

SUMMARY INITIAL ENVIRONMENTAL EXAMINATION REPORT

Supplementary Appendix to the
Report and Recommendation of the President
to the Board of Directors

on the

BALUCHISTAN RESOURCE MANAGEMENT PROGRAM

PAKISTAN

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The IEE is available on request.

25 November 2004

Environmental Assessment of Policy Interventions of the Balochistan Resource Management Program

A. Introduction

1. The purpose of this report is to conduct an environmental assessment of the policy interventions selected from the Policy Matrix of the Balochistan Resource Management Program (BRMP) Loan. The policy interventions selected for the environmental assessment are relevant to the water and agriculture sectors and reflected under the seven Policy Reforms Areas of the BRMP Policy Matrix.

2. Despite extensive developments in the water sector, population growth, rapid urbanization, mining sector development, and industrialization are imposing growing demands and pressures on the water resources of Balochistan province, which are extremely deficient due to its arid and fragile environment. The increasing imbalance between supply and demand has led to shortages and unhealthy competition among end-users aside from causing severe environmental degradation in the form of (i) persistent increase in waterlogging and salinization in the Pat Feeder and Khirther canals; (ii) inefficient and ineffective irrigation management in minor irrigation schemes leading to loss of precious water; (iii) lowering of water table and mining of groundwater in three overdrawn basins (Pishin-Lora, Nari and Zoab); (iv) neglect of Sailaba (Spate irrigation) and Khushkhaba (localized runoff) farming systems resulting in reduced recharge to the groundwater; (v) entry of sewage, agricultural, and industrial effluents into freshwater or storm water streams; and (vi) intrusion of saline water into fresh groundwater reservoirs in the coastal areas and at certain inland locations.

3. Water is at a premium in Balochistan province and there is now growing awareness that the water resources especially the groundwater resources are being depleted to an extent where the contribution of agriculture to the gross domestic product (GDP) is going to be questionable in the future due to rapidly declining groundwater levels. Past water interventions have contributed to the agricultural economy of Balochistan province through contribution of 52% to the provincial GDP to keep pace with the provincial demand in meeting the food and fiber requirements and for export of fruits and vegetables. In other water related sectors, notably urban and rural water supply, the pace of development has not kept up with the need, thus a significant number of the population remain deprived of the benefit of clean and safe water supply for domestic needs and sanitation facilities, resulting in a heavy cost to the province in terms of people's health.

4. The subsidy on electric tariff for tubewells is provided to electric tubewell owners, which number around 7,000 in the province. The total number of farms in Balochistan province is around 243,000 according to the 1990 surveys. It is expected that the current number of farms will be more due to the division based on inheritance laws. These farms are located under farming systems covering tubewell-irrigated agriculture, canal-irrigated areas, minor irrigation schemes, Sailaba (English meaning) and Khushkhaba (English meaning) farming. In addition to these farms, there are livestock farms, which might be in equal number to crop farms. However, the subsidy is provided to only 3% of crop farmers, depriving 97% of the crop farming community and creating injustice and inequity in distributing public benefits to the population of the province.

5. The financial cost of the groundwater pumpage was estimated during the Integrated Water Resource Management (IWRM) study on a comparable situation, where both electric and diesel tubewells can perform (pump setting at 150 feet and bore depth of 500 feet). The capital cost per acre-foot comes to Rs1,629 and Rs2,167 for the diesel and electric tubewells,

respectively. The operational cost without subsidy per acre-foot comes to Rs3,318 and Rs2,167 for the diesel and electric tubewells, respectively. Thus the operational cost of diesel-operated tubewells is higher than electric-operated tubewells under comparable conditions. However, considering the basin level situation in the province, diesel-operated tubewells are normally located in areas having shallow depths to water table compared to areas having electric-operated tubewells. Therefore, the monthly operational cost of diesel tubewells is lower than electric tubewells primarily due to depth variation. But still diesel tubewell farmers have to spend a considerable amount of resources to pump the groundwater.

6. The most challenging aspect of the subsidy is why diesel-tubewell farmers are surviving in spite of spending around Rs28,000 per month on diesel fuel. What cropping pattern they are practicing and how efficient they are in the use of water. There are around 11,371 diesel tubewells compared to 14,363 electric tubewells. Electric tubewell owners pay only Rs4,000 per month, which they neglect to pay sometimes. Therefore, the subsidy is creating disparity by supporting privileged farmers who represent the resource-rich fraction.

7. Presently, there is no comprehensive water policy available in the province and stakeholders agree on the need to have a comprehensive water policy and a time bound action plan. It was in this spirit that Component #3 of the BRMP was well received by all the stakeholders. There is also a consensus on the need to implement the IWRM policy in all sub-sectors of water use.

8. The IWRM approach was adopted in formulating the Policy Document under the project processing technical assistance, where 16 policy thrust areas were enumerated as essential for improving and sustaining surface and groundwater resources. These areas were identified after evaluating issues of sub-sectors of water use instead of using the traditional approach of focusing only on the sources of water (surface and groundwater). It would also help stakeholders to own and implement the Policy pertaining to their subsectors of water use.

9. The water-poverty-environment framework was also used as a criterion while evaluating the IWRM policy and reforms interventions. The basin approach is recommended for managing water resources in a holistic manner. The watershed-water-farming system framework was recommended to enhance productivity and sustainability of water use at the basin level.

10. For the environmental assessment, firstly, efforts were made to link the policy interventions to potential economic and social outcomes. These outcomes are the direct impacts of the policy interventions. Based on these outcomes, the environmental impacts of the selected policy interventions related to water resource management were assessed.

B. Description of Policy Interventions

11. The five policy interventions selected for the environmental assessment from the BRMP Policy Matrix are as follows:

- (i) Restructure agricultural tubewell subsidy;
- (ii) Introduce schemes for efficient water usage—savings from tubewell subsidy to be used to introduce schemes for efficient water usage;
- (iii) Introduce measures to enhance the revenue yield from Abiana;
- (iv) Implement an IWRM policy; and
- (v) Draw up basin management plans for IWRM for the three selected basins (Pishin-Lora, Nari River and Zoab).

1. Agricultural Tubewell Subsidy (Policy Reform Area #1)

12. The agreed actions indicated in the BRMP Policy Matrix are as follows:

- (i) The government of Balochistan (GoB) to announce in the Budget Speech for FY2004/05:
 - (a) that the agricultural tubewell subsidy will be restricted to tubewells operational before 1 January 2005 and will not be extended to new tubewells installed after this date; and
 - (b) its intention to fix the subsidy in nominal terms per working tubewell to equate the subsidy being incurred in FY2003/04, estimated at Rs9,000 per month per working tubewell for GoB and Water and Power Development Authority (WAPDA) and Rs12,000 for the Federal Government. The outstanding balance will be paid out of the electricity bill to be borne by the farmer.
- (ii) GoB to set up a system for approving new and replacement tubewells qualifying for the subsidy.
- (iii) The GoB (with WAPDA, or through a third party) to initiate a survey to determine the number of tubewells eligible for the subsidy. Results of the survey are expected prior to the release of the second tranche.
- (iv) The GoB to undertake a survey on eligibility for tubewell subsidy: From July 2005 the GoB to only pay for tubewells identified under the survey, their replacements and additional ones sunk prior to 1 January 2005 and approved as such by the GoB.
- (v) The GoB to implement schemes for efficient water usage—savings from tubewell subsidy to be used to introduce schemes for efficient water usage.

2. Scheme for Efficient Water Usage (Policy Reform Area #1)

13. The agreed actions indicated in the BRMP Policy Matrix are as under:

- (i) Initiate a study to design and introduce a scheme to support adoption of water conservation technologies.
- (ii) Implement schemes for efficient water usage—savings from tubewell subsidy to be used to introduce schemes for efficient water usage.

3. Measures to Enhance Revenue from Abiana (Policy Reform Area #2)

14. The agreed actions indicated in the BRMP Policy Matrix are as follows:

- (i) Increase receipts from Abiana: (a) enhance rate of tariff for Abiana by 10% in FY2004/05; (b) increase recovery rate of Abiana to 40% of assessed value; and (c) launch a study to develop an action plan to achieve full cost recovery for provision of irrigation water.
- (ii) Implement action plan for cost recovery of Abiana.

4. Integrated Water Resources Management Policy (Policy Reform Area #7)

15. The agreed actions indicated in the BRMP Policy Matrix are as follows:

- (i) Notification to be issued by GOB to constitute a “Working Group for the Development of an Integrated Water Resources Management Policy”.
- (ii) Notification to be issued by GOB for the approval of the “Integrated Water Resources Management Policy”.

5. Basin Management Plans for Selected Basins—Pishin-Lora, Nari River, and Zoab (Policy Reform Area #7).

16. The agreed actions indicated in the BRMP Policy Matrix are as follows:

- (i) Develop Basin Management Plans for the “Integrated Water Resources Management” of the three selected basins (Pishin-Lora, Nari river and Zoab).

C. Environmental Assessment of Policy Interventions

17. The environmental assessment of the five selected Policy Interventions of the BRMP Policy Matrix was conducted by assessing the direct impacts on economic and social aspects and then the environmental implications of these direct impacts. For the environmental impacts, measures are proposed to mitigate the negative impacts on the environment, if any.

18. The purpose of an IWRM policy is to achieve sustainable development, management and use of water resources because implementation of the water development projects in the past in a disjointed manner has resulted in the severe degradation of available water resources. Therefore, policy and reform actions are proposed to manage the past negative impacts on the environment and to mitigate the impacts of persistent drought.

19. There is no investment proposed for the BRMP. The objective of the BRMP is to achieve sustainable management of water resources, to halt the environmental degradation, which is occurring at a rapid rate in the province. An IWRM policy would provide a framework for the Government of Balochistan in the implementation of future water development projects within the framework of sustainable water resource management. Thus an IWRM policy would help to link water development within the overall framework of the IWRM.

20. The information regarding the environmental assessment of the policy interventions of BRMP related to water management is presented in a matrix form (see Table 1).

Table 1. Environmental Assessment of Selected Policy Interventions for the BRMP

Policy Interventions	Economic and Social Outcomes	Environmental Impacts	Mitigation Measures
Restructure Agricultural Tubewell Subsidy	<p>Savings of Rs2 billion to the government of Balochistan and Rs5 billion to the Government of Pakistan</p> <p>Reduced disparity between the rich and poor farmers, as the tubewell subsidy is provided to only 7,000 farms out of a total of 243,000 farms (tubewell-irrigated, canal irrigated area, minor irrigation schemes, Sailaba and Khushkhaba) in the Balochistan province</p>	<p>Reduced negative impacts on the lowering of water table especially in overdrawn basins</p> <p>Reduced mining of groundwater in overdrawn basins</p>	<p>As there are no negative impacts, no mitigation measures are needed rather resource sustainability will be achieved through policy interventions</p>

Policy Interventions	Economic and Social Outcomes	Environmental Impacts	Mitigation Measures
	<p>Saving of groundwater resource for future generations thus reducing inter-generational issues</p> <p>Higher value of groundwater resulting in reduced water and energy losses through improved costing and valuation of water</p>		
<p>Introduce schemes for efficient water usage—savings from tubewell subsidy to be used to introduce schemes for efficient water usage.</p>	<p>Savings in groundwater pumpage by reducing water demand</p> <p>Savings from existing water and energy losses</p> <p>Enhanced profitability of farming systems through improved water productivity</p>	<p>Sustained management of groundwater resources</p> <p>Reduced leaching of nitrate and pesticide residues due to efficient irrigation thus minimizing environmental hazards</p>	<p>As there are no negative impact, no mitigation measures are needed, rather environmental management of the resource will be enhanced through efficient irrigation technologies</p>
<p>Introduce measures to enhance the revenue yield from Abiana</p>	<p>Increased cost recovery of irrigation schemes through increased revenue yield from Abiana</p> <p>Increased awareness for value of water in surface irrigation schemes through enhanced cost recovery</p> <p>More equitable and reliable delivery of water to the users through improved O&M for surface irrigation schemes.</p>	<p>Efficient use of scarce freshwater resources</p> <p>Better O&M of irrigation schemes through enhanced cost recovery and reduced impacts on waterlogging at the head and reduced salinity at the tail end commands.</p>	<p>As there are no negative impacts, no mitigation measures are needed, rather environmental degradation in terms of waterlogging and salinity will be reduced through improved O&M measures</p>
<p>Integrated Water Resources Management Policy</p>	<p>Improved economic and water use efficiency in all sub-sectors of water use, i.e., agriculture, domestic water, etc.</p> <p>More equitable resource management through financial savings from unplanned subsidies and by having more equitable distribution of water to all segments of the society including the poor</p>	<p>Sustained management of water resource both surface and groundwater</p> <p>Reduced leaching of nitrate and pesticide residues due to efficient irrigation</p> <p>Improved O&M of irrigation schemes through enhanced cost recovery and reduced impacts on waterlogging and salinity</p> <p>Improved delivery of water to water users both for domestic water use and for agriculture</p> <p>Increased awareness regarding water</p>	<p>Integrated water resources management (IWRM) policy would help to manage water resources in a sustained and environmentally safe manner. Thus no mitigation measures are needed for implementation of the IWRM policy as future investments are linked with basin planning within the framework of water-environment-poverty reduction</p>

Policy Interventions	Economic and Social Outcomes	Environmental Impacts	Mitigation Measures
		requirements for environmental rehabilitation and for ecosystem needs	
Basin Management Plans for IWRM for the three selected basins (Pishin-Lora, Nari River and Zoab).	<p>Improved economic and water use efficiency in all sub-sectors of water use, i.e., agriculture, domestic water, etc. at the basin level leading toward sustained water resource management</p> <p>More equitable resource management through financial savings from unplanned subsidies and by having more equitable distribution of water to all segments of the society including the poor and covering all the farming systems and rural communities at the basin level</p> <p>Equitable distribution of public sector investments in future</p>	<p>Improved and sustained management of scarce water resources (surface and groundwater) available at the basin level</p> <p>Reduced negative impacts on the lowering of water table especially in overdrawn basins</p> <p>Reduced mining of groundwater especially in overdrawn basins</p>	The IWRM policy will restrict development of water resources within the framework of basin management plans. The plans will ensure sustained and environmentally sound implementation of future investment projects.

D. Environmental Management Plan

21. There are no investments proposed in the BRMP, thus there are no negative impacts because all the interventions are related to policy and reforms to manage the resources. Therefore, a separate environmental management plan is not needed, as it is a built-in part of the Basin Management Plans. The BRMP is designed to formulate and implement an IWRM policy to reverse the impacts of resource degradation in the province, thus an IWRM policy would restrict future investments in the water sector if they are going to have negative impacts in terms of resource degradation.

22. An IWRM policy will restrict future water developments within the framework of IWRM using water-environment-poverty reduction as a criterion for evaluating the interventions. Further, it will also restrict water development within the context of the Basin Management Plans, so that water developments are better rather than resource degradation.

23. The Basin Management Plans would encompass the environmental management plans; therefore, additional efforts would not be required. The Basin Management Plans would be prepared within the context of water-watershed-farming to achieve resource management and sustainability at the basin level. The efficient irrigation and domestic water use policy interventions would also contribute toward achieving resource sustainability.

E. Conclusion

24. In summary, the BRMP would have no negative environmental impacts because all the five policy interventions including the IWRM policy and reforms would have positive impacts on the continued degradation of the scarce water resources in the province. The potential environmental impacts are summarized as under:

- (i) Sustained management of the water resources both surface and groundwater and for all subsectors of water use (domestic, agriculture, mining, and industry);
- (ii) Reduced negative impacts on the lowering of water table especially in overdrawn basins;
- (iii) Reduced mining of groundwater especially in overdrawn basins;
- (iv) Reduced leaching of nitrates and pesticides residues due to introduction of efficient irrigation technologies thus minimizing the negative environmental impacts;
- (v) Improved operation and management of the irrigation schemes through enhanced cost recovery and reduced impacts on waterlogging and salinity;
- (vi) Improved delivery of water to water users both for domestic water use and for agriculture;
- (vii) Increased awareness regarding water requirements for environmental rehabilitation and to meet the ecosystem needs; and
- (viii) Improved and sustained management of the scarce water resources available at the basin level.

25. Sufficient measures have been suggested in the Policy Matrix and will be part of the IWRM policy. The IWRM policy would ensure sustainable and environmentally sound management and development of water resources at the basin and province levels.