1. Key development issues and rationale for Bank involvement

Background: Agriculture is the backbone of Pakistan’s economy and one of the key engines of overall economic growth. Agriculture today is estimated to contribute about 25% of GDP and employs more than 65% of the labor force.

Balochistan is the largest of Pakistan four Provinces (44% of the country’s area) but is the least developed. The North of the Province borders Afghanistan and has been directly affected by the present conflict. Balochistan is an extremely dry area with water being the limiting factor in development. Rainfall has been below normal in 24 out of 26 districts in the last four years.

Agriculture is the mainstay of Balochistan’s economy, accounting for some 60% of provincial gross domestic product, and employing around 67% of the labor force. Crops contribute about 62% of commodity gross farm income and livestock 38%. The most important products are: millet, wheat, apples, vegetables, grapes, milk and meat.

Balochistan Irrigation System, with a total of irrigated area of 1.5 million ha, consists of two different types of systems: perennial (37%) and partially irrigated (63%). The perennial system can be grouped into two major categories: the Indus gravity fed which irrigates annually around 230,000 ha and the small scale irrigation systems about 320,000 ha. The small scale irrigation systems include: units supplied from kareezes or infiltration galleries, bunds (small dams) and weirs in rivers and tubewells or open wells.

Balochistan annual surface water allocation based on the National Water Accord is about 5 billion m³. Groundwater is being used to augment the surface water. Uncontrolled
installation of public and private tube wells has resulted in groundwater mining. This unsustainable use of groundwater has severely affected karez flows (through tunnel or underground channel tapping an aquifer or a spring). Consequently the hydrological water balance can no longer be maintained in many basins.

One of the high priority basins selected for restoring hydrological balance is the Bund Kushdil Kan, located in the Pishin district north of Quetta. This off the river reservoir was constructed in 1890. The embankment is 1.128 Km long across the Tirkha Nullah site where it cuts though a low range of hills. The embankment was raised to hold 29.345 Mm³ to cater for about 4,400 ha of which 1,800 ha were irrigated in the peak period of 1951-56. Over the years, the reservoir has lost most of its capacity due to siltation and the residual storage today is estimated at 6.25 Mm³. The area currently irrigated in rotation is about 250 ha of wheat, barley, apples, grapes, tobacco and vegetables, mostly supplemented by private ground water development. The farmers are organized in a Water User Association to receive the irrigation service provided by the BIPD Pishin District. The groundwater development fundamental to meet the crop water requirements in a timely manner is managed directly by the farmers using flood irrigation, with little external technical assistance.

KK Bund area was declared a wildlife sanctuary in 1982 under the Balochistan Wildlife Protection Act, 1974. It used to be the only large water body around Quetta before it dried up. It was a staging and wintering ground for birds migrating from Siberia to warmer climates in the south. Rehabilitation of the Bund is likely to restore the lake as a wintering ground for the birds.

**Rationale for Bank involvement:** The proposed project supports the CAS goal of reducing poverty through pro-poor growth interventions such as improving water productivity, employment of rural labor force and diversifying the agricultural production. This project will support the efforts of farmers to better manage the scarce water resources, in this extremely dry area, for agricultural production.

Balochistan is the least developed province in Pakistan facing both water and food security challenges. The Bank, having operated several decades in Pakistan, is obliged to support the government’s strategy in upgrading its water resources management and increasing agricultural productivity. The Bank’s involvement will help ensure that: (i) a systematic approach is adopted in the design of the project that addresses both the immediate and long-term issues in the irrigation sector; (ii) a comprehensive package of hardware (physical) component and software (reform) component be built into the project to ensure the sustainability of the project; (iii) there is adequate consultation and participation of the local community, and any environmental and social concerns are properly addressed; and (iv) the project works and facilities are procured and constructed with good quality and within the budget and on schedule. The lessons learnt from other similar projects in Pakistan and elsewhere will be incorporated in the project design to ensure its success.
2. Proposed project development objective

The overall development objective is to help the Balochistan Province better manage its scarce water resources for rural development and poverty reduction through: (a) restoring and increasing water storage; (b) increasing water productivity through a combination of engineering, management and agricultural measures; and (c) building the local capacity and formulating a plan for sustainable surface and ground water resources development and watershed management.

3. Preliminary project description

**Component 1. Infrastructure (Rs 3,300 million)**
It includes two parts: watershed management and irrigation works.

(1) Watershed Management Works:
**The KK Bund Rehabilitation (Rs 1000 million):** The KK Bund is a central element in achieving effective use of the limited surface and groundwater resources of the watershed. The proposed project aims at restoring the hydrological balance in the sub-basin by restoring the lost storage capacity of the KK Bund, facilitating the recharge of the aquifer and its appropriate management, and improving conveyance efficiency and the water application at the farm level. Out of some 12 different options studied since 1988 with the assistance of the Bank, the most economically-viable is to raise the Bund by 5-10 ft. and partially de-silt the reservoir. This alternative is in the process of being reviewed and finalized by the consultants funded under the NDP project. The existing diversion structures can be used to recharge the aquifer in the area. The KK Bund watershed will be the pilot basin for planning, implementing and monitoring the effectiveness of different structural and non-structural measures and options to restore the hydraulic and environmental equilibrium in the basin.

**Delay Action Dams (Rs 1200 million):** The Government of Balochistan has embarked on an aggressive province-wide program for enhancing the use of highly-variable rainfall. A key measure of this program is to delay the passage of occasional floodwaters, both to reduce flood damages and make more water available for human and environmental use. The Concept Clearance Paper prepared by the provincial government includes 46 so-called Delay Action Dams designed to arrest floodwaters and then release them gradually (and automatically) into the river bed and aquifers. These “rainwater harvesting structures” will either be newly-built or rehabilitated. They will be screened and prioritized based on the result of a recent study on the effectiveness of such structures. This component could also incorporate further watershed management measures to prevent silt inflow into the reservoirs resulted from tree-cutting and over-grazing.

(2) Irrigation Works (Rs 500 million): The government has also proposed 30 small-scale irrigation schemes which would draw water from either the existing sources or new reservoirs under the project. The irrigation works proposed include canals, drains and regulating structures. A set of criteria for assessing and prioritizing the irrigation works to be funded by the project, will be defined by the PIPD as part of the project preparation. The purpose of this sub-component is to
improve the physical infrastructure for increasing water delivery efficiency and productivity and lay the foundation for reform in irrigation management.

Component 2. On-farm Water Management and Crop Management (Rs 300 million)
The project will support on-farm development focusing on the KK Bund Basin. The objectives are: (a) to achieve reliable water supply and equal water allocation; (b) developing an approach whereby "vicious subsidies" (such as those for electricity for pumping) could be replaced by "virtuous incentives" which would enable the achievement of higher water productivity; and (c) to increase agricultural production and farm income through crop diversification. It includes modernization of the irrigation systems (for example, converting from canal to piped distribution systems), incentives for efficient on-farm irrigation systems and modern irrigation and agricultural technologies including laser land leveling, drip and bubble irrigation systems, greenhouses, and technology for the application of more efficient liquid fertilizers and pesticides. These sub-components would need to build on existing experiences in Balochistan (such as those of the Agricultural Department from the BCIAP and DERA projects) and beyond. For the implementation substantial technical assistance is required in the organization of the production chain, for the proper use of chemicals and the support of the farmers in the use of modern irrigation technology.

Component 3. Institutional development (Rs 300 million)
All of the above physical investments will contribute to the productivity enhancement and sustainable development only if they are accompanied by major institutional reforms. Accordingly the project will invest in institutional development at two levels: (a) at the water user level, farmers will be organized into user groups to manage their lower irrigation system, and develop groundwater resources according to the agreed development plan. The will measure the water use and collect water charges and apply towards the O & M for sustainable use of the irrigation systems. The farmers will be provided with external technical assistance in irrigation and agricultural technologies through training and extension services; and (b) at the provincial level, capacity building and reform activities will be included to formulate the polices and regulations for effective planning and management of water resources with a long-term vision, and to improve the service standard and accountability of the irrigation management authority.

4. Safeguard policies that might apply

The Bank Safeguard Policy on environmental assessment OP/BP 4.01 and safety of dams OP/BP 4.37 will possibly be triggered and the necessary assessments have to be carried out. Depending on the nature of the solutions, the policy on Involuntary Resettlement (OP/BP 4.12) may be applicable if land acquisition is required by the project. In addition, some of the springs and creeks in the KK Bund basin come and go between Afghanistan and Pakistan and have to be reviewed in this particular case to assess the applicability of the Bank policy for Projects on International Waterways Safeguard Policy (OP/BP 7.50).
5. Tentative financing

Source: ($m.)
BORROWER/RECIPIENT 10
INTERNATIONAL DEVELOPMENT ASSOCIATION 40
Total 50

6. Contact point

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