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GOVERNMENT OF PUNJAB

COMMUNITY DEVELOPMENT PROJECT FOR THE REHABILITATION OF SALT AFFECTED AND WATERLOGGED LANDS – BIO-SALINE-II

MID-TERM REVIEW (MTR)

MISSION REPORT *

29 JULY 2009

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Acronyms and Abbreviations

ASPL II	Agriculture Sector Programme Loan - II
CMST	Community Management Skills Training
CO	Community Organization
CPAP	Country Programme Action Plan
DIU	District Implementation Unit
DoA	Department of Agriculture
EAD	Economic Affairs Division
GoPb	Government of Punjab
GR	Gypsum Requirement
ha	hectares
IPM	Integrated Pest Management
IPNM	Integrated Plant Nutrient Management
IWASRI	International Waterlogging and Salinity Research Institute
M&E	Monitoring and Evaluation
MTR	Mid-term Review
NEX	National Execution
NGO	Non-governmental Organization
NPD	National Project Director
NPM	National Project Manager
PC I	Planning Commission Proforma 1
PCC	Project Coordination Committee
PCOM	Project Cycle Operations Manual
PIU	Project Implementation Unit
PKR	Pakistan rupee
PMU	Project Management Unit
Prodoc	Project Document
PR&GU	Poverty Reduction and Gender Unit
PSC	Project Steering Committee
Rs	rupees
SFRI	Soil Fertility Research Institute
SLUG	Salt Land User Group
SSRI	Soil Salinity Research Institute
TORs	Terms of Reference
TRC	Technical Research Committee
UNDP	United Nations Development Programme
WIG	Women Interest Group

EXECUTIVE SUMMARY

Introduction

1. The Bio-saline II Project has been under implementation for two years, and during this time there have been two changes in the National Project Director (NPD) post which have affected its implementation. Moreover, a host of issues have been raised surrounding the differences between the PC I and the Project Document (Prodoc). The Mid Term Review (MTR) Team has been mandated to highlight the issues and challenges affecting the effective and efficient implementation of outputs and their contribution to project outcomes and impacts, so as to be able to recommend corrective action.

Perspective

2. Biosaline II is Pakistan's largest and most systematic initiative to date for the rehabilitation of salt-affected lands. The initiative depends on the application of gypsum and, to a much smaller extent, on biological solutions such as plantation (of eucalyptus, guava, ber, jaman, etc.) and growing salt tolerant crops and grasses (such as atriplex and kallar grass) on affected lands. The project also includes interventions such as tube wells, fish ponds, kitchen gardens, para-veterinary aids and the creation of implement pools for communities; its community-based approach revolves around Salt Land User Groups (SLUGs) and Women Interest Groups (WIGs). The project area extends to the districts of Hafizabad, Sargodha and Jhang, where 179,000 ha of land are estimated to be salt-affected (62% of which are in Jhang and 34% in Sargodha).

3. The Project is co-funded by UNDP and the Government of Punjab (GoPb) and is a Nationally Executed (NEX) project. Its implementing partner is the Agriculture Department, GoPb. The total budget is USD 13.32 million, of which the GoPb co-shares USD 8.88 and UNDP USD 4.44 million, respectively. The GoPb contribution is drawn from the Agriculture Sector Programme Loan - II (ASPL II), received from the Asian Development Bank. The Project began its operation in October 2006, so until May 2009 it had been under execution for about 2.5 years (31 months). Project closure will take place in approximately one year and half (September 2010). The total expenditures up until May 2009 were USD 5.18 million, or 39% of total budget.

4. The Project goal is to contribute to poverty reduction through an increase in farm incomes (according to the Prodoc) and the expected outcome is increased land productivity and agricultural production in the districts of Hafizabad, Jhang and Sargodha. PC I has suggested a second goal: environmental protection and the revival of a natural resource base.

5. Project implementation is the responsibility of a Project Implementation Unit (PIU) based in Lahore, supported by three District Implementation Units (DIUs) and eight Field Implementation Units (FIUs). The Project Cycle Operations Manual (PCOM), used in the NEX modality of UNDP-assisted projects, provides the administrative and financial guidelines necessary for the implementation of the project.

6. The project is being executed by the Department of Agriculture (DoA) of GoPb, in collaboration with the Soil Salinity Research Institute (SSRI), Pindi Bhattian, and the Soil Fertility Research Institute (SFRI), Lahore.

Structure of the Report

7. The MTR is composed of two complementary parts: a retrospective and a prospective review.

- The retrospective assessment focuses on reviewing Project outputs and progress towards outcomes. It assesses project performance as measured by relevance, effectiveness, and efficiency; and rural poverty reduction as measured by changes in household income, social

capital and empowerment, food security and agricultural productivity. The assessment was analyzed synchronically by considering the Project within a given time frame, which was vital for the assurance of fairness and transparency.
- From the findings of the retrospective exercise, the prospective analysis intends primarily to address long term issues associated with sustainability beyond the Project's life.

Conclusions

8. The Project remains as highly relevant as it was when it was designed. This is particularly true for its focus on gypsum application for the treatment of salt-affected soils on a large scale, and its interventions for kitchen gardens (for women) and implement pools and, to a lesser extent, for tree nurseries and fish ponds, also remain relevant.

9. Cost-sharing arrangements across the board have been evolving without any quantitative analysis regarding issues of equity and outreach or the financial implications for the project. The focus on small farmers requires a clearer understanding of their resource constraints, and the project's treatment of women calls for more commitment and resources.

10. Although it is claimed that Project targets were unrealistic even at the time of design, during implementation the achievement of targets was hampered by a host of administrative issues:

- unwarranted probes and investigations ordered by the DoA as part of a relentless, personalized campaign of victimization that paralyzed the project for one year and demoralized staff at all levels, and throughout the project area;
- the DoA's rejection of PIU proposals regarding gypsum storage which decelerated target achievement;
- the unnecessary practice of taking issues to the PSC instead of resolving them at lower levels;
- inordinate delays in bringing the PC I in line with the Project Document, as decided by the PSC in March 2008;
- despite the agreement between the GoPb and UNDP to use NEX modality, the DoA continued insisting on the application of government rules and regulations.

11. It is difficult to quantify the delay caused by the above-mentioned administrative issues. Notwithstanding these aggravations, all of the evidence gathered by the Evaluation Team indicates that the Project has produced vital outputs in the project area, with potential for outcome realization:

- Although below target levels, lands have been reclaimed and are now under production. Where before the project there was barren land, because of Project outputs lands are now yielding rice and wheat crops.
- The greatest impact of the Project has been mobilization. There has been an empowerment of members in SLUGs and WIGs such that their grass roots organizations have been greatly enhanced, and their private and collective capacity has begun to blossom. The scope of their collective action, they feel, now goes beyond the Project's scope.
- The vicious circle of poverty, caused by poor land and limited resources, has been broken. Barren lands are now becoming productive due to the distribution of Project outputs. Consequently, the net income per farm has increased significantly as measured by farm budgets.

Recommendations for the Attention of GoPb, PIU, and UNDP

12. The most urgent action is the revision of the PC I. Annex V contains the MTR's suggestions. It is vital that the revised PC I allows flexibility for changes during implementation and is sensitive to the rural communities, as agricultural production is vulnerable to fluctuating prices and weather

patterns. The PSC could be the forum in which changes to the PC I are approved during implementation, subject to the goal, objectives and overall budget of the project.

13. Relevance:

(a) Greater focus is required on interventions that contribute directly and significantly to the productivity of salt-affected lands. Interventions such as ICT centres, veterinary aids, financial and non financial services and support for marketing can be deleted from the revised PC I.
(b) There is a need to differentiate between the target groups of landholders of salt-affected land, small farmers who own between 2 ha to 5 ha of land, and other farmers. Cost-sharing arrangements may differ between the two groups. Taking into account the small farmers' resource constraints, 80% of resources should be allocated to them.
(c) A stronger focus on women is possible only if a number of productive home-based interventions are added to the project.
(d) SFRI and SSRI should focus on research and feeding research results into the project. Extension should be undertaken by specially trained Project staff.

14. Effectiveness:

(a) To meet land rehabilitation targets, a sustained supply of quality gypsum can be ensured by procuring and storing gypsum in the low demand season for usage in the peak season.
(b) The number of villages should not be fixed or predetermined for each district. Based on the availability of affected land, the Project should have the flexibility to change the number of villages in each district and decide the number of community organizations required per village.
(c) In view of the above, within the framework of poverty alleviation, PIU must formally outline a strategy for targeting beneficiaries and area selection as soon as practicable and validate with key stakeholders.
(d) While the SSRI and SFRI should provide timely inputs on soil analysis in order to keep pace with implementation imperatives, facilities at the DIUs and devolved SFRI water and soil testing laboratories at the district level may also be utilized to conduct soil, water and gypsum analysis.
(e) Dedicated resources within the PIU towards communications are critical for the consolidation of efforts in community mobilization, networking and dissemination of project extension information.

15. Efficiency:

(a) Only 20% of land rehabilitation has been achieved, and there is only one year and a half left in terms of implementation time. The Project should, therefore, be extended for at least two agricultural seasons.
(b) A results-based M&E system is needed that places emphasis on outcomes and impact as well as timely quantitative analysis of farm economics and project interventions as the basis for decision making. A combination of long term and short term expertise should be engaged at the earliest possible time for this purpose. The inadequate M&E system currently under implementation does not warrant the extension of the M&E specialist's contract.
(c) The involvement of the PCC and TRC in decision making should be optimized and only high level policy issues should be brought to the PSC, once or twice a year.
(d) Maintaining continuity in a project management (National Project Manager and District Managers) which is committed and creative is essential for the success of the project.

16. Sustainability:

Economic sustainability

(a) To follow up on the high level of motivation for self help evident among WIGs, consider funding small projects for income generation. To ensure financial sustainability, consider entering into a partnership with an established micro finance organization.
(b) Small holders of SLUGs require further information and demonstrations on the markets and marketing opportunities of trees in the project area (medicinal, fruits, etc.) for blending with crops/fodder. In the case of tube wells, because their increased cost leads to more expensive irrigation water, consider planning with COs from the start, cropping patterns with high market value and low water consumption so that the investment is sustainable.

Natural Resource Sustainability

(c) In the mid- and long-run, the quantity of irrigation water at the farm gate for the three districts may be limited. As a proactive measure, consider the adoption of management measures to enhance water availability. Specifically:
(d) Increase water use efficiency at the main and secondary canals as well as on-farm levels, and in particular consider canal lining at main and secondary canals.
(e) In the short- to medium-term, commence with procedures to increase on-farm efficiency in water conveyance and application, and especially consider introducing on-farm high efficiency irrigation techniques.

Agronomic sustainability

(f) Consider introducing agronomic measures to cope with limited water availability and the world-wide price increase of fertilizers, pesticides, petrol, and others.
(g) In the short-term, commence the shift towards cropping patterns of high market value and low water consumption.
(h) In the mid- and long-term consider introducing biological knowledge-based technologies, such as integrated plant nutrient management practices (IPNM) and integrated pest management (IPM).
(i) Through the adoption of IPNM, it is feasible to enhance soil fertility. By using home grown inputs (i.e. compost, green manure or organic residues) in conjunction with limited amounts of market-purchased chemical fertilizers, farmers in South Asia have increased agricultural productivity in an efficient and environmentally friendly manner, without diminishing the long term productive capacity of soils.
(j) In addition, through the adoption of IPM practices, it is feasible to reduce the number of pesticide applications thereby minimizing the cost of crop production and increasing the profit margin of crops.

1. BACKGROUND AND SCOPE OF MTR

1.1 Origins and Design of the Project

1. Bio-saline II is ***Pakistan's largest and most systematic initiative to date for rehabilitating salt-affected lands***. It depends on the application of gypsum and, to a much smaller extent, on biological solutions such as plantation (of eucalyptus, guava, jaman, etc.) and growing salt-tolerant crops and grasses on the affected land. The project also includes promising interventions such as tube wells; fish ponds, kitchen gardens, para veterinary aids and the creation of implement pools for farming communities. Its community-based approach revolves around Salt Land User Groups (SLUGs) and Women Interest Groups (WIGs). The project area extends to the districts of Hafizabad, Sargodha and Jhang, where 179,000 ha of land is estimated to be salt-affected (62% of which is in Jhang and 34% in Sargodha).

2. The PC I for the project envisaged a 40-month duration from March 2005 to June 2008. The UNDP Prodoc, approved by the Economic Affairs Division (EAD) of the Government on 16 August 2006, is for October 2006 – September 2010 (48 months). The total cost of the project, excluding community contribution, is USD 13.32 million (PKR 796 million), including USD 8.88 million (PKR 531 million) from the Government of Punjab (GoPb) and USD 4.44 million (PKR 265 million), that is, one-third of the total, from UNDP. The GoPb contribution is drawn from the Agriculture Sector Programme Loan, Phase II (ASPL II) received from the Asian Development Bank. The total budget includes PKR 81 million for cost escalation and PKR 21 million as General Management Service Fee for UNDP.

3. The ***project goal, according to the Project Document, is to contribute to poverty reduction through increased farm incomes***. The expected outcome is increased land productivity and agriculture production in the districts of Hafizabad, Jhang and Sargodha. The goal stated above is shared by the PC I, which also suggests a second goal, that of environmental protection and revival of a natural resource base. The seven specific objectives listed in the PC I are also reflected in the output statements of the Prodoc, which are discussed in paragraph 6.

4. ***Project implementation*** is the responsibility of a Project Implementation Unit (PIU) based in Lahore and supported by three District Implementation Units (DIUs) and eight Field Implementation Units (FIUs). The Project Cycle Operations Manual (PCOM), used in the National Execution Modality (NEX) of UNDP-assisted projects, provides the administrative and financial guidelines for implementing the project. The project is implemented by the Department of Agriculture (DoA) of GoPb in collaboration with the Soil Salinity Research Institute (SSRI), Pindi Bhattian, and the Soil Fertility Research Institute (SFRI), Lahore.

5. The Secretary, DoA, is the National Project Director (NPD) of the project and is assisted by the Project Manager (PM) who heads the PIU. The Project Steering Committee (PSC) is headed by the Chairman, Planning and Development Board, GoPb, and includes government and UNDP representatives. The Project Coordination Committee (PCC) is headed by the NPD. In addition, there is a Technical Research Committee (TRC), not mentioned in the Project Document, which recommends the work plans of SFRI and SSRI for approval by the PCC and PSC.

6. The ***original PC I targets***, which have been discussed often during the implementation of the project, are as follows:

(a) The project area, spread over 179,000 ha, will be surveyed for identification of the nature and the extent of salinity, sodicity and water logging by SSRI and SFRI. The allied parameters (current crops, sources of irrigation, existing yield level and targets) will also be recorded in this technical survey.

(b) Applied research/demonstration trials of one hectare each in 400 villages, appropriate to the soil category, will be conducted in 3 districts. The Soil Salinity Research Institute, Pindi Bhattian will cover 289 villages in 2 districts (Hafizabad 116 and Sargodha 173). The Soil Fertility Research Institute, Lahore will conduct similar experiments in 112 villages of the Jhang district. This activity will act as a model and catalyst in the project area.
(c) An area of 80,000 ha (46% of the total) will be rehabilitated by applying various proven techniques through active participation of the community on a cost-sharing basis of 15:85.
(d) 150 fish ponds each of one ha will be developed in three districts through a cost-sharing basis (20:80).
(e) Forest and fruit plants will be grown in 200 ha on demonstration sites. In addition, saplings for 500 ha will be provided.
(f) In total, 600 community organizations (400 SLUGs and 200 WIGs) will be setup under this project.
(g) Provision of 420 para veterinary kits for sick animals of SLUG/WIG members will be provided under the cost-sharing formula (60:40).
(h) Fifty (50) implement pools with provision of one pool to 8 villages will be established using a participatory approach.
(i) Four hundred (400) nurseries of 20 marla each will be established in the project area for supplying salt tolerant forest/fruit saplings.
(j) A total of 1,000 kitchen gardens will be setup in the project area with a sharing proportion of 15:85.
(k) Provision of nursery plants for 500 hectares.
(l) Establishment of 400 demonstration plots.

7. As indicated in Table 1, there is heavy reliance in the project on community contributions, which has also been an oft-debated matter during implementation.

Table 1: Project Interventions on Cost-sharing Basis as Approved in the PC I

Item	Target	Unit Cost (PKR)	Project share (%)	Community share (%)	Project contribution (PKR mill)	Community contribution (PKR mill)
Land rehabilitation (hectare)	80,000	17,000	23	77	320.00	1,040
Provision of nursery plants (hectare)	500	5,000	50	50	1.25	1.25
Para-veterinary Aid & medicines	420	71,500	70	30	21.00	9.01
Fish Ponds (No.)	150	150,000	20	80	4.50	18.00
Implement Pool	50	300,000	80	20	12.00	3.00
Installation of Tube-wells (No.)	300	60,000	50	50	9.00	9.00
Kitchen gardening (No.)	1,000	500	15	85	0.075	0.425
Nursery raising (No.)	400	200,000	50	50	4.00	4.00
Total					371.825	1,084.685

1.2 Scope, Methodology and Limitations of MTR

Scope

8. As stated, the Project's goal is to contribute to poverty reduction through an increase in farm incomes.[1] The expected outcome is increased land productivity and agricultural production in the districts of Hafizabad, Jhang and Sargodha. To this end, the implementation strategy intends to organize farmers through community-based organizations while using a participatory approach. The aim is to link farmers with knowledge centres, line departments, local governments, civil society organizations and the private sector, so that they can have access to technological packages based on bio-saline know-how, training for skills enhancement, and other support services for irrigated agriculture.[2]

9. The MTR contains multiple and varied tasks, each with a different timeframe. The MTR has been differentiated into two complementary parts: a retrospective and a prospective review. The retrospective assessment focuses on reviewing Project outputs and progress towards outcomes. Specifically, it assesses project performance as measured by relevance, effectiveness, and efficiency; and rural poverty reduction as measured by changes in household income, social capital and empowerment, food security and agricultural productivity. The assessment was analyzed synchronically by considering the Project within a given time frame, thereby avoiding spurious comparisons or inferences from unrelated events, which was vital for the assurance of fairness and transparency.

10. From the findings and lesson learned in the retrospective exercise, the prospective analysis intends primarily to address long term issues associated with sustainability beyond the Project's life.

Methodology

11. The evaluation research has taken place in the following phases—each involving different approaches to information collection and analysis, as described in Table 2.

Table 2: Phases of Evaluation Research

Phase	Dates
1. Evaluation Planning	22 June– 30 June
2. Field Work in Sargodha, Hafizabad, Jhang	01 July – 09 July
3. Review of Aide Memoire in Lahore	10 July
4. Physical Verification of Project Outputs	11 July– 14 July

Evaluation Planning

12. Key activities conducted during the evaluation planning have been:

(a) In Islamabad, initial briefings were launched with the management of UNDP's Poverty Reduction and Gender Unit and interviews were conducted with representatives of the

[1] Government of the Punjab, Agriculture Department. Revised PC-1. Community Development Project for Rehabilitation of Salt Affected and Waterlogged Lands. March 2008, page 7. Note that the Prodoc's goal, outcome and implementation strategy are the same, cf: Prodoc, page5

[2] This strategy has brought results elsewhere in Asia. Research indicates that every increase of 1% in per capita agricultural gross domestic product (GDP) led to growth of 1.61% in the incomes of the poorest 20% of the population, which is a much greater effect than the impact of similar increases in the manufacturing or service sectors. Cf: Gallup et al. Economic growth and the income of the poor. CAER. Discussion paper 36. Harvard Institute for International Development. Cambridge, Mass. 1997. Cited in: IFAD. Evaluation manual. OE, Rome, 2009, page 6.

national execution agencies in the capital Islamabad and in Lahore, with special emphasis on the topics assigned to the evaluation team in TOR.

(b) To evaluate Project performance in the generation of outputs needed to meet outcomes, the Evaluation Team, in discussions with UNDP management, agreed to utilize the standard evaluation criteria. Data has been collected and interviews conducted with the following criteria in mind, namely:

- Relevance determines whether the project was worth doing. It assesses whether project outputs were focused on the right priorities when designed, and if they were adjusted to suit changing circumstances during implementation. It records whether project design was updated during implementation to reflect emerging needs and perceptions, or whether it needed to be updated.
- Effectiveness is a measure of whether the project has achieved what it had been designed to do. It is assessed by reviewing how well the stated objectives have been achieved. If a project's logical framework is available, it will provide a basis for assessment.
- Efficiency is defined as the extent to which the project has achieved, or is expected to achieve, benefits commensurate with inputs, based on economic and financial analysis or unit costs compared with alternative options and good practices. It takes into account timeliness, utilization of resources, facilities and services, and good practice standards.
- Sustainability is the durability of positive project results after the termination of the project. In this context, key issues were identified which would require investigation throughout the evaluation process. These included: changes in household income, issues associated with empowerment, agricultural productivity, the management of natural resources and environment, and long term implications of sustainability matters beyond the project's life. It became clear, however, that baseline data was unavailable. Consequently, the assessment of progress towards outcomes will at best be inferential.[3]

13. Given the Project's technical complexity, in the context of a continuously evolving institutional environment, discussed in chapter 2, it is vital to understand the operational meaning of evaluation, monitoring and audit.[4]

- The requirements for effective monitoring are baseline data, indicators of performance and results, and mechanisms or procedures that include such planned actions as field visits, stakeholder meetings and systematic reporting. Biosaline II's Annual Review Reports for 2007, 2008 and 2009 are examples of well planned monitoring of project performance.
- An MTR serves as a means of validating the initial assessment of relevance, effectiveness and efficiency obtained from monitoring. It may also assess early signs of project success or failure.
- An audit is an examination that assesses and reports the extent to which financial and general administrative management conforms to predetermined standards.[5] Like an evaluation, an audit requires the assessment of effectiveness and efficiency and the formulation of recommendations to promote improvement.[6] In appraising these elements, however, an audit differs from an evaluation in its orientation (see Box 1). An audit usually focuses primarily on compliance with existing rules and regulations rather than on establishing the relevance and determining the likely impact or sustainability of the results of projects, which are the main concerns of an evaluation.

[3] If monitoring systems suffer from sparse information and incomplete baseline data the monitoring process and results are compromised.

[4] These definitions are adapted from: UNDP Results-oriented monitoring and evaluation. New York, 1997, chapter 3.

[5] United Nations, Joint Inspection Unit (JIU), Glossary of Evaluation Terms (JIU/REP/78/5). Cited in: UNDP 1997, op cit, Ch 3.

[6] UNDP, Office of the Administrator, Division for Audit and Management Review, Organization Handbook, September 1993. Cited in: UNDP, 1997, op cit, Ch 3.

14. Notwithstanding this difference in focus, audits and evaluations are instruments through which management can obtain a critical assessment of the operation of a project as a vehicle to introduce change, such as poverty alleviation measures. Because of the difference of focus and technical approach, an evaluation will not produce audit results and vice versa. They are complementary but not similar. The present evaluation is governed by a results-based orientation, and findings and recommendations are evidence-based.

Box 1:
Differences between Audit and Evaluation

Learning + Accountability = Evaluation
Evaluation - Learning = Audit
Evaluation - Accountability = Research

Source: UNDP op cit. 1997, Chapter 3

Field Work in the Project Area

15. The evaluation research's second phase aimed at designing the field work to be conducted in the three districts of the Project area: Sargodha, Hafizabad and Jhang. The Evaluation Team and UNDP deemed it necessary that the MTR be evidence-based.

16. The Evaluation Team, UNDP management and the Project team jointly identified the field sites for visit, which were chosen primarily to verify the achievement of outputs leading to outcomes. Representative cases of successful and less successful situations were taken into consideration. Experience indicates that successful results induce a demonstration effect within the ecosystem where the success has been witnessed. This is not only a vital ingredient of sustainability, but is also why this evaluation focused on learning successful practices.

17. The Team visited each of the three District Implementation Units (DIUs) in operation. With each DIU's management and front line staff, the Team held detailed technical discussions on project design, implementation, monitoring and management issues. The Team met with SSRI experts in Hafizabad and SFRI experts in Lahore. It was particularly enlightening to interact with farmer members of COs, and with women from farmers' households, to discuss their perceptions regarding the Project's outputs. These interactions provided glimpses of sustainability and poverty reduction issues. Table 3 gives the number of beneficiaries contacted for focused interviews.

Table 3: Focused Interviews of Beneficiaries in the Project Area

Beneficiary	Hafizabad	Sargodha	Jhang
Field unit staff	7 + 2 SSRI experts	6	9
SLUGs [no. of members]	Sharbaga village [32] Boteyka village [37]	Muazzamabad village [36] Anjala village [32]	Reirh village [50] Uch-Gul-Imam village [67]
WIGs [no. of members]		Salam village [18]	Reirh village [17]

18. The Team did not conduct a statistical survey where the interaction with each respondent lasts less than 15 minutes and the communication is limited to the questionnaire. It held meetings with COs that lasted between one and two hours. The interactions were open-ended so that each farmer had the opportunity to express his perceptions regarding the effect the Project's outputs were having on his quality of life. The interactions also provided in-depth information on farmers' perceptions regarding issues related to effectiveness, relevance and sustainability, which are discussed in Chapter 3. Annex 2 contains the complete list of persons met in each DIU, Lahore and Islamabad.

19. During the field work and subsequent information analysis, the Team structured its field research in the context of the following key questions, which summarize the core of the evaluation approach:

(a) Relevance: What difference did it make that UNDP and GoPb participated in this particular project? What could UNDP and GoPb do differently?
(b) Effectiveness: Did UNDP and GoPb do what they stated they would do? What can the UNDP and GoPb learn about what worked, and what did not work?
(c) Efficiency: Have UNDP and GoPb used resources to achieve output and outcomes?
(d) Lessons Learnt: How do UNDP and GoPb plan to use the evaluation findings for continuous learning?

20. The Team undertook focused investigations that were designed to assess the potential impact of the Project outputs.[7] These are described briefly below.

Rural Poverty Reduction as Measured by Farm Income

21. Household income provides a means of assessing the flow of economic benefits accruing to an individual or group, whereas assets relate to stocks of accumulated items of economic value.[8]

22. Farm income analysis conducted through the collection of farm budgets reflects the profitability of a farm based on crop production. The calculation of the net farm income represents the reward to the farm for their labour, capital and management invested in the farm during the time being analyzed, and taking into consideration the technological packages introduced by the Project.[9] Given the time and resources available, a purposive or quota sample is commonly used in this kind of inquiry.

(a) With the cooperation of the project team, farm budgets reflecting the current production conditions in the three districts using the proposed cropping pattern for the purpose of rehabilitating saline land were prepared.
(b) Due to the absence of baseline information, farm budgets were collected from farmers that were not participating in the Project. This proxy approach allows the assessment of farm income without the Project. Annex VII contains the farm budgets collected in the three districts, under cropping patterns *with* the Project and those prevailing among farmers *without* the Project.

23. This investigation has provided information used to derive inferences about the following:

(a) *Food security and agricultural productivity*, where the criteria will be changes in food security related to availability, access to food and stability of access. Changes in agricultural productivity are measured in terms of yields.[10]
(b) *Sustainability considerations regarding natural resource management*. From the natural resource and the environment standpoints, the criteria focuses on the extent to which this Project contributes to changes in the protection, rehabilitation or depletion of natural resources and the environment.[11]
(c) *Social capital and empowerment*. The criteria considers human and social capital and empowerment in order to assess the changes that have occurred in the empowerment of individuals, the quality of grassroots organizations and institutions, and the Poor's individual and collective capacity.[12]

[7] The criteria to define impact specifies that these are changes that have occurred or are expected to occur in the lives of the rural poor (whether positive or negative, direct or indirect, intended or unintended) as a result of development interventions. Cf: IFAD Evaluation manual. Rome, 2009, page 10
[8] IFAD Evaluation manual. Rome, 2009, page 10
[9] One must keep in mind that in subsistence agriculture the major resource available that the family unit has is their labour.
[10] IFAD, op cit, 2009, page 11
[11] idem
[12] idem

24. The qualitative information related to empowerment and the quality of grass roots organizations was gathered using the Most Significant Change (MSC) technique, which helps to assess project performance in a qualitative context.[13] The MSC technique involves the collection of significant change (SC) stories emanating from the community level. It is used because it supports the evaluative process, as it provides information which can contribute to understanding the progress of outputs towards outcomes. This technique was used systematically during meetings with SLUGs and WIGs and allowed perceptions reflecting a glimpse of how Project outputs had begun to affect farmers' lives in the project area be collected qualitatively.

Review of Aide Memoire with Steering Committee

25. The third phase of the research evaluation dealt with the preparation and review of the Aide Memoire. Although the information gathered by the Team was in the process of analysis, it was deemed useful by the UNDP and national executing agency to jointly review an Aide Memoire. The Aide Memoire highlighted key findings and recommendations for the consideration of the Project Steering Committee meeting of 10 July 2009 in Lahore. After a Power Point presentation conducted by the Team, a substantive discussion ensued on the MTR findings and recommendations that provided the Team with an early validation of its findings and recommendations. Surprisingly, the Chairman of the Steering Committee requested that the MTR conduct a physical verification of outputs. Physical verification is the subject matter of an audit, as discussed in paragraphs 14 and 15. Nonetheless, as the Team wanted to be client sensitive, after the meeting, it organized a physical verification of outputs produced by the Project.

Physical Verification of Project Outputs

26. The physical verification of the achievements reported by the Project was executed in the three districts from July 11 to 14, 2009. The overall purpose was to authenticate the beneficiaries' use of gypsum and implement pools; actual existence of plantations, nurseries, tube-wells, fishponds and kitchen gardens. It must be noted, as mentioned above, that the Team had already interacted extensively with 6 SLUGs (254 members) and 2 WIGs (35 members) selected for the purpose of the MTR field work in the project area. For the subsequent physical verification, the Team drew randomly a 10% sample from the total 455 COs (SLUGs and WIGs). The sample composed of 45 COs was further differentiated among SLUGs and WIGs in a ratio of 4:1 in such a manner that there would be an equal representation. So 4 SLUGs and 1 WIG were randomly selected from each of the 9 field units. Thus, 36 SLUGs and 9 WIGs were visited by the Team. In addition, the Team also verified the extent to which the Project had adhered to the community-based procurement procedures outlined in the Operational Manual (OM). A structured questionnaire with open- and close-ended questions was administered to collect information concerning the use of the implement tools, adherence to procurement procedures, and attitudes with respect to the different interventions. Annex IX contains the report of the physical verification.

Limitations

27. Surprisingly, some key stakeholders expected audit results from this evaluation exercise. This is complicated because the focus and techniques used for an audit are not the same as those used for an evaluation, nor are the results interchangeable. This is discussed in some detail in this section's paragraphs 8 to 14. Perhaps as a consequence of this shift of perspective in regards to the MTR's anticipated results, the expectations were modified. Nevertheless, the Team addressed these concerns through the physical verification report found in Annex IX.

[13] Rick Davies and Jess Dart. The 'Most Significant Change' (MSC) Technique. A Guide to Its Use. Funded by CARE International, United Kingdom, Version 1.00 -April 2005

2. MAJOR DECISIONS AND EVENTS DURING IMPLEMENTATION

2.1 Changes During Implementation

28. The PC I and the Prodoc differ from each other in a number of ways, particularly in relation to staffing levels, salaries and benefits. The ***staffing issue was discussed several times*** between UNDP and the government during the first two years of the project. A meeting chaired by the Secretary, DoA, was held between UNDP and GoPb representatives on 19 September 2006 to resolve these differences and finalize the Cost Sharing Agreement. The minutes of this meeting include decisions taken with regard to how the differences would be resolved.

29. The matter was again discussed in the first meeting of the PSC on 24 August 2007, in which the Planning and Development (P&D) Department was asked to contact EAD for advice. In lieu of this, however, the Chief Economist, P&D, chaired a meeting between UNDP and government representatives on 1 December 2007. It was pointed out at this meeting that the PC I allows 256 positions, the Project Document 105 and the project had actually recruited staff against 168 positions. It was decided that the PC I would be revised to bring it in line with the Project Document and needs of the project. A revised PC I was drafted by the PIU in March 2008. This was presented and discussed in the third meeting of the PSC on March 31, 2008. The PSC recommended the revised PC I for approval by the Provincial Development Working Party (PDWP) with some changes but the same has not yet been approved.

30. The impression conveyed in the records of various meetings is that the matter had been resolved. In 2009, however, PIU staffing was cited as a deviation from the PC I in the charges made against the PM by the former NPD.

31. ***Gypsum application has been another oft-debated issue*** during the implementation of the project. Almost every meeting of the Project Steering Committee (PSC) and the Project Coordination Committee (PCC) has had something to say about what kind of land should be eligible for gypsum application, who should conduct soil tests, how gypsum should be procured, who should test gypsum quality, and what should be the cost-sharing arrangement. Decisions made at one stage have sometimes been reversed in the process, for reasons that are not always self-evident. More specifically:

(a) During 2007-2008, the project decided to pay for the first 5t/ha of the GR, asking farmers to pay for the remaining quantity, if any was required. This decision was taken in a meeting headed by the Secretary DoA and attended by all stakeholders. In 2009, the PCC, again headed by the Secretary DoA but this time a new one, decided that the farmer and the project would equally share the cost of the gypsum, and no gypsum would be provided for land having a GR of less than 5 t/ha. The third PCC meeting held on 23rd February 2009 decided that the PSC would be requested to extend the duration of the project. It also proposed a number of changes to be incorporated in the revised PC I. ***Contrary to the existing PC I, the meeting decided that land having a gypsum requirement (GR) of less than 5 t/ha "will not be treated with gypsum in any case***." No rationale for this has been provided in any of the project documents, including the meeting in which the decision was made.

(b) The project and the community would deposit their contributions in a bank account operated by three signatories, including two from the SLUG and one from the DIU. Payment for gypsum would be made after delivery and a test for quality.

(c) The community would place orders for gypsum with pre-qualified contractors. In 2008, this was changed to allow procurement from the open market. In 2009, the earlier requirement of buying only from pre-qualified suppliers was re-introduced.

(d) In view of the severe shortage of gypsum during the peak season, the PIU proposed a plan for buying gypsum during the low season, insuring and storing it for a few months, and releasing it to the communities before the start of work. The PIU estimated that this could also be cheaper than buying during the peak season. The proposal was rejected at the third meeting of the PCC.

32. The ***relevance and targets of various interventions*** have also been addressed on a number of occasions during implementation. This pertains, in particular, to targets for land rehabilitation, the number of implement pools and how to make them work, the efficacy of nurseries and fish ponds, specifications and cost of tube wells, and proposals for supporting women's involvement. There has been no discussion of the veterinary aids and ICT centres provided in the project design, and these interventions have been silently ignored during implementation. More specifically:

(a) The first PSC meeting also reviewed the target number of villages in each district, which was stipulated in the PC I to be 116, 112 and 173 in Hafizabad, Jhang and Sargodha, respectively. The PSC decided that the number of villages would be in proportion to the salt affected area to be rehabilitated in each district, that is, 50, 190 and 160, respectively. It also decided, however, that the "same proportion of the area as provided in the PC I would be rehabilitated in each project district, irrespective of the number of villages". On a different subject, the PSC also decided that the baseline survey would be outsourced rather than conduced by the Planning and Evaluation Cell of DoA, as originally planned.
(b) The first PCC meeting held on 27 September 2007 reviewed the matter of implement pools, for which the PC I provided that each implement pool would serve eight villages. As this was not considered a viable option, the PCC decided to increase the number of implement pools by 100 and reduce the value of implements in each pool by 50% of the cost estimated in the PC I. In order to strengthen the focus on women, the PCC called on the PIU to prepare a proposal for goat raising costing PKR 50 million; this proposal was not accepted in the final analysis. The PCC also clarified that preference in land rehabilitation would be given to "the poor having less than 20 acres [8 ha] of salt affected land."
(c) The second PSC meeting held on 31 March 2008 decided to increase the project's share in deep tube well installation in order to achieve the target. The meeting also instructed the project to conduct an economic analysis to justify capping the community's share in land rehabilitation at 2004 prices, and providing the additional cost through the government; the study is now available. The meeting endorsed the revised PC I draft prepared by the PIU for submission to the government.

Key Findings

33. The record of ***decision making at various levels suggests the following key findings***:

(a) The project works with a large and diverse group of farmers. The technical know-how reflected in project design has been manifestly inadequate in relation to the need for a differentiated response. At the same time, rigidity in terms of interventions and targets is inconsistent with the community-based approach adopted by the project.
(b) Farmer responses and a rapidly changing external environment have generated a need for course corrections from time to time, more so in this project compared with the more extensively tested initiatives in agricultural and rural development. The project lacks the capacity, particularly in monitoring and evaluation (M&E), to provide evidence-based feedback for timely decision-making.
(c) On occasion, particularly in the PCC, the need for evidence-based decisions has been dispensed with altogether. Moreover, differences between the PC I and the Project Document were allowed to linger on for too long, and the revised PC I delayed inordinately. Evidently, the project lacks a mechanism to rectify matters in the face of circumstances such as these.

2.2 Departmental Evaluations of the Project

34. At the third PSC meeting on 13 March 2009, the NPD pointed out that ***evaluation teams of ASPL II and DoA were deployed to determine the status of implementation in view of the slow pace of the project***. The Jhang evaluation was initiated in August 2008 and the Sargodha exercise in January 2009. The NPD stated at the PSC that the teams identified a number of deviations from the PC I in Jhang and Sargodha. The PSC established a committee under the Secretary, P&D, to look into the issues brought out in the Jhang and Sargodha evaluations.

Key Findings

35. These evaluations merit special attention because of the manner in which they were conducted and the effect they had on the project. A careful review of the Terms of Reference (TORs), methodology, contents and team composition leads to the following conclusions:

(a) ***These exercises do not qualify as evaluation, audit or inquiry*** according to accepted principles and procedures. More specifically, they were not based on any recognizable evaluation criteria, audit requirements or inquiry procedures.

(b) ***Both exercises suffer from conflict of interest.*** They were ordered by the head of the project (the former NPD), who was also head of the programme (ASPL II) which evaluated the project he was implementing. Moreover, one team member of the Jhang evaluation was a project employee, which renders her ineligible to qualify as an evaluator because of conflict of interest. This team member colluded with the former NPD and the DoA to complain about the project and allege malpractices, even though she put nothing on the record to project management during her service, notwithstanding her role in M&E.

(c) ***They were conducted outside the framework for cooperation between UNDP and the government***, as laid down in the PC I and the Prodoc. In addition, the Jhang evaluation report does not respond to its TORs, while the Sargodha report has no apparent TORs as far as the MTR Mission is aware.

(d) The two exercises contain more allegations than anyone could imagine in a project of this nature. Indeed, ***if all or most of these allegations were to be taken seriously, the conclusion would be that this project is the biggest criminal project in the world of development, and did nothing right***. For example, there are 41 allegations in the summary of the Sargodha report (Annex IV: Appendix 1), which was annexed to a recommendation made by the former NPD to UNDP and EAD that the District Manager's contract should not be renewed. All these allegations, which were not supported by the beneficiaries during the MTR Mission's field visits, deal with just one subject—gypsum. The manner in which the two probes were handled is both sad and unprecedented, given that the sponsors of a project are not expected to maul their own project in this way and on such a scale and could, at the very least, have taken responsibility for improving it.

(e) While suggestions for improvement can be found in some parts of the two reports, ***none of the sensible suggestions were taken up by the former NPD for constructive purposes***. These include suggestions which project management and the PCC had considered at various stages.

(f) On the contrary, the reports were used by the former NPD to discredit two specific individuals, namely, the NPM and the District Manager, Sargodha, and recommend that their employment contracts should not be extended. Evidently, ***the main use of the two exercises was not in improving project performance and results but in a personal campaign directed at two managers***. It is significant that nobody else in the project, not even the District Manager, Jhang, or any other employee in the two districts, was singled out for non-extension of contract or any other administrative action. It is also significant that the third district, Hafizabad, was spared the wrath of the evaluations, audits, inquiries, probes or whatever they may be called.

(g) The methods of inquiry adopted in the two exercises included ***humiliating project staff in the presence of villagers and asking them to provide evidence of wrong-doing***[14]. This resulted in demoralizing the staff as well as the communities and created uncertainty. In Sargodha, reports adverse to the project continue to be planted in the local print media. The entire staff, and particularly the NPM and the District Manager, Sargodha, as well as UNDP has spent months of their time denying allegations and trying to clear their names (Annexes IV: Appendices 2, 3, and 4), instead of concentrating on the project for the purposes for which it was designed and funded.

36. Based on a comprehensive methodology discussed in Chapter 1, the MTR has arrived at the following ***conclusions regarding the contents of the Jhang and Sargodha evaluations***:

(a) There is no evidence that the goods and services reported to be delivered by the project are not on the ground.
(b) The procurement processes of the project are transparent to anyone interested in finding out what they are. The COs are procuring the inputs as per the prescribed procedure in which the community itself places the purchase order with the vendor, receives the inputs and makes payment to the vendor (after quality checks by the community and the project).
(c) Although the project has not yet analyzed and reported its outreach by farm size, the large majority of observed beneficiaries consist of small to medium farmers.
(d) The farmers consistently report satisfaction with the project and a high level of benefits from most of the interventions.
(e) The above findings are corroborated by the Physical Verification Report conducted by the Team (see Annex IX). This verification was requested by the Chairman of the PSC during the joint review of the Aide Memoire in Lahore on July 10, 2009. Specifically, the key findings of the aforementioned report are as follows:

- *Implement pools (IPs)*. The inspection revealed that all of the expected IPs were in existence and were under the control of the concerned CO. All IPs were procured according to the prescribed procedure given by operational manual (OM). The quality of the implements was adequate and the beneficiaries were satisfied with the performance of these tools. All of the inspected IPs were operational and in actual use by the respective CO. IPs are being used according to a schedule agreed upon by the CO members. In some cases, the IPs were rented out to non-members at a market rate. In this manner, COs share a technological resource with the community at large.
- *Gypsum.* COs confirmed that the provision of gypsum was vital for the rehabilitation of degraded lands. All farmers confirmed receiving gypsum as per the Project's records. The inspection showed that the procurement of gypsum was conducted in accordance with the stipulated procedure, i.e. the concerned community places the purchase order with the vendor, and when the community receives the goods, it makes the payment to the vendor. The Project only facilitates the farmer in this process. Some farmers reported irregular supply of gypsum from time to time. This delay negatively affected their efforts of land rehabilitation. Others did not agree with the new policy (as of February 2009) of providing gypsum only to lands with GR of more than 5t/ha. The Team encouraged the Project to continue providing support to women farmers, as in the case of the five women farmers (Bairiwal, Hafizabad) who own degraded lands.
- *Nurseries***.** The inspection revealed that the number of reported nurseries corresponded to those in existence in the sample COs, and they were established according to the predetermined procedure. Most of the nurseries were in excellent condition, with adequate economic returns to the owners; however, a large number suffered from marketing problems, as discussed in section 3.2.

[14] This aspect was disclosed by the project staff at Jhang and Sargodha during the Mission's field visit.

- *Tube-wells*. The inspection revealed that the reported tube wells were actually in existence in the corresponding farms with the concerned farmers. The beneficiaries were satisfied with the quality and performance of engines (bore and Peter Engine of 16-20 HP). The procurement was conducted in accordance with the prescribed procedure.
- *Fishponds***.** The inspection in the sampled COs revealed that all of the fishponds were in existence on the corresponding farms. They were all built according to the specifications and intended procurement procedure. Most of the fishponds were new so there were no economic returns as yet. The only fishpond that was being refilled after a fish harvest was the one situated in Bhudduwana, Shorkot, in DIU Jhang. Most of the farmers appeared concerned about the profitability of the fishponds because of marketing constraints and the increase in the prices of inputs, as discussed in section 3.2.
- *Plantation*. The plantations on relatively salt affected land were carried out by the Project as planned. The procurement of plants, land preparation and the management of these plantations were conducted according to the prescribed procedures. All of the plantations visited in the sample were in satisfactory conditions.
- *Kitchen gardening***.** This is a seasonal activity undertaken with WIG members. The inspected kitchen gardens in the sampled COs were in good condition. The Project provided inputs to establish kitchen gardens as per the prescribed procedure. The women were satisfied from the economic returns of the kitchen gardens. They reported that they can save as much as one half of the food bill during the vegetable growing season.
- In sum, all evidence from the physical verification conducted indicates that outputs were delivered according to the prescribed procedures. All the concerned staff, including the NPM, DMs and other personnel, had adhered to the stipulated procurement procedures. Not a single violation was found.

37. As the entire purpose of the two evaluations was to discredit the NPM and District Manager, Sargodha, and recommend non-extension of their contracts, the findings summarized above must be understood as a clear negation of the charges levelled against them by the former NPD, aided and abetted by the former M&E Specialist of the project and a number of officials from DoA and ASPL II. They demonstrate the *mala fide* intentions behind the two evaluations and wanton disregard for leading this singularly important project for the purposes for which it is intended. There is no doubt that these evaluations and the individuals who instigated and conducted them also considerably delayed the achievement of project targets, and this is discussed in greater detail in specific sections of this report.

38. ***If, as stated by the former NPD, the intention behind the two exercises was to improve the pace of implementation, the result has been the exact opposite***. For almost one year (August 2008 – July 2009), the project has done little except to pay salaries (approximately PKR 50 million per year) and go through the motions of implementation. Moreover, the resulting delays in rehabilitating land and planting trees and kitchen gardens add up to a large amount in terms of the benefits foregone by the farm households of Punjab. The MTR would have recommended exemplary action against the officials concerned, except for the assumptions, hopefully correct, that appropriate action would be taken, and that this was a one-time deviation from the norm that would not afflict this project in the remainder of its lifetime.

3. PERFORMANCE OF THE PROJECT

3.1 Relevance of Objectives and Approaches

39. The ***project goal and outcome***, together with the choice of project area, can be seen as a long-overdue investment in solving the problem of salinity that has afflicted Pakistan's agriculture for decades. While technical solutions for salt-affected lands have been known for a long time, the project has chosen to operate on a large enough scale to establish the efficacy and impact of these solutions at the national level. Combining technical know-how with the aspirations and resources of neglected rural communities through the instrument of social mobilization adds vigour and hope to what might have been an uncertain prospect. Field visits in the three districts confirm that the broad objectives and approach of the project are highly relevant and promising in the setting of the project area.

40. The project has four expected outputs, the first of which is to ***put in place a structure for project management and monitoring and evaluation (M&E)***. The project design has addressed this need by providing for a range of essential management and M&E elements. At the same time, however, the original design failed to adequately anticipate the need for systematic feedback and course correction during implementation which a project such as this creates. It is the first such project, and it operates with a range of interventions in a large and diverse project area. Its success depends on continuous learning by doing timely and careful analysis, and evidence-based decision-making for course correction throughout implementation. A standard M&E component, focusing on input and output monitoring with almost no framework for results-based management, offers little prospect for responding to these challenges.

41. The three other outputs elaborated in the Project document revolve around community mobilization, land rehabilitation and access to markets and services. Each of these includes a number of interventions and approaches and needs to be discussed in some detail.

42. Output II calls for mobilized communities that partner with the government on agriculture and land rehabilitation schemes. The relevance of the approaches outlined as part of this output is assessed as follows:

(a) Formation of SLUGs and WIGs. The Project Document introduces an ambiguity about the scope of these Community Organizations (COs) by saying two somewhat different things in one sentence—that these organizations will explicitly focus on waterlogging and salinity issues, and that they have holistic objectives. Both are relevant but the latter implies a much broader canvas than the former. Moreover, project design provides for a large team of female social organizers, but only PKR 375 per WIG (five kitchen gardens per WIG) as the budget with which to support WIG initiatives. Thus, the WIGs can hardly be seen as a meaningful way of involving women in the project.

(b) Baseline survey. The Project Document suggests that the baseline survey would relate waterlogging and salinity to the socio-economic well-being of people, which is a useful objective for such a survey. At the same time, the design provides for a baseline and a technical baseline, leaving it unclear how information from the two surveys would be pooled to do what the project aims to do.

(c) Needs assessment. The Project Document expects the needs assessment to serve two purposes—to enable a comparison between the pre- and post-project situation, and to help identify appropriate interventions. A needs assessment does not generally serve as a baseline, as the Project Document implies here; if it must, then the instrument used before introducing interventions should also be used in a modified form and completed for all villages at the end of the project, which is not part of the plan outlined in the project design.

(d) Capacity building of COs. This is expected to enable the communities to better manage the COs, develop linkages and sustain interventions. All of these are highly relevant intentions,

and the evidence from the field is that farmers understand and appreciate these aspects of capacity building.

(e) Capacity building of line departments. This includes institutional strengthening (provision of staff, equipment and other support) as well as training in community development (including Participatory Rural Appraisal and Gender and Development) and technical training. All of these may be relevant interventions but it is not clear from the project design why and how the training in community development will be provided.

43. Output III is about rehabilitating land and promoting improved agricultural techniques. It includes the following:

(a) Technical survey on the nature and extent of salinity, sodicity, waterlogging and allied crop-related and socio-economic indicators.

(b) Demonstration of improved techniques based on applied research and demonstration trials of 1 ha each in 400 villages. Under this intervention, the Project Document enumerates the functions of SFRI and SSRI. There is neither analysis nor convincing rationale in the PC I or the Prodoc for some of the functions assigned to these institutes, including: a large-scale soil salinity survey which, in order to be useful to the project, would have to be a census of affected lands; multiplication of seed for distribution to growers, which is not a function of research institutes; monitoring tube well water quality and advising farmers, which is also beyond the mandate of soil research institutes; and active participation in community meetings, which is not the way for a research institute to provide technical guidance.

(c) Capacity building of farmers through training. This activity includes a wide range of training needs, all of which are relevant, but it is not clear from the Prodoc how farmers will be trained effectively to this end.

(d) Land rehabilitation through gypsum application on 80,000 ha of affected land. This, the most highly visible and promising part of the project, has also been the most contentious because of a lack of clarity in project design. The Prodoc is silent on the technical aspects of this subject, while the PC I provides some text as a point of departure. As indicated in Section 1.2, a considerable amount of confusion still exists around the project about whether to apply gypsum to a certain type of land, and how much to apply. Put differently, the relevance of gypsum has not been adequately articulated in the project design.

(e) Water availability through tube wells and implement pools. Both these interventions are relevant and appreciated as such in the project area. They are also, however, subject to continuing discussions in view of project experience.

44. Output IV of the Prodoc lumps together a number of interventions, including some that appear to be ad hoc additions. The output refers to improved access to services, market, increased farm incomes and employment. This output begins to portray the project as an integrated rural development programme. It signifies over-reach and signals how far the design has strayed from its focus on salt-affected land and related competencies. This output includes the following interventions:

(a) Access to financial and non-financial services. This is planned to include microfinance, business development services, veterinary services and markets for outputs. All these require specialized resources and approaches that are not provided in the project design, and perhaps rightly so. It is not clear why they are mentioned at all.

(b) Marketing support for marketing eucalyptus for paper and pulp, and for marketing fish. If eucalyptus marketing is a problem, which is evidently not the case, then a project can do almost nothing to solve the problem. And if fish marketing is a problem, then experience suggests that it should not be promoted. Development projects of this nature focused on and staffed for social mobilization and technical solutions are hardly the vehicle for reform of marketing channels.

(c) Income and employment generation to reduce vulnerability by adopting income generating activities such as kitchen gardens, nurseries, fish ponds and plantations. While nurseries and

plantations relate directly to the objective of rehabilitating affected land in a cost effective manner, fish ponds represent an expensive and uncertain prospect for all but a few in the rural community. Kitchen gardens encourage women's participation and balanced diet and also relate more closely to the project's focus.

(d) Training of youth in computer skills: the project shall establish ICT centres in partnership with government (schools and colleges) and civil society. This activity, as it stands, bears no relationship to anything else in the project design.

45. Community Management and Skill Training (CMST) is basic training imparted to the president and secretary of each SLUG and WIG right after the formation of these organizations. The training is conducted as per the standard module developed in March 2008[15] and on average 25-30 members of the SLUG / WIG are trained in one training event of two days duration. The training module mostly covers orientation to the project objectives, its implementation methodology and the role and responsibilities of SLUGs / WIGs. Of the total seven sessions in the CMST, only two are technical sessions on land rehabilitation.

46. The curriculum/module of the training amply covers the project implementation and social mobilization approach. However, considering the technical nature of the project, the training module lacks adequate customization time for technical sessions to advise the farmers (particularly SLUG members) on the causes of and remedies for land rehabilitation. Farmers also lack exposure to other successful community based initiatives for mutual learning.

Key Findings

47. There are, at this time, ***three main issues in enhancing the relevance of project interventions and approaches***. These are discussed briefly as follows:

(a) Focused *versus* holistic approach. Much of the project design focuses systematically on increasing the productivity of salt-affected lands on a sustainable basis. At the same time, it includes statements and interventions that suggest an ambition to be an integrated rural development project, for which the expertise and resources are not available in the project. Interventions such as ICT centres, veterinary aids, financial and non-financial services, and support for marketing indicate a broad rather than a focused approach. Moreover, the targets for fish ponds and nurseries demonstrate little relevance to market conditions.

(b) Target groups. Although poverty alleviation is central to the project, there is nothing in the project design that could help the project focus on identifiable groups of the poor, whether they are described in terms of small land ownership, other socio-economic characteristics or the condition of their lands. For women's involvement, the project provides only PKR 75 per per kitchen garden for a WIG member as the budget, but a large team of female social organizers pursuing linkages with government and non-governmental agencies that may never materialize.

(c) Inappropriate institutional roles. There is neither analysis nor convincing rationale in the PC I or the Project Document for some of the functions assigned to the Soil Fertility Research Institute (SFRI) and Soil Salinity Research Institute (SSRI), including: a large-scale soil salinity survey which, in order to be useful to the project, would have to be a census of affected lands; multiplication of seed for distribution to growers, which is not a function of research institutes; monitoring tube well water quality and advising farmers, which is also beyond the mandate of soil research institutes; and active participation in community meetings, which is not the way for a research institute to provide technical guidance.

[15] DACCAR Manual for Community Management and Skill Training.

3.2 Effectiveness in Achieving Objectives

3.2.1 The planning process and implementation procedures

47. Against considerable technical odds, the Project is now reaching its cruising speed. Vital implementation tools and processes were missing during the Project's take off stage. To strengthen accountability, the Team has reviewed the planning process within the context of the project cycle in an effort to understand "why" the performance was as it was. These are the proximate causes of current performance.

48. Within the framework of a project cycle for NRM projects, the phases of identification, preparation, appraisal and implementation constitute the standard procedure.[16] As summarily discussed in Annex VI, experience has proven irrevocably that these processes are necessary and sufficient to implement NRM development projects. The central reason is because NRM development projects are the most complex as they need to conjugate the ecosystem, climate, economic, and institutional and social systems in such a manner that the production is ecologically friendly, socially acceptable, and economically viable for the farmer—and output prices are acceptable to the consumer.

49. Biosaline II missed key phases. In retrospect, it may have seemed reasonable to assume that the outputs from Biosaline I were sufficient to configure a Preparation Report to determine the economic, technical and institutional feasibility. It should be kept in mind that Biosaline I was piloted in three sites: Shirkot, Pindhi Bhattian and Sahiwal of the districts Hafizabad, Jhang and Sarghoda.

50. The reality proved differently. The Biosaline I outputs could only provide background information and were insufficient to prepare a feasibility analysis.[17] So the partners (UNDP and GoPb) in both official documents (the Prodoc and PC-1) proposed the need to conduct three technical studies without specifying datelines and TORs.[18]

- The Technical Survey anticipated providing the technical parameters of operations to conduct soil recovery, and production processes during the recovery and post-recovery periods.
- The Needs Assessment anticipated providing the mechanisms to fit the proposed innovations with the farmers' actual conditions on the ground.
- The Baseline Survey, a fundamental document for the measurement of the progress towards outcomes, was expected to be ready at the beginning of the Project implementation.

51. The Need Assessment was not conducted, and only an introductory section is available from the Technical Survey. Only the Baseline Survey became available in May 2009, just before the MTR. Under these circumstances, during the take off stage, the Project Implementation Unit had to adopt an adaptive approach in order to carry the Project forward, as outlined below:

- It proceeded to use information from the Revenue Department to identify potential village beneficiaries and short listed the potential villages using a Social/Technical criteria. Based on a number of villages that met the Project requirements, it carried on with grouping Community Organizations. Thus, on the basis of tailored needs and assessments and soil

[16] This project cycle framework is used by the UN specialized agencies in natural resource management, i.e. IFAD. Guiding principles for the design and use of M&E in rural development projects and programmes, Rome, 1984. World Bank. Managing planned agricultural economic development, AID, Washington, DC 1976; Economic analysis of agricultural projects. Washington, D.C. 1972.

[17] UNDP comparative advantage is capacity development, so those outputs associated with community mobilization, enhancing the organizational capacity of women's groups, etc., were sufficient to conduct Bio-saline II. Techno-agro-economic outputs needed substantial strengthening so they could be used in the implementation plan.

[18] Ultimately when the Baseline Study was conducted a TOR was drafted for this purpose.

samples from selected COs, the PIU moved forward with interventions as anticipated in both Prodoc and PC I.

- Research has established that projects during implementation, regardless of the feasibility analysis' technical quality, undergo "teething problems." It was the tenacity of the problem-solving effort that made the difference between projects whose performance was a success and those whose performance was not. [19] The adaptive approach used in Biosaline II fulfils the characteristics of an action-oriented approach with potential for success in the current development effort.

Key Finding

52. Biosaline II is on its way to reaching its cruising speed, in spite of having missed out on key phases, as the adaptive approach used by PIU proved adequate to meet this challenge. Under the circumstances, it testifies to the Project management's dedication and commitment towards moving forward in order to meet the challenges of a poverty alleviation effort. In the absence of the adaptive approach the project would have had to wait for more than two years to start any work.

Project Strategy for Targeting and Area Selection

53. As noted, the Bio Saline II project intended to improve upon the pilot actions of Bio Saline 1 by increasing the depth of coverage in the three districts of Jhang, Sargodha and Hafizabad. The selection of these three districts was based on these areas' high prevalence of soil salinity and water logging. Broadly speaking, both strategies, i.e. targeting beneficiaries and area selection, were driven by "the size of degraded lands" rather than "poverty alleviation."

54. Both the Prodoc and PC I placed emphasis on poverty reduction through an increase in farm productivity. [20] Notwithstanding the emphasis on poverty reduction, neither document outlined a targeting strategy to translate "poverty" into concrete actions and the PIU has not developed a strategy during the course of project implementation. Thus, it seems that the entire project focus has been on "degraded lands" rather than "poor farm families or small landholders."

55. Nonetheless, the Project has reached a significant number of small and medium landholders. As per the project records, the majority (60%) of the beneficiary farmers are small landholders with farm sizes of up to 12.5 acres, whereas almost 80% of the beneficiary farmers have land ownership of less than 25 acres [21].

56. For the remainder of the Project duration, a clear "poverty targeting" strategy is required. While the results of the "Technical Survey" will guide the project to those villages with high prevalence of degraded lands, additional instruments such as "village profiles" and "poverty ranks" should be used to identify poor / small landholder farmers for project interventions. Before starting any intervention, the project should therefore prepare a "village profile" that would record the socio-economic conditions of the village. The village profile should also include a section on "poverty ranking." [22]

[19] Hirschman. A. Development projects observed. The Brookings Institution. Washington, DC, 1967, pages 9-35

[20] As per the Project Document, poverty reduction through increased farm incomes is the goal of the project (page 5). The PC-I also states that the project would target the poorest segments of the population in a phased manner. It further says that priority will be given to villages where majority of the farmers have small land holdings and have high degree of water logging and salinity (page 10). Similarly in another section, the PC-I says that the main project beneficiaries will be small landowners, rural poor including women and (most interestingly) landless households etc.

[21] Project Progress Reports and Tables of Beneficiary Farmers

[22] The alternate instrument can be "landholding ranking". Three ranks can be used including small landholder farmers (having up to 12.5 acres of land), medium landholder farmers (having more than 12.5 acres but less than 25 acres of land) and large landholding farmers (having more than 25 acres of land)

57. To the extent that the Project can only work with landholders of degraded lands, the size and productivity of land should be the main factor of poverty measurement. This allows the density of poverty in the different areas of each district to be established, and for households to be placed into different poverty ranks. The PIU must formally outline a strategy for targeting beneficiaries and area selection as soon as practicable and validate this with key stakeholders.

3.2.2 Project Performance

58. The Project began its operation in October 2006. Up to the MTR (May 2009), it has been under execution for 2.5 years (31 months) and there is approximately one year and half (September 2010) left of execution time. The expenditures up to May 2009 are USD 5.18 million, or 39% of total budget. Table 4 summarizes the output progress from October 2006 to May 2009.

59. In the context of a Project producing land rehabilitation outputs geared towards poverty alleviation, several issues emerge as paramount. Specifically:

- The Project has been able to mobilize farmers (male and female) beyond the targeted rate, which is a significant achievement. There could not be a development effort without the total support of the farmer beneficiaries.
- The quantity of land rehabilitated is only 29% of the expected target. This is a shortfall of consequence, as land rehabilitation is a key component.
- There are some activities showing overachieved targets, i.e. kitchen gardens and others showing underachieved targets, i.e. development of fish ponds, nurseries.

60. With the intent to strengthen accountability by determining the proximate causes of performance, each output is reviewed in the context of the information gathered in the field by the Team, as summarized in Table 4.

Output I: Programme Management, Monitoring and Evaluation Structure in place

61. Programme management has been operating adequately. The planning targets were met during 2006, 2007 and 2008. Two activities, however, evoke concern. Firstly, the activity related to vaccination of animals appears to duplicate similar actions carried out by the line departments. Secondly, M&E actions leave much to be desired. In fact, the Project does not have an M&E system tailored to its requirements. Performance follow-up of the Project's planning process is primarily a PIU function, whereas the M&E should be focusing on monitoring poverty reduction and associated issues.

<u>Key Findings</u>

62. The key findings for Output I are as follows:

(a) The vaccination of animals seems to duplicate similar actions carried out by the line departments such as the Livestock and Dairy Development Department..
(b) There is an acute need of an M&E plan focusing on monitoring poverty reduction and associated issues related to livelihood opportunities.

Output II: Mobilized communities that partner with the Government on agriculture and land rehabilitation schemes

63. The execution of this output required two tools: the Need Assessment and Baseline surveys. The first has not been done and the second recently became available (May 2009). Although it was

possible to conduct activities with the use of the Adaptive Approach, there are still gaps, which are discussed below.

Table 4: Progress Summary of Biosaline-II

Activity	2007 Progress			2008 Progress			2009 Progress			Cumulative Progress		
	Target	Achieved	%	Target	Achieved	%	Target	Achieved	%	Target	Progress	%
OUTPUT I Programme Management, Monitoring and Evaluation Structure in place												
Media and Publication	4	7	175%	4	10	250%	3	1	33%	11	18	164%
Vaccination of Animals				100	154	154%	200	0	0%	300	154	51%
Meetings of PSC	1	1	100%	1	1	100%	1	0	0%	3	2	67%
Meetings of TRC	2	2	100%	2	2	100%	2	1	50%	6	5	83%
Meetings of PCC	4	3	75%	4	4	100%	4	1	25%	12	8	67%
OUTPUT II Mobilized communities that partner with the Government on agriculture and land rehabilitation schemes												
CO Formation (no.)	100	182	182%	225	266	118%	109	16	15%	434	464	107%
SLUG-Salt Land User Group (no.)	67	120	179%	150	182	121%	73	16	22%	290	318	110%
WIG (no.)	33	62	188%	75	85	113%	36	0	0%	144	147	102%
CMST (Persons)	200	228	114%	450	691	154%	370	0	0%	1020	919	90%
OUTPUT III Land rehabilitated and improved agricultural techniques promoted												
Preliminary Survey of Project Districts (ha.)	179,651	68,215	38%	111,436	135,178	121%	0	0		291087	203393	70%
Analysis of Soil and Water Samples (no.)	5,000	9,195	184%	70,000	90,525	129%	70,000	20,666	30%	145000	120386	83%
Demonstration Plots (no.)	40	62	155%	200	140	70%	105	0	0%	345	202	59%
Installation of Tube Wells (no.)	30	14	47%	150	112	75%	150	10	7%	330	136	41%
Establishment of Nurseries (no.)	60	42	70%	75	50	67%	75	1	1%	210	93	44%
Agricultural Implement Pools (no.)	30	22	73%	80	86	108%	85	7	8%	195	115	59%
Rehabilitation of Affected Area (ha.)	2000	1479	74%	25,000	14,168	57%	28,000	543.4	2%	55000	16190.4	29%
OUTPUT IV Improved access to services, market, increased farm incomes and employment.												
Fish Ponds (no.)	25	13	52%	50	19	38%	25	0	0%	100	32	32%
Kitchen Gardens (no.)	400	325	81%	400	1,816	454%	*	*		800	2,141	268%

Source: PIU Progress Report, May 2009

64. Mobilization of the communities is a successfully achieved output. Each target was over achieved. As indicated, there is huge pool of good will at all levels in the project area because of the quality of outputs introduced by the Project.

- Members of SLUGs and WIGs have testified to the Team every time that their grass roots organization represents a considerable step forward in their quest to escape the poverty trap.
- Beneficiaries are grateful for the opportunity the Project has provided for them to get organized as community organization.
- They have realized that through their grass roots organizations, they have enhanced their individual and collective capacity for their economic improvement beyond the Project scope.

65. As mentioned, the Project lacks a written targeting strategy (both in the PC I and the Prodoc) for farmer selection and for identification for the interventions. The PIU developed a proxy targeting strategy using the salt affected villages for the formation of community organizations. This approach allowed the Project to achieve 100% community mobilization targets during 2007 and 2008. A recent

Project study indicates that 80% of the farms in the project area have an average size of 5 acres.[23] This suggests that the most frequent distribution of farm size in the project area is 5 acres and these farms are situated in villages affected by soil salinity. This constitutes a benchmark in targeting. Paragraphs 56 and 57 outline a strategy based on the fact that the Project can only work with landholders of degraded lands. The size and productivity of land should therefore be the main factor of poverty measurement, thereby allowing the establishment of the density of poverty in the different areas of each district, and the placement of households into different poverty ranks.

Key Findings

66. The key findings for Output II of the project are as follows:

(a) The Project has successfully mobilized all targeted communities. There is much good will from members in SLUGs and WIGs because the quality of their grass roots organizations has been enhanced.
(b) The available evidence indicates that the PIU has primarily been incorporating farmers with landholdings averaging 5 acres into project and that these farms are situated in villages affected by soil salinity.

Output III: Rehabilitation of land and promotion of improved agricultural techniques

67. The implementation of this output required the fundamental support of two tools that were missing during the take off stage: a Technical Survey and a Need Assessment. Using the Adaptive Approach the PIU was able to triangulate the required information from secondary sources so that activity implementation was possible.

68. All available evidence suggests that the reasons behind the shortfall in the target for land rehabilitation are not related to PIU performance or to the farmers' motivation. Although land rehabilitation was impeded primarily by the unavailability of good quality gypsum, the evidence in Chapter 2 reveals that the PIU submitted a viable proposal to cope with this bottleneck, which was not heeded by the NPD in the PCC of 22nd February 2009. In addition to the previous decision, the following factors have proved to be constraints in reaching the targeted delivery:

(a) Inadequate supply of good quality gypsum as well as insufficient time allocated for its purchase.
(b) Increase in petroleum products prices and resulting increase in production and transportation costs of gypsum.
(c) Unprecedented load shedding in the rural areas of the country, effectively reducing the production of gypsum to only 10% of its previous level.
(d) Frequent strikes by the transporters against the increase in petroleum product prices.

69. The agricultural implement pool is another successful activity. In fact, in all meetings with SLUGs, it was unanimously agreed that the best thing that happened to them recently was the introduction of gypsum with the chisel. A few farmers even went as far as to say that the chisel was more important than the gypsum. It became evident that quite a few farmers had tried, unsuccessfully, to rehabilitate their land on their own before the Project interventions. This testifies to the farmers' motivation to seek practical means to increase the productivity of their lands. This motivation is a pivotal element in continuing with the learning curve so as to be able to achieve sustainable yields based on cropping patterns suitable to the ecosystem.

70. The establishment of nurseries is an activity that needs reconsideration. The potential contribution of certain trees species to the enhancement of land fertility is undeniable. The reason for

[23] UNDP The effect of inflation of the purchasing power of communities in the three districts. Biosaline II Project. Draft report. April 2009, page 7

the shortfall in achieving the targeted number is the fact that there may already be too many nurseries, such that the competition may hurt economically all those involved in this activity. It is not clear, however, what segment of the nursery market has potential for the project area: fruit trees, ornamental trees, or industrial trees including medicinal trees.

71. Specifically, from discussions with farmers, the potential benefits from horticulture are not evident, with the exception of citrus trees which are grown in large farms. Their main concern is the fact that horticulture requires three to four years before it begins producing revenue. In the meantime the land is occupied, so it is not possible to grow food crops to meet the subsistence needs of the family unit. This reasoning is correct in the context of a small holder economic rationale. The PIU needs to: (i) establish which trees have the most immediate market in the project area; and (ii) subsequently, consider plot demonstrations about inter blending trees (with economic value besides soil rehabilitation) with food and/or forage crops, or planting these trees along the contours of irrigation canals, field plots, or the house garden.

72. Installation of tube wells is critical, as there would not be agriculture without irrigation. There is every indication that the water table is much lower now than previous levels. The increased cost of tube wells leads to more expensive irrigation water. This equation must be worked out carefully between PIU and those COs seeking to purchase tube wells. Perhaps it will be necessary to plan cropping patterns with high value market and low water consumption from the start, so that investment becomes profitable. In any event, a poverty alleviation effort should not, directly or indirectly, condition negative financial results from proposed operations.

Key Findings

73. Key findings for Output III may be summarized as follows:

(a) All evidence points to the fact that the shortfall in the target for land rehabilitation was primarily impeded by the unavailability of good quality gypsum. Although PIU submitted a viable proposal to cope with this bottleneck, it was not heeded by the NPD in PCC of 22nd February 2009.
(b) Small holders lack the time to assess markets and marketing arrangements for trees. More information is needed to: (i) determine which trees have immediate market possibilities in the project area; (ii) propose possible blending of trees (fruits, medicinal) and crops, and to take into account farmers' management capabilities. It is also evident that most small holders lack the financial capability to launch horticulture production (or any kind of tree production) because of the 3-4 years needed for trees to come to fruition.
(c) The activity of the agricultural implements pool is a patent success. Nearly all members of the SLUGs interviewed agreed that the most significant event to occur since they joined the Project was the introduction of gypsum with the chisel. However, this is not the case with irrigation tube wells because of the significant price increases in the market.

Output IV: Improved access to services, markets, increased farm incomes and employment

74. This output required the use of two important tools which were lacking during the take off stage: a Need Assessment and a Baseline Survey. The Project conducted these activities with the use of the Adaptive Approach.

75. Kitchen gardens are the most successful interventions. They are conducted by women from farmers' households. With a meagre project contribution of PKR 70 per person, they are able to meet 50% of the daily food requirements during two growing seasons of three months each. They shared with the Team their keen interest to follow up income generation activities, and they allowed for the fact that due to their child rearing and house keeping duties they only devoted about 4 to 6 hours a day to these purposes. They added that they would like to have access to micro finance sources so they could finance operations for embroidery, stitching, and vegetable production for the market.

76. Fish ponds appear as risky enterprises for small holders. Only 19 new fish ponds were established against the target of 50 during 2008. However, those farmers with land ownership in the range of 10 acres or more have tried with success. The Team has cautioned the PIU to review the market and the marketing situations before continuing to promote fish ponds. For example, there is need of ice to transport fish to the consumption centres, and also, the local consumption of fish does not appear to be significant. It would be catastrophic for the Project's credibility if one farmer fails in this enterprise because of these factors.

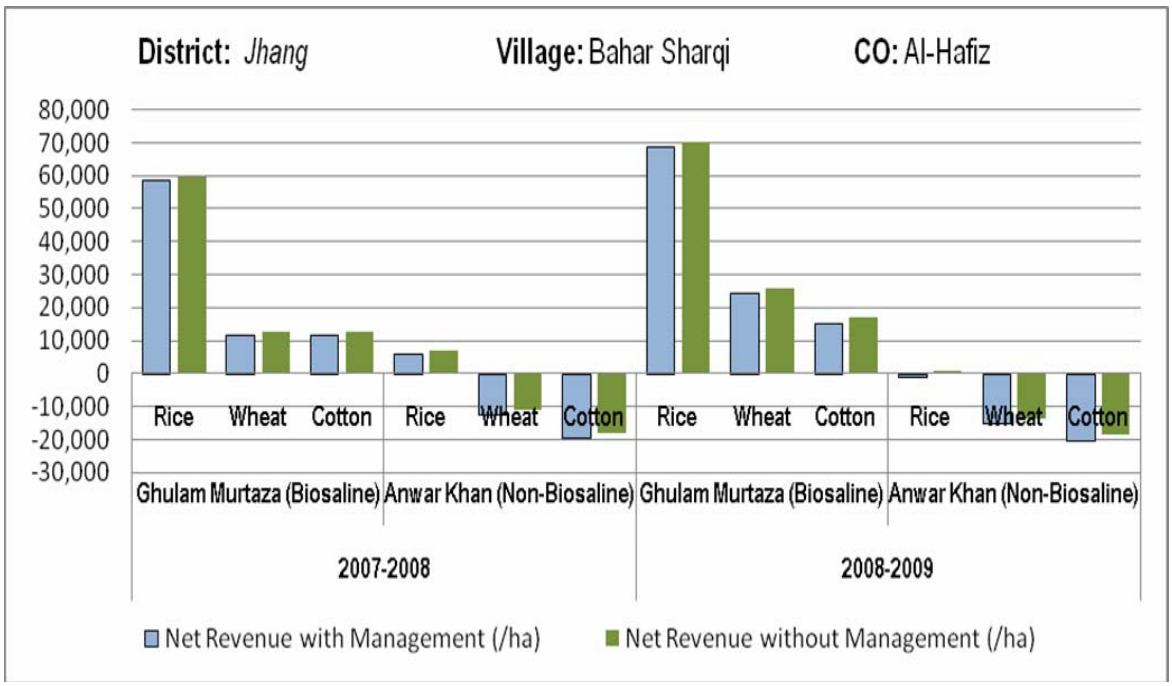
Key Findings

77. The key findings for Output IV are:

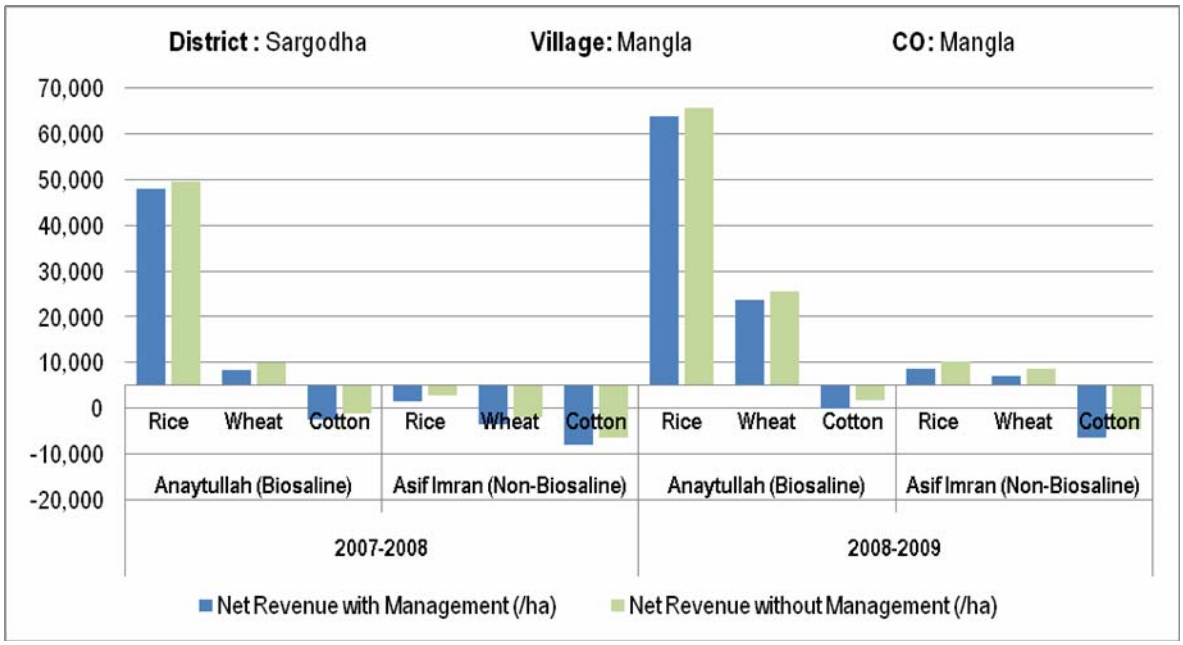
(a) WIGs show momentous motivation for self help. This motivation should not be lost. PIU should consider facilitating networks with micro finance organizations.
(b) There are evident market and marketing constraints operating against the promotion of fish ponds. Small landholders' concern in regards to risk aversion is real and legitimate in this context. However, technical support should continue for those farmers who are already involved in fish ponds.

3.2.3 Emerging Effect from Project on Household Income

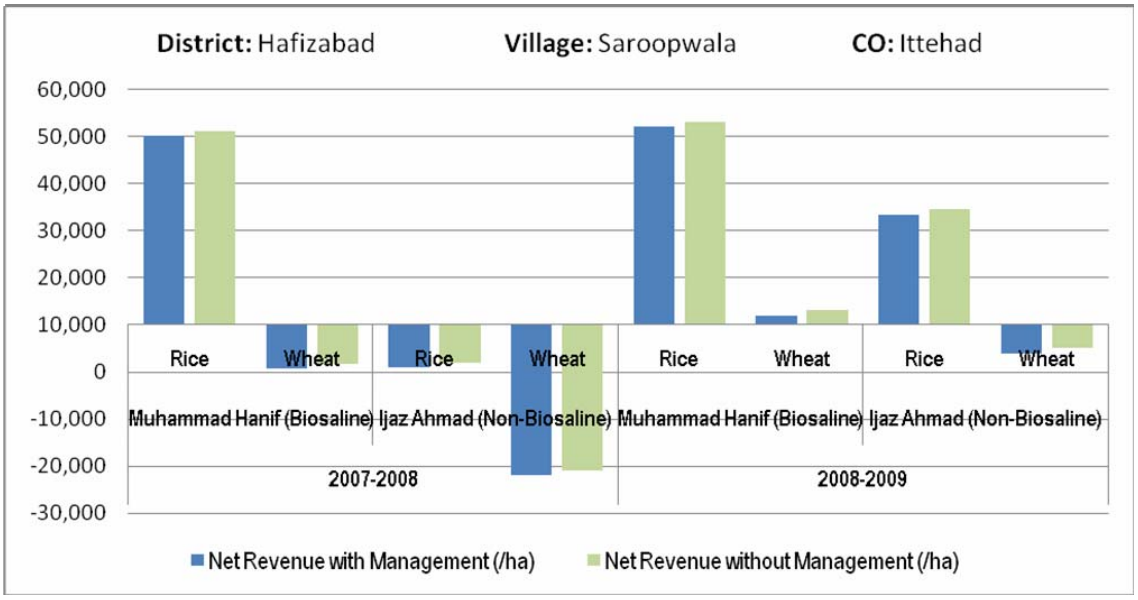
78. The crop and farm budgets prepared by the Team with the participation of the project team underline the potential of the emerging effect on the beneficiaries' household income. The complete set is found in Annex VII. Graphs 1, 2 and 3 typify results achieved in the three districts of the project area. In each district a representative farmer who participates in the Project was compared with another farmer who does not participate in the Project. In this manner, there are results *without* and *with* the Project. Both farmers are using cropping patterns prevailing *with* and *without* the Project conditions. The prices are those that were predominant during the last agricultural campaign.



Graph 1 District Jhang: Economic returns with (biosaline) and without (non-biosaline) project (Source: Annex VII)



Graph 2 District Sargodha: Economic returns with (biosaline) and without (non-biosaline) project (Source: Annex VII)



Graph 3 District Hafizabad: Economic returns with (biosaline) and without (non-biosaline) project (Source: Annex VII)

79. Because the data set is flimsy, it is not yet possible to measure income change at this point. It is, however, a compelling fact that farmers *with* the Project outputs are obtaining hefty economic returns as compared with farmers *without* the Project outputs.

80. When all is said and done, it is unmistakable that land reclamation through the Project outputs is one way to escape the poverty trap. It breaks the vicious circle of rural poverty that occurs due to scarce resources and unsuitable land. Indeed, those farmers who are now in the second season with

the Project have told the Team that they have started sending their children to school and would like their children to continue schooling until they obtain a trade or a university degree. This is the economic incentive that the Project has initiated. The Project can also stimulate further economic growth among farm families if the first spurt of growth (agricultural seasons 2007, 2008) can be consolidated into the second half of the Project life.

Key Findings

81. The following findings are noteworthy:

(a) The Project is at a cross roads. It needs to consolidate all the gains made so far. The next steps require careful calibration to avoid mishaps. It is important to keep in mind that the small holders' margin of error is zero because on the average he has 6 dependents. Thus the subsistence requirements imposed by the family unit are decisive.
(b) The Project outputs have increased the net income of participating farmers. However, there is no design of a poverty reduction intervention in the Project area.

3.2.4 Project Contribution to National Objectives and CPAP

82. Agriculture is the single largest sector of Pakistan's economy. It contributes 21.8 percent to the Gross Domestic Product (GDP) and is the source of livelihoods for almost 44.7 percent of the labour force. [24] Agriculture provides raw materials to the industry and is the main driver of poverty reduction, especially in the rural areas where most of the poor live. The agricultural sector has an effect on the balance of payments through the export of value added crops. Above all, however, it provides food security at the household level.

83. In the context of food security, the sector assumes a significant role in the national development process. For example, in 2007-2008 wheat crops recorded a negative growth, whereas rice grew at a nominal rate of 2.3 percent. The decrease in wheat production from 23.2 million tones in 2006-2007 to 20.9 millions tones in 2007-2008 was the main cause of a food crisis in Pakistan as well as the 17.6 % food inflation during the same year.

84. Wheat and rice are the staple foods in Pakistan and they have considerable influence on the food security of the more than 170 million people of the country. The GoP policies therefore have a special emphasis on increasing the productivity and production of wheat. On the production side, one of the GoP's strategies is to control waterlogging and salinity through the promotion of gypsum to improve sodic soils, as well as supporting research on bio-saline agriculture. [25]

85. Biosaline II Project reflects the concerns of the National Development Frameworks. It can contribute to the national objectives of: 1- enhancing wheat productivity and production, and 2- ensuring food security. Similarly, this Project's interventions are highly relevant to UNDP's CPAP component, namely "poverty alleviation, community development with building assets for the poor."[26] The Biosaline II's outputs relate to the transformation of degraded lands into productive assets contribute directly to the CPAP (2004-08) outcome of "securing access for the poor to land and infrastructure."[27]

86. As a result of the outputs proposed by the Project, the improvement in land fertility is dramatic, as illustrated in Graphs 1, 2 and 3 and farm budgets in Annex VII. From barren land almost without vegetation due to the soil salinity, using the Project's proposed package farmers can obtain,

[24] Economic Survey 2008-09
[25] Medium Term Development Framework (MTDF) 2005-10 (section Agriculture Development, page 4)
[26] Country Programme Action Plan of UNDP (originally from 2004-08 now extended up to 2010)
[27] UNDP has revised this outcome to outcome indicator in its Development Work Plan 2008. The outcome indicator is now worded as "Increase in income and access to productive assets by poor, especially women".

on the average, rice yields of 2MT/ha. It is informative to learn that some farmers had attempted to use gypsum without results. They confirmed that the use of a chisel made a difference in the application of gypsum.

87. If the 80,000 ha are put under production, the Project will contribute, on the average, 48 million MT of cereals to the national production of cereals (Table 5). In other words, with the Project, the total national availability of cereals in the country will increase from 30.37 million MT to 30.85 million of MT. This represents approximately 1% of the national figure. The total requirement of cereal in the county is 24.35 million of MT. Therefore, with the Project the level of food security will increase proportional to the number of ha under production. Annex VIII contains pilot estimates of the Project's contribution to food security at the farm level in the 3 districts.

Table 5: Pilot Estimates of Food Security (Rice and Wheat)	
Supply and demand of cereals (Rice and Wheat)	
Item	2008-09
Total wheat production (million MT)	23.42
Total rice production (million MT)	6.95
Total wheat requirement (million MT)	20.13
Total rice requirement (million MT)	4.22
Total production of cereals (rice + wheat) in million MT	**30.37**
Total requirement of cereals (rice + wheat) in million MT	**24.35**
Surplus [Deficit] (million MT)	6.01
Additional area under cultivation through rehabilitation through Biosaline II (ha)	80 000
Incremental rice production @ 3 MT/ha	0.24
Incremental wheat production @ 3 MT/ha	0.24
Total incremental production (million MT)	0.48
Total availability of cereals (million MT)	**30.85**
Surplus [Deficit] with rehabilitation of 80,000 ha through Biosaline II (million MT)	**6.49**

Source: Economic Survey of Pakistan 2008-09 & PIU estimates 2009.

3.2.5 Social Capital and Empowerment

88. All targets related to empowerment and social capital has been achieved. Project beneficiaries have made vital gains in enhancing their individual and collective capacity. Members of SLUGs and WIGs feel empowered by their organization. Beneficiaries have testified to the Team the improvement in the quality of their grass roots organizations and have indicated that through their organization, their capacity to improve their welfare can go beyond the Project scope. They now feel ready, as an association, to bring their case to the authorities when it is required.

3.2.6 Project Cost –Effectiveness

89. Despite the concern for rehabilitation cost, the cost of rehabilitating 1 ha of land is unclear. The root cause is the planning process, discussed in section 3.2. The initial studies were not accurate—at least not accurate to the 3 - 5% margin of error expected in most feasibility studies.

90. The analysis shown in Table 6 highlights important problems. The cost estimates of PC-1 seemingly omitted several activities required in the investment process and these omissions could be the source of the current inaccuracies. It is noteworthy that the estimates conducted by one of the Project consultancies and the actual costs registered by PIU are similar. Both agree on the activities required for the investment process, and the difference in price can be accounted for by price escalation from different sources.

Table 6: Comparison of Cost of Rehabilitation (PKR/ha)			
Cost Item	PC-1	2009 Study*	Actual (PIU)
Gypsum	8,000	9,775	12,602
Levelling	2,500	1,500	1,500
Deep Tillage		2,000	2,000
Bund making		600	600
Labour for unloading	2,500	300	300
Spreading gypsum		800	800
Watercourse making		2,000	2,000
Tube well water charges	4,000	6,000	5,198
Total	**17,000**	**22,975**	**25,000**

Source: PIU, July 2009

* UNDP. The effect of inflation on the purchasing power of communities in the 3 districts of Punjab. Biosaline Project II, April 2009, page 14

91. Nonetheless, the criteria for cost-effectiveness stipulates that a project is more cost-effective when it achieves its results at the lowest possible cost compared with alternative projects with the same intended results.[28] Unfortunately, no other project has been undertaken for comparison purposes. However, two estimates (from the Project consultancy and PIU records) were prepared independently and the results are similar. However, there is insufficient concern to estimate the benefits/ha of land reclamation. To begin with, the upper limits of crop yields have not been tested, since currently all efforts are being placed in the recovery of lands through rice-wheat cropping. For example, there is an environmental value in recuperating land that was once barren and currently yields wheat and rice crops. This benefit must be considered in the context of the national environmental management.

3.3 Efficiency

92. Project management has been following a learning-by-doing approach during implementation. It has been trying to fill the gaps left during the design stage. It has taken matters to the PSC, PCC and technical experts. ***Progress has been uneven, and sometimes constrained.*** The following factors have moderately aggravated the situation:

a) lack of capacity for sound evidence-based analysis of field conditions, farmer responses and a changing external environment;
b) unrealistic expectation that research institutes can perform certain functions; and,
c) the absence of a mechanism to facilitate decisions when there are stalemates in decision making and delays in follow up.

93. As discussed earlier in the report, little analysis is available from the project on how resources have been translated into results (outcomes and impact). The MTR's field work suggests, however, that ***investments in land rehabilitation, tree plantations, implement pools and kitchen gardens have high rates of return***. Fish ponds appear to be an expensive proposition with an uncertain benefit stream, while nurseries have been promoted in greater abundance than suggested by demand-and-supply factors. No resources have been expended on veterinary aids and ICT centres, and this may well be justifiable.

[28] UNDP. Handbook on Monitoring and Evaluating for Results. New York, 2002, Glossary

94. As mentioned earlier, the project, as well as UNDP and several officials of GoPb, have been pro active in trying to reconcile differences between the PC I and the Prodoc, and to fill in the gaps left in these documents. Some believe that differences between the two project design documents were resolved at various stages since the approval of the Prodoc. Others have noted that these differences were never reconciled. The Prodoc provides for a staffing structure—including number of staff, salary levels and titles of positions—that is in line with the NEX modality agreed between UNDP and the Government. This generally implies fewer staff at higher salaries recruited through open competition on a contractual basis. These features are more appropriate for short-term projects than the normal staffing arrangements of government organizations that are reflected in the PC I, and they have been accepted in a number of meetings between UNDP and GoPb.

95. The unit cost and number of implement pools (IPs) per village is another provision of the PC I from which there was deviation during implementation (with the approval of all concerned). The PC I provides for one IP each for eight villages. During implementation it was realized that farmers spread over eight villages could not access the IP on a timely and cost effective basis. In order to increase outreach, the project decided to provide one IP each for four villages, while reducing the number of implements and cost per set.

96. The PC I does not specify the precise mechanism for procurement of gypsum, and this point had to be addressed during implementation. The project decided (with the approval of all concerned) that beneficiary contributions would have to be deposited in bank accounts operated jointly by two representatives of the SLUG and one from the project. The project would deposit its share in the same account after confirming receipt of the community contribution. The community would purchase gypsum from vendors pre-qualified by the project. During implementation, it was realized that the small number of pre-qualified vendors could not meet the demand in time, often charged prices that were higher than relevant market rates, and could not guarantee quality. The project decided, therefore, that communities could purchase gypsum from the open market, while the project would be responsible for testing quality. The arrangements worked out by the project are consistent with obtaining value for money.

97. The PC I (page 26) provides for the project to support gypsum application of 20-40 bags per acre (2.5-5 t per ha) on saline-sodic soils that need chemical amendment. The project started by providing up to 5 t/ha free to each beneficiary farmer, with the beneficiary contributing the balance of the requirement, if any, from his own resources. The rationale for this particular cost-sharing arrangement is not clear. The PCC decided in a meeting on 23 February 2009 that land having a GR of less than 5 t/ha will not be treated with gypsum "in any case." It was also decided that gypsum would be provided to farmers on 50:50 cost-sharing basis. Neither the technical nor the cost-sharing rationale for the 2009 decisions is clear. The MTR found, however, that small farmers owning 2 -5 ha of land were finding it impossible or particularly difficult to pay for their share of gypsum under the scheme introduced in 2009.

98. Meanwhile, in 2008, a meeting of the PSC decided to commission a study to justify capping the community's (rupee) share in land rehabilitation at 2004 prices. This proposal was motivated by the belief that farmers' disposable income constrained them from contributing more than the share estimated in 2004. There is an implicit belief here that small farmers needed relief in view of increases in the cost of living. The study on disposable incomes that became available in mid-2009 is an elaborate analysis along these lines. There is, at the same time, a substantial subjective judgment attached to the question of how much relief should be given to farmers. Moreover, a study such as this becomes out-of-date fairly quickly in a high-inflation environment.

Key Findings

99. Although the PIU has been pro active in looking for realistic solutions, gypsum procurement, storage and quality testing issues have been debated back and forth a number of times and important issues remain to be decided. With reference to other key issues:

(a) There is more than adequate understanding that the staffing structure adopted in the Prodoc has merit as well as policy approval at the highest levels. The problem is not lack of understanding but an occasional desire among some to raise this issue from time to time for negative reasons.
(b) The way the project has handled the issue of IPs is better than the approach set forth in the PC I. Making this an issue amounts to attacking an approach that is cost-effective and generates greater outreach.
(c) Arrangements adopted by the project for transferring funds to the COs are sound for a community-based project of this nature. No other option has been placed on record for discussion.
(d) Procurement of gypsum from the open market (instead of pre-qualified vendors), supported by the checks and balances ensured by the project, is consistent with value for money. Insisting on buying gypsum only from pre-qualified vendors suggests motives other than value for money.
(e) The decision to go against the PC I and completely exclude lands with a GR less than 5 t/ha is simply inexplicable, more so because it was supported by officials of DoA, including a technical expert, who could not explain the rationale to the MTR.
(f) The rationale for various cost-sharing arrangements adopted or proposed for gypsum has been less than persuasive in terms of equity considerations and the likely impact on outreach (or adoption). The project has been unable, so far, to make a case for cost-sharing on the basis of careful and reasoned quantitative analysis.

100. As indicated earlier, ***the feedback system, particularly the M&E system, has shown limited capacity***. More specifically:

(a) There is no framework for results-based management: the logical framework drafted as the basis for assessing results is a complete non-starter because of its flaws.
(b) As a result of this, there is confusion in the annual reports, where the term "results" is used loosely instead of focusing on outcomes and impact.
(c) Other than input and output reporting, there is no M&E analysis that could have provided a sound basis for discussing course corrections.

4. IMPACT, SUSTAINABILITY AND OVER-ARCHING ISSUES

4.1 Impact on Land and Productivity

101. It is definitive that yields from cropping patterns with the Project are higher than without the Project (see Graphs 1, 2 and 3 and farm budgets in Annex VII). Undoubtedly the economic returns using the Project outputs are significant as compared to those farms that are not using Project outputs. Perhaps this is not surprising because without the land reclamation proposed by the Project the lands would remain barren. For now the magnitude of income change will not be considered, as the data base is flimsy.

102. So far the Project has undergone two agricultural seasons. In both seasons, the cropping pattern was rice-wheat. During the second season the yields were slightly higher. It is postulated by the project team that soils during the third and fourth season will improve so that it will be possible to utilize cropping patterns with leguminous crops to improve the soil further. If so, the potential return from the investments on soil reclamation appear higher than assumed. It is essential to establish the upper limits of the production potential from the investment on land reclamation to determine the full potential effect the Project could have on poverty reduction.

103. Notwithstanding the potential shortage in irrigation water, discussed in section 4.2, there are other externalities in the horizon. These problems are outside the control of farmers and the PIU. The agro-economic study carried out by the Project indicates that farm incomes have been declining since 2004.[29] The prices of farm inputs have been increasing over time, i.e. chemical fertilizers, tube well water, land preparation and others. This is compounded by increases in food expenditure and overall inflation. The study estimates that income has decreased by 8% over 2008 while expenditures have increased by 23% during the same period.

104. The above gloomy picture applies to the agricultural sector of most developing countries due to the continuous price increase of oil. Perhaps the only option available under these circumstances is to strive for a sustainable agriculture using fewer chemical inputs. Choosing alternative cropping patterns with leguminous crops suitable to an arid/semi-arid ecosystem will be helpful to keep soil fertility. Lastly, in the mid- and long-term the introduction of biological knowledge-based technologies, such as plant nutrient management practices (IPNM) and integrated pest management (IPM), are successful options demonstrated by farmers elsewhere in South Asia.

4.2 Other Impacts

105. The potential reverberations of bringing 80 000 ha under cultivation needs to be reviewed by PIU and key stakeholders, as some of these potential impacts are constructive and others harmful. The first possible impact is on markets and prices. Bringing 80 000 ha progressively under cultivation should have an impact on prices and markets at the district level. PIU should review conditions such that prices are not depressed because of a sudden over supply of crops, in particular non-staple crops such fruits and vegetables. To this end it maybe useful to carry out indicative production planning among the 3 DIU in order to avoid an oversupply of produce. If prices fall because of an oversupply of produce, it can negatively affect the second half of the implementation, in terms of poverty reduction effects.

106. The second potential impact is related to the long-term availability of irrigation water for the 3 districts. Table 7 is a preliminary estimate of water balance for the irrigation of the additional 80,000 ha. It suggests that the quantity of water at a farm gate may not be easily available under the

[29] Idem, page 8

prevailing water management conditions. Specifically, column J equals water availability at a farm gate after deducting basic losses like conveyance, seepage and evapo-transpiration. Column K shows the results from cropping pattern simulations conducted in Scenarios 1, 2, and 3. Under all scenarios there is a deficit in irrigation water. If the figures in column K are higher than the figures in column J, it means that either the water available has not been used or is being supplemented through other available resources. Column L is a simple conversion of million acre foot (MAF) to million cubic meters (m^3).

Table 7: Total Water Requirement for the Rehabilitation of 80,000 ha of Salt Affected Land

	Heavy flooding for leaching gypsum (Acres inches)	Rauni (Acre inches)	Other irrigations water requirement (Acre inches)	Total water requirement/acre including water for gypsum leaching (Acres iches)	Area to be rehabilitated (acres)	Total Water requirement (Acre inches)	Total Water Requirement (MAF)	Gross Water Requirement (MAF)	Total Water Availability at Farm Gate (MAF)	Balance (MAF)
Scenario 1										
Low Water Requiring Crops										
Pulses	8	4	6	18	49,420	889,560	0.07413			
Sorghum	8	4	9	21	49,420	1,037,820	0.086485			
High Water Requiring Crops										
Rice	8	4	51	63	49,420	3,113,460	0.259455			
Wheat	8	4	15	27	49,420	1,334,340	0.111195	0.531265	142.44	141.9087
Scenario 2										
	Heavy flooding for leaching gypsum (Acres inches)	Rauni (Acre inches)	Other irrigations water requirement (Acre inches)	Total water requirement/acre including water for gypsum leaching (Acres iches)	Area to be rehabilitated (acres)	Total Water requirement (Acre inches)	Total Water Requirement (MAF)	Gross Water Requirement (MAF)	Total Water Availability at Farm Gate (MAF)	Balance (MAF)
Rice	8	4	51	63	148,260	9,340,380	0.778365	0.88956	142.44	141.5504
Wheat	8	4	15	27	49,420	1,334,340	0.111195			
Scenario 3										
	Heavy flooding for leaching gypsum (Acres inches)	Rauni (Acre inches)	Other irrigations water requirement (Acre inches)	Total water requirement/acre including water for gypsum leaching (Acres iches)	Area to be rehabilitated (acres)	Total Water requirement (Acre inches)	Total Water Requirement (MAF)	Gross Water Requirement (MAF)	Total Water Availability at Farm Gate (MAF)	Balance (MAF)
Rice	8	4	51	63	98,840	6,226,920	0.51891	0.7413	142.44	141.6987
Wheat	8	4	15	27	98,840	2,668,680	0.22239			

Source: PIU, July 2009

107. The following options can therefore be considered:

(a) Increase water availability through enhanced water use efficiency at the main and secondary canals and on-farm levels.
(b) Shift the cropping pattern with low-water consumption and high-value crops, e.g., wheat-rice, wheat-maize, wheat-cotton, pulses-cotton, pulses-rice, pulses-sorghum, vegetables – fruits.

108. In the medium and long term, it may be essential to consider:

- canal lining at main and secondary levels,
- increased on-farm efficiency in water conveyance and application,
- introducing on-farm high efficiency irrigation techniques,
- above all, the farmer will require technical support for advanced agronomic practices applicable to arid and semi arid agriculture

4.3 Sustainability and Replication

109. Every group of beneficiary farmers, including women, with which the Team held a meeting, expressed determination to continue with the interventions introduced by the project. There are also indications, however, that ***resource constraints, marketing and access to technical assistance will affect continuity in the years to come.*** More specifically:

(a) Beneficiaries showed a keen awareness of the methods and benefits of gypsum application. They and their neighbours may continue with this practice after the end of the project, albeit, at a reduced pace.
(b) The set of implements provided by the project is considered useful for various purposes, and SLUGs have worked out a system of user charges. It is not clear, however, that these charges will pay for the replacement of the implements.
(c) Plantations that produce eucalyptus and fruit appear to be reasonably well placed in terms of their sustainability.
(d) There are perhaps too many nurseries for the demand that exists in the project area. Many, if not most, may close down sooner rather than later.
(e) Tube wells have a demonstrable utility in areas where adequate water is not available, and beneficiaries may be expected to maintain them from their own resources as long as this is the case.
(f) Fish ponds face difficulties in maintenance as well as marketing, which few are likely to survive for long.
(g) Kitchen gardens depend on quality seed, which is not widely available. As vegetable growing is a visibly beneficial activity, it may continue in some form even after the end of the project.
(h) Members of SLUGs expressed a desire to sustain these organizations beyond the end of the project because of the benefits of collective management demonstrated by the project. Judging from country-wide experience, this may be a pious hope, although the benefits of gypsum could motivate the beneficiaries to work together as other interventions have not.

110. It is possible that certain elements of this project, for example, cost-sharing, demonstration plots, soil testing, implement pools, fish ponds, kitchen gardens and plantations may be observed in future projects associated with the rehabilitation of salt-affected lands. The key feature of the project, however, is the way it is managed, with flexibility, learning-by-doing, focusing on small farmers and engaging communities as well as technical expertise. ***There is, as yet, no evidence so far that this kind of approach has attracted others in the sector.*** There may be understandable reasons for this, including the fact that the project is implemented very differently from the way government departments are obliged to work.

<u>Network / linkages</u>

111. Women members of WIGs have expressed their desire to link with local organizations involved in micro finance. Despite their heavy work load associated with housekeeping and rearing children, they feel they have about 4 to 6 hours per day where they could get involved in the production of embroidery, stitching children's clothes, and garden vegetables for the market—if they had access to working capital.

112. During the field visits the Team almost always found members of SLUGs motivated to learn improved techniques for agricultural production. Indeed, many farmers shared with the Team their failed attempts to recover salt-affected soils on their own before the Project. These elements are indicative of the demand from beneficiaries for linkages with know-how centres to continue enhancing their agronomic expertise. In addition, given the world wide shortage of fertilizers, pesticides and others, the introduction of biological knowledge-based technologies, such as plant nutrient management practices (IPNM) and integrated pest management (IPM) have enabled farmers in South Asia to increase agricultural productivity without investment on fixed assets. These knowledge-based technologies are pro poor.

5. CONCLUSIONS, LESSON LEARNED AND RECOMMENDATIONS

5.1 Conclusions

113. The Project remains as highly relevant as it was when it was conceived. This is particularly true for its focus on gypsum application for the treatment of salt-affected soils on a large scale. Its interventions for kitchen gardens (for women) and implement pools and, to a lesser extent, for tree nurseries and fish ponds, also remain relevant. The remaining interventions (ICT centres, veterinary aids, financial and non financial services and support for marketing) require specialized resources and approaches that are not provided in the project design.

114. Cost-sharing arrangements across the board have been evolving, with more of an intuitive and subjective understanding than careful quantitative analysis with reference to issues of equity and outreach and the financial implications for the project. The focus on small farmers, while substantial, has been less than emphatic due to a lack of a definition of small farmers and a clearer understanding of their resource constraints. The project's treatment of women, through positive, has been lacking in conviction, clarity and resources.

115. Discussions held during the MTR suggest that the targets set for the project were considered too high in some cases, even at the time of design. The achievement of targets during implementation was further hampered by the following factors:

(a) one year of delays caused by probes and investigations ordered by the DoA;
(b) the DoA's rejection of proposals from the PIU (revolving around gypsum storage) that could have helped achieve targets;
(c) the practice that prevailed for at least a year of taking issues to the PSC instead of resolving them at lower levels;
(d) inordinate delays in bringing the PC I in line with the Project Document, as decided by the PSC in March 2008; and,
(e) the practice, among some in the DoA, of insisting on the application of government rules and regulations rather than the NEX modality agreed by GoPb and UNDP.

116. Under the circumstances, it is difficult to say how progress could have been faster than it has been. The MTR's field visits and discussions with a large number of beneficiaries provide no indication that what the project has reported in terms of goods and services delivered does not exist on the ground. Moreover, the MTR's estimates, even if discounted, suggest high rates of return to gypsum application, tree planting and kitchen gardens. The implement pools have been a successful activity, whereas plant nurseries and fish ponds are riskier ventures with limited appeal. Tube wells have had a favourable impact on farmers in the short run but may not be sustainable in most cases due to the falling water table.

5.2 Lesson Learned

<u>Design and Implementation of Rural Institutions for Pro Poor Development</u>

117. Technological constraints on growth of agricultural productivity have become less binding. This makes the current challenge of how to create viable rural institutions for sustainable farming systems geared for poverty reduction more compelling than ever. There is a demand for adjustments (innovations) to enable institutional frameworks to facilitate the accrual of benefits from technological change to targeted beneficiaries, particularly the poor. For example, the gains of the green revolution

during the 1970s accrued mainly to large landholders with access to credit to invest on fixed assets.[30] These investments on fixed assets (i.e. water efficient irrigation systems, high-yielding varieties of rice/wheat plus fertilizers, etc.). allowed large landholders to realize hefty economic returns from the green revolution. Although the green revolution was technically neutral, small landholders with little or no access to credit due to tenure insecurity could not take economic advantage of the green revolution.

118. Pro-poor agricultural development is based on knowledge-based technologies that require little or no investments on fixed-assets. The early results from the Biosaline II indicate sound potential to become a pro poor technological package that can lead farmers out of the poverty trap. This is illustrated by the bulk of the Project's small landholders, whose farms are situated in saline barren areas, and who have been able to break the vicious circle of poverty by enhancing their productivity through knowledge-based technologies provided by Biosaline II.

119. The lesson learned is that it is possible to enable the process of poverty alleviation through an institutional framework capable of supporting pro poor knowledge-based technologies—in such a way that the enhanced yields can be converted into improved incomes. For sustainability purposes beneficiaries must be made aware of the factors governing the economic exploitation of the technology so that they can successfully adapt to the fluctuations of weather and prices.

5.3 Recommendations

120. The most urgent action that is required now is the long-pending revision of the PC I. Suggestions to this end are provided by the MTR in Annex V. It is important that the revised PC I allow flexibility for changes that become necessary during implementation, as agricultural production is vulnerable to fluctuating prices and weather patterns. Also, in similar community-based projects, for example, targets are explained as indicative targets that may be changed from year to year, based on responses from the community, changing circumstances, feedback from supervision and MTR missions, and other considerations that influence development projects. The PSC could be the forum in which changes in the PC I are approved during implementation, subject to the goal, objectives and overall budget of the project.

121. Relevance:

(a) The project needs to focus on interventions that contributed directly and significantly to the productivity of salt-affected lands. Interventions such as ICT centres, veterinary aids, financial and non financial services and support for marketing can be deleted from the revised PC I. All these require specialized resources and approaches that are not provided in the project design. Due to difficulties in the marketing of saplings and fish, the targets for nurseries and fishponds may be reduced.
(b) The target group of owners of salt-affected land needs to differentiate between small farmers owning, say between 2 ha to 5 ha of land, and other farmers. Cost-sharing arrangements may differ between the two groups in view of the resource constraints of small farmers so as to devote at least 80% of the resources to small farmers.
(c) A stronger focus on women is possible only if a number of productive home-based interventions are added to the project. If feasible options to this end cannot be demonstrated, the women's programme should be closed.
(d) SFRI and SSRI should focus on research and feeding the results of research into the project. Further efforts, including demonstrations, may be undertaken by project staff trained by relevant organizations, including SFRI and SSRI.

[30] Ruttan, V.W. Induced innovation and the green revolution. In: Binswanger & Ruttan, eds. Induced innovation. The John Hopkins University Press, 1978

122. Effectiveness:

(a) Land rehabilitation targets have been severely hampered by a lack of the timely availability of quality gypsum. A sustained supply may be achieved through a system of procuring and storing gypsum in the low demand season for usage in the peak season.
(b) The number of villages should not be fixed or predetermined for each district. The project should have the flexibility to change the number of villages in each district based on the availability of affected land.
(c) Flexibility should be exercised in deciding the number of community organizations required per village, depending upon the existence of degraded land.
(d) In view of the above, within the framework of poverty alleviation, PIU must formally outline a strategy for targeting beneficiaries and area selection as soon as practicable and validate with key stakeholders.
(e) While the SSRI and SFRI should provide timely inputs on soil analysis to keep pace with the implementation imperatives, capacities in DIUs and the devolved SFRI water and soil testing laboratories at the district level may also be utilized to conduct soil, water and gypsum analysis.
(f) Communication and advocacy with the farming community and relevant stakeholders is a prerequisite for community mobilization, networking and dissemination of project extension information. Dedicated resources within the PIU for communications are recommended.

123. Efficiency:

(a) A revised PC I is urgently needed to reconcile differences between the existing PC I and the project document, and to incorporate lessons learned during implementation and the MTR process. The stipulation of targets should be qualified by the need to accommodate learning by doing and changing circumstances during implementation. Moreover, as only 20% of land rehabilitation, which is a key intervention, has been achieved, the project should be extended.
(b) The project needs a much stronger system of feedback, starting with a sound results-based framework that focuses on outcomes and impact and includes a timely empirical (particularly quantitative) analysis of farmer circumstances, project interventions and the need for course corrections. A combination of long term and short term expertise should be engaged at the earliest time for this purpose. The inadequate M&E system under implementation does not warrant the extension of the contract of the M&E specialist.
(c) The involvement of PCC and TRC in decision making should be optimized, and only high level policy issues should be brought to the PSC once or twice a year.
(d) Maintaining continuity in a project management (National Project Manager and District Managers) which is committed and creative is essential for the success of the project.

124. Sustainability:

Economic sustainability

(a) To follow up the large amount of motivation for self help evident among WIGs, consider funding small projects for income generation. To ensure financial sustainability, consider: 1- entering into a partnership with an established micro finance organization, 2- institute a revolving fund with positive interest rates plus administration costs factored into the repayment schedule. This will allow other women to take advantage of these funds.
(b) Small holders of SLUGs lack the time and knowledge to assess markets and marketing arrangements for blending crops with tree production. Consider determining the immediate market opportunities of trees in the project (medicinal, fruits, etc). Subsequently, in demonstration plots show economically profitable blending of trees (fruits, medicinal) with crops/fodder. In the case of tube wells, because of their increased cost leading to more

expensive irrigation water, consider planning with Cos, from the start, cropping patterns with high market value and low water consumption so that the investment is sustainable. Taking into account farmers' management capabilities is a paramount factor in this process.

Natural Resource Sustainability

(a) In the mid- and long-run, the quantity of irrigation water at the farm gate for the three districts may be limited. As a proactive measure, consider the adoption of management measures to enhance water availability. Specifically :
(b) Increase water use efficiency at the main and secondary canals as well as on-farm levels; in particular consider canal lining at main and secondary canals.
(c) In the short- to medium-term, commence with procedures to increase on-farm efficiency in water conveyance and application, especially consider introducing on-farm high efficiency irrigation techniques,

Agronomic sustainability

(a) Consider introducing measures to cope with limited water availability and the world-wide price increase of fertilizers, pesticides, petrol, and others.
(b) In the short-term, commence the shift towards cropping patterns of high market value and low water consumption.
(c) In the mid- and long-term, consider introducing biological knowledge-based technologies, such as plant nutrient management practices (IPNM) and integrated pest management (IPM).
(d) Through the adoption of IPNM it is feasible to enhance soil fertility. By using home grown inputs (i.e. compost, green manure or organic residues) in conjunction with limited amounts of market-purchased chemical fertilizers, farmers in South Asia have increased agricultural productivity in an efficient and environmentally friendly manner without diminishing the long term productive capacity of soils.
(e) In addition, through the adoption of IPM practices, it is feasible to reduce the number of pesticide applications, thereby minimizing the cost of crop production and increasing the profit margin of crops.

Annex I:
Terms of Reference of the MTR

Background

The Community Development Project for Rehabilitation of Salt Affected and Waterlogged Lands - Biosaline-II (to be referred to as the project henceforth) is co-funded by UNDP and Government of Punjab (GoP). The second phase of the project started its operation in October 2006. It is a Nationally Executed (NEX) project, and its implementing partner is Agriculture Department, Government of the Punjab.

The project's goal is to contribute to poverty reduction through increased farm incomes. The project outcome is to increase land productivity and agriculture production through the rehabilitation of 80,000 hectares of saline and waterlogged land. Major activities include the land rehabilitation through application of chemical amendments (especially gypsum), installation of tube wells, plantation of salt resistant trees etc. as well as small income generation through livestock improvement and nursery farming. The project's target area consists of three districts of Punjab namely Jhang, Hafizabad and Sargodha.

The key project outputs are:

1. Around 6,500 households organized in more than 458 community organizations
2. Approximately 16,000 hectares of affected land rehabilitated
3. 6,500 households reported an average PKR 3,000 increase in their monthly incomes

The first phase of the project was implemented by IWASRI[31]. The provincial department decided that the second phase be led by the Agriculture Department. The PC-I thus developed in 2004 was an ambitious one with sizeable injection of human resources within the project. During this time the Atomic Energy Commission expressed its interest and lead in the project, while the Planning Commission raised concerns on the effective utilization of Government monies by UNDP who was the management agent for this project. Thus in 2006, the UNDP project document optimized human resources to deliver the results of the project.

The project has been under implementation for two years. During this time the project has witnessed two changes in the National Project Director (NPD) which has affected its implementation. Host of issues have been raised that question the differences between the PC I and the project document as well as the validity of the PC I that was written in 2004 and implemented in 2007.

The Mid-Term Review will review the progress of the project as of May 2009, as well as identify issues and recommend course corrections. The review is being undertaken at the mid of project implementation and will pave the way for improved project delivery for the remaining project duration and propose amendments, (if any) required in project design, implementation and/or institutional linkages and anchorage in order to contribute to the creation of sustained farming systems for rehabilitation of degraded lands.

[31] International Waterlogging and Salinity Research Institute, Lahore

Objectives of the Review Mission

The mid-term project Review will analyse project progress against stated outputs. The Mission will also highlight issues and challenges affecting effective and efficient implementation of outputs and their contribution to project outcomes and impact and recommend course corrections.

Key Focus Areas

The mission should assess:

Relevance

i. Analyse whether the project's community based approach addresses the needs and demands of the beneficiaries
ii. Assess the relevance of the tools / instruments / inputs applied by the project for land rehabilitation including the technical input.
iii. Analyse the response of the communities to the project and identify any redundant activities/ outputs.
iv. Assess the relevance of technical assistance and CMST[32] given to the member farmers.

Effectiveness

v. Review whether the project has accomplished its outputs. In particular the mission should review:
    a. Area selection criteria and its implementation
    b. Targeting strategy for the farmer identification and its application
    c. Project's cost-effectiveness
    d. As well as any emerging effect of the project on beneficiaries. These may include aspects on household Income generation especially from rehabilitation and income diversification, and contribution of project interventions to food security.
vi. The performance of the Project so far with particular reference to qualitative and quantitative achievements of outputs and targets as defined in the project documents and work-plans;
vii. The contribution of the projects towards the achievement of national objectives and CPAP[33] goals vis-à-vis creation of assets;

Efficiency

viii. Assess how the project has utilized the project funding to achieve results.
ix. Analyse whether the project management has utilized the different approval foras for timely decision making. In this regard also review the soundness of the decisions taken with respect to:
    a. Reported deviations from the PC-I (in particular reduction in staff strength, increase in implement pools, salary structures etc.)
    b. Provision of up to 40 free gypsum bags
    c. Transfer of funds to village organizations/community organizations
    d. Prequalification process adopted by the project
    e. Decision of PSC to cap the farmer share as of 2004
    f. Change of policy in providing gypsum to the farmers on 50:50 basis and excluding the farmers having GR[34] less than 40 bag/acre

[32] Community Management Skills Training
[33] Country Programme Action Plan (UNDP)

x. Analyse the role of the project coordination committee (PCC), Technical Research Committee (TRC) and the project steering committee (PSC) and whether these foras are optimally being used for decision making.

xi. Assess the timeline and quality of the reporting followed by the project

xii. Assess the efficiency of mechanism for transfer of funds to the communities.

xiii. The qualitative and quantitative aspects of management and other inputs (such as equipment, monitoring and review and other technical assistance and budgetary inputs) provided by the projects vis-à-vis achievement of outputs and targets;

xiv. Identify factors and constraints which have affected project implementation including technical, managerial, organizational, institutional and socio-economic policy issues in addition to other external factors unforeseen during the design

Sustainability

xv. Assess preliminary indications of the degree to which the project results are likely to be sustainable beyond the project's lifetime (both at the community and government level), and provide recommendations for strengthening sustainability.

xvi. Assess the sustainability of the project interventions in terms of their effect on environment

xvii. The appropriateness of the research institutions as well as implementation strategies adopted by the project. In this regard analyse issues on the perceived and actual role of the SSRI[35] and SFRI[36] in project implementation.

xviii. Indicate if the reproduction/replication of the project or service methodology elsewhere is feasible;

Network /linkages

xix. The level, degree and representation by the beneficiaries and stakeholders, (government and donor partners etc.) in the implementation of the project (with particular attention to the development, testing of community based approaches towards land rehabilitation and income diversification, especially for women and accessing technical assistance inputs outside the project);

xx. Any linkages formed as a result of project activities which further advanced project objectives or conversely, any missed opportunities which would have significantly enhanced achievement of objectives/targets;

xxi. Project's knowledge management strategy and outreach and communications to all stakeholders.

Lessons learnt

xxii. Analyse areas for improved programme planning, especially with respect to setting targets, relevance and capacity of institutions for project decision making and delivery.

xxiii. Significant lessons learnt that can be drawn from the experience of the project and its results and impact on beneficiaries;

xxiv. Identify lessons learned and recommendations for adjustments in project strategies, implementation approaches and management structures to improve project implementation and its impact, even after donor intervention has ended;

[34] Gypsum Requirements
[35] Soil Salinity Research Institute
[36] Soil Fertility Research Institute

Outputs

The Mission's findings and recommendations will be thoroughly discussed with the UNDP, Government of the Punjab (GoPb), Project Partners, project management, donors and the Economic Affairs Division (EAD).

The Mission will complete and submit a draft final report in both hard and soft copy at the end of the mission. The Mission Leader will finalize the report in the light of comments/suggestions of stakeholders. The key outputs of the Review are:

1) Draft Report Template: Submission of a draft report format containing Table of Contents for final report for approval by UNDP.
2) An Aide-Memoire (Executive Summary and Key findings) and Presentation:
   The consultants will present the key findings and executive summary of the report to the project stakeholders (UNDP, GoPb, EAD and Bio Saline) in a consultative workshop.
3) Mid-Term Review report: The final Review report should be logically structured, contain evidence-based findings, conclusions, lessons and recommendations, and should be free of information that is not relevant to the overall analysis. The report should respond in detail to the key focus areas described above. A set of specific recommendations formulated for the project; and, identify the necessary actions required to be undertaken, who should undertake those and possible time-lines (if any);
4) A brief paper documenting changes if any to be made to the PC I as well as UNDP's Project Document. This may be annexed to the Mid Term Review Report
5) Presentation: For presenting and discussing the draft final report interactively, the consultants will facilitate a one-day concluding workshop in Islamabad for the project stakeholders.

Background Documents

- Project Document
- Project PC -1
- Project Annual Progress Reports
- Evaluation Report (Jhang and Sargodha) – conducted by Agriculture Sector Programme Loan (ASPL II)
- Project Response to Evaluation Report by ASPL II
- Minutes of the Steering Committee Meetings
- Minutes of the Project Coordination Committees
- Minutes of the Committee chaired by Secretary Planning and Development Department, Punjab.
- Communication to UNDP by the Bio Saline II (Second NPD)
- UNDP Response to the NPD and EAD

Consultants

A team of consultants; one with at least fifteen years of experience in livelihoods and Agriculture sector issues and the others with at least ten years of expertise in community based livelihoods initiatives.

Methodology

The mission will adopt a consultative and participative approach. This will include field visits to project sites and meetings with communities / project direct beneficiaries in the three project districts namely Jhang, Hafizabad and Sargodha to collect first hand information[37]. The mission will also meet with the Project team, relevant government agencies / partners at federal, provincial and district level, if need be, the mission may also meet other agencies / projects engaged in similar interventions. The MTR will start with a meeting at UNDP Country Office and will conclude on a debriefing workshop with UNDP and other project partners.

[37] The consultants will discuss and finalize the data collection tools and success indicators in consultation with UNDP.

Annex II:
List of Persons Met

ISLAMABAD			
S. No	**Name**	**Organization and Designation**	**Purpose**
1	Ms. Faiza Effendi	UNDP, ARR, Islamabad	Orientation on ToRs
2	Mr. Shakeel Ahmad	UNDP, ARR, Islamabad	Unpacking of ToRs
3	Mr. M. Anwar Sheikh	Deputy Secretary, Economic Affair Division, Govt of Pakistan, Islamabad	Views about the project
4	Dr. Zahoor Ahmad	Project Director, NAPSAB,MINFA, Govt of Pakistan, Islamabad	Views about the project and salinity in Pakistan
5	Dr. Qadir Bakhsh Baluch	ADC,MINFA, Govt of Pakistan, Islamabad	Views about the project and salinity in Pakistan
LAHORE			
6	Mr. Sami Saeed	Chairman, P&D Board, Govt of Punjab	Presentation on Aide-memoire of MTR Mission
7	Mr. Arif Nadeem	National Project Director/Secretary Agri. , PD PMU,ASPL-II and Chief P & E Cell at the office of NPD, Lahore	Performance and implementation strategy of the project
8	Mr. Rab Nawaz Khan	Secretary P & D Deptt. Govt of Punjab, Lahore	Strategic approach of the project
9	Mr. Najaf Sayyed	National Project Manager, Biosaline II	Refinement of methodology and planning for field visit
10	Ms. Bushra Khanum	Social Organiser and Gender Dev. Specialist PIU, Lahore	Progress of the project
11	Dr. Khalid Gill	NRM Specialist, PIU	Technical issues about the project
12	Mr. Faisal Shehzad	HRD Associate	HRD Plan
13	Mr. Awais Gilani	GIS/MIS Assistant	
14	Dr. Shahid Mahmood	Director SFRI, Lahore	Role of SFRI and Biosaline project

FIELD VISIT TO DISTRICT IMPLEMENTATION UNITS IN THREE DISTRICTS			
District Implementation Unit at Pindi Bhattian, Hafizabad			
15	Mr. Ali Hassan Shah	District Manager, DIU, Hafizabad	Progress and issue of the project/baseline survey
16	Mr. Muhammad Naeem Awan	SO, DIU, Hafizabad	Village Selection Criteria/Poverty targeting strategy
17	Ms. Aneeqa Maqbool	FSO, DIU, Hafizabad	WIGS, CMST module
18	Mr. Ishrat Manzoor	HRDA, DIU, Hafizabad	HRD Plan/ Need assessment Study/training modules
19	Ms. Shahana Khan	M&E Specialist DIU, Hafizabad	M&E Systems for the DIU/Project
20	Dr. Iqrara Hussain	Senior oil Chemist, DIU Hafizabad.	GR, IP, Plantation Technical survey
21	Mr. Muhammad Shafi	Asst. Agri. Officer, DIU, Hafizabad	CMST, Technical assistant
22	Mr. Munnawar Mehdi	Director SSRI, Pindi Battian	Role of SSRI and bio saline project
23	Mr. Muhammad Ajmal Javed	GIS Specialist, SSRI/DIU, Pindi Battian	Mapping of soils at SSRI/DIU
Field Visit to SLUGS in Sharbaga Village			
24	Mr. Tariq Usman	President CO, Haryali, Shar Baga, Pindi Battian	GR, IP, Plantation and other project interventions
27	Mr. Tassawar Hussain	Secretary, CO, Haryali Shar Baga, Pindi Battian	GR, IP, Plantation and other project interventions
28	Mr. Umar Draz32 Member of CO	SLUG Members, Haryali Shar Baga, Pindi Battian	MSC Technique and discussion on project benefits
Field Visit to SLUGS in Boteyka Village			
29	Mr. Mohabat Khan	President CO, Mehak, Boteyka, Pindi Battian	GR, IP, Plantation and other project interventions
30	Mr. Azam Ali Sabir	Secretary, CO, Mehak, Boteyka , Pindi Battian	GR, IP, Plantation and other project interventions
31	Mr. Mohabat Khan and 37 Members of CO	SLUG Members, Mehak, Boteyka , Pindi Battian	MSC Technique and discussion on project benefits
District Implementation Unit, Sargodha			
32	Mr. Faisal Fareed	District Manager, DIU	Progress and issue of the project/ baseline survey
33	Mr. Adeel Ashraf	SO, DIU,	Village Selection Criteria/Poverty targeting strategy
34	Ms. Saira Sahar	FSO, DIU,	Information about WIGs

35	Mr. Asim Hanif	HRDA, DIU,	HRD Plan/ Need assessment Study
36	Mr. Suhail Awan Malik	M&E Specialist DIU,	M&E Tools and Follow up
37	Mr. Ibrahim Hanif	Asst. Agri. Officer, DIU,	GR, and other technical issues
Field Visit to SLUGS in Village Muazzamabad, Sargodha			
38	Mr. Zulfiqar	President Zamindara SLUG,	GR, IP, Plantation and other project interventions
39	Mr. Muhammad Nazir	Secretary, Zamindara SLUG,	GR, IP, Plantation and other project interventions
40	Mr. Zulfikar and 32 Members of CO	SLUG Members,	MSC Technique and discussion on project benefits
Field Visit to SLUG in Village in Anjala, Sargodha			
41	Mr. Ahmad Yar	President Khushali SLUG,	GR, IP, Plantation and other project interventions
42	Mr. Aslam	Secretary, CO,	GR, IP, Plantation and other project interventions
43	Mr. Ahmad Yar and 32 members of SLUG	SLUG Members,	MSC Technique and discussion on project benefits
Field Visit to SLUG in Village in Salam, Bhalwal.			
44	Mr. Sultan Ahmad	President Khushali SLUG,	GR, IP, Plantation and other project interventions
45	Mr. Muhammad Khan	Secretary, Khushali, SLUG	Benefits of projects
46	Mr. Members of SLUG		
Field Visit to WIG in Village in Dainu Kathian, Salam, Bhalwal			
47	Ms. Sughra Bibi	President, WIG, Dainu Kathian,	Discussion on project benefits/Kitchen gardens
48	Ms. Kausar Parween	Secretary, WIG, Dainu Kathian	Discussion on project benefits/Kitchen gardens
49	18 members of WIG	WIGs Members,	Discussion on project benefits/Kitchen gardens
District Implementation Unit, Jhang			
50	Mr. Faisal Farid (Additional Charge) Mr. Masood Anwar (Designate)	District Manager, DIU	Progress and issue of the project/baseline survey
51	Ms. Shehzad Farid, Mian Ahsan Raza	SO, DIU,	Village Selection Criteria/Poverty targeting strategy

52	Ms. Zahida Manzoor Ms. Sidra Ashraf	FSO, DIU,	WIGS/benefits from kitchen gardens
54	Mr. Asim Hanif	HRDA, DIU,	HRD Plan/ Need assessment Study
55	Mr. Shahid Imran Khan	M&E Specialist DIU,	M&E Tools and Follow up
56	Dr. Javed Khalid	Senior Soil Chemist, DIU	GR, and technical survey
57	Mr. Umar Farooq	Asst. Agri. Officer, DIU,	GR, and other technical issues
Field Visit to SLUGS in Village Reirh, Jhang			
58	Mr. M. Asraf and 50 Member of CO	Secretary, CO, Sabz Inqilab, Reirh	GR, IP, Plantation and other project interventions
Field Visit to SLUGS in Village Uch-Gul Imam Jhang			
59	Mr. Muhammad Tahir	President SLUG	GR, IP, Plantation and other project interventions
60	Mr. Manzar Abbas	Secretary, CO,	Project benefits
61	Member of CO	SLUG Members,	MSC Technique and discussion on project benefits
Field Visit to WIGS in Village Reirh			
62	Ms. Taslim Akhter	President CO,/WIG	GR, IP, Plantation and other project interventions
63	Ms. Hamida Mai and 17 SLUG Members	Secretary, CO,/WIG	GR, IP, Plantation and other project interventions

Annex III:
List of References

SNO	Name of the Document
1	Project Document
2	Project PC -1
3	Project Annual Progress Reports(2006,2007 and 2008)
4	Evaluation Report (Jhang and Sargodha) – conducted by Agriculture Sector Programme Loan (ASPL II)
5	Project Response to Evaluation Report by ASPL II
6	Minutes of the Steering Committee Meetings
7	Minutes of the Project Coordination Committees
8	Minutes of the Committee chaired by Secretary Planning and Development Department, Punjab.
9	Communication to UNDP by the Bio Saline II (Second NPD)
10	UNDP Response to the NPD and EAD
11	Baseline survey for district Jhang
12	Baseline survey for district Hafizabad
13	Baseline survey for district Sargodha
14	The Effect of Inflation on the Purchasing Power of Communities in Three Districts of Punjab (From 2004 to date)
15	Case studies prepared by DIU Sargodha
16	Monitoring Mechanism/System of the Biosaline project
17	Baseline information survey by Semiotics
18	CMST Module of the Bio saline –II
19	Proceeding Registers of the SLUGs and WIGs
20	Information related to soil analysis prepared by SSRI and SFRI.
21	HRD Plan of Biosaline- II project
22	Extension material on land rehabilitation prepared by SSRI

	Extension material on land rehabilitation prepared by SSRI,NARC and NIAB, Agriculture (Research) Government of Punjab.
I	Technology for growing trees in salt affected lands by Ch .Ghulam Hussain, Dr, Shahzada Munnawar Mehdi, Sh M. Sadiq and M. Sarfaraz, SSRI, Pindi Bhattian, Department of Agriculture(Research) Govt. of Punjab, Lahore
II	Commercial farming in salt affected lands by Dr, Shahzada Munnawar Mehdi, Ch .Ghulam Hussain, Sh M. Sadiq and M. Sarfaraz, Wasim Hassan SSRI, Pindi Bhattian, Department of Agriculture(Research) Govt. of Punjab, Lahore and Department of Research Information, NIAB, Faisalabad
III	Rice and Wheat crops in salt affected lands by Ch .Ghulam Hussain, Dr, Shahzada Munnawar Mehdi, Sh M. Sadiq and M. Sarfaraz, SSRI, Pindi Bhattian Department of Agriculture(Research) Govt. of Punjab,Lahore
IV	Recommended dozes of fertilisers for rice and wheat in salt affected lands by Ch .Ghulam Hussain, Dr, Shahzada Munnawar Mehdi, Sh M. Sadiq and M. Sarfaraz, Ghulam Abbas and Wasim Hassan, SSRI, Pindi Bhattian

	Department of Agriculture GoPb,Lahore Pakistan Agricultural Research Council, Islamabad.
V	Recommended dozes of fertilizers for rice and wheat in rehabilitated lands Dr, Shahzada Munnawar Mehdi, Ch .Ghulam Hussain, Sh M. Sadiq and M. Sarfaraz, SSRI, Pindi Bhattian Department of Agriculture GoPb, Pakistan Agricultural Research Council, Islamabad
VI	Commercial use of salt affected lands for cotton, by Sheikh Muhammad Sadiq, M, Jamil,Ghulam Abbas Dr, Shahzada Munnawar Mehdi, Mahmoodul Hassan, SSRI, Pindi Bhattian Department of Agriculture GoPb.
VII	Scientific Methods of farming for salt affected lands by Dr. Shahzada Munnawar Mehdi, Sh M. Sadiq and M. Sarfaraz, Ghulam Abbas and Wasim Hassan, SSRI, Pindi Bhattian, Department of Agriculture GoPb, Pakistan Agricultural Research Council, Islamabad

Annex IV:
Supporting Documents Related to Major Decisions and Events during Implementation

List of Documents

Appendix 1: Findings of the Probe into Purchase of Gypsum in Sargodha District under Bio-Saline II
Appendix 2: Response by District Manager, Sargodha, to Allegations against Him
Appendix 3: Response by NPM to Allegations against Him
Appendix 4: Response by UNDP to Allegations against NPM

Appendix 1:

Findings of the Probe into Purchase of Gypsum in Sargodha District under Bio-Saline II

1) Determining gypsum requirement (GR)

1. Area selected fro treatment with gypsum is generally cultivated. The share of normal to marginal cultivated lands in the selected areas varies from 70% to 80%.
2. There is huge gape between the area from where soil samples were drawn for determining GR and finally selected fro treatment with Gypsum. The later is less than 40% of the former.
3. The gypsum has been provided fro the land having GR over less than 20 bags per acre.
4. Major part of treated area belongs to large farmers (70% to 80%)
5. Variation in GR worked out by SSRI&GR conveyed to farmers is several cases were observed.
6. Gypsum was provided in several cases on the basis of GR worked out by S&W Testing Lab Sargodha.
7. Proper procedure for sampling from patchy salt affected lands has not been adopted.

2) Cost sharing arrangement

1. Information level of COs member regarding amount contributed by then and share of the project in the purchase of gypsum and purchase price was poor.
2. As the major part of the treated area is cultivated, hence, farmer contribution in kind (land levelling, cultivation, bund making and irrigation etc.) is negligible. Against the approved cost sharing 23:77 of the project and farmers actual contribution of farmer in the shape of gypsum is less than 20 percent in the shape of his share in gypsum.
3. Increase in cost of gypsum after collecting farmer's share is being paid by the project on the direction of P.M.

3) Purchase of Gypsum and its quality analysis

1. Procurement of gypsum is generally being made by DIU on behalf of COs. from non pre-qualified vendors. Involvement of COs in purchase gypsum is almost absent. Payment to vendors is being made through DIU.
2. Entire supply of gypsum was reported coming from Quaidabad and Khewra.
3. Analysis of quality of gypsum was mostly done at DIU level but its results are not conveyed to the concerned COs Field Units.
4. Farmers are not aware from results of quality analysis of the gypsum.
5. Substandard gypsum was rejected on the basis of physical inspection/ visual observation rather than quality analysis. It was reported that gypsum rejected by one Field Unit was transferred to other Field Unit.

6. Analysis of the Gypsum samples (103) taken during the Evaluation exercise reveals that around 60% samples were below the approved purity level of 70%.
7. Use of old bags and under weight were reported in several cases.
8. Generally farmers showed their satisfaction over quality of gypsum and no complaint about Gypsum quality was reported by them. However, the view point of farmers is no substantiated with the analysis results of gypsum samples drawn during the field visits.

4) Application of Gypsum

1. Gypsum is not applied at proper time. Main application of gypsum is before wheat crop without proper treating the affected land.
2. Cheisling an essential activity for treatment of salt affected lands with gypsum is almost absent (less than 10%).
3. Gypsum is being applied on waterlogged salt affected lands for which it is not a suitable intervention. Gypsum application was found even in severally waterlogged lands having standing water.
4. In several cases gypsum was applied even without proper levelling of field. On such fields application of water for leaching down the salts is not possible.
5. Full does of gypsum was applied at light textured soils against recommended level of 25-50% of GR.
6. Free of cost provision of gypsum up to 40 bag has resulted in its wastage i.e. use on waterlogged soils and long storage.
7. Change in area for application of gypsum at farmer's level is common practice.
8. Long storage of gypsum (more than six months) was observed in several cases. Gypsum applied during July 2008 is yet to be applied.
9. In several cases, Gypsum is applied on more or less area than area for which it was provided.
10. Encouraging results of gypsum application on cultivated land were reported by the farmers (even much higher than technically can be). Results on newly treated barren lands are not visible clear and yet to be established.
11. Patchy land to be treated under the project has not been defined properly. The land having patchy area even less than 1% has been treated with the gypsum.
12. Proper procedure for application of gypsum on patchy salt affected was not adopted.
13. Gypsum is being applied on land on which "Kalar Mar Grass" is already sown.

5) Other Observations

1. No signboards have been erected on the Demo plots; hence, these cannot create desired demonstration effect. Most of the members of COs are not aware from the Demo-plots.
2. Formation of more than one CO in one village and inclusion of farmers of other villages in COs was observed in several cases.
3. It appeared that project interventions are not being physically monitored in the field by the project staff.
4. Poor record keeping at CO level was observed. Counterfoils of chequebooks were found blank. Moreover, record regarding purchase and distribution of gypsum was not available at CO level.
5. Date regarding dates on which soil samples were drawn, analysis reports of soil samples were received, gypsum was provided and applied in the fields was not available with COs (particularly in Sahiwal Tehsil).
6. In case of absentee landlords it was observed that proper procedure is not being adapted for treatment of affected lands through gypsum application.
7. No maximum limit has been fixed for area to be rehabilitated of a single owner. In several cases gypsum was provided to big land owners from more than 100 acres.
8. A single unit of land owned by different family members and being managed by single person has been shown separately against all shareholders.
9. In several cases gypsum was provided to lessee rather than owner of the land.

10. The progress of area rehabilitated through application of gypsum can not be given due to its application on cultivated and water logged land, absence of chiselling and proper irrigation for treatment of land. Only the progress regarding area treated with gypsum can be given.

Appendix 2: Response by District Manager, Sargodha, to Allegations against Him

"Findings of the probe into the purchase of gypsum in Sargodha district under Bio-saline-II" is referred to as justification by the NPD for not recommending my Service Contract.

Para-wise comments on the above report are as follows:

(1) DETERMINING GYPSUM REQUIREMENT (GR)			
1	Area selected for treatment with gypsum is generally cultivated. The share of normal to marginal cultivated lands in the selected area varies from 70% to 80%.	1	The samples were taken from the salt affected lands by the technical staff of the project and got analyzed from SSRI. The gypsum was provided to the farmers on the basis of GR determined by SSRI. According to an exercise conducted by field units; about 70% of the land rehabilitated through gypsum application was either highly affected or severally affected.
2	There is huge gap between the area from where soil samples were drawn for determining GR and finally selected for treatment with Gypsum. The later is less than 40% of the farmer.	2	Not true. The Gypsum was provided to the farmers for the acres from where samples were collected.
3	The Gypsum has been provided for the land having GR over less than 20 bags per acre.	3	What makes the point? It is stated in the PC-1 that the gypsum less than 40 bags can be provided to the farmers and the same endorsed by NPD in his meeting dated 20-12-2008.
4	Major part of treated area belongs to large farmers (70-80%)	4	Not true. The things are otherwise. Almost 80% of the beneficiaries are small to medium and holders.
5	Variation in GR worked out by SSRI&GR conveyed to farmers in several cases was observed.	5	Not true. The farmers were conveyed about the GR of each acre by the project field staff according to the results received form the SSRI.
6	Gypsum was provided in several cases on the basis of GR worked out by S&W Testing Lab Sargodha.	6	There are not several cases rather about 150 samples only out of approximately 16000 results. Moreover, it is a Government Institute and also ISO certified.
7	Proper procedure for sampling from patchy salt affected lands has not been adopted.	7	Not true. Proper procedure was followed in case of sampling of each acre of land by the technical staff.
(2) COST SHARING ARRANGEMENT			
1	Information level of COs member regarding amount contributed by them and share of the project in the purchase of Gypsum and purchase was poor.	1	Not true. Every member who deposited his share into the account knows very well about his share as well as the benefits he/she got from the project.
2	As the major part of the treated area is cultivated, hence, farmer contribution in kind (land levelling, cultivation bund	2	Absurd comments. Every time a farmer grows a crop he has to make his contribution in kind (Land Levelling,

	making and irrigation etc.) is negligible. Against the approved cost sharing 23:77 of the project and farmers actual contribution of farmer in the shape of gypsum is less than 20 percent in the shape of his share in Gypsum.		Cultivation, Inputs, Irrigation etc.)
3	Increase in cost of Gypsum after collecting farmer's share is being paid by the project on the direction of P.M.	3	True. There was a written permission from the Project Management and National Project Director.
(3)	**PURCHASE OF GYPSUM AND ITS QUALITY ANALYSIS**		
1	Procurement of Gypsum is generally being made by DIU on behalf of CI from non pre-qualified vendors. Involvement of COs in purchase of gypsum is almost absent. Payment to vendors is being made through DIU.	1	Gypsum is purchased by the COs and payment is being made to the vendors by the COs themselves through crossed cheques. Copies of all cheques were provided to the probing teams.
2	Entire supply of gypsum was reported coming from Quaidabad and Khewra.	2	True. Gypsum was purchased from Quaidabad and Khewara by the COs themselves because of less transportation cost as compared to other sources such as Taunsa and Kohat. It is however pertinent to mention here that the source of the gypsum stone crushed by the vendors was from Daud-Khail mines.
3	Analysis of quality of gypsum was mostly done at DIU level but its results are not conveyed to the concerned COs of Field Units.	3	The quality of Gypsum was checked by the technical staff of the project in the lab at DIU and results were communicated to the Field Units.
4	Farmers are not aware of results of quality analysis of the gypsum.	4	Refer to para 8 of the report.
5	Sub-standard gypsum was rejected on the basis of physical inspection/ visual observation rather than quality analysis. It was reported that Gypsum rejected by one Field Unit was transferred to other Field Unit.	5	Not true. Absurd Comments. If the Gypsum was to be delivered to other FU, then why it rejected at first place?
6	Analysis of the Gypsum samples (103) taken during the Evaluation exercise reveals that around 63% samples were below the approved purity level of 70% (Report at Annexure-A)	6	The results of the Gypsum analysis by the SSRI are not reliable as the institution is part of the Agriculture Department who is party to this probe. Moreover, it is also worth-mentioning that the soil analyses conducted by the SSRI are extremely unreliable. There are many instances which can be quoted in this regard.
7	Use of old bags and underweight were reported in several cases	7	Not true. Refer to para 8.
8	Generally farmers showed their satisfaction over quality of gypsum and no complaint about Gypsum quality was reported by them. However, the view point of farmers is no substantiated with the analysis of results of gypsum samples drawn during the field visits.	8	True. Farmers were satisfied with quality of the gypsum. It is also pertinent that the end-users (farmers) are highly satisfied with the quality of the gypsum whereas the probing teams wanted to malign the efforts of the project by putting their conviction of the unreliable test results.

(4)	**APPLICATION OF GYPSUM**		
1	Gypsum is not applied at proper time. Main application of gypsum is before wheat crop without proper treating the affected land.	1	Related to technical staff of PIU. However, it is pertinent to mention that SSRI established 8 Wheat Demonstration plots to be followed by the farmers.
2	Cheisling an essential activity for treatment of salt affected lands with gypsum is almost absent (less than 10%)	2	Related to technical staff of PIU.
3	Gypsum is being applied on waterlogged salt affected lands for which it is not a suitable intervention. Gypsum application was found even in severally waterlogged lands having standing water.	3	Not true. The observation for the evaluation team is based upon the very fact that during the evaluation there were two or three heavy rains and they presumed that the area was waterlogged. Again related to the technical staff of PIU. Anyhow, why the farmers would do so?
4	In several cases gypsum was applied even without proper levelling of field. On such field application of water for leaching down the salts is not possible.	4	Not true. Gypsum was applied by the farmers after proper levelling, because it was prerequisite for the rehabilitation of the land and farmers know this fact very well
5	Full dose of gypsum was applied at light textured soil against recommended level of 25% of GR.	5	Related to technical staff of PIU.
6	Free of cost provision of gypsum up to 40 bag has resulted in its wastage i.e. use on waterlogged soils and long storage.	6	Not true. It was a farmer friendly policy. Especially the poor farmers benefited a lot.
7	Change in area for application of gypsum sat farmer level is common practice.	7	There were a few instances on the part of farmers but it was not all a common practice.
8	Long storage of gypsum (more than six months) was observed in several cases. Gypsum supplied during July 2008 is yet to apply.	8	Not true. “Long storage” is very subjective term.
9	In several cases, Gypsum is applied on more or less area than area for which it was provided.	9	Not true. No such instance was reported by the staff.
10	Encouraging results of gypsum application of cultivated land were reported by the farmers (level much higher than technically can be). Results on newly treated barren lands are not clearly visible and yet to establish.	10	The results of the gypsum application were very encouraging as reported by the farmers but the probing team also took this phenomenon with grain of salt. This shown the lack of understanding of the teams who could not appreciate the germination of the crops on hither to barren lands.
11	Patchy land to be treated under the project has not been defined properly. The land having patchy area even less than 1% has been treated with the gypsum.	11	Related to the technical staff of PIU
12	Proper procedure for application of gypsum on patchy salt affected was not adopted.	12	Related to the technical staff of PIU
13	Gypsum is being applied on land on which “Kala Mar Grass” is already sown.	13	The farmer would definitely prefer crop over grasses for better economic return.
(5)	**OTHER OBSERVATIONS**		
1	No signboards have been erected on the Demo-plots; hence, these could not create demonstration effect. Most of the members	1	Related to SSRI. Strange enough that the task of SSRI is also being reporting as irregularity of District Manager.

	of COs are not aware of the Demo-plots.		
2	Formation of more than one CO in one village and inclusion of farmers of other village in COs was observed in several cases.	2	There are only 4 villages where there is more than one CO out of 92 villages. This was due to demand of social staff on the basis of large areas of the villages.
3	It appeared that project interventions are not being physically monitored in the field by the project staff.	3	Not true. All the interventions are monitored by the staff.
4	Poor recordkeeping at CO level was observed. Counterfoils of chequebooks were found blank, moreover, record regarding purchase and distribution of gypsum was not available at CO level.	4	Record regarding purchase and distribution of the gypsum is available with the COs.
5	Data regarding dates on which soil samples were drawn, analysis reports of soil samples were received, gypsum was provided and applied in the fields was not available with COs (particularly in Sahiwal Tehsil)	5	A lame comment. This has nothing to do with the practical side of the project.
6	In case of absentee landlords it was observed that proper procedure is not being adopted for treatment of affected lands through gypsum application.	6	Incomprehensible comment.
7	No maximum limit has been fixed for area to be rehabilitated of a single owner. In several cases gypsum was provided to big land owners for more than 100 acres.	7	PC-1 places no Burdon on land ownership as far as rehabilitation is concerned there might be 3 to 4 farmers in the whole district who would have been provided gypsum for more than 100 acres.
8	A single unit of land owned by different family members and being managed by single person has been shown separately against all shareholders.	8	What is the issue? The main objective was to rehabilitate the affected land of each household.
9	In several cases gypsum was provided to lessee rather than owner of the land.	9	It is nowhere written in PC-1 that the gypsum would be provided to owners or the lessees. However there are no such several cases.
10	The progress of area rehabilitated through application of gypsum cannot be given due to its application on cultivated and waterlogged land, absence of chiseling and proper irrigation for treatment of land. Only the progress regarding area treated with gypsum can be given.	10	The progress shown under land rehabilitation surely includes work done on all categories of affected land as provided on page 26 of PC-1.

The District Manager is responsible for overall management of the district. The report does not say a single word on management role of District Manager rather it emphasizes on social and technical aspects of the project that are specifically the roles of technical and social staff which is based at DIU and PIU. It would have been much better if NPD had commented on my management capacities, initiatives, project management skills etc. rather than blaming the District Manager for everything, it might be right or wrong. Moreover, none of the above observations/allegations is the responsibility of the District Manager according to the TORs specified by UNDP for the post.

As per the above discussion and a meeting held under the Chairmanship of Secretary P&D in which all above “accusations” levelled by PMU, ASPL-II and kind of endorsed by NPD has categorically

termed baseless. It is requested that my PAR done by NPM may be taken into consideration for extension of the contract.

This is my quick and short reply to the comments of NPD and PMU, ASPL-II. I reserve the right to submit my detailed response to this if required.

(FAISAL FAREED)
District Manager
Bio-saline, Sargodha

Appendix 3: Response by NPM to Allegations against Him

During September 2008 to April 2009, numerous objections were raised by various committees formed by ex-Secretary Agriculture. These issues/objections have been discussed hereunder for better understanding of the project and its implementation.

1. Recruitment of Project Staff:

It was objected that the recruitment to the project have been done in violation of the PC1. This is objection was invalid the same had already been approved by Project Steering Committee in its 2nd meeting held on 31 March 2008.

2. Portable Labs to be Established under Project:

One of the objections raised by the probing teams was use and establishment of labs at the project site for conducting soil, water and gypsum analysis. Again this is not a valid objection as eight such labs have been provided in the PC1. The background of the use of these labs for project purpose is as under:

The main activity of the project is land rehabilitation through active participation of the local farming community. The most critical step in this intervention is the analysis of the soil on the basis of which the treatment for the land is advised.

The PC1 says that Soil Salinity Research institute (SSRI)) will provide soil analysis services to Sargodha and Hafizabad and Soil Fertility Research Institute (SFRI) to Jhang. The results of soil analysis from SFRI were delayed significantly due to various reasons including its capacity and distance from Jhang. The farmers' pressure was increasing. The project trust was diminishing and credibility ebbing. Under these circumstances, the project has two options either to look for alternate/supplementary arrangements or sit and wait for the soil analysis from SFRI. In a situation where the activity is season specific (3 months time) the project teams have very narrow time window. The loss of one season means extension in the project by one year. The project proactively approached the private sector to get the soil analysis done (FFC did some of the soils for Biosaline-II) and also established the portable labs in the project offices to augment the efforts of SFRI and SSRI.

3. Technical Survey and Village Selection:

It was pointed out in the probe reports that the project has selected villages without using the technical survey conducted by the government research institutes and have thus violated the provision of the PC1. It is not true as nothing has been said about the relation of technical survey and selection of project villages in the PC1.

In fact there are three types of surveys to be conducted under this project: preliminary survey, technical survey and baseline survey. The preliminary survey is more of a visual survey to spot the prevalence of salinity in a village, technical survey provides information on the extent and type of salinity and baseline survey is to ascertain the current socio-economic conditions of the farmers for assessing project impact. These surveys are to be used for various purposes of the project including the selection of project villages.

The village selection is an important task to initiate project activities. As explained earlier the PC1, however, does not clearly define various parameters for village selection except the

maximum incidence of salinity which is not the sufficient criterion. The project has, however, prepared comprehensive village selection criteria/check list by taking into consideration many additional important factors such as, socio-economic status of the community, ownership of the land, legal issues and morphology of the village.

SSRI has provided two lists to the project so far; the first one is based on a preliminary survey in Sargodha and Hafizabad (November 2007) and the other on technical survey (December 2008) in these districts. The preliminary list was hopeless and 90% data was wrong. Though the technical survey was again very poor who missed many important salinity hit villages. The SFRI on the other hand did not even provide any list either based on the preliminary survey or technical survey for district Jhang. Therefore, for district Jhang, the project proactively approached the district revenue department and collected the relevant data to proceed on with village selection process as per the criteria.

4. Land Rehabilitation:

The project management was accused of deviating from the provisions of PC I for land rehabilitation. It was said that project had adopted a policy of providing up to a maximum of 40 bags for each acre as its share to every deserving farmer in violation of the provisions of the PC I. This again is not true as the PC I does support this policy. The background of this policy is as under:

Land rehabilitation is one of the most important activities of the project. This activity is undertaken on a cost sharing ratio of 23:77 between the project and farmers respectively. The PC I has made an allocation of PKR 320 million for this activity on account of project share implying PKR 4,000 per hectare or 10 tons gypsum/ hectare @ PKR 40 per bag.

At the very start of its implementation, the project faced the challenge of keeping both the cost sharing arrangements namely the ratio (23:77) and upper ceiling (PKR 4,000) intact. It was also impossible to provide the 10 tons gypsum @ PKR 40 per bag (the unit price prevalent in 2004 when the PC I was prepared) due to almost double increase in the gypsum prices.

To review and take a decision in this regard, the then Secretary Agriculture/ NPD convened a meeting of all the stakeholders. It was unanimously decided in the meeting that the project would provide to farmers 40 bags per acre based on the market prices to maintain the 23:77 ratio.

This decision greatly helped the farmer to reclaim their affected lands effectively. The community has so far contributed PKR 25.5 million in cash and PKR 163 million in kind to rehabilitate 14,169 hectare of land.

This arrangement has increased the project's average share on rehabilitation of one hectare of land from PKR 4,000 (as per indicative prices of 2004) to approximately PKR 4,556. The issue of increased cost per hectare has also been considered by the PSC in its meeting and has recommended the increase to PKR 5,000 with 10% inflationary increase in the revised PC I. The cost incurred so far is still well within this limit; therefore, the objection of the probing teams is baseless.

5. Establishment of Implement Pools:

It was objected that the project management has increased the number of implements pool from 50 to 100. The background of this intervention is as under:

The project's PC I provides for 50 agricultural implement pools at a unit cost of PKR 300,000 and one pool per 8 villages. The project, however, faced a number of issues related to the establishment of one pool for 8 villages. Some of them included the high distances between villages leading to uneven access to these pools, the ownership and the responsibilities for pools' operation and maintenance and the collection of rent etc.

To address the above issues, the project divided each pool into two with equal number of critically essential implements. The cost of each sub pool is PKR 150,000 and its ownership lies with one CO (village) instead of 8 villages.

This matter was placed before the PSC in its meeting on 31-03-2008 where it recommended the incorporation of 250 pools at a unit cost of PKR 150,000 in the revised PC I. The Secretary Agriculture/ NPD, however, in a meeting held on June 6, 2008 decided one pool one CO arrangement by following existing cost sharing formula.

6. Procurement of Gypsum from Pre-qualified Vendors:

It was objected that the project communities has procured the agro-gypsum from open market which is again the violation of PC I. The brief background of this aspect is given below:

Being a community based initiative; the project promotes community ownership through their cost sharing contribution and procurement of gypsum. At the start of the project implementation, a few firms were pre qualified for the supply of gypsum to communities. However, later on due to the limited capacity of the pre qualified firms, the communities were allowed to procure gypsum from other source subject to the approval of the quality of gypsum by the project. The gypsum is thus procured by the concerned communities as per the standard procedures and operation being followed in other community based projects of UNDP as well as those of Rural Support Programmes.

Appendix 4: Response by UNDP to Allegations against NPM

This note to the file records UNDP's analysis on the differences between the NPD Bio Saline (Mr. Javed Iqbal Awan) and the Project Manager Mr. Najaf Iqbal contained in the Performance Assessment Report 2008. Provided below is a brief history of the case.

Post 2008 general elections and the induction of the new provincial cabinet, in April 2008 Mr. Javed Iqbal Awan, the new Secretary of Agriculture was notified as a project director. From the time of taking over his post UNDP noted on several occasions that he was not available to the Bio-Saline project. Examples included delays in payment of staff salaries, delays in approval of quarterly work plan and related budgets and limited or no provision of time for interaction with the project manager significantly affecting project delivery.

Soon after joining as NPD, Mr. Awan floated a proposal to the Punjab Government for initiation of a new Bio-Saline (type of) initiative in 3 districts, one of which were the same as Bio-Saline. During a steering committee meeting in June 08, UNDP raised concern regarding potential overlaps between them. Subsequently a pre-project appraisal meeting on this new project took place in Punjab, where the issue of lack of gypsum supply was tabled as a constraint for starting the new project. The pre-project appraisal committee recommended that no new initiative should be considered unless the gypsum supply issue is resolved.

Since this event, UNDP noted a negative attitude of the NPD towards the Project Manger Bio-Saline. In August 2008 the National Project Director, Bio Saline II project, commissioned a team from the Agriculture Department, Agriculture Sector Program Loan Project and Bio Saline II project to evaluate the performance of Bio Saline II. The evaluation was carried out in one of the three districts of Bio Saline II and was based on a sample of few community organizations. This evaluation was out of context and violated the monitoring arrangements agreed to in the project document. The findings of the evaluation are the ones that the NPD has used against the project manager.

UNDP's views on the evaluation teams' findings and the allegations levelled against the project manager are as follows:

NPD Views	UNDP Views
Gap between targets and achievements without approval by the competent authority	Annual project targets are set by the Steering committee, which provides the umbrella approval to the management for implementation. Furthermore an analysis of the project target vs. achievements demonstrates solid performance on most of the fronts. For example, during 2008: • Achieved more than 100% of its targets related to the output on community mobilization, • 77% related to land rehabilitation, • more than 100% related to farm incomes and • 99% related to budget utilization. • The underachievement (57%) related to land rehabilitation through gypsum, was caused on account of unavailability of quality gypsum in the market, excessive load shedding hampering production of gypsum powder and the delay in the approval of gypsum procurement by the NPD himself.

Lack of financial discipline and transparency	This allegation demonstrates the NPDs lack of knowledge or understanding of PCOM and related UNDP procedures. In our view the project has maintained financial discipline. The NEX audit 2007 rated Bio-Saline as Satisfactory and reported no deviation of high severity. Regarding the utilization of funds, at the community level, funds are transferred to community organizations (COs) through cross cheques based on a standard procedure. If we look at the three districts almost 100% of funds transferred to community organizations in district of Sargodha was utilized, more than 80% in Hafizabad and around 69% in Jhang (source Annual Progress Report). The bulk of unspent funds is primarily due to lack of gypsum availability. Moreover the evaluation team in gross violation to the project rules held in custody the cheque books of 14 COs for over 2 months. As the COs couldn't make the payment, their funds were left unspent in their accounts. With regard to community contribution, the project has so far mobilized approximately Rs. 25.5 million in cash and Rs.163 million in kind from communities. This is a satisfactory achievement. Finally the project manager is being penalized for efficient management practice. Example is the process for selection of firms for gypsum procurement. In the beginning a few firms were pre-qualified by a Project Procurement Committee. However later in the year, due to increase in gypsum prices and the inability of the pre-qualified firms to meet project demand at competitive rates, the Project Manager rightly adopted an open Market approach to Gypsum procurement to address both the supply and price issue. This decision was taken upon the recommendation of the procurement committee, and is in line with UNDP procedures.
3. Deviation from the provision of approved PC I	The PCI was developed in 2004. The project started implementation in 2007. The need to revise the PC I including upward revision of staff salary scales, revised cost of gypsum etc. has been raised by UNDP in several steering committees. The file with the revised PC I has been with the Secretary Agriculture for the last 7 months. The decision regarding the provision of 40 bags of gypsum and implement tools has been taken at the appropriate levels of the Steering Committee which is documented. This allegation therefore reflects more on the lack of support of the NPD than on the NPM, as it is the former who has to move the file for the revision of the PC I to ensure compliance.
4. No Approval of cost escalation from Project Steering Committee	The issue was discussed by the PSC in its meeting held early 2008. The PSC agreed to cap the community share at 2004 prices. Therefore the Steering committee did provide approval to the cost escalation by increasing the subsidy factor of the project.

5. Non compliance of instructions of Planning and Development Department and Project Steering Committee	The project has already revised the project PC I and has submitted the same to the NPD. It is with the NPD for the last 7 months for further action. The baseline survey has already been completed and the draft report submitted to the project management.
6. Non-availing of the services of Soil Fertility Research Institute as per PC-I	The issue of using provincial research institutes (like SFRI) has been much debated. While the project strengthens the capacity of these institutes through procurement of new equipment and using their facilities for soil testing, however in order to meet its ambitious land rehabilitation targets it cannot rely solely on using these institutes. Therefore as per the project document soil testing labs have been established at the district level closer to the farmers for speedy soil analysis and related land rehabilitation interventions. Therefore UNDP is rather alarmed at the NPD for raising this concern, as it would sabotage the project delivery, the entire land rehabilitation intervention will be held hostage if soil testing results are not provided on a timely basis.
7. Non-availability of authenticated data	One of the project staff had provided draft data to the evaluation committee without any consultation with the concerned district manager. Later on refined data was provided to the committee. We also understand that a lot of documentation is being done at different levels including community organizations, field units, district units and project management units that might have led overlapping data. UNDP is aware of the multiple levels of reporting and data collection which raises the risk of data accuracy and credibility. This is the reason why a comprehensive MIS is under development that links the district data input to provincial data consolidation processes.
8. Over centralization	The project operates under a decentralized structure of 3 district offices reporting to a provincial structure anchored in the Agriculture Department and reporting to the Secretary Agriculture. Day to day functioning of the project takes place as per the guidance provided by the NPD which in this project has been sorely lacking since April of 2008. The project applies PCOM rules for its implementation. All decisions relating to the work plan and budget are taken by the Steering committee comprising of other provincial departments like planning, forestry, irrigation etc. In UNDP's views it is due to the lack of guidance and support provided by the NPD that suspicions and doubts have emerged fuelled by staff who fail to draw benefits from the project.

Annex V:
Recommendations for PC I Revisions

1. Price Escalation

Price escalation over the last 5 years (since PC-1 was prepared in 2004 till present). Following table shows the needed changes:

	Cost of Intervention (Unit cost in Rs.)	
Intervention	**Existing Cost**	**Proposed Cost 1/**
Land Rehabilitation (Gypsum)/ Hec	17,000	32,000
2. Tube well	60,000	80,000
3. Agri. Implement Pool 2/	150,000	200,000
4. Plantation per hectare	5,000	8,000
5. Fishpond per hectare	150,000	200,000
6. Kitchen Garden	500	500
7. Nursery (10 marlas)	20,000	40,000
8. Backyard Poultry (3+1 member) 3/	-	1,500

1/ Year 2009 costs; will be reviewed/ revised by PCC when needed.
2/ Implements may be incorporated in the pool include chisel plough, disc harrow, leveller, ditcher, post-hole digger, rabi-drill and ridger etc.
3/ This new intervention is for the female members.

2. The cost sharing arrangement needs to be reviewed

Cost Sharing Arrangement Between the Project and the Farmer		
Intervention	**Present Project: CO**	**Proposed**
Land Rehabilitation (Hectare): The proposed cost-sharing will now be in gypsum only. The ratio of 23:77 is for overall cost of land rehabilitation. The revised PC-1 will talk about the gypsum share only.	23:77	60:40
▪ Tree Plantation (Hectare)	50:50	50:50
▪ Nursery	50:50	50:50
▪ Tube well	50:50	50:50
▪ Implement Pool	80:20	80:20
▪ Fish Pond	20:80	40:60
▪ Kitchen Garden	15:85	80:20
▪ Backyard Poultry (3+1 member) 1/	-	80:20

1/ The technical assistance will be provided through the existing Livestock and Dairy Department by creating linkages.

3. Human Resources Requirements

For an effective implementation and further improvements, the project's human resource structure needs various changes. These are suggested below.

a. Since huge data set is required to be maintained at the DIU level, therefore, three positions of IT Assistants in SC3 should be included in the revised PC-1.

b. A position of Media and Communications Associate should be introduced. The need of this position was terribly felt during the past few months when it was observed that the media awareness campaigns of the project focusing farmers and other stakeholders were relatively weak.

c. There are 400 SLUGs in comparison with 200 WIGs as against equal number of male and female SOs in the project where the work load for the female Social Organizers is far less than the male. Therefore there is dire need for rationalizing the number of male and female social staff (20 male and 12 female). By increasing the number of male SO more workforce can be provided for the land rehabilitation initiatives. Some activities for the WIGs, therefore, are being proposed so that the female staff will have good opportunity to bring the female population into the income generating activities. The male SO in place of female SO should be hired when such position falls vacant.

d. The grade of Research Assistant (GIS) needs to be upgraded from scale SC4 to SC5, as the responsibilities of GIS are relatively higher than the job description given in the current recruit. (Project).

e. One mid-level Agricultural Economist/ Economist should also be recruited in SC5 or SC6 for 3-5 years.

4. Extension of the project implementation period by 1-2 years as the important targets cannot be achieved in the remaining period.

Supply of Agro-Gypsum to Project Communities and Storage Policy:

The achievement of target of land rehabilitation for 2008 was severely hampered only because non-availability of good quality gypsum which in turn was the result of fluctuating fuel prices, limited production capacity, and load shedding. Although against a target of 25,000 hectares, 14,169 hectares were reclaimed during 2008, yet another 8,000 hectares could easily be cultivated with adequate supply of gypsum to communities as the response of the communities had been encouraging and overwhelming. The project's social mobilization teams collected around Rs 19 million as community share only for gypsum application during 2008 but the entire money could not be utilized only because slow supply of the gypsum. This evinces that if there is continuous and ample supply of quality gypsum the target of 25,000 hectares could have been achieved easily. The same is being experienced in 2009. The communities have shown great interest in the project activities by contributing around Rs 20 million as their share for gypsum in just 20 days. The supply against the demand is still inadequate.

It is proposed that under the prevailing circumstances the land rehabilitation target can only be achieved when there is sustained supply of gypsum to the farmers. The objective of sustained supply can only be achieved through procuring and storing gypsum in advance. The stored gypsum will augment the running supply during the high demand season (May-July) to fulfil the requirement of the farmers.

5. Revision in Project targets:

Project targets needs to be rationalized.

- Nurseries: 125 from 400 - the nursery is not a very successful intervention as marketing of plants has been an issue in the previous years and secondly such a huge number of nurseries create a competition within themselves.
- Fishponds: the number of the fish ponds may be decreased to 50 from 150. The profit margin in this intervention is slim, thus it is not a very popular intervention. The project has helped in

establishing 32 fish ponds, if the cost and sharing arrangement as advised above is adopted then more and more farmers will be interested to take this intervention, thus diversifying the income means of the farmers.

- Implement Pool: the number of implement pools may be increased from 100 to 400 to accommodate each village. This is one of the most popular interventions of the project. (Project)

Tube well: 50 out of 300 will be deep well tube well at the cost of Rs 120,000 as there are certain areas where water table is deep and cost of the tube well much higher than the regular tube well.

6. Allocation for Women Interest Group:

There has not been a great deal for the women in the project. The following is being proposed:

a. Backyard poultry – 3,000 units @ Rs 1,000 for each member of 200 WIGs,
b. Allocation of Rs 5 million for project based investment with the WIG members on cost-sharing basis. (Rs 25,000 for each WIG). The project brought by the WIGs will be assessed on their merits and funding will be provided.

7. Revision of the Annual Work Plan 2009:

The AWP 2009 needs to be reviewed in the wake of ongoing issues and the ground realities. The land rehabilitation target should be reduced to 8,000 hectare.

8. Target beneficiaries and the Target Land:

- The target land should be expanded and the lands having GR more than 1 tone should also be included.

9. Soil Analysis

- The test analysis report should also contain the advice on the kind of interventions. There should be more than one option for the farmers based on the sample results.

10. Role of Project Steering Committee (PCC):

The PCC will provide general guidance on the overall working of the project. It will, however, be doing following specific jobs as well:

a. Interpretation of provisions of the PC-1
b. Adjustment of targets and various plans of the project and its teams.
c. Changes in implementation strategy and implementation of field interventions such as selection of villages, CO formation etc.
d. Advise on various recruitment issues.

The meeting of the PSC may be conducted every two months.

11. Extended Project Procurement Committee:

In addition to the project procurements the EPPC will also look into the following:

- Based on quotations or any other market survey instrument, to approve the maximum prices for various items to be procured by the community.
- To review the ongoing processes and procedures for community based procurement of items and recommend changes, if and when required.

Annex VI:
The Planning Process and Implementation Procedures

Against considerable technical odds, the Project is now reaching its cruising speed. Vital implementation tools and processes were missing during Project's take off stage. To strengthen accountability, the Team has reviewed the planning process within the context of the project cycle in an effort to understand "why" the performance was as it was. These are the proximate causes of current performance.

Figure 1 outlines the phases of identification, preparation, appraisal and implementation, within the framework of a project cycle for NRM projects.[38] Specifically:

- once a project selected during the identification phase,
- during the preparation phase it undergoes a feasibility analysis at three levels (institutional, economic and technical);
- if the feasibility analysis indicates that the project is viable, then it is put under a litmus test by another set of professionals during the appraisal phase.

At this point the project is ready for implementation once the partners enter into a legal agreement. Subsequently, the implementing agencies based on the preparation and appraisal reports prepare a project implementation plan (PIP). The PIP fundamentally sets up a coordinated physical, financial and technical implementation work plans which must ensure that the production of outputs leading to tangible outcomes.

Experience has proven irrevocably that these processes are necessary and sufficient to implement NRM development projects. The central reason is because NRM development projects are the most complex. They need to conjugate the ecosystem, climate, economic, institutional and social systems in such a manner that the production is ecologically friendly, socially acceptable, and economically viable for the farmer—and output prices are acceptable to the consumer.

As shown in Figure 2, Biosaline II missed out key phases. In retrospect, it may have seemed reasonable to assume that the outputs from Biosaline I could have been sufficient to configure a Preparation Report to determine the economic, technical and institutional feasibility. It should be kept in mind that BiosalineI was piloted in three sites: Shirkot, Pindhi Bhattian and Sahiwal of districts Hafizabad, Jhang and Sarghoda.

The reality proved differently. The Biosaline I outputs could only provide background information. They were insufficient to prepare a feasibility analysis. One of UNDP comparative advantage is capacity development, so those outputs associated with community mobilization, enhancing the organizational capacity of women's groups, etc., were seemingly adequately conducted. In time these capacity development outputs proved sufficient to conduct Biosaline II.

It was the techno-agro-economic outputs that needed substantial strengthening so they could be used in the implementation plan.

[38] This project cycle framework is used by the UN specialized agencies in natural resource management, i.e. IFAD. Guiding principles for the design and use of M&E in rural development projects and programmes, Rome 1984. World Bank. Managing planned agricultural economic development, AID, Washington, DC 1976; Economic analysis of agricultural projects. Washington, D.C. 1972

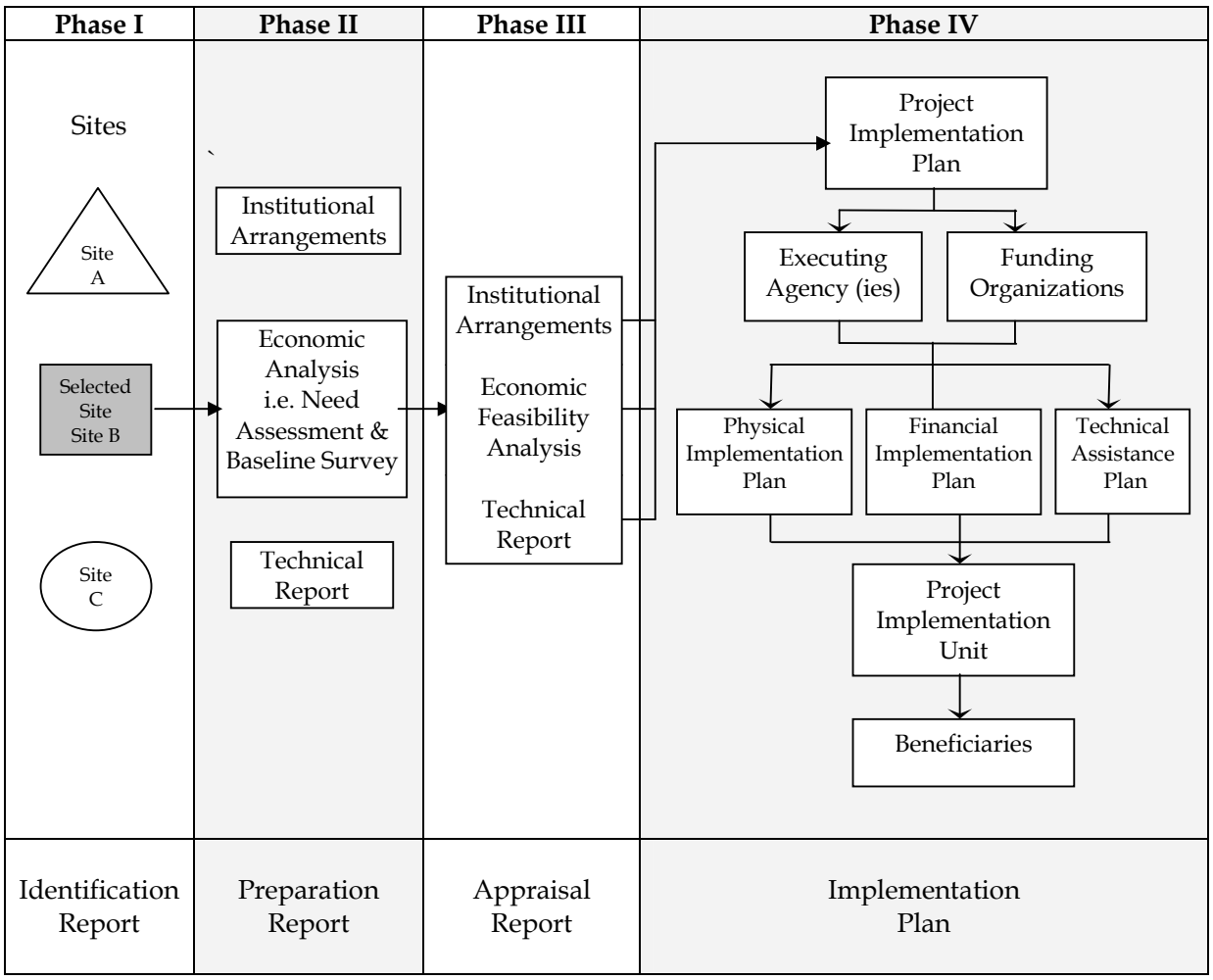


Fig 1: Standard Project Cycle of NRM Project [Source: Mission estimate]

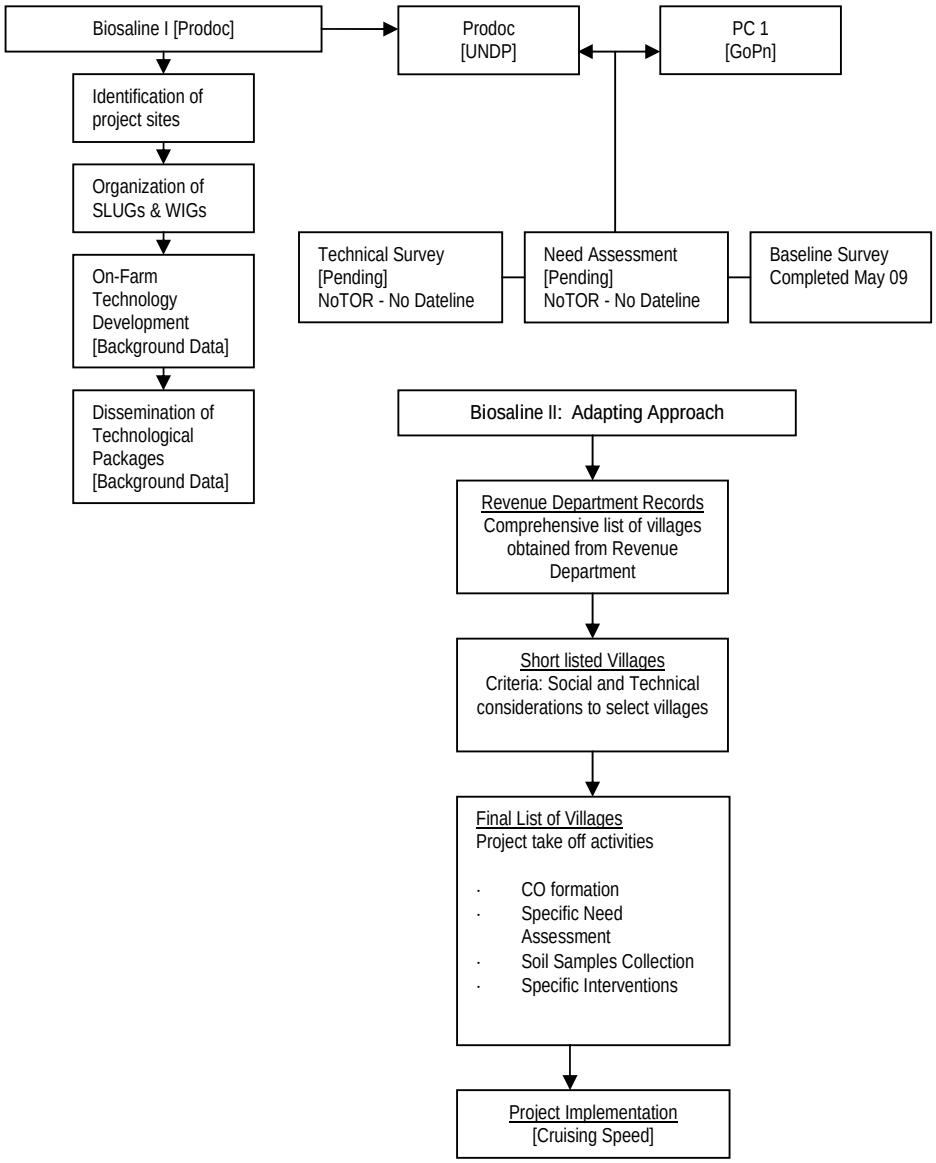


Fig 2: Biosaline II Project Cycle: An Adaptive Approach
Source: Mission estimates

In this vein, the partners (UNDP and GoPb) in both official documents (the Prodoc and PC-1) proposed the need to conduct three technical studies without specifying datelines and TORs. Ultimately, before the Baseline Survey was conducted, the TORs were duly prepared.

- The Technical Survey anticipated providing the technical parameters of operations to conduct soil recovery, production processes during the recovery and post-recovery periods.
- The Needs Assessment anticipated providing the mechanisms to fit the proposed innovations with the farmers' actual conditions on the ground.
- The Baseline Survey a fundamental document to measure the progress towards outcomes was expected to be ready at the beginning of the Project implementation.

The Need Assessment was not conducted. From the Technical Survey only an introductory section is available. Only the Baseline Survey became available in May 2009 just before the MTR. Under these circumstances, during the take off stage, the Project Implementation Unit had to take an Adaptive Approach to carry the Project forward.

- It proceeded to use information from the Revenue Department to identify potential village beneficiaries. It short listed the potential villages using Social/Technical criteria. Based on a number of villages that met the Project requirements, it proceeded with grouping Community Organizations. Thus, on the basis of tailored needs and assessments; soil samples from selected COs, the PIU moved forward with interventions as anticipated in both Prodoc and PC-1.

The foregoing analysis should not be considered as disapproving of the actual planning process that took place. In fact, research established several decades ago that nearly all projects, regardless the quality of their feasibility study, have teething problems.[39] It was the problem-solving effort that made the difference between projects whose performance was a success and those that did not. In short, the Adaptive Approach used in Biosaline II must be considered as an action-oriented approach—characteristic of successful approaches to development efforts.

Key Finding

Biosaline II is on its way to reach its cruising speed, in spite of having missed out key phases. The Adapted Approach used by PIU proved adequate to meet the challenge. Under the circumstances, it testifies to the Project management's dedication and commitment to move forward to meet the challenge of a poverty alleviation effort.

[39] Hirschman. A. Development projects observed. The Brookings Institution. Washington, DC, 1967, pages 9-35

Annex VII:

Farm Budgets in the Project Area (Districts of Hafizabad, Sargodha and Jhang)

Source: UPI and Mission Estimates

Cropping pattern simulations with and without the Project

Cropping patterns with Project are those currently used for land reclamation purposes

Data on cropping patterns without Project comes from farmers that do not participate in Project

Situation-1 (A) 2007-08 Hafizabad					
Mauza/Village:: Saroopwala		Muhammad Hanif S/o Muhammad Boota		Ijaz Ahmed S/o Ahmed Ali	
CO: Ittehad		Biosaline Farmer		Non-Biosaline Farmer	
Item	**Crop**	**Rice**	**Wheat**	**Rice**	**Wheat**
A	Area (Ha)	I Ha	I Ha	I Ha	I Ha
B	Grain Yield (t/ha)	3.46	3.16	1.98	1.48
C	Farm gate price (Rs./ha)	**103,782**	**51,397**	**59,304**	**23,166**
D	**Sub Total**	**103,782**	**51,397**	**59,304**	**23,166**
E	**Input (Rs./ha)**				
	Land lease (Rs./ha)	9,266	9,266	9,266	9,266
	Seed	371	2,432	371	2,432
	Fertilizer	6,425	12,355	4,942	12,355
	Pest management (No. of spray)	4,448	618	4,448	618
F	**Sub-total**	**20,509**	**24,671**	**19,027**	**24,671**
G	Interest on input	-	-		
H	**Labour (Rs./ha)**		-		
	Land preparation (Mechanical)	8,649	9,884	8,649	7,413
	Seeding/transplanting	4,942	247	4,942	247
	Weeding/Earthing up	4,942	-	4,942	-
	Irrigation (Tube Well)	12,355	5,082	12,355	4,588
	Harvesting & Threshing	1,297	9,773	7,413	7,228
	Drying & Storage	-	-	-	
	Animal draft/Power tiller	-	-	-	
I	**Sub-total**	**32,185**	**24,986**	**38,301**	**19,476**
J	Management cost (@ 7000 PM/100 acre)	1,038	1,038	1,038	1,038
J.1	Total cost (F+G+I+J) (with management cost)	53,732	50,695	58,365	45,185
J.2	Total cost (F+G+I) (without management cost)	52,694	49,657	57,327	44,147
K	Gross revenue (D)	103,782	51,397	59,304	23,166
M-1	**Net Revenue (K-J1) with Management**	**50,050**	**702**	**939**	**(22,019)**
M-2	**Net Revenue (K-J2) without Management**	**51,088**	**1,739**	**1,977**	**(20,981)**
N-1	Net Revenue of total cropping pattern (Rs./Ha) with Management Cost		50,752		(21,080)
N-2	Net Revenue of total cropping pattern (Rs./Ha) without Management Cost		52,827		(19,005)

Situation-1 (B) 2008-09 Hafizabad					
Mauza/Village: Saroopwala		Muhammad Hanif S/o Muhammad Boota		Ijaz Ahmed S/o Ahmed Ali	
CO: Ittehad		Biosaline Farmer		Non-Biosaline Farmer	
Item	**Crop**	**Rice**	**Wheat**	**Rice**	**Wheat**
A	Area (Ha)	I Ha	I Ha	I Ha	I Ha
B	Grain Yield (t/ha)	3.46	2.97	2.97	2.47
C	Farm gate price (Rs./ha)	**129,728**	**70,424**	**111,195**	**58,686**
D	**Sub Total**	**129,728**	**70,424**	**111,195**	**58,686**
E	**Input (Rs./ha)**				
	Land lease (Rs./ha)	11,120	11,120	11,120	11,120
	Seed	402	3,697	402	3,697
	Fertilizer	8,896	12,355	8,896	12,355

	Pest management (No. of spray)	5,436	865	5,436	865
F	**Sub-total**	**25,853**	**28,037**	**25,853**	**28,037**
G	Interest on input	-	-		
H	**Labour (Rs./ha)**		-		
	Land preparation (Mechanical)	9,884	9,884	9,884	7,413
	Seeding/transplanting	4,942	247	4,942	247
	Weeding/Earthing up	4,942	-	4,942	-
	Irrigation (Tube Well)	14,826	7,553	17,297	7,553
	Harvesting & Threshing	16,216	11,675	13,899	10,502
	Drying & Storage	-	-	-	
	Animal draft/Power tiller	-	-	-	
I	**Sub-total**	**50,810**	**29,360**	**50,964**	**25,715**
J	Management cost (@ 8000 PM/100 acre)	1,186	1,186	1,186	1,186
J.1	Total cost (F+G+I+J) (with management cost)	77,849	58,582	78,003	54,938
J.2	Total cost (F+G+I) (without management cost)	76,663	57,396	76,817	53,752
K	Gross revenue (D)	129,728	70,424	111,195	58,686
M-1	**Net Revenue (K-J1) with Management**	**51,879**	**11,841**	**33,192**	**3,749**
M-2	**Net Revenue (K-J2) without Management**	**53,065**	**13,027**	**34,378**	**4,935**
N-1	Net Revenue of total cropping pattern (Rs./Ha) with Management Cost		63,720		36,940
N-2	Net Revenue of total cropping pattern (Rs./Ha) without Management Cost		66,092		39,312

Situation-2 (A) 2007-08 Hafizabad					
Mauza/Village: Saroopwala		Rana Azam		Riaz Ahmed	
CO: Ittehad		Biosaline Farmer		Non-Biosaline Farmer	
Item	**Crop**	**Rice**	**Wheat**	**Rice**	**Wheat**
A	Area (Ha)	I Ha	I Ha	I Ha	I Ha
B	Grain Yield (t/ha)	3.16	2.97	1.78	1.38
C	Farm gate price (Rs./ha)	**94,886**	**48,185**	**53,374**	**22,486**
D	**Sub Total**	**94,886**	**48,185**	**53,374**	**22,486**
E	**Input (Rs./ha)**				
	Land lease (Rs./ha)	8,031	8,031	8,031	8,031
	Seed	371	2,432	371	2,432
	Fertilizer	6,425	12,355	4,942	12,355
	Pest management (No. of spray)	2,224	618	1,730	618
F	**Sub-total**	**17,050**	**23,436**	**15,073**	**23,436**
G	Interest on input	-	-		
H	**Labour (Rs./ha)**		-		
	Land preparation (Mechanical)	8,649	9,884	8,649	7,413
	Seeding/transplanting	4,942	247	4,942	247
	Weeding/Earthing up	4,942	-	4,942	-
	Irrigation (Tube Well)	9,884	5,082	9,884	4,588
	Harvesting & Threshing	11,861	9,637	6,672	7,067
	Drying & Storage	-	-	-	
	Animal draft/Power tiller	-	-	-	
I	**Sub-total**	**40,277**	**24,850**	**35,088**	**19,315**
J	Management cost (@ 7000 PM/100 acre)	1,038	1,038	1,038	1,038
J.1	Total cost (F+G+I+J) (with management cost)	58,365	49,324	51,199	43,789
J.2	Total cost (F+G+I) (without management cost)	57,327	48,286	50,161	42,751
K	Gross revenue (D)	94,886	48,185	53,374	22,486
M-1	**Net Revenue (K-J1) with Management**	**36,521**	**(1,139)**	**2,174**	**(21,303)**
M-2	**Net Revenue (K-J2) without Management**	**37,559**	**(102)**	**3,212**	**(20,265)**
N-1	Net Revenue of total cropping pattern (Rs./Ha) with Management Cost		35,382		(19,128)
N-2	Net Revenue of total cropping pattern (Rs./Ha) without Management Cost		37,458		(17,053)

Situation- 2 (B) 2008-09 Hafizabad					
Mauza/Village: Saroopwala		Rana Azam		Riaz Ahmed	
CO: Ittehad		Biosaline Farmer		Non-Biosaline Farmer	
Item	**Crop**	**Rice**	**Wheat**	**Rice**	**Wheat**
A	Area (Ha)	I Ha	I Ha	I Ha	I Ha
B	Grain Yield (t/ha)	4.15	3.36	2.77	1.98
C	Farm gate price (Rs./ha)	**155,673**	**79,813**	**103,782**	**44,478**
D	**Sub Total**	**155,673**	**79,813**	**103,782**	**44,478**
E	**Input (Rs./ha)**				
	Land lease (Rs./ha)	7,413	7,413	13,591	13,591
	Seed	278	3,503	278	3,503
	Fertilizer	7,413	9,884	7,413	9,884
	Pest management (No. of spray)	865	865	1,977	865
F	**Sub-total**	**15,969**	**21,664**	**23,258**	**27,842**
G	Interest on input	-	-		
H	**Labour (Rs./ha)**		-		
	Land preparation (Mechanical)	9,884	7,907	6,178	4,942
	Seeding/transplanting	2,718	618	5,189	247
	Weeding/Earthing up	-	-	3,707	-
	Irrigation (Tube Well+ Canal)	12,355	5,082	12,355	4,588
	Harvesting & Threshing	19,459	15,024	12,973	11,737
	Drying & Storage	-	-	-	
	Animal draft/Power tiller	-	-	-	
I	**Sub-total**	**44,416**	**28,631**	**40,401**	**21,514**
J	Management cost (@ 8000 PM/100 acre)	1,186	1,186	1,186	1,186
J.1	Total cost (F+G+I+J) (with management cost)	61,571	51,481	64,845	50,542
J.2	Total cost (F+G+I) (without management cost)	60,385	50,295	63,659	49,356
K	Gross revenue (D)	155,673	79,813	103,782	44,478
M-1	**Net Revenue (K-J1) with Management**	**94,102**	**28,332**	**38,937**	**(6,064)**
M-2	**Net Revenue (K-J2) without Management**	**95,288**	**29,518**	**40,123**	**(4,878)**
N-1	Net Revenue of total cropping pattern (Rs./Ha) with Management Cost		122,434		32,872
N-2	Net Revenue of total cropping pattern (Rs./Ha) without Management Cost		124,806		35,245

Situation-3(A) 2007-08 Hafizabad					
Mauza/Village: Parh Massoo		Abdul Sattar		Arif Yaseen	
CO: Ittehad		Biosaline Farmer		Non-Biosaline Farmer	
Item	**Crop**	**Rice**	**Wheat**	**Rice**	**Wheat**
A	Area (Ha)	I Ha	I Ha	I Ha	I Ha
B	Grain Yield (t/ha)	1.98	2.47	0.99	0.99
C	Farm gate price (Rs./ha)	**59,304**	**40,154**	**29,652**	**16,062**
D	**Sub Total**	**59,304**	**40,154**	**29,652**	**16,062**
E	**Input (Rs./ha)**				
	Land lease (Rs./ha)	7,413	7,413	7,413	7,413
	Seed	293	2,317	293	1,930
	Fertilizer	3,707	6,178	3,707	4,942
	Pest management (No. of spray)	2,471	-	741	865
F	**Sub-total**	**13,884**	**15,907**	**12,154**	**15,150**
G	Interest on input	-	-		
H	**Labour (Rs./ha)**		-		
	Land preparation (Mechanical)	5,683	4,942	4,695	4,942
	Seeding/transplanting	2,471	494	2,471	247
	Weeding/Earthing up	-	-	2,471	-
	Irrigation (Tube Well+ Canal)	10,094	5,082	10,094	4,588

	Harvesting & Threshing	7,413	8,834	3,707	6,425
	Drying & Storage	-	-	-	
	Animal draft/Power tiller	-	-	-	
I	**Sub-total**	**25,661**	**19,352**	**23,437**	**16,202**
J	Management cost (@ 8000 PM/100 acre)	1,186	1,186	1,186	1,186
J.1	Total cost (F+G+I+J) (with management cost)	40,731	36,445	36,778	32,538
J.2	Total cost (F+G+I) (without management cost)	39,545	35,259	35,592	31,352
K	Gross revenue (D)	59,304	40,154	29,652	16,062
M-1	**Net Revenue (K-J1) with Management**	**18,573**	**3,708**	**(7,126)**	**(16,477)**
M-2	**Net Revenue (K-J2) without Management**	**19,759**	**4,895**	**(5,940)**	**(15,290)**
N-1	Net Revenue of total cropping pattern (Rs./Ha) with Management Cost		22,281		(23,602)
N-2	Net Revenue of total cropping pattern (Rs./Ha) without Management Cost		24,653		(21,230)

Situation-3 (B) 2008-09 Hafizabad					
Mauza/Village: Parh Massoo		Abdul Sattar		Arif Yaseen	
CO: Ittehad		Biosaline Farmer		Non-Biosaline Farmer	
Item	**Crop**	**Rice**	**Wheat**	**Rice**	**Wheat**
A	Area (Ha)	I Ha	I Ha	I Ha	I Ha
B	Grain Yield (t/ha)	2.57	2.97	1.19	1.98
C	Farm gate price (Rs./ha)	**96,369**	**70,424**	**44,478**	**46,949**
D	**Sub Total**	**96,369**	**70,424**	**44,478**	**46,949**
E	**Input (Rs./ha)**				
	Land lease (Rs./ha)	9,884	7,413	9,884	13,591
	Seed	463	3,580	278	3,503
	Fertilizer	3,707	9,884	3,707	9,884
	Pest management (No. of spray)	2,471	-	741	865
F	**Sub-total**	**16,525**	**20,877**	**14,610**	**27,842**
G	Interest on input	-	-		
H	**Labour (Rs./ha)**		-		
	Land preparation (Mechanical)	7,166	6,425	4,695	4,942
	Seeding/transplanting	3,212	494	3,212	247
	Weeding/Earthing up	-	-	2,471	-
	Irrigation (Tube Well+ Canal)	17,248	5,082	12,355	4,588
	Harvesting & Threshing	12,046	14,085	5,560	14,455
	Drying & Storage	-	-	-	
	Animal draft/Power tiller	-	-	-	
I	**Sub-total**	**39,672**	**26,086**	**28,293**	**24,232**
J	Management cost (@ 10000 PM/100 acre)	1,483	1,483	1,483	1,483
J.1	Total cost (F+G+I+J) (with management cost)	57,679	48,446	44,385	53,557
J.2	Total cost (F+G+I) (without management cost)	56,197	46,963	42,903	52,074
K	Gross revenue (D)	96,369	70,424	44,478	46,949
M-1	**Net Revenue (K-J1) with Management**	**38,690**	**21,978**	**93**	**(6,608)**
M-2	**Net Revenue (K-J2) without Management**	**40,172**	**23,460**	**1,575**	**(5,125)**
N-1	Net Revenue of total cropping pattern (Rs./Ha) with Management Cost		60,667		(6,515)
N-2	Net Revenue of total cropping pattern (Rs./Ha) without Management Cost		63,633		(3,550)

Situation-4 (A) 2007-08 Hafizabad					
Mauza/Village: Thatha Botaka		Azam Ali Sabir		Ghulam Abbas	
CO: Thatha Botaka		Biosaline Farmer		Non-Biosaline Farmer	
Item	**Crop**	**Rice**	**Wheat**	**Rice**	**Wheat**
A	Area (Ha)	I Ha	I Ha	I Ha	I Ha
B	Grain Yield (t/ha)	3.16	2.67	1.98	1.48
C	Farm gate price (Rs./ha)	**94,886**	**43,366**	**59,304**	**24,092**
D	**Sub Total**	**94,886**	**43,366**	**59,304**	**24,092**
E	**Input (Rs./ha)**				
	Land lease (Rs./ha)	9,884	9,884	9,884	9,884
	Seed	371	2,432	371	2,432
	Fertilizer	10,625	10,440	8,154	7,969
	Pest management (No. of spray)	865	-	618	2,471
F	**Sub-total**	**21,745**	**22,756**	**19,027**	**22,756**
G	Interest on input	-	-		
H	**Labour (Rs./ha)**		-		
	Land preparation (Mechanical)	10,625	7,660	7,413	6,178
	Seeding/transplanting	3,212	494	3,212	247
	Weeding/Earthing up	-	1,025	-	680
	Irrigation (Tube Well+ Canal)	12,565	5,823	16,272	6,318
	Harvesting & Threshing	4,448	4,942	4,942	4,942
	Drying & Storage	-	-	-	
	Animal draft/Power tiller	-	-	-	
I	**Sub-total**	**30,850**	**19,945**	**31,839**	**18,364**
J	Management cost (@ 10000 PM/100 acre)	1,483	1,483	1,483	1,483
J.1	Total cost (F+G+I+J) (with management cost)	54,078	44,184	52,348	42,603
J.2	Total cost (F+G+I) (without management cost)	52,595	42,702	50,866	41,120
K	Gross revenue (D)	94,886	43,366	59,304	24,092
M-1	**Net Revenue (K-J1) with Management**	**40,809**	**(818)**	**6,956**	**(18,510)**
M-2	**Net Revenue (K-J2) without Management**	**42,291**	**664**	**8,438**	**(17,028)**
N-1	Net Revenue of total cropping pattern (Rs./Ha) with Management Cost	39,990		(11,555)	
N-2	Net Revenue of total cropping pattern (Rs./Ha) without Management Cost	42,956		(8,589)	

Situation-4 (B) 2008-09 Hafizabad					
Mauza/Village: Thatha Botaka		Azam Ali Sabir		Ghulam Abbas	
CO: Thatha Botaka		Biosaline Farmer		Non-Biosaline Farmer	
Item	**Crop**	**Rice**	**Wheat**	**Rice**	**Wheat**
A	Area (Ha)	I Ha	I Ha	I Ha	I Ha
B	Grain Yield (t/ha)	3.95	3.95	1.78	1.48
C	Farm gate price (Rs./ha)	**148,260**	**93,898**	**66,717**	**35,212**
D	**Sub Total**	**148,260**	**93,898**	**66,717**	**35,212**
E	**Input (Rs./ha)**				
	Land lease (Rs./ha)	12,355	12,355	12,355	12,355
	Seed	463	3,580	278	3,113
	Fertilizer	13,096	15,382	13,096	15,382
	Pest management (No. of spray)	2,471	-	2,471	2,471
F	**Sub-total**	**28,386**	**31,317**	**28,200**	**33,321**
G	Interest on input	-	-		
H	**Labour (Rs./ha)**		-		
	Land preparation (Mechanical)	15,567	7,660	15,567	7,660
	Seeding/transplanting	3,212	494	3,212	247
	Weeding/Earthing up	-	1,025	-	1,174
	Irrigation (Tube Well+ Canal)	15,036	5,823	18,743	6,318

	Harvesting & Threshing	4,942	4,942	4,942	4,942
	Drying & Storage	-	-	-	
	Animal draft/Power tiller	-	-	-	
I	**Sub-total**	**38,758**	**19,945**	**42,464**	**20,341**
J	Management cost (@ 10000 PM/100 acre)	1,483	1,483	1,483	1,483
J.1	Total cost (F+G+I+J) (with management cost)	68,626	52,745	72,147	55,145
J.2	Total cost (F+G+I) (without management cost)	67,143	51,263	70,664	53,662
K	Gross revenue (D)	148,260	93,898	66,717	35,212
M-1	**Net Revenue (K-J1) with Management**	**79,634**	**41,153**	**(5,430)**	**(19,933)**
M-2	**Net Revenue (K-J2) without Management**	**81,117**	**42,635**	**(3,947)**	**(18,450)**
N-1	Net Revenue of total cropping pattern (Rs./Ha) with Management Cost		120,787		(25,363)
N-2	Net Revenue of total cropping pattern (Rs./Ha) without Management Cost		123,752		(22,398)

Annex VIII:

Pilot Estimates of Food Security: Districts of Jhang, Hafizabad, and Sargodha

Source: PIU and Mission Estimates

Based on cropping pattern simulations with and without the Project from Annex 4 (Farm budgets) Cropping patterns with Project are those currently used for land reclamation purposes. Data from cropping patterns without Project comes from farmers that do not participate in Project.

Food Security (District Jhang)			
Crop: Rice			
Farmer Name: Ghulam Murtaza	Cropping pattern		
Items	**Y0***	**Y1***	**Y2***
Area (ha)	1.00	1.00	1.00
Paddy production (tonnes/ha)	0.60	3.50	3.70
Sale price (Rs./tonne)	25,000	30,000	37,500
Value (Rs./ha)	**15,000**	**105,000**	**138,750**
Average Family Size (Heads)	6	6	6
Consumption per capita/annum (tonnes)*	0.03	0.03	0.03
Total for home consumption (tonnes)	0.157	0.157	0.157
Marketable surplus (tonnes)	0.443	3.343	3.543

* Rice consumption @ 17Kg/person/annum of cleaned rice

Crop: Wheat			
Food Security Situation in District Jhang			
Farmer Name: Ghulam Murtaza	Cropping pattern		
Items	**Y0**	**Y1**	**Y2**
Area (ha)	1.00	1.00	1.00
Wheat production (tonnes/ha)	0.40	3.30	3.40
Sale Price (Rs./tonne)	15,625	16,250	23,750
Value (Rs./ha)	**6,250**	**53,625**	**80,750**
Average Family Size (Heads)	6	6	6
Wheat consumption (tonnes/capita/annum)*	0.12	0.12	0.12
Total for home consumption (tonnes)	0.744	0.744	0.744
Marketable surplus (tonnes)	(0.344)	2.556	2.656

* wheat consumption @ 124Kg/person/annum

Gross Returns to farmer/ha

Farmer Name: Ghulam Murtaza	Cropping pattern		
Items	**Y0**	**Y1**	**Y2**
Paddy Production (tonnes/ha)	0.60	3.50	3.70
Wheat Production (tonnes/ha)	0.40	3.30	3.40
Total Production (rice + wheat) (tonnes/annum)	**1.00**	**6.80**	**7.10**
Total Rice for home consumption	0.157	0.157	0.157
Total wheat for home consumption (tonnes)	0.744	0.744	0.744
Total home consumption (rice + wheat) tonnes	0.901	0.901	0.901
Total Marketable Surplus (tonnes)	0.10	5.90	6.20
Total Value of marketable surplus (Rs./annum)	**5,702**	**141,827**	**195,945**
Value addition (Rs./ha)		136,125	54,118
Cumulative value addition after two years of rehabilitation (Rs./ha)			190,243
Marketable surplus from 51002 ha (Rs millions)	291	7233	9994

* Y0 is year before adoption of rehabilitation technology
* Y1 is first year of rehabilitation
* Y2 is second year of rehabilitation

Food Security (District Hafizabad)			
Crop : Rice			
Farmer Name Abdul Sattar	Cropping pattern		
Items	**Y0***	**Y1***	**Y2***
Area (ha)	1.00	1.00	1.00
Paddy production (tonnes/ha)	0.48	1.98	2.57
Sale price (Rs./tonne)	25,000	30,000	37,500
Value (Rs./ha)	**12,000**	**59,304**	**96,369**
Average Family Size (Heads)	6	6	6
Consumption per capita/annum (tonnes)*	0.03	0.03	0.03
Total for home consumption (tonnes)	0.157	0.157	0.157
Marketable surplus (tonnes)	0.323	1.820	2.413

* Rice consumption @ 17Kg/person/annum of cleaned rice

Food Security Situation in District Jhang			
Crop : Wheat			
Farmer Name Abdul Sattar	Cropping system		
Items	**Y0***	**Y1***	**Y2***
Area (ha)	1.00	1.00	1.00
Wheat production (tonnes/ha)	0.60	2.47	2.97
Sale Price (Rs./tonne)	15,625	16,250	23,750
Value (Rs./ha)	**9,375**	**40,154**	**70,424**
Average Family Size (Heads)	6	6	6
Wheat consumption (tonnes/capita/annum)*	0.12	0.12	0.12
Total for home consumption (tonnes)	0.744	0.744	0.744
Marketable surplus (tonnes)	(0.144)	1.727	2.221

* wheat consumption @ 124Kg/person/annum

Gross Returns to farmer/ha

Farmer Name Abdul Sattar	Cropping systems		
Items	**Y0**	**Y1**	**Y2**
Paddy Production (tonnes/ha)	0.48	1.98	2.57
Wheat Production (tonnes/ha)	0.60	2.47	2.97
Total Production (rice + wheat) (tonnes/annum)	**1.08**	**4.45**	**5.54**
Total Rice for home consumption	0.157	0.157	0.157
Total wheat for home consumption (tonnes)	0.744	0.744	0.744
Total home consumption (rice + wheat) (tonnes/annum)	0.901	0.901	0.901
Total Marketable surplus (tonnes)	0.18	3.55	4.63
Total Value of marketable surplus	**5,827**	**82,660**	**143,238**
Value addition (Rs./ha)		76,833	60,578
Cumulative value addition after two years of rehabilitation (Rs./ha)			137,411
Marketable surplus from 2947 ha (Rs. millions)	17	244	422

* Y0 is year before adoption of rehabilitation technology
* Y1 is first year of rehabilitation
* Y2 is second year of rehabilitation

Food Security (District Sargodha)			
Crop : Rice			
Farmer Name: Anaytullah	Cropping system		
Items	**Y0***	**Y1***	**Y2***
Area (ha)	1.00	1.00	1.00
Paddy production (tonnes/ha)	0.4	2.12	3.14
Sale price (Rs./tonne)	25,000	30,000	37,500
Value (Rs./ha)	**10,000**	**63,600**	**117,750**
Average Family Size (Heads)	6	6	6
Consumption per capita/annum (tonnes)*	0.03	0.03	0.03
Total for home consumption (tonnes)	0.157	0.157	0.157
Marketable surplus (tonnes)	0.243	1.963	2.983

* Rice consumption @ 17Kg/person/annum of cleaned rice

Food Security Situation in District Jhang			
Crop: Wheat			
Farmer Name Anaytullah	Cropping system		
Items	**Y0***	**Y1***	**Y2***
Area (ha)	1.00	1.00	1.00
Wheat production (tonnes/ha)	0.60	2.45	2.65
Sale Price (Rs./tonne)	15,625	16,250	23,750
Value (Rs./ha)	**9,375**	**39,813**	**62,938**
Average Family Size (Heads)	6	6	6
Wheat consumption (tonnes/capita/annum)*	0.12	0.12	0.12
Total for home consumption (tonnes)	0.744	0.744	0.744
Marketable surplus (tonnes)	(0.144)	1.706	1.906

* wheat consumption @ 124Kg/person/annum

Gross Returns to farmer/ha

Farmer Name Anaytullah	Cropping system		
Items	**Y0***	**Y1***	**Y2***
Paddy Production (tonnes/ha)	0.40	2.12	3.14
Wheat Production (tonnes/ha)	0.60	2.45	2.65
Total Production (rice + wheat) (tonnes/annum)	**1.00**	**4.57**	**5.79**
Total Rice for home consumption	0.157	0.157	0.157
Total wheat for home consumption (tonnes)	0.744	0.744	0.744
Total home consumption (rice + wheat) (tonnes/annum)	0.901	0.901	0.901
Total Marketable Surplus (tonnes)	0.10	3.67	4.89
Total Value of marketable surplus	**3,827**	**86,615**	**157,133**
Value addition (Rs./ha)		82,788	70,518
Cumulative value addition after two years of rehabilitation (Rs./ha)			153,306
Marketable surplus from 28691 ha (Rs. millions)	110	2485	4508

* Y0 is year before adoption of rehabilitation technology
* Y1 is first year of rehabilitation
* Y2 is second year of rehabilitation

Annex IX:
Physical Verification of the Project Interventions by MTR Mission, During visit to the Project Area

DIU, FU, Name of Villages/ SlUGs /WIGs	Visit Date	Details of Project reported interventions/ inputs G: Gypsum, IP: Implement Pool, FP: Fish Pond. N: Nursery, P: Plantation, TW: Tube-well, KG: Kitchen Gardens	Were the project reported interventions / inputs physically available in the village/CO?	Was the procurement done per the prescribed procedure?	Person(s) Met
Sargodha (Bhalwal FU)	July 4 and 11,2009				
1. Salam(S)		G,IP, N	Yes	Yes	Sultan , Muhammad and 17 members
2. Jalalabad,(S)		G,P, TW	Yes	Yes	Hussain, M Yar
3. Lalyani, Sadabahar		G,TW,P,N	Yes	Yes	Ahmad, Nasir, Aftab, Manzoor
4. Purana, Balwal,(S)		G,P,	Yes	Yes	Hassan, Shabbir, Younas
5. Purana Balwal,(W)		KG	Yes	Yes	Nasrin Bibi, Zahida
Sargodha (SargodhaFU)	July 5 and 11,2009				
1. Dharema-Alhabib.(S)		G,N,IP	Yes	Yes	Khalid Akram, Ramzan
2.Behak Makin, Soon da Thatta		G,IP,	Yes	Yes	Mumtaz, Qadir Bakhsh, Mukhtar
3. Muzzamabd, Zamindara(S)		G,IP	Yes	Yes	Zulfiqar with 32 members
4. Behak Makin, Kissan,(S)		G,IP	Yes	Yes	Ahmad Yar, Allah Yar
5. Behak Makin, Roshni, W			Yes	Yes	Nasreen Akhtar
Sargodha(Sahiwal FU)	July 11,2009				
1. Gujjar Town, Sahiwal A		G,IP,FP,KG	Yes	Yes	Rana Nisar, Ghulam Hussain
2. Sulki,(S)		G,TW	Yes	Yes	Shamsher, Ahmad
3. Saleeqa,(S)		G only	Yes	Yes	M.Yar, Iftikhar
4. Meta,(S)		G, TW	Yes	Yes	Hafiz Shaiq, Saifullah
5. Jehanian Shah,(S)		G, FP	Yes	Yes	Ashraf, Nasir, Akhtar
6. Rakh Fatehwal,(S)		G,FP	Yes	Yes	Rana Tariq, Bilal
Jhang(FU, 1)	July 7 and 12,2009				
1. Bhori Dhnian, Abadkar		G,TW	Yes	Yes	Khudadad, G. Abbas
2. Wakeelwala, Al-Falah		G,IP,P	Yes	Yes	Sharif, Ashraf with 25 members
3. Nadha, Ghar, Umang		G,IP	Yes	Yes	Amir Abdullah

4. Gumnana, Mujahid		G,IP	Yes	Yes	Liaqat, Malik Iqbal
5. Gumnana WIG		KG	Yes	Yes	
Jhang (FU, 2)	July 6, and 12,2009				
1. Rehr Sabz Inqilab		G,IP	Yes	Yes	Ashraf with 21 members
2 Ajnala, Khushali		G,IP,P	Yes	Yes	Ahmad Yar with 15 members
3. Utchgul Imam		G,IP,P	Yes	Yes	Manzar Kahn, Tahir khan
4. Gag Rana		G,IP	Yes	Yes	Ayub, Allah Ditta, Iqbal
5. Rehr WIG		KG	Yes	Yes	Hameeda Mai with 11 members
Jhang (FU, Shorkot)	July 12,2009				
1. Rustam Sargana		G,IP	Yes	Yes	Abbas, Khurshed
2. Chak 419/JB		G,TW	Yes	Yes	Jan Nisar, Azad, Iqbal
3. Bhudduwana		G,FP	Yes	Yes	Ghulam Rasool, Farid, Sarfarz
4. Chak No: 485, JB		G,IP	Yes	Yes	Dastagir,Younas
5. Chak No 485, JB (WIG)		KG	Yes	Yes	Kalsoom, Najma
1. Beler Gharbi			Yes	Yes	
Jhang (FU, Ahmadpu Sial)	July 12,2009				
1. Ber Gharbi		TW,G in process	Yes	Yes	Waris, Mazahr
2. Basti Sadiqwala (New Co)		G in process	Yes	Yes	Mastan, G.Dastagir
3. Bar Sharki		G,FP	Yes	Yes	Saqlain, Sharif
4. Basti Jalalwala		G,IP	Yes	Yes	Mushtaq, Kh. Hussain
5. Basti Jalal (w)		KG	Yes	Yes	Nasim and Ramzana
Hafizabad (Pindi Bhattian FU)	July 2,and 13,2009				
1. Sharbaga, Haryali		G,IP,FP,	Yes	Yes	Umar Draza, Buta and 23 members
2. Botekea, Mehak		G,IP,	Yes	Yes	Mohabat Khan and 19 members
3. Muan Bhattian		G,IP,TW	Yes	Yes	Mian Aslam, Sarfaraz
4. Shari Maneka		G ,IP in process	Yes	Yes	Sikandar, Abid Hussain
5. Shari Maneka		KG	Yes	Yes	Azra, Samina
Hafizabad (Hafizabad FU)	July 13,2009				
1. Saroopwala, Ittehad		G,IP,TW	Yes	Yes	Maqbool, Farooq
2. Thatha Gagoka, S. Dharti		G,IP,TW	Yes	Yes	Mansab, Falak Sher
3. Bairiwala, Inqilab		G,IP,	Yes	Yes	Shakeel and Javed
4. Lal Key Dharenkey		G,IP,	Yes	Yes	Baqir Ali
5. Thatha Gagoka,Saweera		KG,N	Yes	Yes	Nazia and Samina, Sumaira, Nazir and Azra