stakeholders in the area

It is well documented that integration helps to maximize the benefit of the project activities when several entities having related activities are present in a project area. Integration at project area may have two important advantages. First, any project is subjected to the economic principle of scare resources. Thus the limited resources at its disposal earmarked to specific objectives can be sufficient if integration of activities with other stakeholders is undertaken. The efficient integration of crop-livestock agriculture mentioned above is a case in point. If this integration-gap had been filled by MoA, the benefit generated from effective utilization of runoff water could have been maximized. Along these lines, the same is true about the credit service, literacy campaign, etc which could have potentially contributed to the effectiveness of the delivery of the project objectives.

Another important advantage of integration with stakeholders is related to what happens to the project benefits once the project is terminated. The reversal of project benefits is a serious problem that happens due to the problem of ownership and follows up. Therefore, any mechanism that ensures the sustenance of project benefits is very important. This is where the integration with stakeholders is useful. If the stakeholders were to be an integral part of the project activates from the beginning, the continuity of the project benefit is more likely to be guaranteed.

D. Income generation

The project provided the opportunity to obtain supplementary income by training the women villages in handicraft making. But, apart from those items which can be utilized for household consumption, many of the trained women were not able to market and earn supplementary income. Obviously, it seems training alone could not create the capacity to generate incomes. There may be two important points why this has happened. First, the raw materials (doom palm leaf) required for the type of handicrafts taught (broom *seteta*, mat etc) are not locally available. More important though, they lacked marketing channels to reach the markets even in nearby markets let alone to reach far away market places like in Asmara. Such capacity is usually created through organizing the women themselves with the participation of other stakeholders. It seems this issue should have been given due consideration. Likewise, other prospective skills where the chance of applicability was good should have been. For example, in Demas, it was suggested that "singer training" could have been more prospective than what was provided. Although this capacity may not be applicable for all the women to benefit from, it could have provided a wonderful income generation opportunity for some. It could have also provided important utility to the villagers as no tailoring services exist in most of the villages.

E. Financial sustainability

The project has done a lot to ensure the sustainability of access to clean water. It installed new facility, trained personnel to run the water delivery system effectively, etc. However, it seems little attention was paid to the financial sustainability of the water service. The payment arrangement was left to the independent decision of the villages, many of whom followed user fee arrangement. In one village (Adi-Shuma) a flat rate payment arrangement was applied instead. As it has been witnessed in many similar projects, user fee payment may not generate adequate fund to cover the recurrent costs or even operational costs. The lesson in this case is that greater attention should have been given to the creation of capacity to ensure the financial sustainability following the project's termination. In addition to user payment cash sources, other means and ways such as yearly exacted contribution, or setting aside some farmland to raise money should

have been considered. This is particularly relevant to those small villages where the capacity to generate adequate fund from users' fee is limited.

F. Efficient use of drain water

The project has attempted to minimize the flow of drain water, but avoiding it altogether is not possible. Instead, in such arid places where one drop of water is so precious, it is imperative to make best use of any unavoidable drain water. In some places the "watermen/ technicians" have made best use of it by developing small gardens for themselves. In others nothing is done. Similar benefit could have been gained in other places by investing in its use for village tree or garden nursery. Where this is not possible , the water could have been collected in a sink and used for other utilities such as for building bricks and for watering animals.

G. Cost of toilet

The introduction of the toilet was an integral part of the sanitation intervention. This technology was only introduced in 10 households (as a model) in Demas, but has gained excellent acceptance. However, it costs which is Nakfa2000.00 seem high to hamper its adoption by the majority of households. In such a situation, the poor are those that will fail to adopt and the most to lose. It is thus, very important to see ways and means of reducing the cost by 1/3rd or 1/4th and make it readily adoptable. This means cheap available local materials should be used even it means compromising some aspect of the sanitary design factors. It is obvious that this issue has to be addressed before any effort is made to introduce latrines to the other villages.

H. Overall empowerment

The spate irrigation by its very nature requires collective working arrangement. All the villages in the area have committees responsible for certain operation or tasks. However, their institutional arrangement could be so weak such that their decision making process may be slow or ineffective. But, helping them build strong organizational capacity to articulate their opportunities, constraints and mobilize the members to take action could be important in sustaining the overall benefit of the project.

17. SWOT ANALYSIS

The environmental context in which a project is implemented is composed of two components, namely, the internal organizational environment and the external organizational environment.

The internal environment elements such as the financial resources, facilities, equipment and machineries, supplies, internal work rules and procedures, project policies and objectives; whereas the external environment consists of the social, political, economical, and technological elements. Thus, in SWOT (Strength, Weakness, Opportunity, threat) analysis the evaluators analyze the internal environment of the project in order to identify the strength and weakness; also they examine the external environment elements to identify the opportunities and threats that affect positively or negatively the effectiveness, efficiency, impact, and sustainability of the project.

This section therefore, examines the strength, weakness, opportunities, and threats of the SDDP.

17.1 Strength

The evaluating team has identified various strengths of the Project. These strengths are:

- The ability of the project to formulate project objectives that address the most pressing needs of the people in the project area. As stated in the previous sections the most pressing needs of the people were the lack of pure potable water and lack of spate irrigation facilities. The objectives of the project, among others, being the development of water, and development of crop and livestock, is a clear indication that the project had focused on solving the real problems of the people. In other words, the identification of right problem for the making of the right solution is identified as a major strength of the Project. The right problem in the project area was identified by the baseline survey conducted in the year 2000.
- The second strength of the Project is the implementation approach adopted by the project management staff. The PMU of the SDDP was able to involve and organize various experts from the line ministries and regional as well as sub-regional administrations. The involvement of these project partners has contributed greatly to the efficiency and effectiveness of the project.
- The bottom-up approach in making annual plan of action and priority setting is also a strength of the Project that has contributed greatly to timely response of the project to the most pressing needs of the most severely affected villages in the project area. The fact that development problems and needs were defined by the target beneficiaries as facilitated by their VDCs, and the organization of the PRA at the level of sub-regional administration has enabled the SDDP to deploy its scarce resources according to the plans and priorities set with the participation of the villagers. The final outcome of this bottom-up approach is the attainment of the allocative efficiency, which is actually attained by the SDDP. Furthermore, the transparent and extensive participatory (PRA) discussions held was a major factor for the absence of any form of conflict among the villages in sharing the project resources and benefits.
- Other strength worth mentioning here is the participation of the people in kind and in labor. This has significant impact on the sustainability of the project; because the tremendous amount of participation creates a feeling of project ownership among the beneficiaries.
- The SDDP has formulated a project implementation policy that reduces the financial contribution of the SDDP for the project area as the project implementation progresses from one year to the next. The policy states that the implementation cost to be covered by SDDP is 100%, 75%, 50%, and 25% of the total annual implementation cost for the 1^{st}, 2^{nd}, 3^{rd}, 4^{th}, and 5^{th} years, respectively.
- The SDDP has formulated another important provision concerning the implementation of its budget. When the approval of the budget by NORAD in Norway, or SDDP headquarter in Asmara is delayed, the SDDP manager is entitled to take financial resource that amounts to 20% of the total budget of the latest completed year. This has ensured the smooth implementation of the project and timely response to the needs of the beneficiaries.
- The ability of the PMU staff of SDDP to create mutual understanding and work harmoniously with the line ministry officials of the Government of Eritrea is highly appreciated by the key informants from the officials.
- The facilities, supplies, motor vehicles and equipment have been sufficient to the implementation and monitoring of the project. Furthermore, the presence of project management staff that have adequate previously acquired experience, skill and knowledge in similar project activities is the strength of the Project.

17.2 Weakness

Despite of the successes and strengths, the Project has also some weaknesses. These weaknesses usually had regressive impact on the implementation of the project. The following is a list of the weaknesses identified by the evaluating team.

- Lack of financial resource is listed number one. The development needs are many and the financial resource available was scarce. This shortage has resulted in the inability to use some opportunities that prevail in the project area. For instance, the focus group discussants at Gahtelay mentioned that there are several other rivers that can be diverted to their agricultural fields. Yet, due to shortage of the financial resources the SDDP could not construct gabions at those rives. This shows the inability of the target beneficiaries to use the opportunity of running waters for spate irrigation. Furthermore, the lack of financial resource had caused in the shifting of the financial resource from one budget item to another during the implementation of the budget. An example of this is the transfer of the 40% of the budget allocated for sanitation to health activities in the fiscal year 2005.
- Training was not given by SDDP to the VDCs who take a decisive role in mobilizing people's participation. Training on organizing people, communication skill, and development issues would have contributed added value to the sustainability of the Project output.

17.3 Opportunity

Opportunities, as stated above, prevail in the external environment of the project. Project management staff and development partners are required to make use of the opportunities that prevail in the environment. This section presents the opportunities and the ability of the SDDP staff to exploit those opportunities.

- Organizing the villagers through the VDCs to make nominal periodic contribution for the creation of a fund that can be used for the maintenance of project facilities and outputs. The sub-regional administration at Ghindae is planning to institute such a practice so that the villages will not depend on the SDDP or the government for maintenance expenses. Until the completion of the project in the year 2006, the PMU of the SDDP has not found a means for organizing the people to create a fund for project output sustainability purposes. The evaluators notice the importance of granting a start-up fund for the VDCs in the project area so that the creation of a fund will be facilitated.
- There are other development agencies that contribute to solving the development problems of the project area. An example of these agencies is the Early ECDP which has recently provided the smokeless stove to some villagers in the project area. The focus group discussants at Gahtelay stated that 35 women have received the stove named Adhanet. The presence of development interventions by other agencies, therefore, is seen as an opportunity for SDDP. The SDDP may not shoulder all of the responsibilities of developmental activities for itself; rather, it has to find ways and means to discuss bilateral cooperation network and share of responsibilities as well as in the identification of development problems that have to be addressed by mutual cooperation.
- Another opportunity is the presence of good clay and gravel in the project area for the construction of latrines. The latrine models constructed by the SDDP are made up of cement and bricks. These construction materials are expensive and beyond the ability of the majority of the villagers. Thus, the SDDP could have used trained the villagers to construct their latrines using clay bricks and the gravel found in the project area. This

could have facilitated the construction of latrines in the whole project area. The project could adhere to the *principle of start small and grow gradually* in this regard.

- The deep-rooted and historical cooperation and assistance of the Norwegian government earlier (during the armed struggle) through the provision of humanitarian aid, and later on during developmental interventions, lay down a strong base for the continuation of the SDDP intervention even at times when the policies of the Government of Eritrea and that of several other non-government organizations could not be compatible with each other.
- The right of women to possess farmland through equal access to the common properties of the village is endorsed in Proclamation No. 58/1994. This proclamation makes women to support a development intervention like SDDP that invests highly on physical infrastructure for agricultural activities.
- The presence of various types of government and non-government interventions in the area will contribute to the sustainability of the project output. Among the interventions are adult literacy programs, introduction of fuel-efficient stoves, health and education facilities that enhance the awareness and/or human capital of the target beneficiaries to enable them protect, maintain, and ensure sustainability of the project outputs.

17.4 Threat

Threat refers to an external environmental phenomenon that has a likelihood of affecting performance of the project negatively. The threats that surround the SDDP are the following:

- The inability of the market to supply some of the important raw materials for the provision of irrigation facilities is identified as the first threat for the Project. The gabion net, which was used for the construction of gabion diversion canals in most of the project villages, is now not available in the domestic market. This will, therefore, cause problem for the maintenance of broken gabions and construction of new diversion canals. Importation of gabion from the international market will also make maintenance or construction of gabions very costly constraining the financial flexibility of the project management.
- The amount of rainfall in the highlands, which is expected to create running runoff water for spate irrigation in the eastern lowlands, is getting more and scarcer. If the scarcity of the rainfall continues for longer period of time, undoubtedly it will reduce the effectiveness of the diversion canals in enabling increased crop productivity.
- The digging of several wells for irrigational activities in some of the villages in project area (for example in Demas) has the potential to drain the amount of underground water from which the well dug by SDDP for the provision of potable water is percolated. In Demas there are more than 90 wells out of which only three are owned as common property by the village residents; the remaining are owned by individual irrigation farmers. Both the focus group discussants and the key informants from the area stated that the digging of new wells in the villages make the underground water to shift from the site where the older wells are build, if the landscape is convenient for that. The fact that there is an extensive farmland of the Ministry of Defense near the Demas' village potable water well may gradually reduce the amount of water available for the well when the Ministry digs more and deeper wells around for irrigation purpose.
- The Government of Eritrea is pursuing its demobilization activity of many defense forces. Eventually most the demobilized persons belong and will return to the villages in the project area. Furthermore, more persons are expected to return from exile to reside in the villages encompassed in the project area. This phenomenon will, therefore, put more pressure on the potable water facilities prepared by the SDDP and breakdown and maintenance cost of the facility may become recurrent.

- The high rate of inflation reduces the purchasing power of the people in the country in general. Thus, the amount of income/benefit that could have been earned by the women trained on handcrafts will not be realized unless the purchasing power of the society is improved. This phenomenon will reduce the willingness of women to attend in similar training believing that they will not benefit a lot from them.

18. CONCLUSION AND RECOMMENDATION

18.1 Conclusion

The evaluating team concludes that the activities undertaken by the SDDP are relevant to the most pressing needs of the target beneficiaries. The irrigation physical infrastructure, water facilities, crop and livestock development activities, and the human resource development (training) programs that address gender problems have been notable in responding to the needs of the target beneficiaries. The new development facilities erected in the Project area are very relevant to the socio-economic situation of the people.

Furthermore, the project has been very effective in meeting the expectations of the target beneficiaries. Its ability to rank the problems according to their importance has enabled it to provide timely solutions to the problems. The need for pure water is satisfied almost fully; the need for irrigation canals is answered with satisfactory results. In the case of gender-relations issue, the change in attitude and practice towards abandonment of female genital mutilation is a very conspicuous success. Thus, the SDDP is evaluated as effective in meeting its goals.

The methods of short-term planning and implementation, adopted by the SDDP management staff, were the key result area in ensuring efficiency of the Project. The unobstructed use of the PRA in the definition of problems helped for the achievement of allocation efficiency. That is, the resources were deployed for solving the right problem of the target beneficiaries. In addition to this, the active and continued participation of the experts from the line-ministries and the villagers through contribution of free labor contributed greatly to cost reduction, and hence efficiency.

The impact of the project is one of the benchmarks for evaluation. There is noticeable short-term impact of the project. The young girls and boys are able to concentrate on their educational enrolments due to the greatly reduced time required to fetch potable water. Women are able to carryout the productive, reproductive and community management roles easily. Furthermore, the women were able to attend training on home economics and other relevant training (e.g. adult literacy program) due to the intervention of the SDDP in water development. Another impact is on the changed attitude and practice of the project beneficiaries towards FGM. This change has ensured the safeguarding of the rights of women, and also protect female from physical and mental harms that would have been inflicted on them.

Even though, there are some tangible positive results of the crop and livestock development intervention, many are yet not able to harvest crops due to lack of adequate rainfall in the highlands that form the flood water to be used for spate irrigation.

The last, but probably the most important benchmark, is the sustainability of the Project output. It is easily observable that the SDDP has managed to provide various physical infrastructures in the project area. On their part, the beneficiaries are playing a role to maintain broken embankments and canals. The fund that is planned for establishment by the facilitation of the sub-regional administration of Ghindae along with the VDCs is going to be very instrumental in the provision of financial resource needed to maintain and/or expand the facilities provided by the SDDP. It is not only the contribution

and dedication of the administration and VDCs which matters in this regard, but also, the attitude-change campaigns and awareness enhancing teachings conducted by the mass media is very helpful to ensure the sustainability of the changed attitude and practice. The radio program of Dimtsi Hafash has a broadcast program on health matters with special emphasis in women-related diseases. Furthermore, Eri-TV is broadcasting the negative consequences of FGM as supported by the video pictures recorded by the SDDP. All these efforts will foster the sustainability of attitude and practice change.

Taking into account the performance of the SDDP with regard to the five evaluation benchmarks, the evaluating team witnessed the success of the Project. The project is relevant, effective, efficient, and sustainable. Yet, the impact on crop production is very difficult to determine due to lack of rainfall and other factors especially with livestock.

18.2 Recommendation

Taking into account the implementation contexts, strengths, weakness, opportunities and threats of the Project, the evaluating team recommends the following points.

1. In some of the villages the water reservoirs are not sufficient for the entire village residents. For instance in Metkel-Abet there is only one water reservoir and this has resulted in unwanted crowdedness and long queue. Eventually, this phenomenon reduces the amount of time available for women to carryout their productive and community management roles. Thus, taking into account the number of residents of these villages and the forecasted population growth in the area, it is necessary to increase the number of stand-pipes and water reservoirs.
2. Training on local resources based skills such as brick making is more appropriate in the area. The cost of latrines can be reduced by using local resources such as clay and gravel. This will have positive impact in introducing latrines in each household in the project area. Dependence on cement and manufactured bricks retards the expansion of latrines because the people can not practically afford the expenses incurred to build one latrine which is close to Nakfa2000.00
3. The distribution of best seeds for food and cash crops (for example, watermelon) should have been among the priorities of the SDDP. Due to lack of best watermelon seeds many farmers are using seeds that produce less tasty and less succulent one that does not get demand in the local markets. In order to ensure completeness of impact; distribution of best seeds to farmers is essential.
4. There are several intermittent rivers that have the potential of sufficient runoffs for spate irrigation. Thus, in order to fully satisfy the need of the communities, the SDDP should further invest on the construction diversion canals to make use of these rivers.
5. Borehole based water supply in the target areas is observed to be on the decline, though not seriously. Thus this calls for enabling the community to conserve water from floods by means of under ground reservoir.
6. The SDDP is also seen to shift financial resource from one item of expenditure to the other. For instance, 40% of the total financial resource allocated/budgeted for sanitation was transferred to the provision of health service in the year 2005. This shows that there is lack of hard budget or inability of the SDDP management to implement its budget according to the plan. Thus, the evaluating team recommends for the establishment of contingency fund that can be used to cover unforeseen costs instead of transferring financial resources allocated for some purpose.
7. The provision of water facilities for livestock is another issue that needs immediate attention in the area. The project area is rich in underground water sources. Hence, instead of traveling for one hour or more to find water for livestock, the SDDP should provide water for livestock within an easy reach of the villages.

8. The SDDP did not implement its plan for micro-credit provision. In order to avoid duplication of similar interventions, the PMU/SDDP agreed with the sub-Zoba administration office not to defer from implementing the credit scheme. The local government has already allocated around Nakfa 20 million for micro-credit facility. The group-lending scheme is administered by the sub-regional administration. Thus, instead of venturing on group lending, the SDDP should take initiative for the introduction of individual lending.
9. As a result of the SDDP activities the cutting of trees and soil erosion was reduced significantly. However, more work should have been accomplished in environment protection component of the project. Thus, the evaluators recommend for the provision of nursery area for the growing of various seedlings compatible to the climate in the area. The provision of nursery area will facilitate aforestation activity in the area.
10. Many of the water pumps and tubes are made up of iron. This type of facility wears out in a short period of time due to rusting as the water is relatively saline. Thus, there is a need to replace them with plastic tubes.
11. Water lifting mechanism using diesel powered engine is not feasible, thus only solar and or wind powered mechanism need to be introduced
12. There are certain incomplete community concerns which need to be completed (Examples include, drilling of borehole in Demas to make water provision sustainable, completion of embankments with gabions in Demas, re-instigation of the older solar pump facility in Shebah, construction of more diversion canals in selected villages, marketable skills training etc). Hence, the implementation period of the SDDP should be extended for three years to complete these activities.
13. As per the baseline survey done in year 2000 the SDDP should be replicated in other village located west wards, that is, up on the upper escarpments. This will have the double advantage of completing the remaining activities in the Shebah-Demas area and at the same time implementing new activities in the upper escarpments.
14. Some socio-economic change might have taken place since the conduct of the baseline survey in 2000. Hence, if the SDDP is to be replicated in the upper escarpments the baseline survey should be updated to reflect current socio-economic condition of the area and top community priorities.
15. The creation of income generation activities for women after home economics training is important. Accordingly, market outlets should be created by establishing marketing pools (commonly known as "one stop shopping") in Ghindae and Gahtelay or in either of these towns as appropriate. These marketing pools (pooling centers) can serve as "business incubators" where after certain periods those women who are matured in the centers shall leave room to new women beneficiaries. As an initial establishment cost women should be supported with the provision of credit in the form of a revolving fund. The creation of these market pooling centers will facilitate income generation activities by selling their produces (hand craft produces) to tourists who shuttle to and fro Massawa. The consultant recommends a detailed study be done on these marketing linkages for women beneficiaries especially with the creation of the free trade zone in Massawa and the flourishing of economic activities associated with it.

18.3 Implications for further independent study

Some of the recommendations might require detailed study before they are implemented on the ground. For this reason we provide below the implications of the evaluation results for further independent study. The following studies might be considered as one package or might be desegregated and treated independently.

Study required	**Duration**	**Estimated cost in NFA**
Update baseline survey	5 weeks	180,000.00
Make detailed study for marketing of products for women beneficiaries	5 weeks	180,000.00
Study the potential and feasibility of providing credit schemes to beneficiaries in the upper escarpments and plains	5 weeks	180,000.00
Total	**15 weeks**	**540,000.00**

APPENDIX ONE:

Appendix1A: Condition of water facilities

Village Name	Type of water pump/solar or motor		Year installed		Cost per facility				Frequency suffered from drop services	Cost incurred to repair and maintain	Present condition
	Motor	Solar	Motor	Solar	Village	Motor (Nakfa)	Solar (USD)	Civil works *			
Demas	∨	∨	2002	2005	Demas	115,000.00	15,880.00	576,000.00		-	V. Good
Metkel-Abet	∨	∨	2003	2004	Shebah	180,000.00	15,880.00	710,000.00		-	V. Good
Asus	∨	∨		2003	Metkel-Abet	132,000.00	12,120.00	35,000.00		-	V. Good
Shebah	∨	∨	2002	2006	Gahtelay	135,000.00	-	680,000.00		52,175.00	V. Good
Gahtelay	∨	∨	2005		Adi-Shuma	248,000.00	8,110.00	332,000.00		-	V. Good
Adi-Shuma	∨	∨	2003	2003	Asus	-	6,810.00	194,500.00		-	V. Good
					Total	**810,000.00**	**58,800.00(USD) 882,000.00 (Nfa)**	**2,527,500.00**			

* - distribution points reservoirs, drilling etc.

Appendix1B: Embankment and diversion construction by villages

Village	Embankment construction with oxen in kms		Embankment construction with the help of bulldozer in m^3		Diversion structures with gabions in m^3		Remark	Soil bund
	Plan	Actual	Plan	Actual	Plan	Actual	Canals	
Demas	15	24	15,000	23,000	924	924		
Gahtelay	20	30	25,000	30,000	2,470	2,470	5 kms	
Shebah	30	49	30,000	48,000	246	246		
Metkel-Abet	45	83	45,000	64,000	1,942	1,942	2.3 kms Asus	
Adi-Shuma	20	32	20,000	41,000	840	840		
Total	130	218	135,000	206,000	6,422	6,422	7.3 kms	

Appendix1C: Cost and production rates of crops

Village	Total land under cultivation (in Hectares)	Cost in Nfa per diversion canals	Total quintals of Durra from one hectare	Income from sales of Durra/price per quintal of Durra	
Demas	562	15,626 Nacfa per km	8-10	160	2002
Metkel-Abet	600		8-10	160	2003
Asus	150		8-10	350	2004
Shebah	582		8-10	500	2005
Gahtelay	512		8-10	1,000	2006
Adi-Shuma	300		8-10		
Total	**2,706**				

Appendix1D: Cost description of project activities

Village	Cost description						
	Diversion + Embankment	Water	Health	Education	Gender /including training of women	Training farmers	Sanitation
Demas	1,474,918.00	See 1.1 under cost per facility	220,504.00	360,362.00	150,000.00	117,098.00	45,000.00
Gahtelay	1,954,780.00		686,000.00		130,000.00	129,263.00	65,000.00
Shebah	1,695,780.00		498,640.00*		190,000.00	110,000.00	45,000.00
Metkel-Abet + Asus	3,146,958.00				150,000.00	155,923.00	45,000.00
Adi-Shuma	1,448,564.00				140,000.00	123,397.00	40,000.00
Total	9,721,000.00		1,635,144.00		760,000.00	635,681.00	240,000.00

*Cost of Ambulance

Appendix 1E: Total Project cost covered by SDDP

Stakeholder	Amount in money	Remark
SDDP	18,279,651.00 Nacfa	
Community		
Others (specify)		
Total		

APPENDIX-2: SDDP contributed to food security in the area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	29	82.9	82.9	82.9
	No	2	5.7	5.7	88.6
	I am not sure	4	11.4	11.4	100.0
	Total	35	100.0	100.0	

APPENDIX-3: TERMS OF REFERENCE

1. Project Description:

The Shebah- Demas area is located in the Northern Red Sea Region, Under Ghindae Sub-zone. The climate of the project area is characterized as hot and semi-arid with annual temperatures of 24°C to 47°C; while rainfall varies from 50mm to 200mm. Precipitation is very low in the project area. Normally the rainy season is from October to March. The area depends on irrigation for agriculture from floods off the highland area between July and September; and the relatively small runoff from the escarpments, commonly known as the 'green belt' from October to March.

1.2 Project Duration and components:

The project started operation in 2001 and is expected to phase out in 2006.

The project is involved in:

- Spate irrigation
- Water and sanitation
- Farmers training in General agriculture
- Women training in home economics
- Strengthening health facilities
- Rehabilitation of school in Demas

2. Project Objectives

2.1 Overall objective

The overall objective of the program is: to assist the population to break the vicious cycle of poverty; to improve their quality of life: and to plan and carry out development programs in harmony with a proper gender approach, and sound ecological and environmental practices.

2.2 Immediate Objectives

- Maintain and improve infrastructural works (diversion structures) used in spate irrigation
- Increase the productivity of farmer agriculture
- Improve water supply for domestic use and animal husbandry
- Involve the local community in the design, planning and implementation of the program

3. Purpose of the Evaluation

- Consider whether the project objectives are being achieved.
- Consider whether the project is effective in both educating and training the community with the desired impact.
- Review the use of funds.
- Give recommendations to guide future decision making and project development
- Document lessons that are being learned
- Provide a basis for accountability to concerned implementing, financing institutions and project beneficiaries.

4. Specific Areas of Evaluation

Each specific area of focus stated below should critically take into account:

- Efficiency
- Effectiveness
- Impact
- Sustainability
- Gender Sensitivity.

4.1 Agricultural production
Assess the impact of project activities on food crop and animal production.

- Land under cultivation
- Yields.

4.2 spate irrigation infrastructure
Assess the improvements made with regard to the construction of diversion structures, canals and gabions and embankments in the field.

4.3 water supply
Assess improvements in the quality and quantity of water available to project beneficiaries and their animals. Assess the technical and economic viability of the current water supply infrastructure.

4.4 Training

- Evaluate the impact of training or women in home economics and other income generating activities and its output in this area.
- Evaluate the impact of training of farmers in various agricultural fields

4.5 Local project implementation structures:
Assess the performance of project implementation structures in the project area and the participation of beneficiaries in project planning and implementation.

4.6 Health support
Assess the support provided by the project with regard to strengthening of health facilities in the project area

4.7 Rehabilitation of Scho ol in Demas:
Assess the support provided by the project with regard to the rehabilitation of the school in Demas.

5. Methodology:

- Document review
    - Proposals
    - Reports
    - Other records
- Direct field Observation
- Key Informant interviews and discussion

6. Team Composition:

- Water and sanitation expert
- Gender expert/sociologist/anthropologist
- Agriculturalist/ agricultural economist

7. Time schedule

The planned time schedule for the evaluation of the project is assumed as follows:

- 20 days of field work and consultation with relevant partners.
- 20 days of reporting writing

APPENDIX-4: DATA GATHERING INSTRUMENTS

Questionnaire to be completed by beneficiaries

Dear respondent:
WEKITA Consultancy Office is conducting a terminal evaluation of the SDDP. The successfulness and effectiveness of the evaluation depends partly on the completeness and accuracy of information gathered for that purpose. We humbly believe that you, as a beneficiary of the Program, have valuable information to share us. Thus, we request you to kindly cooperate in answering the questions formulated in this questionnaire. All the information that you give us will be used only for evaluation of the Program and be kept confidential.

We thank you in advance for any sort of assistance that you give us by sparing some of your valuable time.

Enumerator's Name:_____ Date of interview:_____
---

i. Sub Zoba:_____ ii. Village/ Admin. area:_____
iii. Age:_____ iv. Gender:_____ v. Major economic activity:_____
vi. Educational level:_____ vii. Marital status:_____
viii. Do you have farm land: Yes____ No____ ix. Do you have livestock? Yes____ No____
x. Do you have irrigation land? Yes____ No____ xi. Do you have children? Yes___ No____

1. What do you know About the SDDP?
_____
_____

2. From which of the following projects of SDDP have you benefited?
a) Water development
b) Crops and livestock development
c) Social and physical infrastructure development
d) Environmental protection and development
e) Gender issue and human resources development
f) Other, specify_____

3. Do you believe that the SDDP intervention was relevant to the most pressing needs of the farmers in the area?
a) Agree b) Partly agree c) Uncertain d) Disagree

4. Did the SDDP provide the village with potable water facility?
a) Yes b) No

5. How do you evaluate the contribution of SDDP water project in solving the problem of potable water?
a) Very satisfactory b) Moderately satisfactory c) Less satisfactory
d) Not satisfactory

6. How do you evaluate the contribution of SDDP water project in solving the shortage of water for livestock?
a) Very satisfactory b) Moderately satisfactory c) Less satisfactory
d) Not satisfactory

7. For how many hours were you traveling to fetch potable water?
a) Before the intervention_____ b) After the intervention_____

8. Do you believe that the SDIDP water project has contributed to food security in the area?
a) Yes b) No c) I am not sure

9. What are the benefits you have received from the water development project of SDDP?
a) Knowledge of proper water use practices
b) Ability to irrigate more land
c) Availability of more water for livestock
d) Shorter traveled distance than before to fetch potable water
e) Shorter traveled distance to livestock water resource
f) Affordable cost of potable water
g) Increased household income due to the sale of more agricultural products
h) Other, specify_____

10. What are the obstacles, if any, that hinder you from using the potable water provided by SDDP?
a) Long distance to be traveled to the new water source?
b) Unaffordable cost of potable water
c) Difficulty of transporting water from its source to home.
d) Lack of maintenance service in the area/village
e) Other, mention_____

11. Who fixes the potable water facility when it breaks down?
a) repairer is hired from outside the area administration
b) an area resident trained by the SDDP
c) Other, specify_____

12. How did the SDDP contribute to increase crop productivity?
a) It provided farm inputs
b) It provided micro-credit to farmers
c) It introduced appropriate farm technology
d) It provided best seeds to farmers
e) It provided improved plant breeds
f) It trained farmers on how to use agricultural chemicals
g) Improved nutrition of the community (more animal protein consumed)
h) Higher livestock sales income
i) Other, specify_____

13. How do you see the productivity of crops after the intervention of SDDP?
a) Increasing b) Decreased than before c) Same as before d) Not sure

14. What are the obstacles that are not addressed by SDDP and contribute to low crop production?
a) Lack of micro-credit
b) Lack of agricultural technical assistance service/extension service
c) Lack of water for irrigation
d) Lack of irrigable land
e) Lack of farming tools
f) Other, specify_____

15. How much 'meshemae' of food crops did you harvest per year using irrigation facilities?
a) Before the intervention_____ b) After the intervention_____

16. How much income, in monetary terms, did you get per month from the sale of agricultural products?
a) Before the intervention_____ b) After the intervention_____

17. How did the SDDP contribute to increase livestock production?
a) It introduced proper husbandry practices
b) It helped in the production of fodder
c) It donated livestock to the farmers in the area
d) It provided improved animal breeds
e) It trained farmers on fattening livestock
f) It provides veterinary service
g) Other, specify_____

18. Do you believe that the quality or number of livestock has improved after the SDDP?
a) Agree b) Partly agree c) Uncertain d) Disagree

19. Do you think the sale of livestock has decreased in the village due to the intervention of the SDDP?
a) Yes_____ b) No_____

20. What problems of livestock production are not yet addressed by the SDDP intervention?
a) Lack of fodder
b) Lack of knowledge on fattening practices
c) Lack of knowledge on proper husbandry practices
d) Other, specify_____

21. How did the SDDP contribute to health service of the area (sub-Zoba)?
a) It established a health centre/health station
b) It increased awareness of the people in basic health issues
c) It provided an ambulance
d) Nearer health facility
e) Provision of affordable health service
f) Other, specify_____

22. How did the SDDP contribute to physical infrastructural development?
a) It mobilized the people to construct new feeder roads
b) It mobilized the people to maintain existing roads
c) It constructed school
d) It constructed water diversion canals and/or terraces
e) It constructed wells/dams
f) Other, specify_____

23. How did the SDDP contribute to environmental protection and development?
a) Through awareness creation of the importance of 'healthy' environment
b) It undertook soil and water conservation activities
c) It introduced alternative (non-tree) fuel sources
d) It enhanced awareness on the importance of non-tree fuel sources
e) It trained the farmers on proper grazing practices
f) It mobilized the people to plant trees
g) Other, specify_____

24. What problems of environmental protection and development are not yet adequately addressed by the SDDP?
a. Lack of sufficient grazing land
b. Lack of fodder
c. Lack of seedlings for afforestation
d. Lack of alternative fuel sources
e. Unaffordable alternative fuel sources
f. Lack of alternative house construction materials

g. Unaffordable house construction materials
h. Other, specify_____

25. Have you observed any kind of conflict among the villagers or villages due to the intervention of the SDDP?

a) Yes_____ b) No_____

If your answer is yes what is the conflict all about? And how has it been solved?

_____
_____

26. Think of your life situation before the SDDP!!! To what extent has the SDDP changed your quality of life?

a) Improved b) Remained the same d) Worsened

27. How do you evaluate the effectiveness of SDDP in solving women's problems?

a) Very effective b) Effective c) Uncertain d) Not effective

28. Do you believe the SDDP intervention (water provision, home economics, social/physical infrastructure) has enabled women to carryout their

I. Productive roles more easily?	Yes	No	Uncertain
II. Reproductive roles more easily?	Yes	No	Uncertain
III. Community management roles more easily?	Yes	No	Uncertain

29. What interventions of the SDDP are undertaken to improve the status of women in the community?

a) Training on income generating activities
b) Adult literacy programs
c) Other, specify_____

30. What problems did the SDDP face in its adult literacy activity?

a) Cultural b) Financial c) Shortage of teachers d) Religious e)Other_____

31. Do you believe that female genital mutilation is still important?

a) Yes_____ b) No_____ c) I am not sure

32. What new positive changes have occurred in the living condition of women?

_____
_____

33. Which of the following interventions were undertaken by SDDP to address women's practical and or strategic needs?

S.No	**Intervention**	**Yes**	**No**
33.1	Provision of grinding mills		
33.2	Convenient location of stand-pipes for clean water		
33.3	Development of fuel-efficient stoves (Adhanet)		
33.4	Nearby primary health centers		
33.5	Training on child spacing/family planning advice		
36	Nearby primary schools		
33.7	Convenient transport facilities		
33.8	Training on improving housing internal infrastructure		
33.9	Training on income generating activities		
33.10	Provision of micro-credit		
33.11	Organizing women for selling their marketable goods		
33.12	Mobilizing women to attend adult literacy classes		
33.13	Provision of gender-neutral training materials for literacy programs		
33.14	Lobbying for women for the right to use common property		
33.15	Mobilizing women to take part in development committees		

34. What of the following training interventions were undertaken by SDDP to address the problems of the community?

S.No.	Type of training	Yes	No
34.1	Training on proper water use practices		
34.2	Training on proper husbandry practices		
34.3	Training on maintenance of water sources (pumps, dams)		
34.4	Training on protection of the environment and wild life		
34.5	Training on irrigation techniques		
34.6	Training on the proper use of agricultural chemicals		
34.7	Training on nutrition		
34.8	Training on proper grazing		
34.9	Training on proper use of land		

35. Overall how do you rate the effectiveness of the SDDP in solving the development problems of the Shebah – Demas inhabitants?

a) Very satisfactory b) Satisfactory c) Do not know d) Not satisfactory

SDDP Questionnaire for Key Informants

i. Administrative Village:_____
ii. Name of Respondent(s): _____
iii. Organization:_____
iv. Position:_____
v. Name of SDDP project site:_____

1. Why was the project site selected? What was the first step that necessitates the initiative of implementing the SDDP in this area? (NCA, MOA)

2. Please illustrate the implementation structure of the SDIDP and the formal organizational links that exist between all stakeholders?

3. What role did your organization play in implementing the SDDP?

4. Which organizations were the implementing partners for the SDDP?

5. What was the role of every of the following organizations in the implementation of the SDDP?
    a. NCA
    b. MOA
    c. Village development committee/council
    d. Local/village administration
    e. MOE
    f. MOH
    g. NUEYS
    h. NUEW
    i. Ministry of Land, Water and Environment

6. How do you evaluate the inter-organizational cooperation that exists between the different partners (MOA, NCA, Village Administration, and Village Development Committee)

7. Was there any cooperation reservation from any stakeholder to implement the SDDP? If any, please mention by name and the reasons attributed for the reservation?

8. Do you think that the policies of the NCA as a donor and your organization as a partner of implementing the SDDP were consistent? (elaborate on policy support for the different components of the SDDP)

9. Can you please mention some of the physical resources (including office facilities) and their financing sources that you have used to implement the SDDP?

Type	Quantity	Financing source

10. Do you think that adequate resources (time, money, facilities, capacity, personnel, and workload) had been allocated to the implementation of the SDDP? If no Why?
    _____

11. Had any form of training related with SDDP provided to the staff members?

	Date provided	Duration	Type	Relevance and applicability to your needs
Yes				
No				

12. Can you elaborate on the monitoring and evaluation systems of your organization on the SDDP?

13. How do you rate the involvement of the beneficiaries in the SDDP program
A. Very satisfactory B. moderately satisfactory C. less satisfactory D. not satisfactory

14. What economic benefits had the beneficiaries gained as a result of SDDP?_____

15. Are there any new practices that farmers have developed as a result of SDDP?_____
a) proper husbandry practices,
b) proper land use practices,
c) better gender relations, and
d) Proper water use practices?
e) Other explain

16. How do you see the relevance of SDDP program?
    - technically
    - economically
    - social acceptability
    - environmentally
    - others (specify)

17. What steps has been taken to ensure the sustainability of the SDDP?

18. If the SDDP is to be implemented in the area what additional components do you think should be added?

19. Why was not credit included as a component of the SDDP?

20. What do you think were the major problems facing the SDDP:
a. institutional:_____
b. cultural:_____
c. organizational:_____
d. religion:_____
e. financial:_____
f. technical (knowledge of the farmers about new technology):
g. time constraint:_____
h. other: explain:_____

21. Can you mention if there were any negative effects that the SDDP has brought to your relations with the farmers, or partners? (like sidelining of your activities by the farmers)

22. What was the strength of SDDP?
    a. financially:_____
    b. technically_____
    c. program planning and design
    d. implementation
    e. coordination
    f. communication
    g. other
23. What was its weakness?
    a. financial insecurity:_____
    b. technically_____
    c. program planning and design
    d. implementation
    e. coordination
    f. communication
    g. other
24. What other opportunities do you think can the area and the communities have for their development
    a. Political
    b. Economic
    c. Social
    d. Technology
25. What about any threats that can deter development in the area and to the community?
    a. Political
    b. Economic
    c. Social
    d. Technology

Discussion Guidelines for Focus Group Discussion of SDDP Participants

1. Mention 4 of the most important benefits received from SDDP intervention?
   Explain why they are important?
2. Do you believe the community members of the area have significantly increased their awareness on the importance of environment protection and development after SDDP intervention? a) Yes
   b) No

Explain please.

3. Compare the attitude and practice of the community members towards cutting trees, and actions of closure of forest land? Do you think there is improvement after the SDDP intervention in

a) Decreasing the cutting of trees
b) Support for more closure ('hisati') of forest land
c) In case of closure of land, what alternative has been provided for feeding the livestock?

4. Do you think the management of the SDDP involve the people of the community during:

a) Project design
b) Monitoring of the implementation of the interventions

5. Due you think the community members of the area are practicing

a) Improved grazing practices
b) Improved animal husbandry practices
c) Better water use practices

Explain please.

6. What new positive practices do you see in the community members (especially women) to

a) Improve nutrition
b) Environmental protection and development
c) Increase financial or material income of households
d) Reduce problem of overgrazing
e) Improve sanitation
f) Reduce soil erosion
g) In gender relations

7. In your view point, what are the factors that hamper positive change in the practice of community members in

a) Environmental protection and development?
b) Improving nutrition?
c) Improving sanitation?
d) Increasing financial or material income of households?
e) In gender relations?

8. What is the strength and weakness of each of the following in improving the welfare of the community in relation to the implementation of the Program?
a. SDDP Management and staff
b. Village councils
c. Village administration
d. Village/area development committee
e. Ministry of Agriculture
f. Ministry of Health
g. Ministry of Education
h. NUEW
i. NUEYS

9. Do you believe that the SDDP has equipped the community with the required skill to maintain what has been already established in the absence of the project's inputs?

10. What obstacles do the community members face in their effort of enhancing their own welfare?

11. What
a) Opportunities, and
b) Threats prevail in your community and what is their plan to react to them

12. How do you evaluate the changes that occurred with regard to attitude towards female genital mutilation?

13. Was training that focus on gender relations given to the community residents? If yes

a) Who were the main target groups?
b) Explain the outcome/impact of the training?

14. Do you believe the SDDP has brought positive changes in the living conditions of women? If yes how? Explain in the following aspects.
a) Health service
b) Education service
c) Participation in social organization
d) Income generating activities
e) Other, specify_____

15. Explain in particular the positive changes introduced in relation to
a. Irrigation activities
b. Training of home economics/handcrasts or poultry farming
c. Crop production
d. Livestock production
e. Water development

16. From your observation and knowledge of the program, how do you evaluate the
a) effectiveness
b) sustainability
c) efficiency
d) relevance, and
e) Impact of the SDDP?

17. a) Would you suggest for the replication of the SDDP in other areas of the Zoba?
b) What improvement would you recommend for the program before it is replicated?

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Some FGD participants

Name	Village
Ahmed Shelela (Administrator)	Gahtelay
Mohammed Abubeker (Office Administrator)	Gahtelay
Ali Hamed Sheik	Gahtelay
Ahmed Deres	Gahtelay
Mussa Osman	Gahtelay
Mohammed Sulieman	Gahtelay
Hamid Mussa	Gahtelay
Ahmed Nuray	Gahtelay
Nasir Hadege	Gahtelay
Mohammed Genai	Gahtelay
Mohammed Seid Mantay	Gahtelay
Salih Ali	Gahtelay
Mohammed Salih Husien	Gahtelay
Saida Aledin	Gahtelay
Siti Ahmed	Gahtelay
Jimi'a Haji Adem	Gahtelay
Jimi'a Ahmed Ibrahim	Gahtelay
Zahra Abdela	Gahtelay
Abdela Mohammed Deres	Gahtelay
Omer Mohammed (Office Administrator)	Shebah
Seid Haji Mohammed	Shebah
Mohammed Abdela Kentibay	Shebah
Mussa Mohammed	Shebah
Abdela Mohammed Ali	Shebah
Hawa Salih	Shebah
Sa'idet Ferej	Shebah
Timnit Jimie	Shebah
Halima Omer Mohammed	Shebah
Mohammed Mohammed Seid	Shebah
Omer Abir Mohammed	Shebah
Haj Fagir Mohamud	Shebah
Idris Mohammed Ali	Shebah
Mohammed Seid Delas	Shebah
Afa Abir Mohammed (Administrator)	Shebah
Talke Salih (Administrator)	Demas
Osman Ismael	Demas
Omer Ali	Demas
Omer Idris	Demas
Sulieman Idris Ali	Demas
Mohammed Adem Ali Mohammed	Demas
Gebreselassie Haile	Demas
Saidia Mohammed Adem	Demas
Kedija Idris	Demas
Saidia Ali	Demas
Amna Abdela	Demas