

PC-1 FORM

1. **Name of the Project** **Sindh Water Sector Improvement Project Phase-I (WSIP-1)**
2. **Location** The Project would cover: **(i)** area under the jurisdiction of SIDA and AWBs of Ghotki Feeder in district of Ghotki; Nara Canal in districts of Khairpur, Sanghar, Mirpurkhas, Umer Kot; and Left Bank (Canals) in districts of Tando Muhammad Khan, Hyderabad and Badin and **(ii)** the area where the Barrages are located (Guddu, Sukkur and Kotri). **Map attached.**
3. **Authorities responsible for:**
- i) **Sponsoring** Irrigation & Power Department, Government of Sindh
- ii) **Execution**
- Irrigation & Power Department GoSindh,
 - Sindh Irrigation & Drainage Authority,
 - Area Water Boards of Ghotki Feeder, Nara Canal & Left Bank Canals,
 - Farmers Organizations (FOs)
- iii) **Operation and Maintenance**
- Irrigation & Power Department GoSindh
 - Sindh Irrigation & Drainage Authority
 - Area Water Boards of Ghotki Feeder, Nara Canal & Left Bank Canals.
 - Farmers Organizations (FOs)
- iv) **For provincial projects, name of the concerned federal ministry.** Ministry of Water and Power
4. (a) **Plan Provision:** -----
- i) **If the Project is included in the medium term/five year Five-Year Plan, specify actual allocation.** Not specifically included in the current five year plan.
- ii) **If not included in the current Plan, What** WSIP-I meets all eligibility criteria and achievement of the objectives set forth under the plan. The WSIP-I is being implemented in the area

warrants its inclusion and how is it now proposed to be accommodated.

where reforms are underway and project will provide consolidation of reforms to achieve improvement in distribution of water through participatory irrigation management. It is proposed to be allocated under the MTDf (2005-2010), which provides financial allocation of Rs. 218.293 billion for new schemes. (*Provision of Rs. 5119 million for financial year 2007-08, Rs. 6150 million for year 2008-9 and Rs. 9169 million for financial year 2009-10 exists in the plan*).

iii) If the project is proposed to be financed out of block provision for a program, indicate:

As above

(b) Provision in current year PSDP/ADP (2006-07)

Rs.70.00 million (Sindh ADP)

5. Project Objectives:

i) The objectives of the sector/sub sector as indicated in the medium term/five year plan to be reproduced.

The sector / sub-sector main objective of MTDf 2005 – 10 is to achieve food security for the people of Pakistan. The concept of more crops per Drop shall be pursued to enforce improved irrigation methods and practices. The concept of participatory irrigation management of irrigation systems shall be promoted in the shape of Farmer Organizations (FOs) to enable the irrigation stakeholders to participate effectively in the decision making process. Ensure stakeholders and creating enabling environment for active stakeholders consultation and participation at all levels and in all aspects of the water resources including Irrigation, drainage and other water sector components.

ii) Indicate objectives of the project and develop a linkage between the proposed project and sectoral objectives.

The project objective is to improve the efficiency and effectiveness of irrigation water distribution in three AWBs (Ghotki, Nara and Left Bank), particularly with respect to measures of reliability, equity and user satisfaction. This would be achieved by: (a) deepening and broadening the institutional reforms that are already underway in Sindh; (b) improving the irrigation system in a systematic way covering key hydraulic infrastructure, main and branch canals, and distributaries and minors; and (c) enhancing long-term sustainability of irrigation system through participatory irrigation management and developing institutions for improving operation and maintenance of the system and cost recovery. The improved water management would lead to increased agricultural production, employment and incomes over area about 1.837 million ha or more than 30 percent of the irrigated area in Sindh, and one of the poorest regions of the country.

The main objectives of sector/ sub sector as indicated in the “Medium Term Development Framework” for agricultural development will be to achieve self-reliance in agricultural commodities, ensure food

security and improve productivity of crops. An average annual growth rate of 5.2 percent is projected during the MTRF.

The project supports key priority of Sindh Province for upgrading of the water infrastructure and supports the Bank Country Assistance Strategy (CAS). The three inter-linked and mutually reinforcing pillars of the CAS are: (i) sustaining growth and improving competitiveness; (ii) improving government effectiveness and service delivery; and (iii) improving lives and protecting the vulnerable. Under the first pillar in irrigation, the Bank will support a combination of institutional reforms and investments throughout the system including major investments in rehabilitation of critical assets and reforms to improve the quality, efficiency, and accountability with which irrigation services are delivered.

The Sindh Water Sector Improvement Project Phase-I (WSIP-I) supports all three pillars of the CAS by: (a) rehabilitating/improving the hydraulic and irrigation infrastructure on which the irrigated agriculture is fully dependent and thus avoiding social and environmental disaster in case of collapse Irrigation and Drainage (I&D) infrastructure; (b) deepening and widening the reforms already underway in Sindh's I&D sector and thus improving the efficiency, quality, accountability and sustainability of I&D services, supporting the second pillar of CAS ; and (c) improving the agricultural production, employment in rural areas of Sindh which is one of the poorest region in the country, leading to improving the lives of vulnerable. The project is consistent with the Pakistan Water CAS. Most importantly, the project would address the systemic issues of Irrigation and Drainage sector leading to its sustainability in the long run.

The overarching project objective is to: achieve equitable and sustainable delivery of irrigation water in the three AWBs covering 1.837 million ha (more than 30 percent of the total irrigated area in Sindh). Expected project outcomes would include (i) improved efficiency for water delivery and reduced water logging; (ii) greater equity in the distribution of water and management of water delivery through stakeholder participation; (iii) improved financial sustainability resulting from rehabilitation of infrastructure and increased cost recovery from users, and (iv) increased agricultural production and incomes for estimated 4.0 million beneficiaries within the project area.

Direct quantifiable project benefits would include annual incremental agricultural production with estimated value of Rs 3.4 billion (June 2006 prices) and creation of additional 4.39 million workdays per year of farm labor at full development due to increased cropping intensity and yields.

Indirect and non-quantifiable benefits would include reduced drainage requirements; reduced soil salinity risks; reduced incidence of stagnant pools of water and decrease in mosquito-borne diseases; and reduced negative impact of water logging on buildings and roads.

Irrigation and drainage in Pakistan face major environmental, social and fiscal issues all stemming from underlying institutional weaknesses, which manifest in following forms:

- (i) Serious deterioration of irrigation and drainage infrastructure due to inadequate routine and preventive maintenance.
- (ii) Low irrigation delivery and application efficiencies.
- (iii) Water distribution inequities
- (iv) Crop yields reduced by 25% to 60% of potential yields due to water logging and soil salinity.

Realizing the need for a holistic water resources management strategy that encompasses policy and institutional improvements, Government of Sindh has evolved an interim strategy that would yield quick dividends, while building the foundation for the longer term strategy. This interim strategy has three inter-related elements: (a) fostering an institutional, policy and operational framework conducive to efficient and self-sustaining operation and management of the irrigation system; (b) supporting community organizations e.g. Farmers Organizations (FOs) in implementing high payoff infrastructure improvements needed for improved water management, particularly at the distributary and minor canals level at a much accelerated pace, than in the past; and (c) enhancing agricultural productivity and incomes by introducing improved technology, agronomic practices, and information/knowledge systems.

The Project would supplement the efforts of following projects that are presently underway:

- (i) World Bank Assisted Sindh On-Farm Water Management Project.
- (ii) Revamping/Rehabilitation of Irrigation and Drainage System Project
- (iii) National Drainage Program (Reprogramming)
- (iv) Lining of Distributaries and Minors in Sindh Province

6 Description and justification of Project (enclose feasibility study for projects costing Rs. 300 million and above) For preparation of WSIP various studies as Diagnostic Review of Investment component, water stress Quantification study by Water Watch, Integrated Environment and Social Impact study. Rapid Appraisal of Irrigation infrastructures in 3 AWBs by FAO under TCP were conducted for preparation of the project.

Integrated Social and Environmental Impact Study (ISEA) study reveal that Project is feasible. Copy of Summary report of ISEA and Clearance from Sindh Environmental Protection Agency (SEPA) is enclosed as **Annex-A**

i) Describe the project and indicate existing facilities in the area and justify the establishment of the Project. The key elements of the project strategy include: (a) strengthening of irrigation and drainage institutions particularly the Farmers' Organizations (FOs) at the distributary level and SIDA, and AWBs. The successful FOs are also a key element for improving I&D services at the upper tiers of the system as they would be acting as the

countervailing power and represent the demand side in various canal committees improving governance and cost recovery; (b) investments to improve physical infrastructure thus removing bottlenecks and enabling institutions to deliver I&D services effectively; and (c) addressing the enormous problems of Sindh's I&D systems in phases incorporating the lessons learned into subsequent phases. The first phase would cover the three AWBs, Ghotki, Nara and Left Bank which has already been established and where FOs have been formed. The FOs function well in areas where AWBs are established at the main and branch canal level, and have representation at the upper level of the system. Also the phased approach would allow a systematic approach to improve the irrigation system starting from the barrage, main and branch canals and distributaries, concentrating limited resources to achieve visible results instead of sprinkling them all over the province with invisible outcomes. The next Phase of WSIP would focus on the areas where GoSindh establishes AWBs in future.

Main components of the projects are:

- A. Community Development and Capacity Building.
- B. Improvement of Irrigation and Drainage System.
- C. Management Plans for Major I&D Infrastructure.
- D. Project Monitoring, Evaluation and Supervision of Environmental Management Plan.
- E. Project Coordination, Monitoring, Technical Assistance and Training.

ii) Provide technical parameters i.e. input and output of the project. Also discuss technological aspect of the project.

The works are scattered over a large area and their implementation through participatory approach will therefore require good planning, management, and supervision. The detailed designs for all I&D works (including I&D works within the areas of FOs) would be prepared jointly by an international and national engineering firms. These designs and specifications will be subject to a detailed review by the Bank to ensure that design specifications are sound and suitable for local conditions, and that estimated investment costs as well as the level of contingencies are realistic. To ensure quality of civil works construction, the works would be packaged for bidding purposes to attract qualified contractors, while contract management and construction supervision would be carried out with the assistance of qualified engineering firms. The only new and technologically sophisticated element in the project area is establishment of a modern water measurement and accounting system and development of a database and management information system. For design and developing this system qualified consultants would be provided under the project.

The output of the project will be assessed by the progress towards achieving the development objective and will be measured through the following key performance indicators of the water management services:

Efficiency: Increased canal conveyance efficiency to the

distributary/minor canals, watercourses, farms, and reduced discharges of drainage water.

Reliability: Ratio between actual amounts of water supplied to the project area and the demand/planned water supply for the project area on a ten-day, monthly, seasonal and annual basis. Also decrease in the incidence of canal breaches.

Equity of water deliveries: improvements in water distribution between head and tail watercourses measured by the delivery performance ratio (DPR – ratio of DPRs of head watercourse and tail watercourse of a canal measured as the ratio of actual discharge to the authorized discharge. A DPR value of 1.0 indicates full equity among head and tail watercourses.)

Sustainability: Number of farmers' organizations taking over the distributary/minor canals through the Irrigation and Drainage Management Transfer Agreements (IDMTA) and the start of effective O&M of the system. Improvements in collection of *Abiana* and available budget for O&M of the irrigation and drainage systems in project area.

User Satisfaction: Improved user satisfaction with respect to water distribution practices, as shown in sample surveys conducted before and after activities in each AWB.

Drainage and Soil Salinity: Reduction in area with shallow groundwater level and soil salinity.

Agriculture Production: Agriculture production enhancement for main crops in the project area.

iii) Provide details of civil works, equipment, machinery and other physical facilities required for the project

The Project will cover the implementation of irrigation and drainage rehabilitation, improvement and modernization works including water metering and control structures and programs at all levels of the selected command areas. The hydraulic infrastructure will be upgraded to make water delivery more reliable, flexible, efficient, and equitable. This will be achieved by renovating degraded canals, installing new types of water control and flow measurement structures. Subcomponents include (i) irrigation and infrastructure improvement including drainage improvement in FOs areas, (ii) Asset Management of Major I&D Infrastructure. Improvement works for the Main and Branch canals under WSIP would generally include the following type of works:

- Remodeling of Feeders canals, Main Canals and Branch canals on the basis of latest sanctioned discharges, determined based on the actual flows at the head of the canal over the last ten years;
- Constructing proper section of the canal, strengthening of banks and inspection paths;
- Rehabilitation or reconstruction of the regulating structures, repair/replacement/motorization of regulator gates;

- Installation of gauges and control structures for measuring flows in the main and branch canals and at the distributary off take points;
- Repairs or reconstruction of operational buildings near the regulators, field offices, and guest houses that are necessary for the operation of the canal system;
- Rehabilitation/replacement of road bridges, where necessary;
- Construction of escapes, where necessary, to avoid overtopping;
- Control/Improvement of the Direct Outlets and Pump sumps;
- Planting of trees in the right-of-way beyond the inspection and non inspection paths;
- Restoration of markers showing distance from the head of the canal (RD markers).

Distributary/Minor Canal Improvement works would generally include the following type of works:

- De-silting, creating proper section of the distributary channel;
- Reconstruction of channel banks and berms, inspection path and strengthening of the non inspection path banks;
- Restoration of outlets;
- Repair and reconstruction of head or any regulating structures in the distributary;
- Construction of measuring sections:
- Buffalo wallows, washing ghats where necessary;
- Rehabilitation and construction of foot and road bridges;
- Construction of the RD markers;
- Plantation of trees on land available along the distributary;
- Other works identified by FOs;
- Rehabilitation/construction of FOs' offices, provision of office equipment, furniture, facilities, and stationery.

In addition to rehabilitation and improvement to canals, a system of water measurements and accounting would be introduced through out the main and branch canal systems and at the distributaries and minors. For that purpose appropriate flow measuring sections would be constructed and water measuring devices would be installed throughout the canal system. A data communication network would be installed to gather information and send to central locations at AWBs and SIDA offices. A database and management information system would be developed to collect, store and disseminate flow data helping system wide water management. Modern control rooms for operation and management of the canals would be established at the AWBs and the SIDA. SIDA's management information system (as outlined in SIDA component) would be developed under this component along with strengthening of website and possibility of broadcasting the water management information on FM radio.

Substantial investments have been made in improving the drainage system in recent years under various projects. While the main focus of the WSIP is irrigation infrastructure, some funds are provided to address major bottle necks that may exist in the project area in safe disposal of the drainage effluent and areas managed by the FOs. The scope and works to be included in this component would be identified by SIDA/AWBs in consultation with the FOs.

Under Asset Management of Major I&D infrastructure feasibility

study for rehabilitation of the Guddu barrage will be prepared and assistance will be provide for preparing studies for rehabilitation of Sukkur and Kotri barrages. A regional master plan would be prepared to deal with floods and drainage issues on the left bank of Indus river and studies for designing measure for improvement of wet lands in Indus delta and the coastal zone.

Rehabilitation and improvement of irrigation and drainage infrastructure in the Project area will include following works.

- 1) Improvement of 7 Main Canals (824 km) and 28 Branch Canals (980.7 km).
- 2) Improvement of 170 Distributaries and Minors (1802 km).
- 3) Improvement of drainage for 200,000 ha.

Existing facilities available for implementation of the project include SIDA Secretariat, three AWBs and 230 FOs with sufficient manpower and other resources. Capacity of these institutions will be strengthened under this project. Contractors will provide the equipment, machinery and other facilities required for implementation of the project.

iv) Indicate governance issues of the sector relevant to the project and strategy to resolve them.

The Government of Sindh is fully committed to the Project and its proper and most effective implementation because improvement in water resources management is crucial for the economy and development of Sindh. To mitigate and guard against governance, mismanagement and inefficiency risks and improve transparency and accountability in implementation of project activities several measures have been incorporated in the Project. The procurement rules/guidelines of Federal PPRA Rules 2004 adopted by GoSindh would be followed. However, in case of any conflict among the donor (IDA) and Govt. rules, the donors rules would prevail and be adopted. The detail is given in **Annex-B** and summarized as follow:

- The overall design of the Project itself leading to transparency in water management.
- Improved Institutional Arrangements for Project implementation.
- Measures in management of Procurement, Civil Society oversight and remedies.
- Improved Financial Management Procedures.
- Enhanced Supervision and Surveillance arrangements

v) Provide project areas characteristics in terms of population, climate, geology, soil, irrigation, ground water, drainage and agriculture (crops, yields etc.)

Area and Population: The Project area would include Gross Command Area (GCA) of 5.2 Mac (2.1 Mha) and Culturable Command Area (CCA) of 4.538 Mac (1.77 Mha). The total GCA in Sindh is about 14.1 Mac (5.7Mha) and the CCA is of the order of 12.6 Mac (5.1 Mha); as such the Project will cover about 30% of the total CCA in Sindh. The estimated population of Project area is 10,000,000 and the project will benefit 595,100 farm families with an average size of 6.8 person per family as such 4,046,680 population will be directly benefited by the project.

Physiography: The project area is a part of the alluvial plain formed over geological time by silt deposits of River Indus. The topography of the Project area is very flat with an average land slope of about 0.14 % (0.75 ft/ mile) falling southwards and away from the present course of the river. Some localized relief is provided by the bar deposits, old channel remnants and courses of streams etc.

Climate: The climate of the Project Area is arid and hot. In an average year coastal region receives the maximum rainfall 175-200mm. The hottest region is the Northern part of the Project area where during summer mercury goes up to 53⁰ C.

The cold season extends from December to February. Mean monthly temperature varies from 20⁰ C near the coast to 14⁰ C in the north. Daily variation is about 30⁰C but temperature above 32⁰ C or below 2⁰ C may be expected occasionally. Humidity is generally high and is in the in the 40-60 % range. Monthly rate of evaporation during the cold season varies from 76mm in the north to 114mm in the south. Winter rainfall is less than 25mm.

The monsoon season, July to mid September, is characterized by comparatively low daytime temperatures due to considerable increase in clouds in the coastal areas and high humidity (over 60% in the south and 50% in the north). The evaporation rates are low (only 15 or 18mm at some stations in August). Occasional depressions from the east result in a 4 or 5-day period of rain and thunderstorm, especially in the south. Rain in the northern part of the project area is generally scanty.

Geology: The alluvial sediment deposited by the River Indus in the lower Indus region in general and in the project area in particular consists mainly of fine to medium sands, silts and clays of Pleistocene and recent epochs over a basement of tertiary rocks. The nature of the soils varies considerably from place to place and there are layers of sand belts (containing sand and sandy silt) and clay belt (containing clay and silt) spread throughout the area. These belts are of various thicknesses.

The depth of soils it self varies from 30 to 300 feet and more. On the whole sand belts are wider in extent than the heavy soil belts. However towards the south clay belt predominate.

Soils: The soils of the Project area are of recent alluvial origin and are basically suitable for irrigated agriculture. Textures are closely related to depositional conditions and all mapping is based on geomorphic units.

Although, stratification is complex, the majority of soils are within the range of fine sandy loam to silty clay loams being most common. True clays and sands are rare at least in the upper alluvium. All soils contain calcium carbonate and most contain gypsum. Salinity is wide spread but generally ephemeral, with adequate water and drainage, most soils can be reclaimed by simple leaching.

Irrigation: The Project would cover the area under the commands of (i) Ghotki Feeder (ii) Nara Canal (iii) Fuleli canal and (iv) Akram Wah Canal. Ghotki Feeder off-takes from Left Bank of Guddu Barrage. The System comprises 94 channels (Branches, Sub-branches, Distributaries, & Minors) whose total length is about 900 miles (1450 Km). The total Number of outlets in Ghotki Feeder Canal is 3874. Ghotki Feeder was originally a non perennial canal but now is working as perennial canal. Total CCA of the canal is 83,000 acres (0.336 Mha).

The Nara Canal irrigation system is the largest system in Sindh in terms of the cultivable command area (CCA). In terms of discharge, it ranks third in Sindh. The canal receives perennial supplies from the Left Bank of the River Indus at Sukkur Barrage.

The first 155 km length of the Nara Canal serves approximately 270,000 acres (109,312 ha), which is 11% of the total CCA of the Nara system. The Nara irrigation system below Jamrao Weir constitutes 89% of the total CCA of the Nara system. The area below Jamrao Weir (at RD 575 of the Nara Canal), is served by 4 main canal systems namely Jamrao Canal; Mithrao Canal; Khipro Canal and the Lower Nara Canal including Thar Canal. Total CCA of the Nara Canal System is 2.3 million acres (0.93 Mha)

Chotiari Reservoir, an off-stream reservoir, is a part of the Nara Canal System. The Reservoir was constructed as a part of the Left Bank Outfall Drain (LBOD) Project. The reservoir has a gross capacity of storing 0.71 MAF (0.87 BCM) with a live capacity of 0.67 MAF (0.82 BCM) of water during floods in the Indus River. It is to be released in winter and early summer months to the Lower Nara Canal below Makhi Weir. The water will be drawn from Nara Canal in summer months and would be available for the remodeled Jamrao Canal command in Sanghar and Mirpurkhas districts in LBOD project area.

The Akram Wah feeder canal conveys the water from the Kotri Barrage to the Gaja Branch at RD 110, and then again to the very tail of the Left Bank Canal South East of Tando Bago and Badin.

The intermediate area (over some 200 RD) is irrigated through the Fuleli Feeder. The Akram Wah is concrete cement (CC) lined from the head up to RD 110 and from RD 130 up to RD 190 (Matli - Tando Gulam Ali Road bridge). The section between RD 110 and 130 is brick lined. It has a CCA of 483,000 acres (197,000 ha).

The Fuleli feeder canal conveys the water from the Kotri Barrage to the middle reach of the Left Bank Canal. Its first major take-off is at RD 145 to the Guni Branch. It has a CCA of 929,000 acres (376,100 ha).

Groundwater:

The water table in the project area is generally at shallow depths and the groundwater in most of the Project area, except in parts of Ghotki command is highly saline and unfit for irrigated agriculture. Agriculture is adversely affected by soil Salinization and sod city.

Drainage:

- **Nara Canal AWB:** The drainage infrastructure consists of 2,000 Km of surface drains inclusive of the spinal drain of LBOD. The sub-surface drainage comprises of 2,034 standard tube wells, 361 scavenger wells and 1,100 Km of tile drainage.
- **Left Bank Canals AWB:** The drainage infrastructure extends from beyond Tando Mohammad Khan till Badin comprising of about 480 miles (800 Km) of surface drains with approximately 2,400 inlets. There is no sub-surface drainage system in the area.
- **Ghotki Feeder AWB:** There are only 2 drainage systems operating in the area a) The Karo Naro drain in command of Ghotki Feeder has a catchments area of 0.13 Ma (0.05 Mha). The drain is about 48 miles (80 Km) in length with 400 structures. b) The Ghotki drainage system runs parallel to the Ghotki Feeder the purpose of this drain is to collect seepage water of the Ghotki Feeder and thereafter recycle the water by means of 9 pumps back into the Ghotki Feeder.

Agriculture:

Average Crop Yield per Acre (Kg) and Intensities (%)

Crops	Yield Kg/Acre	Cropping Intensities WP (%)
Kharif Crops		
Rice (Irri)	842	25
Millet	346	3
Cotton	612	25
Kharif Fodders	7,287	3
Kharif Vegetables	2,909	4
Rabi Crops	-	-
Wheat	804	29
Rabi Fodders	11,932	2
Rabi Vegetables	3,742	3
Perennial Crops	-	-
Sugarcane	23,675	4

Orchard	1,776	3
Overall		101

vi) For multipurpose projects, provide basis of allocation of costs between different purposes.

vii) Engineering projects be supported by technical background data and each distinct segment of the project be described separately.

The Project would consist of the following components:

Component A: Community Development and Capacity Building.

Sindh Irrigation and Drainage Authority’s (SIDA) capacity would be enhanced to carry out functions in accordance with the Sindh Water Management Ordinance (SWMO) of 2002 in managing water resources in the province and irrigation and drainage services. SIDA would be the main implementing agency under the project responsible for recruitment of consultants, carrying procurement of major contracts, managing project funds and disbursements from the IDA credits. The Project would provide support in rehabilitation of SIDA offices, developing capacity to transform I&D services from traditional system to new structure of FOs and AWBs, by providing staff with expertise in social mobilization, capacity building of FOs, training, legal advisors, and by establishing an Environmental Management Unit (EMU). The EMU would be responsible for environmental assessment of the investments, assisting in designing investments in a participatory way incorporating environmental issues, and monitoring the long term as well as during construction impact of major investments in the Province. The Project would also strengthen the office of the Chairman of SIDA (currently Minister of Irrigation and Power Department).

The component would help SIDA to acquire an image of modern service oriented organization with clearly defined roles and responsibilities in the irrigation and drainage sector. For that purpose SIDA would develop detailed rules of business for its own internal functioning as well as in delivering the mandated services. Among other things SIDA would: (a) develop rules, procedures, guidelines, for management of water resources and I&D systems in the province; (b) procurement rules, financial management and audit procedures, administrative rules and procedures; (c) staff rules and procedures for recruitment, code of conduct, administrative powers and decision making process within the organization, and (d) technical standards, design specifications for various kinds of infrastructure; and (e) O&M procedures, standards, yardsticks and inspection mechanisms, etc. SIDA would then establish a management information system consisting of all data related to water resources management, irrigation and drainage, water flows in the river, canals, and drains, and plans for operation of the canals. SIDA would link the management information

system (MIS) with its website for disseminating the information to public. In particular, SIDA would disseminate the information about irrigation scheduling, operation of the canals planned and actual, flood forecasts and warnings. As suggested by several respondents in the social assessment, SIDA would explore the possibility of establishing a radio station/or broadcasting information on local radio sing FM bands. Around mid-term of project implementation, progress in the institutional reforms would be reviewed and depending upon the readiness of the Government the Project would support establishment of a provincial regulatory authority for regulation irrigation and drainage services and water resources management in accordance to the provision of the SWMO 2002. Terms of Reference / Main Description of SIDA Secretariat is **attached as Annex-C**

Three Area Water Boards (AWBs) that have been established already would be strengthened to perform their functions according to the SWMO 2002 which includes: (a) O&M of parts of the irrigation system such as the main canals and branch canals and provide water to the FOs according to the authorized discharge for the canal command and agreements reached under Irrigation and Drainage Management Transfer Agreement (IDMTA); (b) O&M of parts of the drainage system including drainage tube-wells, drains with capacity larger than 15 cusecs in its area (inter-AWB drains are to be managed by SIDA); (c) carry out flood protection and maintain infrastructure within its command area; (d) promote formation, development and growth of the FOs in its command area into self-supporting and financially self-sustainable entities; and (e) advise Provincial and or Local Government on any matter strategic or tactical, related to I&D system and its functioning. The Project will strengthen capacity of Ghotki, Nara and Left Bank AWBs, by providing incremental technical, financial and administrative staff and incremental operating costs that are required for improving the functioning of the AWBs and satisfactory implementation of the Project.

For the Project implementation AWBs would be responsible for main and branch canal improvements, as well drainage improvements in their area and support design and supervision of the works on the distributary level carried out by the FOs. Terms of Reference / Main description of Establishment of AWBs is **attached as Annex-D**.

Capacity Building of Farmers Organizations (FOs). The SWMO 2002 assigns crucial functions in irrigation management to FOs formed at the distributary/minor level -- the point where water control lies in Pakistan's irrigation system. It empowers them to receive water from AWBs, operate and maintain the parts of the irrigation system conferred on them to ensure efficient and equitable distribution of water including small and tail end farmers, to supply non-agricultural users and to guarantee drinking water; operate and maintain the parts of the drainage system conferred on them; carry out flood protection and maintain infrastructure within their command area; and advise Local Councils on any matter strategic or tactical, related to its role and functions. The FOs would collect *abiana* (water charges) and other

dues, if any, from the water users and users of the drainage systems, including the costs charged for supply of irrigation water and conveyance and/or disposal of drainage effluent by the AWB and SIDA and surcharge for late payment on such dues and other charges. FOs have the authority to reduce irrigation water supply services to watercourse associations upon non-payment by one or more of its water users of due water charges. The FOs would pay 60% of their revenue target to the AWB and would retain 40% of the collected revenue for O&M of the system under their jurisdiction. FOs would cover sufficiently large areas (an average command area of about 4,500 ha), and would generate sufficient revenue to carry out O&M in a cost effective manner. Therefore, capacity building of FOs is crucial so that they can carry out all these crucial functions of I&D services effectively.

In three AWBs there are about 369 distributaries/minors. FOs have been formed on about all distributaries/minors, under the National Drainage Program (NDP), ongoing Sindh OFWM Project and other national programs under which FOs formation is still ongoing. The primary focus of the Project would be to strengthen and enhance capacity of FOs. If there are some distributaries on which FOs are not formed by the start of the Project then the Project would provide support in establishment of FOs on such distributaries. The capacity building efforts under the Project would be aimed at about 269 FOs while remaining 100 FOs would be covered by the Sindh OFWM Project.

The Project would provide: (a) the services of an Assistant Engineer knowledgeable about the operation of the distributary canal, functions of various hydraulic structures, and capable of assisting FOs in identifying and prioritizing the rehabilitation and improvement works that need to be carried out on the distributary to improve its functioning to effectively deliver water to all of its users.

One Assistant Engineer would cover about five distributaries at a time and help FOs to liaison with the design and construction supervision consultants (Project Implementation Consultants –PIC).

The Social Development Cell through Assistant Engineer would also provide training to the FOs staff in O&M and rehabilitation work which may be necessary in future so that FOs would be able to run the distributary canals in the long run. About 13 to 14 Assistant Engineers would be recruited under the Project and assigned to work with the FOs; (b) training the FOs in I&D management, collection of Abiana, accounting and book keeping, assessment of O&M budget, conflict resolution etc.; (c) offices, office equipment and computers, motorcycles, bicycles, and flow measuring equipment. Provision of offices, and equipment FOs for 173 distributaries for which rehabilitation would be carried out under the Project would be included in the civil works contracts. For 96 FOs which are formed under the national program (but that does not provide for their capacity building), the offices and other equipment is included in this component. Terms of Reference / Main description of Formation of

FOs is **attached as Annex–E**

Component B: Improvement of Irrigation and Drainage System.

This component will cover the improvement of irrigation and drainage system including implementation of modernization works including water metering and control structures and programs at all levels of the selected command areas in the jurisdiction of the three AWBs; Ghotki Canal, Nara Canal, and the Left Bank Canals covering the Akram Wah and Fuleli Canals. The hydraulic infrastructure will be upgraded to make water delivery more reliable, flexible, efficient, and equitable. This will be achieved by renovating degraded canals, installing new types of water control and flow measurement structures.

This component also aims to improve the management of I&D services so that infrastructure can be utilized effectively. Each AWB will prepare and implement comprehensive plans covering operations, maintenance, and financial management. The improvements in the irrigation and drainage infrastructure are aimed at bringing more accountability and transparency in the selected canal command areas. It will be ensured that no duplication will occur for Rehabilitation / Improvement works.

B1. Main and Branch Canals.

The component would include main and branch canals of Ghotki canal system, Nara canal system and Fuleli canal system. Feasibility Study is underway for the enlargement of the Akram Wah canal system in the Left Bank AWB. If necessary the project would supplement the funds for preparation of detailed feasibility and designs for the Akram Wah system.

The investment related to improvement of main and branch canals of Akram Wah may be included in the future project after completion of detailed design, and environmental and social studies. For Ghotki, Nara and Fuleli canal systems the Project would cover some 824 km of main canals and 980.7 km of branch canals. Improvement works for the main and branch canals would generally include the following type of works: (a) remodeling of Feeders canals, Main Canals and Branch canals on the basis of latest sanctioned discharges, determined based on the actual flows at the head of the canal over the last ten years; (b) constructing proper section of the canal, strengthening of banks and inspection paths; (c) rehabilitation or reconstruction of the regulating structures, repair/replacement/motorization of regulator gates; (d) installation of gauges and control structures for measuring flows in the main and branch canals and at the distributary off take points; (e) repairs or reconstruction of operational buildings near the regulators, field offices, and guest houses that are necessary for the operation of the canal system; (f) rehabilitation/replacement of road bridges, where necessary; (g) construction of escapes, where necessary, to avoid overtopping; (h) planting of trees in the right-of-way beyond the inspection and non inspection paths; (i) restoration of markers showing

distance from the head of the canal (RD markers); and (j) other crucial rehabilitation/remodeling works identified during the design preparation.

In addition to rehabilitation and improvement to canals, a system of water measurements and accounting would be introduced through out the main and branch canal systems and at the distributaries and minors. For that purpose appropriate flow measuring sections would be constructed and water measuring devices would be installed throughout the canal system. A data communication network would be installed to gather information and send to central locations at AWBs and SIDA offices. A database and management information system would be developed to collect, store and disseminate flow data helping system wide water management. Modern control rooms for operation and management of the canals would be established at the AWBs and the SIDA. SIDA's management information system (as outlined in SIDA component) would be developed under this component along with strengthening if website and possibility of broadcasting the water management information on FM radio.

Detailed designs for rehabilitation/improvement of main and branch canals systems would be prepared during the project implementation. Full design report outlining the technical, environmental, social and economic aspects along with any EMP or social management plan (SMP) would be prepared according to the Bank guidelines for each canal system. These design reports upon approval would form the basis for preparing the bidding documents for carrying out the construction works and implementing EMP and SMP actions where necessary.

B2. Distributaries and Minors.

Rehabilitation of distributaries/minors is most crucial for improving water distribution efficiency and equity. There are about 369 distributaries and minors in the Project area i.e. the three AWBs. About 100 distributaries in these AWBs would be covered by the Sindh OFWM Project and about 46 under the national program. The Project would cover about 170 distributaries/minors with a length of about 1802 km would be rehabilitated and improved under the project.

The FOs would be involved in all stages of work on the distributary/minor canals including identification, planning, and prioritizing, designing and construction of rehabilitation and improvement works. The rehabilitation works would be designed in lots of 5 distributaries adjacent to each other or as close as possible. As stated above, for FOs strengthening one Assistant Engineer would be assigned covering the 5 distributaries at a time. The FOs would prepare an assessment of condition of the distributary, problems, and possible remedial works that are required to fix the problems. In identifying the work a join walk through would be done by the FOs supported by its Assistant Engineer and the design and supervision

consultants (Project Implementation Consultants –PICs). The rough cost estimates for these would be prepared with the help of the design and supervision consultants (PICs) and works would be prioritized with the available budget. PICs would prepare a design report for each lot of five distributaries outlining the major issues, outcome of the joint walk through of the channels, prioritization of works, technical solutions, design parameters, cost estimates, and environment and social impact that has to be accounted for in design and construction management, etc. These design reports would form the basis for preparation of construction plans, detailed designs and bidding documents, implementation of environmental and social action plans.

An allocation of Rs. 1,200 per acre is made for distributary canals in Ghotki and Nara canal command and 1,680 Rs. Per acre for distributaries in Fuleli and Akram Wah these channels generally having higher discharges. The works at the distributary channels may cover (i) desilting, creating proper section of the distributary channel; (ii) reconstruction of channel banks and berms, inspection path and strengthening of the non inspection path bank; (iii) reconstruction of outlets; (iv) repair and reconstruction of head any regulating structures in the distributary; (v) construction of measuring sections, and buffalo wallow, washing ghats where necessary; (vi) rehabilitation and construction of foot and road bridges, construction of the RD markers, and any other works identified by FOs; (vii) plantation of trees on land available along the distributary; and (viii) rehabilitation/construction of FOs' offices, provision of office equipment, furniture, facilities, and stationery. The selection of works would be done by the FOs based on their own priorities within the available funds. FOs would have the option to carry out distributary improvement works under community based contracts (project selection criteria attached *as Annex-F*).

B3. Improvements of the Drainage System.

Substantial investments have been made in improving the drainage system in the project areas in recent years under various projects. While the main focus of the WSIP-I is irrigation infrastructure some funds are provided to address major bottlenecks that may exist in the project area for safe disposal of the drainage effluent and areas managed by the FOs. The works to be included in this component would be identified by SIDA/AWBs in consultation with the FOs with a primary focus to provide drainage relief to the area where FOs have taken over the management of the Irrigation and Drainage system.

B4. Design and Construction Supervision.

This component would cover the cost of Project Implementation Consultants (PIC) recruited under the Project for carrying out surveys and investigations, consulting services for consultations with the FOs in identifying and prioritizing the works, preparation of detailed designs, bidding documents, procurement of works, and construction supervision covering all works included in components B1 to B3.

The Project Implementation Consultants will be engaged through a

rigorous process of selection and would be responsible for Engineering, Design and Supervision Consultancy to assist the Implementing Agencies (IAs) to design and implement physical works of Irrigation and Drainage infrastructure under WSIP in Ghotki Feeder Canal Area Water Board (GFAWB), Nara Canal Area Water Board (NCAWB) and Left Bank Canal Area Water Board (LBCAWB). The physical works for which the Consultants would assist IPD/SIDA; AWB and FOs to implement according to the scope summarized in the PC1. The Consultants will also have specific responsibilities for the production of reports and designs, and act as the “**Engineer**” for the supervision of major contracts. The objective of the consultancy will be as follows:

- a) To determine the priority of works and also determine to package those works by ensuring overall efficiency in implementing works;
- b) To supervise the field/condition survey for design and prepare cost estimates of the sub-projects;
- c) To prepare, design and supervise schemes for the improvement of canal commands and modernization of the irrigation infrastructure in GFAWB, NCAWB and LBCAWB;
- d) To conduct joint walk through survey with FOs to identify works of Rehabilitation, Improvement of Distributaries/ Minors
- e) To prepare, design and supervise schemes for the improvement of drainage systems in GFAWB, NCWB and LBCAWB;
- f) To prepare bidding documents and evaluation of bids;

The Consultants will be required to hire services of highly specialized and technical staff to implement the sub-projects of Main and Branch canals.

Technical studies and finite element modeling will be required to study the flow of irrigation water in the canals. The works will involve the rehabilitation or reconstruction of the regulating structures and motorization of regulator gates by means of flow measuring devices through remote sensing. A data communication network would need to be installed throughout the canal system. For this purpose foreign qualified personnel will be required or probably an association of foreign and local consultants would be engaged. Offices of consultants will be established in all AWB areas with its headquarters at Hyderabad to liaison with SIDA main office. Sophisticated survey and testing equipment will be needed to coordinate works at sites.

Duties of the Project Implementation Consultants (PICs)

The Consultants will be responsible for carrying out preparatory work to assess and rank the sub-projects for Rehabilitation/ Improvement of Main canals, Branch canals, Distributaries and Minors. FOs will prepare assessment of condition of the distributaries problems and possible remedial measures that are required to overcome these problems. To identify work PIC will conduct joint walk through surveys with FOs supported by their Assistant Engineers.

PICs would prepare a design report for each lot of five distributaries

outlining the major issues, outcome of the joint walk through of the channels. Prioritization of works, technical solutions, design parameters, cost estimates and **environment and social impact that has to be accounted for in design and construction management**. The design reports prepared by PICs will form the basis for preparation of construction plans, detailed designs and bidding documents and implementation of environmental and social action plans. The Consultants' detailed duties for survey, design, procurement and supervision are as follows.

a) Feasibility Report

A sub-project report will be prepared for each sub-project which will form basis for its evaluation and ranking by the competent authority. The Report will contain, (i) a strategy for improvement/development of the irrigation/drainage basin, (ii) an initial social assessment;(iii) an environmental screening in the form of an initial environmental examination (IEE) and where potentially significant negative environmental impacts are identified, an environmental impact assessment (EIA); (iv) a description, how views of affected groups and local NGO's are reflected in the design; (v) feasibility-level details on the scope and cost of the works; (vi) economic and financial analysis (vii) a land acquisition and resettlement plan and budget; (viii) a beneficiary participation plan; for post-construction O&M and details about annual O&M costs.

b) Surveys

Channels will be surveyed by taking cross sections at more than 200 m longitudinal centers, and in sufficient detail to accurately portray the hydraulic properties of the channel and the configuration of banks, roads, and other features. Surveys will extend at right angles to the channel to include all associated embankments, roads and spoil heaps to cover at least 10 meters each side beyond the Right-of-Way of the respective channels. Structures on existing channels will be surveyed in sufficient detail to establish their hydraulic properties, including the form of transitions to the channel shape. Structures will also be surveyed for structural condition, including: evidence of corrosion of reinforcement and steel fittings, spalling, cracking or other signs of concrete distress, and evidence of settlement or other movement. Where the structural capability of important structures cannot be ascertained from drawings and inspection, they will be load tested.

c) Planning and Design

Prepare a detailed implementation schedule and Critical Path Method diagram covering the design, procurement, and implementation phases of the project. Update the schedule

and diagram monthly or more frequently if required, to track physical and financial progress, so as to preclude delays in Project implementation. Establish criteria, for procurement and supervise the execution of the required investigations and surveys. The additional investigations and surveys will be produced separately by the Consultants through sub-contracting to specialized firms/agencies.

Prepare detailed drawings, specifications, and bills of quantities suitable for the bidding documents for the works and facilities. The drawings and specifications will fully define the works and facilities and will include drawings. Advise the Client on the appropriate size and scope of contract packaging for the works and facilities, in line with the policies of IPD/SIDA.

d) Preparation of Bidding Documents

Prepare prequalification documents based on World Bank standard format and guidelines, prepare advertisements, and evaluate prequalification applications for the construction of the works and facilities, in accordance with WB guidelines on the Prequalification of Civil Works Contractors. Where necessary, also recommend short lists of contractors to be invited to bid.

Prepare bidding documents for the construction/supply of the works and facilities in accordance with the World Bank Standard Bidding Documents adopted by the Pakistan Engineering Council. The procurement of goods, or the supply, Delivery and Installation of Goods, as the case may be, making or adapting the Conditions of Contract, Forms of Tender, and Invitation for Bids as appropriate, but without departing from the essential concept of standardized Bidding Documents. Submit the Draft Bidding Documents to the Client and the Donor for their approval prior to their finalization and calling for bids.

Prepare draft advertisements, prepare letter of invitation to submit bids, evaluate bids received, and prepare an evaluation report for the Client, in accordance with World Bank format for the approval of the Client and Donor. Advise and assist the Client in the award of the contract, including requesting clarification of bids, examining and verifying certificates and bonds, and drawing up the contract for signature.

e) Supervision of Supply, Survey and Construction as the Engineer

Develop and implement a program of effective joint survey/construction supervision and inspection of materials, equipment and other goods, to ensure adequate quality

control, compliance with specifications and other provisions of the contract, and accurate measurement of completed works and facilities at the site.

Prepare plans and all detailed drawing and verify reinforcement schedules necessary for construction works and facilities, but excluding shop drawings of equipment, steel fabrications or temporary works, including shuttering for concrete.

Maintain a permanent presence on construction sites during the Contractor's working hours, and issue instructions to Contractors and generally supervise the execution of the works and facilities as "The Engineer" as defined by the construction contract. Approve as built drawings, documents and manuals prepared by the contractor. Review contractors' payment applications, certify work performed, and certificates for payment to the contractors by the Client, in accordance with the construction contract. IPD, SIDA and AWBs staff will be seconded with consultants.

Component C. Management Plans for Major I&D Infrastructure.

The component would include:

C1: Feasibility Studies for Barrages.

Three barrages in Sindh were constructed a long time ago and due to age, overuse and lack of O&M these are all in dire need for rehabilitation. The Guddu barrage (constructed in 1962) in particular is facing sever hydraulics problems, which can be exacerbated with addition of the Raine canal as planned and high floods. The Project would support detailed technical, hydraulic modeling, environmental and social studies necessary to investigate the problems and design the remedial measures to make the barrages safe for operation.

The Sukkur barrage (constructed in 1932) is one of the largest barrage in the country serving 7 canals and some 3.2 million ha of land. The barrage has several problems. Several emergency repairs have been carried out recently. The GoSindh has appointed consultants for conducting feasibility study for long term remedial measures. The studies, commissioned by the Irrigation and Power Department (IPD) are underway; also hydraulic studies are undertaken at the Punjab Irrigation Institute at Nandipur. The Project would provide support for completion of these studies, if necessary as well as for review by a panel of experts that may be required for developing an investment project that can be financed by the international development partners.

Rehabilitation of Kotri barrage (constructed in 1955) has been completed recently and there seem to be no major issues with the

barrage. If necessary the Project would finance inspection as well as assessment of the state of the Kotri barrage and studies for designing any remedial works that may be necessary.

C2. Preparation of Master Plan for Left Bank of Indus, Delta and Coastal Zone.

The component would support detailed studies and preparation of a master plan for addressing the flooding issues and providing proper drainage to the area on the left bank of the Indus river considering structural and non-structural measures, including remedial measures for any outstanding deficiencies in the Left Bank Outfall Drainage system, measures for retention and/or safe disposal of storm and flood water, rehabilitation and improvement of wetlands in the delta area and in the coastal zone.

Flood Management Plan for the Left Bank of the Indus River.

The Project will support the preparation of a comprehensive flood management plan for the Left Bank of the Indus River in Sindh including the Indus delta and coastal areas. This regional drainage master plan, agreed with local stakeholders during preparation of the National Drainage Master Plan, will encompass both surface drainage, sub-surface drainage, water logging and salinity control and flood risk management, and will include appropriate structural and non-structural options (e.g., flood warning and communications, flood proofing and improved preparedness and response systems). Planning and infrastructure management capacity will be built and the capacity of local authorities will be strengthened. A modern, world-class knowledge base will be developed with appropriate analytical tools and information management systems to support planning, operations and management. The detailed design would be prepared and made ready for implementation of the priority works identified under the master plan under a future investment project that Sindh may undertake with the assistance of its development partners.

Coastal and Indus Delta Development Programme: The deltaic coastal area of River Indus is facing environmental problems arising due to sea water intrusion, global climatic change and increase in sea-level due to diversion of flows, morphological changes and greenhouse effect. These environmental issues have caused great impact on River Indus especially at its riverine area. These problems have also shrunk the mangroves area, which were largest in extent some years back, riverine forests and increase in salinity level. These factors have ultimately led to a significant loss of river and sea products like fish and prawn besides flora & fauna. These developments and challenges in the Indus basin delta & coastal region require a serious examination, drawing upon international experience, in order to identify and assess environmental mitigation measures. Strategy would be developed that recognizes the environmental importance of the region and its considerable economic potential. A series of workshops seminars will be organized to interact with professionals, civil society and other key

stockholders for formulation of development programs.

Component D: Monitoring and Evaluation of the Project Impact and Environmental Management Plan. (EMP)

M&E Consultants will work under supervision of Planning and Development Department. The M&E activities would provide continuous feedback to the GoSindh, PSC and implementing agencies on the project's performance and impact of its various components, so that corrective actions could be undertaken in a timely manner. They will also supervise implementation of the overall EMP, careful review and monitoring of subproject specific social and environmental management plans and supervision of their implementation. The M&E activities are thus likely to cover, but not limited to: (i) the impact of the I&D improvements on water use efficiency at various levels of the system, reliability and equity in water distribution, irrigation water supply at various levels of the system and drainage flows, ground water levels and quality, and soil salinity; on-farm water use; cropping patterns and yields; and livestock population, health and production;

(ii) performance of the FOs and their activities in O&M of the system, service delivery and collection of *abiana* and availability of budget for management of the system; (iii) environmental impact of construction activities in the project area in particular on any wetlands, ecologically important sites, population and livestock; (iv) any acquisition of public and private land and assets, agreements reached and arrangement made for acquisition of assets on a voluntary basis; (v) Socio-economic impact and the impact on the level of unemployment and household incomes in the project area; estimation of the project's overall benefits and economic rate of returns etc. M&E would be carried out using latest technology such as satellite imagery and GIS systems.

Environmental Management Plan

It is a natural fact that mankind has been settling and hebetating their villages, towns and cities beside the banks of Rivers and natural or artificial streamline of water resource for many thousand years. In initial era, people passed their lives in jungles and woods and they got food from raw material of woods when they gradually thought to live together for passing social life. They knew that individuals could not complete needs and wishes of leading life; accordingly, they would have to depend on each other for developing societies. Interventions under EMP would be as under;

- Identification and record of industrial and urban sources, which are discharging their effluents in to Pinyari canal.
- Determination and categorization of pollutants.
- Determination of groundwater quality and its possible contamination level.
- Determination of impact of noxious gases emitting from the canal.
- Raising awareness among the community about water pollution, its impact and control measures.

- Encourage municipal and Industrial Authorities to implement and maintain effective sewage Treatment Plants.
- To propose safe and efficient surface collection systems for industrial and municipal effluents and where ever-possible sub surface pipe systems for sewage.
- Guidance and suggestions for adopting real on-site control on industry, to treat pollution at source.
- To maintain and encourage to implement the National Environmental Quality Standards (NEQS) to the potential polluters.

Development of regulatory framework/ guidelines for pollution control. The Environmental Management Plan is to mitigate the adverse environmental impacts and to enhance the positive impacts due to urban and industrial effluent. The City municipalities and industrialists will be advised to install treatment plants and not to discharge polluted water into fresh water channels. Environment condition of Sindh can be ameliorated. There is only source of controlling over adverse diseases that are waterborne by legal action.

Therefore, social life and activities lead them to accumulate and increase density of population in Urban area and developing of Industrial sector. The augment in density of demography and development of Industrial sector that have taken place cause of generating huge wasted solid material and effluent water and heinous and dangerous chemical from urban area and Industrial sector. The polluted wasted solid matter and water from Urban area and Industrial sector that have been reason of endemic diseases such as diarrhea, hepatitis and lung diseases etc. This polluted water from Urban and Industrial sector has been discharging into Irrigation network or Natural streamline that is flowing beside of Urban/Industrial sites.

There are many big cities of Pakistan settled on the banks of Rivers and artificial channels and they have been generating deteriorating environment and atmosphere of country but especially towns and cities of the province Sindh are situated near water bodies and the channels. Therefore, these cities always remain cause of polluting of environment of Sindh. Accordingly, it is necessary and compulsory to control on the disposal of wasted and polluted Urban and Industrial sites of the province of Sindh. There is dire need to make legal/regulatory framework to control over polluted water from Urban and Industrial areas into fresh water Channels. The Environmental Management Plan is to mitigate the adverse environmental impacts.

Component E: Project Coordination, Monitoring, Technical Assistance and Training:

This component would support the Government in implementing the project, coordinating all project related activities and preparing a follow-on project. It would include: (i) support for the operation of the Project Coordination and Monitoring Unit (PCMU) within the Planning and Development (P&D) of Sindh; (ii) project management

and supervision consultants/procurement agent (PMCA) for recruitment and management of all consulting services and staff under the project and monitoring of their performance; (iii) technical assistance and SIDA training center in such areas as detailed design, contract administration and construction supervision, procurement, financial management, legal issues, irrigation and drainage and agricultural development; (iv) project preparation (feasibility studies and preparation of bidding documents) for the WSIP Phase II; and (v) strategic studies and pilot projects which may be identified during the project implementation.

Some of the research studies and pilot projects may include: (a) study for improving revenue assessment and collection, improving the effectiveness of FOs; studies on the commercial exploitation of SIDA AWB assets; (b) introduction of modern tools for irrigation scheduling in the project area, at the branch and distributary canal level and at the AWB and FO level; (c) assistance with budgeting and accounting for O&M to the AWBs, and FOs; and (d) training and study tours; (e) studies for improving water management in the region in the delta area and coastal zone; (f) monitoring of key hydraulic infrastructure in the province; (g) reuse of industrial effluents and waste by sugar industries; (h) low cost water treatment technologies including tested package of low cost household level water treatment methods (such a filters, coagulation) disseminated to local organizations; (i) biological control of water logging, waste water reuse, use of poor land/ saline water for agro forestry; (j) commercial use of silt from the canals, effective weed control in drainage network; and (k) development of inland fishery and research on development of mangroves. (l) Impact on lower riparian due to infrastructure development on Indus for last 50 years in terms of Environments, Ecology, Forestry Agriculture fisheries and wildlife.

The research proposals prepared by SIDA would be reviewed and scrutinized by the Research Advisory Committee (RAC), in the pattern of NDP Project. RAC would be constituted by the Managing Director SIDA. Research Studies would be implemented on approval of Project Steering Committee. It would be ensured that there is no duplication of research work. The RAC would comprise representatives from concerned research originations, universities and NGOs, IDP, PCMU CDA.

7. Capital Cost Estimates

Project Allocated Cost Estimates and Financing (Million)

Project Components	Total Cost		IDA Credit		GOS Rs.
	US \$	Rs.	US \$	Rs.	
A. Community Development & capacity Building	10.00	610.0	10.00	610.0	
A1 Capacity Building of SIDA	3.20	195.2	3.20	195.2	
A2 Capacity Building of AWB	5.20	317.2	5.20	317.1	
A3 Capacity Building of FOs	1.60	97.6	1.60	97.6	
B. Improvement of Irrigation & Drainage System	139.8	8527.8	115.0	7015.0	1512.8
B1 Main and Branch Canals	73.40	4477.4	58.70	3580.7	896.7
B2 Distributaries and Minors	49.20	3001.2	40.70	2482.7	518.5
B3 Drainage System in FOs Areas	8.00	488.0	6.40	390.4	97.6
B4 Design, Engineering & Construction Supervision	9.20	561.2	9.20	561.2	
C. Asset Management of Irrigation & Drainage Infrs.	12.00	732.0	12.00	732.0	
C1 Strengthening Office of Secretary I&P Department	0.194	11.834	0.194	11.834	
C2 Feasibility Study & Design for rehabilitation of Barrages	4.806	293.16	4.806	293.16	
C3 Preparation of Master Plan for Irrigation & Drainage System	7.00	427.0	7.00	427.0	
D. Project Monitoring, Eva. & Supervision of EMP	4.20	256.2	4.20	256.2	
D1 Monitoring & Evaluation Consultants	1.72	104.92	1.72	104.92	
D2 Monitoring & Eva. Activities	0.84	51.24	0.84	51.24	
D3 Environmental Management Plan	1.23	75.03	1.23	75.03	
D4 Social Studies	0.41	25.01	0.41	25.01	
E. Project Management, Coord. and Technical Assistance	9.00	549.0	9.00	549.0	
E1 Project Coordination and Monitoring and Supervision	1.80	109.8	1.80	109.8	
E2 Project Management Consultants/Procurement	1.70	103.7	1.70	103.7	
E3 Future Project Preparation in	2.50	152.5	2.50	152.6	

Water Sector including WSIP-II					
E4 Technical Assistance, Training and Strategic Studies	3.00	183.0	3.00	183.1	
Total	175.0	10675	150.2	9162.2	1512.8

Detailed Cost Estimates of various components are attached as **Annexure - G**

- i) **Indicate date of estimation of Project cost.** Base Cost as of August 2005 and projected to July 2007 (Project Start). However, for the purpose of financial and economic purpose, June 2006 prices has been adopted (Annex-I)
- ii) **Basis of determining the capital cost be provided. It includes market survey, schedule rates, estimation on the basis of previous work done etc.** The cost for rehabilitation of main and branch canals and distributaries are based on cost estimates for similar works carried out in Pakistan on canals in Sindh as well as in other Provinces under different projects. Based on such sample of canal works estimates were made for cost per acre of command area and used as unit rates.
- These unit rates were then applied to estimate the cost of rehabilitation for the canals in the project area. For distributaries it is assumed that average size of the distributaries would be about 10,000 acres (some distributaries would be larger and some would be smaller). For Ghotki and Nara canals cost per acre is assumed as Rs. 1,200 per acre or about and for Left Bank canals which have higher discharges about 1,680 per acre. For rehabilitation of canals unit cost per acre is taken as Rs. 960. Physical contingencies are added to these costs. These costs are considered based on the recent experience and reasonable for rehabilitation/improvement of the canal system. Costs for strengthening for SIDA, AWBs, FOs, PCMU etc, are based on the equipment, vehicle cost collected from the market and recent bids. Similarly cost of staff salary and operating expenditures are based on recent estimates. The cost for consulting services are based on the scope of work required, expected TORs and staff month required for carrying out such assignments. The cost of various components have been re-adjusted in accordance with Project Appraisal Document March 31, 2007 issued by the World Bank after negotiations held on March 29-30, 2007.
- iii) **Provide year-wise estimation of physical activities:** Year wise estimation of physical activities of the project are given in attached **Annex-G (Table B-2, B-3, B-4, B-5, B-6, B-7 & B-8)**
- iv) **Phasing of Capital cost be worked out on the basis of each item of work as stated above:** Total Project Cost is estimated to be Rs. 10,675 Million year – wise phasing of capital cost is given in **Annexure – G (Table G-2)**
- 8. Annual Operating Cost**
- **Item-wise annual operating cost based on proposed capacity utilization be worked out for 5 years and sources of its financing.** The operational costs are about Rs 143.57 million annually.
- O&M costs are derived from the IPD Yardsticks as mentioned in the Operation and Maintenance Manual of IPD. In long run the AWB and FOs would cover the O&M cost from their own resources.

9. Demand and supply analysis

- Existing capacity of services and its supply/demand ---

Projected demand for last 10 years. ---

- Capacity of the projects being implemented in public/private sector. SIDA has also been implementing various projects/schemes (other than NDP) being funded locally and by different donors.
Second Flood Protection Sector Project: This project has been implemented by SIDA with 75% share of Asian Development Bank 25% GOP share. Under this project, 20 schemes have been completed costing Rs.1105 million.
Sindh On-farm Water Management Project: Under Sindh On-farm Management Project Social Mobilization/ formation of 100 FOs and capacity building of existing and new FOs, establishment of information kiosks and Rehabilitation / Improvement of 100 Distributaries / Minors and 25 Branch Canals in three AWBs is in progress.

National Drainage Program (Reprogramming): 59 contracts costing Rs. 570 million are under implementation, which comprise 38 contracts for modernization of 46 Distributaries/ Minors in Area Water Boards of Nara Canal, Left Bank Canal and Ghotki Feeder Canal Rehabilitation of existing of Drainage Systems and Repair of Ghora Bari Outfall regulator and Construction of Phul Daulatpur Drainage Scheme is in progress.

Rehabilitation / Revamping of Irrigation and Drainage components are being implemented in three Area Water Boards.

- Supply – demand gap. 1.673 m ha will be benefited against 1.827 m ha
- Designed capacity and output of the proposed project. Channels will be rehabilitated as per design. The project will result efficiency, reliability in water distribution due to structural improvement and participatory Irrigation management.

10 Financial Plan

Sources of financing

- (a) Equity: ----

Indicate the amount of equity to be financed from each source

- Sponsors own resources ----

- **Federal government** -----
- **Provincial government** Rs. 1512.8 Million (US\$ 24.8 million)
- **DFI's/banks Local**
- **General public**
- **Foreign equity**

NGO's/beneficiaries

- **Others**

- b) **Debt** Rs. 9162.2 Million (US\$ 150.2 million) IDA Credit Final Aide Memoire of World Bank (**attached in Annex-H**)

Indicate the local & foreign debt, interest rate, and grace period and repayment period for each loan separately. The loan repayment schedule be also annexed. The project is being funded through IDA Credit with 0.75% overheads and the credit would be payable after 25 years.

The schedule of repayment will be decided during the negotiations with IDA.

- c) **Grants along with sources**
- d) **Weighted cost of capital**

11 Benefits of the project and analysis

- **Financial: Income to the Project along with Assumptions** The project will increase agricultural productivity on a total area of more than 1.837 million ha, as a result of improved availability, reliability and equity of water deliveries, and adoption of improved on-farm water management and agronomic practices by farmers. Direct quantifiable project benefits would include annual incremental agricultural production with estimated value of Rs 3.4 billion (June 2006 prices)

- **Economic: Benefit to the economy along with assumptions** The proposed project interventions would result in raising rural incomes and securing the availability of water for a broad range of purposes including timely and equitable availability of water particularly for tail end farmers by promoting and strengthening institutional reforms and making investments that facilitate better integrated water management and irrigation modernization. The project will increase agricultural productivity on a total area of about 1.837 million ha, as a result of improved availability, reliability and equity of water deliveries, and adoption of improved on-farm water management and agronomic practices by farmers. The Economic Rate

of Return (ERR) and Financial Rate of Return (FRR) of the project are estimated at **18.2% and 14.6%** respectively.

The economic value of project benefits has been calculated by estimating incremental outputs and inputs at parity prices. For non-traded commodities economic prices have been calculated by applying a standard conversion factor (SCF) of 0.9. Economic project cost has been calculated by applying the SCF and excluding taxes and duties. Cost of all project components, except, cost of component-C, has been taken into account. The project life is assumed to be 30 years including construction period of 5 years.

- **Social: Benefits with indicators**

An Integrated Social and Environmental Assessment (ISEA) was carried out covering the canal irrigated areas of the three canal AWBs namely Nara Canal, Ghotki Feeder and Left Bank Canals (Akram Wah and Fulelli). Consultations with the key stakeholders revealed that the project is socially beneficial and its implementation would provide key social and economic benefits i.e. improvement of water distribution especially at tail area, assured representation of small and tail end farmers in the FO, AWB decision making, improvement in the income of sharecropper, women farmer, improvement in the agricultural production through equitable distribution of irrigation water, and creating increased employment opportunities in rural areas of Sindh leading to improvement in the lives of vulnerable people. The explicit criteria for the social prioritization have been developed and will be used during screening and designing of subproject particularly those related to I&D rehabilitation works in the FOs areas. Specific social development outcomes and benefits include the following:

- The equitable sharing of project benefits by small and tail end farmers;
- Enhanced status of women through greater representation in FOs;
- Enhanced status of tenants and sharecroppers by encouraging their participation in FOs and in decision making for sub-projects and their implementation;
- Increased income earning opportunities for haris (sharecroppers) and waged laborers by ensuring that their inputs in development work and projects is recognized and paid for;
- in case of loss of land or assets it would be ensured that compensation and other assistance would enable affected people to at least restore their livelihood and income to pre-project levels, if not better off than before;
- The management information system to be developed by SIDA, among other things, would help in flood warning and operation of various water infrastructure thus helping to address some of the flooding issues in lower coastal areas;
- studies under C2 Component of the Project would provide an overall plan and detailed designs of priority works for addressing the flood and drainage problems in the area of left bank of Indus river and development of Indus delta and coastal zone that would be ready for implementation by the GoSindh jointly with its development partners in future.

Moreover, to address social safeguard issues that may be caused by any of the rehabilitation and civil works activities in the Project, a Social Impact Management Framework (SIMF), incorporating social screening process, is prepared for the Project.

Full design report for each canal system and the design reports for rehabilitation and improvement works for the distributary/minor canals would include, in addition to technical aspects, a social impact assessment report, incorporating social safeguard issues i.e. specific impacts on assets, incomes and livelihood, and any impacts on vulnerable groups including nomads and migratory indigenous groups; and appropriate mitigation measures and necessary safeguard documents in accordance with the provisions of the SIMF.

- **Environmental:
Environmental impact
assessment
negative/positive**

The Environmental Impact Assessment is a fundamental requirement of this project due to physical and biological environmental impacts during construction and post construction. An ISEA for the project was carried out as per the World Bank/ GOP guidelines. ISEA reveals that, based on the nature of physical works and subsequent effects, the negative impacts on the physical and biological environmental are limited whereas positive impacts would be substantial.

The rehabilitation and construction works involve major earth work, desilting, cutting of trees and plants, etc. The negative environmental problems and issues may be created due to following activities of rehabilitation and construction works;

- Traffic dislocation.
- Disposal of excavated earth and canal silt.
- Dust pollution.
- Noise pollution.
- Labor camps.
- Destruction of Flora and fauna.
- Borrow Pits for construction activities.
- Temporary diversion of channels.

The movement of transportation of materials for the construction and rehabilitation work through heavy vehicles may cause compaction of soil, cutting of trees, negative environmental impact over cropped area due to not availability of roads and other such activities in the project area. Installation of labor camps and desilting of distributors/minors, improvement of channels by heavy machines may create dust pollution and noise pollution. It may also affect humans and flora and fauna in the jurisdiction of Project area.

In order to mitigate these possible negative effects ,an overall Environmental Management Plan (EMP) has been formulated and would be implemented, during the execution of the physical works, at the project/ Sub-projects levels. Sub-project Environmental Assessment and EMP would form integral part of the designs prepared by the consultants and implemented by the contractors. For details, refer ISEA summary report at Annex-A.

Financial/Economic Analysis (with assumptions)

Attached in Annex – I

- **Financial analysis**

The financial appraisal has been based on financial costs. The financial analysis is undertaken by applying discounted cash flow techniques, as in the economic analysis described earlier. The financial analysis involves:

 - Identification and evaluation of costs and revenues attributable to the project.
 - Application of financial investment criteria to the cash flow of costs and revenues, throughout the life of the project,
 - Calculation of such financial indicators as net present value (NPV) and financial internal rate of return (IFRR) to define the financial feasibility of the project, and
 - Sensitivity analysis on the IFRR for key variables.
- **Quantifiable output of the project**

The estimates of future yields with the project interventions are based on the experience gained in various irrigation projects implemented in near past (Third on-Farm Water Management Project; National Drainage Program etc). Accordingly, the future increases in yield have been estimated as 2.5% for wheat; 5% for vegetables; 2.9% for mixed orchards; and 3% for cotton, pulses, fodders and rice on the basis of information obtained from agricultural specialists and interviews with progressive farmers in the area. Since no incremental/ additional water supplies are anticipated in the area, productivity increases are expected due to better management practices, timely and equitable water availability and saving in water losses due to improvement and rehabilitation of the irrigation channels. A period of ten years has been assumed to achieve the level of full development in yields. As such, the annual incremental agricultural production has been estimated as Rs 3.4 billion.
- **Profit and loss account and Cash Flow statement**

The Cash flow statement of the project has been placed in **Annex-I**
- **Net present value (NPV) and Benefit Cost Ratio**

Rs. 3796.280 million
1.56
- **Internal financial rate of return (IFRR)**

14.6%
- **Unit cost analysis**

Unit cost analysis is given in **Annex–G**
- **Break even Point**

As the nature of the project is not an entrepreneurial, hence not

- (BEP)
- **Payback period** applicable.
The project is in the public sector and no sharing in investment from the private sector is proposed. Moreover the project aims at improvement and rehabilitation of irrigation system. In return, the agricultural production would increase, as explained above. The value of incremental production would become equivalent to the capital investment in a period of about 2.5 years.
- **Return on equity (ROE)** There is no partnership in the project investment hence the analysis for estimating ROE is not applicable.
- **Economic analysis**
- **Provide taxes & duties separately in the capital and operating cost** In Capital Cost US 14.5 Million (Rs. 884.5 Million)
- **Net present value (NPV) and benefit cost ratio (BCR)** Rs. 6238.07 million
2.01
- **Internal economic rate of Return (IERR)** 18.2%

Employment analysis

- **Employment generation (direct and indirect)** The project will provide employment opportunities to Engineers, Social Scientists, Ecologist, hydrologist, skilled persons and unskilled workers, who will be deployed for implementation of various components of the project. Rehabilitation / Improvement of Irrigation and Drainage infrastructure will require deployment of heavy machinery and equipment in addition to skilled, semi skilled and unskilled workers. Improvement of Irrigation network will be instrumental to improve water distribution in the channels and enhancement of cropping intensity.

The project will increase agricultural productivity on a total area of more than 1.837 million ha, as a result of improved availability, reliability and equity of water deliveries, and adoption of improved on-farm water management and agronomic practices by farmers. It would need additional man days at farm for harvesting additional produce under with project conditions. Difference of farm labor required in the bench mark and at full development reflected in the crop budgets for each crop is considered as the additional labor required under the with project situation (as no increase has been assumed under without project scenario). As such, additional farm days have been estimated as 22 person days per acre per year. Projecting the same at project level, it has been estimated that the project would generate 4.39 million workdays per year of farm labor at full development due to increased cropping intensity and yields.

In addition the project would create labor days for skilled and

unskilled labor during the construction of the project. These have been estimated as 4.1 million days (11,250 person years) of skilled labor and 5.47 million person days (15000 person years) of unskilled labor over a period of five years.

- **Sensitivity analysis**

The project ERR is robust and not very sensitive to variations in the project costs or benefits. Switching values have been computed to determine the effects of increase in costs and decrease in benefits. The analysis shows that the ERR is equally sensitive to reduction in benefits and in costs. The results indicate that the ERR for the project would fall to 10 percent if the cost increased by more than 90 percent or the benefits decreased by more than 47 percent.

Impact of Delays On Project Cost And Viability

2-years delay in project would reduce ERR from 18.2% to 13.2%. Therefore, the IRR remains above the opportunity cost even if the project is delayed by two years – the project may be considered viable.

12 Implementation Schedule

- **Indicate starting and completion date of the project**

The project would be implemented over a period of five years starting from **July 1, 2007**. Thus the target would be to complete all project works by **June 30, 2012**.

Item-wise/year-wise implementation schedule in line chart correlated with the phasing of physical activities

Item-wise/year-wise implementation schedule correlated with phasing of physical activities is given in (**Annex- G**) and **Annex- J**

13 Management Structure and Manpower Requirements

Administrative Arrangement

Overall Project Management. The proposed project implementation arrangements are shown in Chart I. The Government of Sindh would have overall responsibility for the project management and coordination through its Planning and Development (P&D) Department. A Project Coordination and Management Unit would be established under P&D Department to handle the day-to-day coordination activities. The project would be implemented by SIDA, respective AWBs and FOs. The implementation arrangements are described in further detail below.

Project Steering Committee (PSC) headed by the Additional Chief Secretary Development (Dev) already established in Sindh would provide policy guidance and monitor overall project implementation and outcome. The PSC would comprise of Secretaries of Irrigation and Power, Agriculture, Finance, Environment, Director General Agriculture Engineering and Water Management (DGAEW), Director General Coastal Development Authority (DG,CDA), Managing Director (MD) SIDA, Project Coordinator of PCMU, Team Leader of

PMCA and representative of farmers and NGOs.

The PCMU will act as the secretariat of the PSC. The PSC will meet at least once every quarter or more frequently whenever issues requiring resolution are submitted for its consideration. The PSC would: (a) review physical and financial progress reports, evaluate outcomes (including those relating to social and environmental safeguards), ensure consistency of project implementation with the Implementation Framework, provide policy guidelines and advise implementing agencies how issues affecting implementation can be overcome; (b) Ensure provision of adequate budgetary allocation for timely implementation of the Project and for O&M; (d) Resolve issues not settled by the SIDA and PCMU; (e) Ensure adequacy and continuity of project management staff; and (f) Ensure that project complies with legal and financial covenants.

Irrigation and Power Department (IPD) would carry out the feasibility studies for rehabilitation of barrages (Component C1) of the project and coordinate in preparation of the master plan for the Indus left bank, delta and coastal zones (Component C2). It would work closely with SIDA/AWB in operation of the canal system and implementation of all activities on main and branch canals.

Project Coordination and Monitoring Unit (PCMU) established under the Planning and Development Department will monitor and coordinate all project implementation activities. It would be responsible for carrying out project monitoring and evaluation studies and supervision of the overall project environmental management plan as well as subproject specific level environmental and social plans. For M&E studies an independent consultants would be recruited under the Component D of the project. The M&E consultants to be based in PCMU would maintain a website showing the implementation status of the project as well as the project impact and findings of various evaluation studies. PCMU would also carry out various studies and manage technical assistance and training through SIDA under component E2 of the project. As mentioned above the project management consultants/procurement agent would be based in the PCMU. Further detail of establishment of PCMU including TORs/functions, staffing position etc. **attached as Annex-K.**

Project Management Consultants/Procurement Agent (PMCA). A United Nations Food and Agriculture Organization (UN/FAO) team would be appointed as the PMCA under the project for recruitment and supervision of the consulting services under the Project. The PMCA would be based in and report to Project Coordination & Monitoring Unit (PCMU) under the P&D Department. PMCA to be appointed for the duration of the project would be responsible for preparation of request for proposal packages (RFP), review of the terms of reference (TORs), short listing of consultants, evaluation of technical and financial proposals and award of the contract. During project implementation the PMCA would review any changes proposed in the

TORs or scope of work of the consultants and variations resulting from such proposals, oversee their work and evaluate the performance of the consultants in carrying out their responsibilities, examine of the purpose of consulting services is being achieved, as well as payments made to the consultants. The PMCA would also support in recruitment of SIDA and AWBs staff that would be recruited under the project. PMCA would develop and manage a website showing the status of all procurement actions under the project as well as implementation status of the project.

The Sindh Irrigation and Drainage Authority (SIDA) would be the primary project implementing agency. The SIDA has a Board chaired by the Minister of Irrigation and Power Department (IPD). SIDA would be responsible for: registering FOs under the SWMO 2002 and entering into IDMTA with FOs; building capacity of FOs and providing post-IDMT support; maintaining consolidated project accounts, preparing disbursement applications and operation of the Special Account (SA) and transfer of funds to other implementing agencies, and contributing to the project's overall management information system. SIDA would be responsible for procurement of major contracts under the Project. SIDA would also be responsible for preparation of the master plan for flood and drainage management on the left bank of the Indus river and plans for delta area and costal zone (Component C2) in coordination with other concerned provincial and federal agencies, future project preparation (Component E2) and technical assistance, training and strategic studies (component E3). SIDA's Board would meet quarterly to address project issues and make key decisions regarding investments as well as institutional strengthening. The MD SIDA would also act as project Director of WSIP-I.

The Area Water Boards (AWBs) would be responsible for implementing civil works for improvement of main and branch canals (Component B1 of the project); water scheduling in main and branch canals; assisting FOs in identifying, preparing and implementing sub-projects for rehabilitation of the distributary/minor canals (Component B2); receiving AWB/SIDA share of *abiana* from FOs; improvements of the drainage system (Component B3) of the project.

Farmer Organizations (FOs) are legal entities as defined under SWMO 2002. The FOs are bound by, and operate in accordance with their by-laws. FOs would have a central role in project implementation. Registered FOs who enter into IDMTAs with SIDA/AWBs would progressively take over irrigation management from the AWBs. They would distribute water among users, collect water charges, maintain income and expenditure accounts, and carry out the routine O&M and repairs of the distributary/minor canals, above the *mogha*. FOs would be eligible for project assistance for improving distributary/minor canals and they would be assigned an Assistant Engineer to help them in their work. They would identify, plan and implement distributary improvements under Component B2 of the project.

SIDA/AWBs through their, project implementation consultants, would provide technical assistance for carrying out surveys, designs and bidding documents. FOs would themselves carry out rehabilitation works costing up to US\$100,000 equivalent under community contracts.

Responsibilities – Matrix for implementing arrangements is attached as **Annex-L**

- (i) **The manpower requirements by skills during execution and operation of the project be provided** Skilled manpower will be provided by the Contractors for construction activities. Skilled manpower is available in SIDA and AWBs. However additional manpower will be recruited under the project as indicated in Annex-M.
- (ii) **The job description, qualification, experience, age and salary of each post be provided** Job description for PCMU is given in *Annex-K*, whereas that for SIDA is given at *Annex- M*.

14 Additional projects/decisions required

Indicate additional projects/decisions required to optimize the investment being undertaken on the project

Not required

15 Certified that the proposal has been prepared on the basis of instruction provided by the Planning Commission for the preparation of PC-I for infrastructure sector projects.

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ANNEXURE – B

Annexure – B

Governance and Accountability Plan

PAKISTAN: Sindh Water Sector Improvement Phase-I Project (WSIP-I)

Introduction

1. Given the history of implementation of projects in Sindh, in particular the National Drainage Program (NPD) that involved several governance and corruption issues, WSIP-I would be implemented in a high risk environment. However, the Government of Sindh is fully committed to the Project and its proper and most effective implementation because improvement in water resources management is crucial for the economy and development of Sindh. To mitigate and guard against governance, corruption and fraud risks and improve transparency and accountability in implementation of project activities several measures have been incorporated in the Project. These include:

- The overall design of the Project itself leading to transparency in water management.
- Improved Institutional Arrangements for Project implementation.
- Measures in management of Procurement, Civil Society oversight and remedies.
- Improved Financial Management Procedures.
- Enhanced Supervision and Surveillance arrangements

Project Design.

2. The Project is designed to improve the governance in the water sector in the long run and supports the institutional reform program that brings more transparency and accountability in water distribution. The approach is to empower the water users' the Farmers' Organization (FOs) to takeover the water management at the distributary canal level. This arrangement would be finalized through a formal irrigation and drainage management transfer agreement between the Government and FOs with the required legal basis in accordance with the Sindh Water Management ordinance of 2002 (SWMO 2002). At the canal command level, the system is transferred from Government's Irrigation and Power Department (IPD) to Area Water Boards (AWBs) which has a board with representation of FOs, and similarly Sindh Irrigation and Drainage Authority (SIDA) at the Province level. The project supports transformation from a fully owned/managed irrigation and drainage (I&D) system to a decentralized system with participatory irrigation management with highest participation of users at distributary/minor level and below, thus, bringing transparency and accountability in management. In particular, the FOs would act as countervailing power to the institutions at the upper tiers of the system demanding better governance at all levels and also be representative at the AWBs and SIDA boards. This would bring transparency and accountability in the operation and management of I&D systems (by AWBs and SIDA) as well as in planning, prioritizing, designing and implementing of the project activities.

Implementation Arrangements.

3. Institutional arrangements for project implementation are designed with proper checks-and-balances in implementation of project activities, supervision, monitoring and redressal of governance/corruption issues in case they arise during project implementation. As indicated in Annex 6, SIDA would be the primary implementing agency for project implementation. SIDA, that has its own Board also drawing non-governmental members as well as from the representatives of FOs, would report to the Project Steering Committee (PSC) and Planning and Development (P&D) Department, Chaired by the Additional Chief Secretary of Sindh. A unit within the P&D Department, namely the Project Coordination and Monitoring Unit (PCMU) would carry out day-to-day monitoring and supervision of key activities. The PCMU would

be supported by an independent team of internationally recruited consultants (M&E consultants) for carrying monitoring and evaluation of the project impact, monitoring of the project implementation progress, status of implementation under various contracts, and supervision of implementation of environmental and social frameworks as agreed under the project. M&E consultants would prepare progress reports on a regular basis and send to PSC and the World Bank. FAO would be appointed as Procurement Management Consultant/Agent for recruitment of major consulting services under the project to manage such contracts. These arrangements are given in more detail in the section below and in Annex 8 on Procurement and Annex 11.

4. Beneficiaries through their FOs would be involved in planning, design, and implementation stages of the project bring higher level of accountability in implementation of project activities. They would implement smaller contracts for improvement of distributaries and minors and represent at Boards of AWBs and SIDA. Also NCB contract for improvement of distributart/minors would be signed by the FOs. FOs would be provided technical staff from the project in order to make them effective in O&M of I&D systems and also to carry out the responsibility of employer under the NCB contracts.

Measures in Procurement.

5. **Special Measures for Dealing with Procurement Risk.** These are given in the Annex 8 in more detailed and listed below for completeness:

- (i) Appointment of FAO as Procurement Management Consultants/Agent (PCMA) for procurement and contract management of consultancy contracts;
- (ii) Project Implementation Consultants (PICs) to procure civil works contracts and supervise them as the “Engineer”;
- (iii) Enhanced community participation in procurement and implementation;
- (iv) Involvement of Transparency International Pakistan to reinforce transparency in procurement process;
- (v) Establishment of System of handling complaints;
- (vi) Establishment of Procurement website;
- (vii) Establishment of a procurement information and documentation system, filling system and a database; and
- (viii) Several other measures listed in Annex 8.

6. **Procurement Packaging** Project works, goods and services to be procured under the Project have been packaged into larger packages, or groups of contracts wherever possible. It is usually smaller contracts and involvement of small contractors without much performance record which creates problems in management also requiring more resources for supervision and contract management. The packaging would help attract good and qualified contractors with track record in performance, contract implementation, financial standing and business practices. The rehabilitation of main and branch canals would be done through three International Competitive Bidding (ICB) contracts using bulk of the project resources, about US\$73.2 million. The distributary/minor works would be tendered in groups of five resulting about 24 NCB contracts (at the most 30 for about 120 distributaries). The remaining 53 distributaries are expected improved by the FOs through community based contracts.

7. Procurement of goods involves small amount, US\$1.8 million much of which will be using National Competitive Bidding (NCB) only about US\$0.3 million is expected through national shopping. The PMCA would check the validity of three quotes provided by the suppliers in case of shopping procedures. The consulting services are packaged in about 5 to seven contracts which would be managed by PMCA. The packaging would make procurement management and supervision much easier allowing detection of any irregularities in procurement as well as implementation of the contracts.

8. **Enhanced Disclosure.** As mentioned above the Project would have a Procurement Website (managed by PMCA/PCMU) showing the status of procurement actions, bidding documents, evaluation and award, and other information. In addition an enhanced disclosure process described below would be followed:

(i). The implementing agency (SIDA) will provide the following information in the PIP, the Procurement website, and in the bidding documents:

“The contact point for complaints related to the Water Sector Improvement Phase-I Project:

To : Managing Director SIDA
SIDA

Tel: Fax: e-mail:

To: Team Leader of Project Management Consultant/Agent

Tel: Fax: e-mail:

To the World Bank Fraud and Corruption unit
Email: investigationshotline@worldbank.org
Website: <http://www.worldbank.org/integrity>

If you prefer to remain anonymous, you may wish to make use of a free email service (such as Hotmail or Yahoo) to create an email account using a pseudonym. This way, we could correspond with you as necessary, to seek clarification or additional information. This would be helpful for us in pursuing your allegation. Through a Fraud and Corruption Hotline hired by INT for this purpose: (24 hours/day; translation services are available)

Toll-free: 1-800-83 1-0463
Collect Calls: 704-556-7046

Mail:
PMB 3767, 13950 Ballantyne Corporate Place
Charlotte, NC 28277, United States”

(ii). Each annual Work Program and the Procurement Plan will be published on the official Procurement Website and made available to the public as a part of the public disclosure policy of this project.

(iii). GoSindh through PCMU will publish a quarterly newsletter on the official Procurement Website including information concerning the list of contracts, implementation progress, project-related workshops and the number, typology and status of complaints for each location. SIDA will send the quarterly newsletter to the civil society (e.g. FOs, their council members, NGO) forum in hardcopy or through an electronic mailing system.

(iv) Guidelines on disclosure of information to the public on project and procurement activities shall be incorporated in the PIP and will include the following key actions:

(a) The SIDA/PCMU will and the World Bank may make publicly available, promptly after completion of a mid-term review of the project carried out in accordance with the loan agreement, the mid-term review report and the aide-memoire prepared for this purpose. SIDA/PCMU will also post this on the official website within 2 months of the completion of the mid-term review.

(b) The SIDA/PCMU will and the World Bank may make publicly available promptly after receipt all final audit reports (financial or otherwise, and including qualified audit reports) prepared in accordance with the loan agreement and all formal responses of the government in relation to such reports. SIDA will also post this on the SIDA official (Procurement) website within 1 month of the report being accepted as final.

(c) The SIDA/PCMU will and the World Bank may:

- Make publicly available promptly after finalization all annual Procurement Plans and schedules, including all updates there to; SIDA/PCMU will also post this on the official website within one month of the end of the fiscal year.
- Make available to any member of the public promptly upon request all bidding documents and requests for proposal (this provision does not include actual bids and proposals) issued in accordance with the procurement provisions of the loan agreement, subject to payment of a reasonable fee to cover the cost of printing and delivery. Each such document will continue to be made available until a year after completion of the contract entered into for the goods, works or services in question.
- Make available to any member of the public promptly upon request all shortlists of consultants.
- Actively encourage representatives of civil society groups to attend the public bid openings and other key procurement steps. Representatives of civil society will be included as observers and sign the attendance list for the Procurement/Selection process.

For works: The Project Implementation Consultants will: (a) manage the opening of bids, and certify the Minutes of bid opening of bids (b) send one copy of the bids (after the bid opening) to the SIDA/PMCA within 24 hours; and (c) keep in a safe place one copy of the sealed bids (after bid opening) and make available the copy of the bids and the minutes of the opening of the bids to the PSC and World Bank.

For consultants services: FAO (PMCA) would carry out the recruitment of the consultants in line with TORs described in Annex xx. PMCA would carry out the opening of technical and financial proposals, and certify the Minutes of Opening of technical/financial proposals, also keep in a safe place one copy of the technical proposals submitted by each consultant (once they are open), the sealed financial proposals (before they are open), and one copy of the financial proposals submitted (after they are open).

In line with the Procurement Guidelines, within two weeks of contract award (Bank's no objection) publish in UNDB online, Market, on Procurement website, and send to those who submitted bids, contract award information identifying the bid and lot numbers and the following information (a) name of each bidder who submitted a bid (b) bid prices as read out at the bid opening, (c) name and evaluated prices of each bid that was evaluated; (d) name of bidders whose bids were rejected and the reason for their rejection; and (e) name of the winning bidders, and the price it offered, as well as the duration and summary scope of the contract awarded.

Make available, promptly upon request by any person or company, a list of all contracts awarded in the three months preceding the date of such request in respect of a project, including the name of the contractor / supplier / consultant, the contract amount, the number of bidders / proposes, the procurement method followed and the purpose of the contract.

The Procurement/Project official website would provide monthly updated information on project activities. This information would include, inter alia: nature of contracts awarded (estimated cost, scope of works, contractor details); current estimate of the progress of implementation (e.g. gross

estimate of completion as a percentage of works to be carried out); other project-related activities such as workshops; data concerning complaints and remedial actions.

9. **Civil Society Oversight.** SIDA/PCMU will actively encourage representatives of FOs in particular and civil society groups in general to attend public bid openings and other key procurement steps. Civil society observers may be invited from local universities or other independent institutions. Experience in other projects strongly suggests that implementing agency should not control the selection and briefing of such representatives, therefore a third-party such as PMCA, acting on behalf of the SIDA/PCMU, may be required to perform these roles. Details concerning the selection and briefing of representatives must be recorded at the national level.

10. The SIDA will establish a mechanism whereby the FOs, media and civil society groups can become involved in monitoring the progress of the project including implementation. This mechanism will include regular sharing of information with the media. Copies of press clippings (etc.) will be filled and entered into the database. Regular (e.g. annual) Accountability Meetings will be held to enhance accountability and sharing of information. The first of these will occur at the province level, before procurement of contractors or service providers, so that any FOs, civil society and community representatives required for the procurement processes (etc.) can be selected in a transparent manner. Each meeting must be properly organized and the agenda widely distributed amongst interested parties.

11. **Mitigation of collusion risks.**

Works contracts. SIDA will use “semi” e-procurement and publish on its official website for all works contracts:

- all Invitations to Bid,
- bidding documents and drawings,
- clarification of bids,
- bid opening minutes,
- Information on contract award.

Manual system will continue to run in parallel for contractors who wish to use it.

- Bidding documents will be available for download on-line.
- PMCA/PICs to certify the documents are on-line prior to the issuance of the Invitation to Bid and remain available to bid opening.
- Pre-qualification for ICB contracts more than US\$10 million
- List of bidders remains confidential until bid opening.
- The specifications shall be defined clearly in the bidding documents. Clarifications can be sought through written correspondence and replies will be sent to all bidders. Appropriate guidelines for providing guidelines for this will be prepared. Any changes due to clarifications etc, would be valid only after amendment to the bidding documents are issued.
- TI to be present to observe the bidding process and opening
- Bids to be kept under control of PICs during the “Bid Submission Period”.
- Two sealed copy of the bids submitted to be kept by PICs, which will send one sealed copy to SIDA within 24 hours to be kept by SIDA.
- PICs to immediately check the bids for any signs of collusion (using tracking software) and to certify the minutes to be submitted to SIDA
- Bid Evaluation Report to be complete and submitted within 4 weeks and prepared by PICs to be submitted to SIDA, and copy to the PMCA and PSC.
- Bids awarded within original bid validity period. Any extension of bid validity period

for the second time or for cumulatively greater than 8 weeks requires Bank no objection. Bank would not provide such no objections.

- No rebids. If needs a rebid due to corruption and/or collusion, Sub-project is not eligible for financing.
- SIDA to use FIDIC arrangements with thr independent supervision by PICs having responsibility as the "Engineer" in the works contract.
- SIDA/PICs will track the following indicators from the bill of quantities of contracts and report in the quarterly Progress Report: bid price of earth work, concrete, steel, tree planting.

Consultant services. This is expected to apply to key consulting contracts for consulting services. Use of "semi" e-procurement and publish on its official website for all consultant contracts

- Short listing: New process for short listing.
- Request for Proposals. Only the CVs of key personnel will be evaluated up to about 10 staff. (Currently up to many CVs are evaluated making this a very mechanical giving random results).

NCB procedures will be adopted.

Advertisement of bids. The SIDA will employ a standard agreed format (minimum column size=10) of advertisement and place in a nationally circulated newspaper, on the Procurement official website, on the UNDB on-line and dg Market websites.

Guidelines for preparation of specifications / selection criteria in the Bidding Documents/ request for proposal will be prepared to ensure compliance with Bank guidelines. This will include suggestions to conduct simple surveys on available products in the market and the alternative o f hiring consultants for procurement o f works / services to define the specification / terms of reference.

Guidelines to prepare owner estimates, particularly for consultancy work will be defined. This will include the requirement to provide a detailed breakdown of estimates, suggestions to conduct simple market price surveys, maintaining data base of survey results and previous purchases, which will be accessible to all Implementing Units.

A narrative justification of each short listing will be required for proposing shortlists for prior review contracts.

The reports/records o f public openings for all prior review contracts shall be submitted promptly to the Bank.

The PCMU/PICs will provide guidelines and training on how to conduct clarifications/negotiations that are in line with the Bank guidelines.

12. ***Mitigation of Forgery and Fraud Risks.*** This would include, but not limited to the following actions:

- SIDA would have a qualified procurement specialist/officer and financial management specialist/officer
- Filing system would be maintained.
- Timelines for procurement decisions will be agreed between SIDA and the Bank to establish service standards and avoid procurement delays to reduce opportunities for corruption.

- The SIDA establish procedures for regular review of accounting reports including all supporting documents (Le. travel report, receipts, etc.)
- Guidelines for submission of complete documentation required for requests for payments by PICs and SIDA.

The SIDA with the help of private auditors shall conduct regular interim audits which will include review of procurement process and procurement results (end use checks, quality and quantity of acquired goods/works/services, verification of payments, price comparison between contract price and market price etc.)

The SIDA shall delegate the authority for supervision of works by stating clearly and in detail the bidding/contract document the authority for Engineer's.

13. **Complaint Handling System.** A complaint handling mechanism, which includes maintaining a project complaint log and filing to monitor status of follow up of each received complaints will be established by the each implementing agency, SIDA and PCMU with an oversight by PMCA and PSC. The mechanisms will include provision for follow up investigations of substantial complaints by the internal Auditors, or third party audit to ensure independency and reliability of the system.

All complaints received shall be responded within 7 days of receipt, with copy to PCMA, PSC and World Bank.

All complaints handling component will be included in the website to be established for the project. This will be updated on a monthly basis.

For the complaint mechanism to function, it is essential that information concerning the alternative conduits for complaint (telephone hotline', dedicated email address and PO Box) is widely disseminated.

Strict procedures to ensure anonymity of informants will be enforced.

Recording and appropriate referral of all incoming complaints will be undertaken by the Implementing Agency with each case generating an automatic, standard format report to the Bank.

Tracking of the status of investigations and measures taken will be reported in monthly reports to management and the Bank. Complaints deemed possible serious infringements may be further investigated by the Bank.

14. **Sanctions and Remedies.** Remedies for non-compliance with agreed time-lines for procurement decisions / service standards will be established and will include the following remedies:

- An Evaluation report must be submitted to the Bank within four weeks of bid/proposal submission. Failure to do so will be deemed to be a failure of due diligence; timely and appropriate action acceptable to the Bank will be required to remedy the situation.
- Request for extension of bid validity for 8 weeks beyond the original validity will require the Bank's prior approval. Bank will not give such no objections.

The SIDA will establish the remedial actions and sanctions for cases of fraud and corruption that are reported and for which evidence is found. This will include sanctions to staff proven to be involved in such cases.

In all contracts, evidence of fraud, corruption, collusion and coercive practices will result in termination of the relevant contract, possibly with additional penalties imposed (such as fines, blacklisting, etc. in accordance with Bank and/or Government regulations and may result in suspension of disbursement of funds with respect to that contract. Any entity that is found to have misused funds may be excluded from subsequent funding. Information regarding such cases, where lessons are learned and funds are retrieved, will be widely disseminated.

Disbursement to any given contract/location can be suspended or stopped completely if cases of corruption are not dealt with effectively.

Financial Management.

15. The key measures that directly strengthen the governance and accountability include among others:

- Appointment of professional staff in SIDA and strengthening its financial management wing encouraging segregation of duties, exercise of authorization and approval controls, compliance with procedures and independent internal checking;
- Appointment of professional staff in AWBs strengthening the governance structure and internal control environment within AWBs;
- Transparent systems for approval of sub-schemes;
- Effective controls on disbursement of funds;
- Adoption of International Accounting Standards to promote adequate disclosure and presentation of financial information;
- FM support teams developing accounting capacity in FOs and promoting accountable environment in lower-level constituents;
- Annual audit by independent private auditor in addition to the Government audit that would also cover audit of procurement and contract management in addition to the financial audits.

Supervision and Surveillance.

16. Supervision arrangement for this project in general and in procurement and financial management in particular, is very extensive. The prior review thresholds are selected carefully to screen all types of contracts initially in first 18 months of project (see Annex 8). First contract of all type, goods, consultancy, works, etc. would be reviewed regardless of their value in order to start a good practice procurement and contract management. With the contract packaging as proposed, and prior review threshold levels, contracts with value more than US\$155 million (out of US\$175 million) would be awarded based on prior review basis. The post reviews would be carried out by qualified staff in procurement and contract management covering 15-20 percent of such the contracts. Post reviews would be done quarterly for the first 18 months.

17. In addition, the PMCA and PICs would carry out extensive supervision on the implementation of contracts. An independent team of M&E consultants would review the overall progress in implementation and inform about any issues implementation of contract on the ground to PSC and the World Bank. Bank supervision missions would more frequent in the start of the project and staffed with qualified staff in all disciplines, including procurement, contract management, and financial management.

ANNEXURE – C

Annexure- C

Terms of Reference /Main Description of Establishment of SIDA Secretariat

1. BACKGROUND OF REFORMS IN IRRIGATION AND DRAINAGE

In 1997 the Government of Sindh started the reform of the management of the entire irrigation system with the approval of the SIDA Act 1997, shifting the responsibilities for the management of the irrigation and drainage infrastructure from the governmental centralized Provincial Irrigation and Power Department (IPD) to autonomous bodies: the Sindh Irrigation and Drainage Authority (SIDA), Area Water Boards (AWBs) and to Farmers' Organizations (FOs). In 2002 the Sindh Water Management Ordinance 2002 replaced the SIDA Act.

The immediate goal of the reforms in Sindh is to restore equitable and reliable water delivery to the farmers. The ultimate goal is, of course, the improvement of agricultural production. This will be done by:

- Transforming the IPD into a series of autonomous bodies.
 - The Sindh Irrigation and Drainage Authority (SIDA)
 - About 13 Area Water Boards (AWBs)
 - about 1400 Farmers' Organizations (FOs)
- Increasing the farmers' participation in the management of the irrigation and drainage system. An important envisaged effect is the reduction of costs for Government of Sindh.

1.1. The Sindh Irrigation and Drainage Authority

SIDA is the first tier in the new system of organizations running the irrigation system. SIDA has the following tasks:

- operation and maintenance of the barrages in the Province of Sindh
- Distribution of irrigation water from the barrages to the AWBs.
- Construction, operation and maintenance of the outfall drains.
- Receive effluent drainage water from AWBs and convey it to the sea.
- Maintain the flood protection infrastructure along the river Indus.
- acting as the prime agent of change, giving advice to AWBs and FOs.
- providing advice to Government.
- temporarily, SIDA has the role of Regulatory Authority (RA), until the RA is functional.

SIDA will be supervised by a Board in which farmers play an important role. Besides farmers there will be independent members at the board: experienced specialists in widely diverging fields such as agriculture, social development, finance, rural sociology, environmental issues, irrigation and drainage, etc. The Managing Director will report to the Board. Main ToRs of SIDA are given in next section.

1.2. Area Water Boards

The second tier of the water management system consists of Area Water Boards (AWBs). The Area Water Boards will be responsible for:

- Operation and maintenance of the main and branch canals.

- Distribution of irrigation water to the FOs.
- Maintenance of intermediate drainage infrastructure.
- The collection of revenue where no FOs currently exist.
- Paying SIDA for the irrigation water received.
- Charging FOs for the irrigation water they distribute to them.

A Board in which farmers are represented will manage the AWBs. The Director will report to the Board. Main ToRs of AWB are **attached as Annex – D**

1.3. Farmers' Organizations

The third tier of the system consists of Farmers' Organizations (FOs). FOs will be established on the distributaries and minors on the basis of Water Course Associations (WCAs) and Drainage Beneficiaries' Groups, i.e. unions of farmers on individual water courses or drainage infrastructure, which are the constituting members of the FOs and form its General Body. Tasks of the FOs are:

- operation and maintenance of their distributaries, minors and water courses
- the equitable distribution of irrigation water to the farmers
- maintenance of their drainage infrastructure
- Collection of revenue (abiana, drainage cess and other) from the farmers through the WCAs.
- Paying the AWB for the water received from them.

A transfer agreement will be made to regulate the water services between AWB and FO. Ultimately there will be close to 1400 FOs throughout Sindh. Main ToRs of FOs formation (if supported by the project) are **attached as Annex – E**

1. 1.4. Regulatory Authority

The system of SIDA, AWBs and FOs will be supervised by a Regulatory Authority (RA). The RA will have the following main tasks:

- to approve the annual plans (business plans) of SIDA, AWBs and FOs.
- to approve the annual reports of SIDA, AWBs and FOs.
- to set performance standards for SIDA, AWBs and FOs.
- to arbitrate in case of conflict between SIDA, AWBs and FOs.
- to provide transparent and publicised guidelines for water distribution in case of drought and/or periods of genuine water shortages.
- to set limits, negotiated between all parties concerned, to rates for water charges.

2. 1.5. Important features of the new system

This three-tier system of organizations will permit autonomous, but connected, bodies to be responsible for the management of each of the constituent parts of the system. Important features of the new organizations are:

- autonomy
- Working on the basis of sound business principles. These include: cost effectiveness, transparency, accountability, and customer orientation

The purpose of the system is to deliver professional services (irrigation water delivery, disposal of effluent to/from drains and, where appropriate, drinking water).

2. SIDA MISSION, VISION AND VALUE STATEMENT

SIDA's Vision and Mission were formulated as follows:

2.1. Vision

Vision

SIDA is committed to promote sustainable development and improved quality of life in Sindh through integrated water management.

2.2. Mission

Mission

SIDA mission is to improve water management in Sindh. It will ensure equitable distribution of irrigation water, efficient removal of drainage water, management of river flood protection infrastructures and act as prime agent of change. SIDA will do so through an integrated approach in a sustainable manner, using sound business principles and in partnership with its clients and stakeholders.

2.3. SIDA's Organizational Values Statement

SIDA guiding values are a commitment towards particular behavior and attitudes to be demonstrated by management and staff at all levels and experienced by them, the clients and stakeholders.

2.4. SIDA's Organizational Values

▪ Participatory Decision Making

Clients and Stakeholders will be consulted and participate fully in the definition of their needs, expectations and in problem solving so as to empower them through informed decision making.

▪ Coordination and Cooperation

SIDA sees itself as part of a network of organizations in the irrigation sector. In order to achieve synergy within the group, it will co-ordinate in the implementation of its programs, maintain up-to-date operational relationships with its clients/stakeholders and effectively respond to the sector development needs.

- ***Openness and Accountability***

SIDA aims to meet the highest standards of openness and accountability in accordance with best practices. SIDA will actively pursue in providing quality information and will improve and expand the means it uses to make information available so that it reaches a wider audience and is better targeted at those who need to know about its services.

- ***Performance Oriented***

SIDA will provide leadership for effective service delivery. Staff at all levels will demonstrate their commitment to the delivery of quality, reliable and responsive client service, as well as, to ensure that previously agreed performance standards are met and improved.

- ***Professionalism and Commitment***

SIDA will reflect a constant drive to maintain and improve individual, group and organizational performance. It will display a proactive attitude towards addressing emergent issues within the organization and the environment.

- ***Customer Orientation and Business Ethics***

SIDA will be sensitive to the needs and expectations of its clients and stakeholders. It will align itself to the highest standards of behavior and practices in dealing with its clients.

- ***Team Work***

The organization facilitates and stimulates employees regardless of their position to work together on common products and delivery of services.

- ***Positive Staff Approach***

SIDA considers its staff as its main asset. It will stimulate and value their contribution. It will motivate them to perform, offer incentives and rewards and will adopt a management style that fosters positive attitudes.

- ***Gender Sensitivity***

SIDA intends to be an organization in which men and women and those that are handicapped can work on equal terms and under condition which facilitate women to participate in the organization.

3. ORGANISATIONAL DEVELOPMENT AND MANAGEMENT STRUCTURE

3.1. Organizational development and transition

The SIDA organization is still not yet fully staffed. Furthermore, SIDA still is tied to some government regulations which hamper it from operating as a fully autonomous body on sound business principles. Transfer of administrative control of staff to SIDA and AWB is essential for further development. Successes were nevertheless achieved e.g. supervision of capital works and social mobilization.

The actions to be taken focus on transfer of control of staff, further recruitment and on management development. SIDA plays an important role in developing the total water management system. Therefore,

the business plan describes in short the second and third tiers of this system and gives the actions SIDA has to take in the transition process.

The second tier consists of *Area Water Boards*. (AWBs). The 3 Area Water Boards which have been established are in their initial stages and therefore show the same characteristics as SIDA. The organizations of the AWBs have to be developed and staffed further in order to function as the semi-autonomous organizations they are intended to be. First achievements become visible, e.g. abiana collection, social mobilization, training of farmers, growing awareness of farmers, and participation of farmers in AWB activities.

The third tier of the system consists of the *Farmers' Organizations* (FOs). At present there are 217 FOs, of which 175 have signed an IDMT Agreement, conferring the water management tasks to them. The preliminary results are encouraging. Nevertheless, the FOs have serious difficulties in taking up their tasks. The FOs need substantial outside support in building up their capacity over a longer period of time. With regard to organizational development of the FOs, the activities focus on further capacity building of FOs and the improvement of their performance through continued training and management support.

According to the SWMO- 2002, a *Regulatory Authority* is to be established to ensure compliance of the organizations in the three tiers with the provisions of the SWMO 2002, and to handle conflicts. With the approval of the SWMO 2002 the establishment of this RA has become necessary. At present the SIDA acts as RA according to section 100 of the SWMO 2002. The activities with regard to the RA focus on getting the means for the establishment and strengthening of the RA.

3.2. Management Structure

The organizational chart of SIDA is the result of a development process over the course of the years from 1999 onwards. The ideas about the organizational chart underwent several changes after the establishment of SIDA in 1997. In emerging organizations such as SIDA that have to be built up from their foundations, this is a usual phenomenon.

The need for an update of the organizational chart has become apparent during the preparation of the revision of the PC-1 for the institutional strengthening of SIDA.

The management structure with MD SIDA four General Managers and a Secretary would under normal circumstances be an overloaded structure, too heavy for the scope and the size of the activities being carried out by SIDA. However in the present circumstances the structure is defensible given the need for great effort and sustained efforts to implement far reaching reforms. All Departments have an important role in the implementation of the Reforms and in the realization of the role of SIDA as a primary agent of change.

At present there is no real expectation that the work load resulting from the role of SIDA as the primary agent of change will become less during the coming many years. Given the experience with reforms till date (lack of understanding of reforms, open resistance to change, etc) it is realistic to suppose that the work load will continue to be heavy during at least the coming ten years. The time table for reforms as contained in the Sindh Water Management Ordinance 2002 did not meet.

3.3. Job designations

As much as possible job designations have been harmonized. In line with earlier decisions of the Board of Management of SIDA the main job designations are:

- Managing Director

- General Manager
- Specialist
- Deputy General Manager
- Manager
- Assistant Manager

Other job designations exist only for purely technical or very specific positions.

1. 3.4 The Board of Management

The Board of Management will consist of the Managing Director and four General Managers (heading respective wing). The Secretary is to act as the Secretary to the BoM and as Head of the Administration wing. Further details and role and tasks of the BoM, please refer following section. The job Description of the management is **attached as Annex – M** description of remaining staff is available with the management. Staff of SIDA will be procured from market according to selection criteria, Qualification, Experience mentioned in Job description of each post. The salient features of each wing is given in next sections.

2. 3.5. Transition Wing

3.

The wing will be headed by General Manager Transition. The wing is the most important in terms of managing the change and transition process. The wing overall is to contribute in realization of the one of the key functions of SIDA regarding managing the transition process, promote formation, growth and development of the AWBs and FOs into self supporting and financially self sustaining entities. The Social Development Specialist (DGM Transition), Manager Communication and Manager HRD would report to GMT and would be integral part of the and would head the units and cells created to augment the reform implementation process. In case of absence of absence of GMT, the SDS/DGM Transition of the wing would act as Acting GM and head the wing. The position of Managers and social mobilization officers has also been introduced to support the wing through its cells and units. The wing is divided into following three parts:

Cell/Section	Headed by	Major Tasks
Social Development Cell	SDS/DGMT	Growth and development of AWBs FOs, Social Development, Social mobilization, FO training and capacity building
Media and Communication Section	Manager Communication	Awareness, information disclosure, liaison with the public and the news media , etc
HRD Section	Manager HRD	Staff procurement, recruitment, policy, management development and management training, etc.

Under the WSIP project, and as per WSIP ISEA recommendations, the Environmental Management and Social Development Cell (SDC) of SIDA would be strengthened in order to support implementation of Social and EMF/EMPs under the project and also to improve SIDA’s capacity in planning and development and operation of water resources management systems with proper consideration to environmental and social issues and participation of stakeholders in order to make water systems sustainable in the long run and generate higher benefits.

In addition to above a Training Centre has also been established by SIDA in the Transition Department. The training centre will undertake training activities for which enough funding is already provided in WSIP project PC1 in the component E of the project i.e. Project Management, Coordination and Technical Assistance. The center's establishment/operational cost would be identified later-on from the block allocation. A note on SIDA Training Centre. Moreover, a Farmer organization complaint centre (FOCC) has also been established in the department to address the issues and concerns of stakeholders, especially of farmers and FOs.

4. 3.6. Operations Wing

The wing is headed by the GM Operations and would undertake all matters related with irrigation, drainage and flood protection. The wing play important role in undertaking investment and capital works to modernize the system and assist FO and AWBs in such investment and rehabilitation activity and participatory irrigation management. It is to be hoped that sooner or later the barrages will be transferred to SIDA. The management and regulations of barrage would also be dealt by Operations wing. The wing will have key professionals i.e. Deputy Directors (DGM) engineering in drainage and capital works, Deputy Director (DGM) Irrigation & Flood Protection and the Assistant Directors. However, under the scheme a position of Project Planning Consultant has been introduced to raise the capacity of SIDA in project management including preparation, implementation, M&E, etc.

5. 3.7. Finance Wing

The wing will be headed by GM Finance and assisted by other professionals as indicated in the organizational chart. The staffing of Finance has been strengthened, qualitatively and quantitatively. The wing will give strategic direction towards financial sustainability and take care of all matters related with finance, revenue collection, etc. The positions of Manager Finance, Procurement Specialist, IT specialist, Procurement analyst would further support the wing in delivery of service in efficient manner. It will facilitate the sister wing in flow of funds for smooth operations. It will take lead in preparation of business plan, budgets, financial regulations, transparent accounting systems, etc and get audits conducted properly. It will take care of the procurement/purchasing, disbursement, etc.

3.8. R&D Wing

The General Manager Research and Development will head the wing. The wing will undertake the tasks related to environment, research and policy & planning studies and research programmes related with integrated water management, control of water logging and salinity, prevention of sea-intrusion, water distribution during drought, etc. The environmental specialist (DGM R&D) would be integral part of the wing. In case of absence of GM R&D, the ES/DGM R&D of the wing would act as acting GM and head the wing. Currently the wing has also set up an Environmental Management Unit to address the environmental concerns. Under the WSIP project, and as per WSIP ISEA recommendations, the Environmental Management and Social Development Cell (SDC) of SIDA would be strengthened in order to support implementation of EMF/EMPs under the project and also to improve SIDA's capacity in planning and development and operation of water resources management systems with proper consideration to environmental and social issues and participation of stakeholders in order to make water systems sustainable in the long run and generate higher benefits.

3.9. Administration Wing

The Secretary SIDA will head the wing and would play key role in facilitation, Coordination and logistics. Increasingly the need is felt within the organization of SIDA to improve on the internal administration, document handling and administrative support to the technical wing. Therefore the post of Office Manager and other support staff have been introduced. In case of absence of Secretary, the senior manager of the wing would act as secretary and head the wing subject to the approval of BoM. The role of this wing will be that of a General supporting wing facilitating the working of the organization as a whole. The need is felt of a stand-by legal advisor within SIDA. All legal matters including with court, legal advises, etc would be addressed by this wing.

4. Provisional Role of SIDA as Regulatory Authority

The RA as created under the Sindh Water Management Ordinance is the first RA of Irrigation, Drainage and Flood Protection. Its perceived mission can be defined as follows:

“To provide a stable regulatory environment which will allow corporate bodies to effectively and equitably deliver their services and to safeguard the interest of stakeholders”

6. 4.1. Objectives

The objectives of the RA are as follows:

a) Primary Objectives

The primary objectives of the RA (RA) are:

- Ensure compliance with statutory provisions of Sindh Water Management Ordinance
- Promote effective interaction, fair dealing and collaboration between SIDA, AWB, FO and support bodies e.g. WCAs and DBGs
- When invited to do so – arbitrate (if invited by one or both parties)

b) Secondary Objectives

The following are a list of some of the indicative secondary objectives of the RA: as derived from its role and powers.

- a) To set service standards specifying the main type (level and quality) of services that clients and customers can realistically and consistently expect.
- b) To undertake the compliance with provincial standards of water services provision.
- c) To track service delivery (failures and successes) and to suggest remedies for service failure in consultation with SIDA, AWBs, FOs and others.
- d) To receive Business Plans of SIDA and AWBs, and to monitor the development of targets and performance standards
- e) To ensure that the corporate bodies’ strategic priority objectives are expressed in their business plans and are consistent with the Government at Sindh and that functions, services and programmes are aligned to provincial government objectives and priorities.
- f) To monitor and to report on compliance with Regulatory decisions.
- g) To ensure a proactive and systematic approach to communication, planning and budgeting.
- h) To review priority issues and opportunities and to identify and interact with stakeholders in a planned and coordinated way.
- i) To keep the Office of the Governor informed and to ensure officials understand the issues involved and consequences of regulatory policy decisions.

The primary business of the RA consists of the regulatory functions and tasks under the Ordinance and the provision of services for SIDA, AWBs and FOs. For the efficient functioning of the Authority and in order to effectively administer its business affairs a number of non-core or internal /supporting functions will be established. The main functions and tasks of the RA are described in the Ordinance. The RA will have the following functions and tasks:

7. 4.2. Main Regulatory Functions

General regulation

- Ensure adequate interaction and participation between and within SIDA, AWBs and FOs
- Setting regulations or provisional regulations
- Approve all regulations set by SIDA, AWBs or FOs – election, fines, penalties, suspension and interruption of water supply
- Establish performance standards for AWBs

Financial regulations

- Ensure adequate financial management
- Approve business plans of SIDA, AWBs and FOs, their annual reports and financial audited statements and to review the sustainability of the organization concerned
- Fix maximum charges

FO registration

- Register FO's and issue certificates of registration
- Maintain Central Registry of FOs
- Register WCA's and DBG's in non FO areas

Arbitration and trouble shooting:

- Establish Tribunals and Field Services Committees
- Appoint acting Chairman
- Receive and safeguard assets
- Enforcement of Orders and Compliance

Inspection and adequate water management:

- Intervene in water distribution during drought
- Intervene to avoid wastage of water
- Inspect premises

Communication:

- Draw attention to problems of recurrent nature
- Provide information to SIDA, AWBs and FOs
- Keep records and make available
- Undertake research and special projects
- Ensure customer service representation
- Notify and publish as required

Management Services & Office Support Functions:

- Management and office support (Human resources, Finance and Info.Tech)
- Administration
- Office support
- Legal Services

5. SIDA Board and Management- Roles and Tasks

As a result of the institutional reforms in the Water Management System in Sindh, a series of new organisations have come and will come into being: SIDA, Area Water Boards, and Farmers' Organisations.

All these new organisations have one organisational characteristic in common. They have a Board (Board of Constitution, General Board, or General Body). The SIDA and the AWBs have professional management. In SIDA there is a Managing Director and a Board of Management consisting of the Managing Director and four General Managers. At present, the AWBs have a Director. In future they too will probably have a Managing Director and a Board of Management, consisting of their MD and some General Managers (The Board of Management is not to be confused with the Board of Constitution or the General Board)

Having a Board is common in Autonomous Bodies in Pakistan. In the context of water management however, Boards are a new phenomenon. Therefore it is appropriate to define the roles and tasks of the Board and the Management in these organisations and to define some common basic principles for their composition and functioning.

In many countries in the world, Boards are common organisational tiers, within public organisations as well as within private organisations. The role definition between the Board and the management often causes problems and conflicts. In most cases, these problems and conflicts arise, because the Board takes a management role or because the management takes decisions which are the prerogative of the Board.

5.1. ROLE AND TASKS OF THE BOARD

The primary role of the Board is strategic:

- to assess the present situation of the organisation
- to define the strategy of the organisation
- to monitor progress towards the strategic goals
- to adjust the strategic goals if necessary
- to assess the performance and the contribution made by the management in formulating and realising the strategy
- appoint the managing director

In more detail, the tasks of the Board are:

- the Board defines the policy of the organisation, it establishes and decides all policy matters: policy matters are: the goals of the organisation, the limits, of the means to be used, the global ways and performance standards to be upheld in achieving the goals
- the Board defines the norms and values of the organisation as a whole: Board, management and staff: the values it wants to represent and for which it wants to be held accountable..
- The Board defines the powers it wants to delegate to the management and the conditions for such delegation It receives reports on the execution of delegated powers
- The Board defines the way it wants to be informed about the execution of the policy it has defined and the progress towards the business goals it has set.
- The Boards defines the priorities for the work by the organisation in case of conflicting demands of the organisation or its environment
- The Board approves the annual work plan and the annual budget

Requirements to the Board with regard to its functioning are:

- the Board represents the interest of the stakeholders, i.e. the farmers, the other water users
- the members of the Board will however operate in the interest of the organisation of whose Board they are members.
- However big the differences between its members, the Board will operate as a unit. The members will respect each other's diversity of opinion and they will respect the unity of the Board. Decisions will if necessary be taken by a majority. If the Board is not complete a quorum can decide.
- The Board will define clearly its expectations regarding its own way of operating and that of its individual members, their behaviour towards the Board, toward the organisation and towards society
- The Board will operate in an open relation with the Managing Director and the other members of the board of Management
- The Board will set standards for the evaluation of the performance of the Managing Director and the other members of the Board of Management, after having heard and taking into account their opinion on these standards.
- The Board will avoid as much as possible to take ad hoc decisions, disregarding policy lines it has set previously.
- The Board will refrain from giving detailed procedural guidelines and prescription. It will be mainly concerned with setting the goals, not with how to reach them.

5.2. THE ROLE AND TASKS OF THE CHAIRMAN OF THE BOARD.

The position of the chairman in Pakistan organisations carries more weight than in many other countries in the world. It is wise to take this culturally defined phenomenon into account and at the same time to set some basic rules to prevent the chairman from operating at too far a distance from the Board.

The primary role of the chairman is to facilitate the functioning of the Board.

Specific tasks of the chairman are:

- To prepare the meetings of the Board. In doing this he cooperates closely with the Managing Director, who will operate as the ex-officio Secretary of the Board.
- To take action on any matter to be decided by the Board if the Board does not convene in time and decisions on the matter concerned cannot be postponed
- To report to the Board as soon as possible about the decisions he has been required to take without consulting the Board previously.
- To represent the organisation and its goals in society together with the Managing Director

5.3. ROLE AND TASKS OF THE MANAGEMENT

The role of the management is to run the day-to day business of the organisation and to ensure the results. Specific tasks of the management are:

- Preparing and executing the budget within spending ceilings given by the Board for which no approval is required
- Adjusting allocation of financial means within the given budget and within guidelines given by the Board.
- Hiring staff, promotions, disciplinary measures, firing staff
- Monitoring to the day to day progress of works and activities
- Ensuring the quality of the performance of the organisation as a whole and the actions taken by individual members of the organisation
- Preparing reports to the Board on any aspect of the organisational development: finances, human resources, performances,
- Representing the organisation and its goals in society together with the chairman

The cooperation between Chairman and Managing Director is of vital importance for the realisation of a good performance. The relation should be based on mutual respect, each party facilitating the other to realise his responsibilities.

6. Establishment of Chairman SIDA Secretariat

Since the irrigation reforms are still in nascent stage thus the Chairman SIDA is required to fully contribute in the change management process. In order to develop close coordination and liaison with other government agencies and stakeholders, it has been felt necessary to establish the secretariat at Karachi. The establishment of Chairman SIDA Secretariat in Karachi was discussed in the 27th SIDA Board meeting held on June 11, 2005. The staff officer to Chairman SIDA would assist in this initiative to make the difference. The WSIP project would support such small establishment for better results.

ANNEXURE – D

ANNEXURE – D

Terms of Reference /Main Description of Establishment of AWB Secretariat

The following text gives a short explanation of the staffing and equipment for the Nara Canal AWB (Nara Canal AWB) as contained in the PC-I.

1. General remarks

1.1. Cost effectiveness: further development of staff.

After the implementation of the PC-1, the professionally qualified staff of the AWBs will increase by more than 60 nos in all three AWBs. This is necessary to meet the requirements with regard to performance as formulated in various documents prepared by IRC, etc for adequate management, sound business principles, equitability of water distribution etc.

2. Some remarks on sections of the AWB organization

2.1. General: major changes

The organization and staff of the AWB as proposed in this PC-1 contain two major changes as compared to the present organization and staff:

- The first change is the change in the management structure, necessary to create the management capacity and quality at the level required to cope with the change to come and to bring the performance at the desired level.
- The second change is the introduction of an administration/customer relations department, consisting of sections for Finance, IT, HRM, Customer Relations and Communications. This department will also include the present Director's Office.

2.2. Management structure

At present, the management is provided by one Superintending Engineer, who is the senior manager, senior engineer and senior responsible for the transition process, all at the same time. To him report XENs of the irrigation, mechanical and drainage Divisions, plus the head of the Director's Office. This accumulation of roles and tasks already causes problems in the present situation: the CEO cannot perform all the required tasks at the same time. The XENs cannot perform management tasks, because they are totally immersed in their day-to-day businesses: operations and maintenance.

Therefore the concept of General Managers has been introduced:

One General Manager Operations. To him will report the XENs of the Irrigation, Mechanical and Drainage Divisions;

One GM Finance / Administration / Customer Relations, who will be head of the Finance/Administration/Customer Relation Department.

The GM Operations will have engineers' qualifications (education and experience plus management experience). He may be recruited from IPD in competition with candidates from the market. The GM Finance/Admin/CR will preferably have a financial background. He will be recruited from the market.

Together with the Director, these General Managers will form the Board of Management.

It should be noted that this management structure is justified given the size of the organization and above all given the transition process, which requires a major management effort during many years.

2.3. Staff Department

The functions included in the staff department do either not exist at all, or they are performed only partly in the present AWB organization and mainly in the Secretariat in Karachi. If the AWB is to function as a autonomous organization as foreseen in the Sindh Water Management Ordinance 2002, it is vital to have properly staffed and equipped functions for Finance, IT and HRM. If the AWB is to function as an organization run on sound business principles (that means: commercial principles), customer relations and communication are essential.

2.3.1. Section Finance:

The financial section will serve as financial policy-framing unit and accounting unit. It will be responsible for the management of the real estate and its exploitation as well as procurement. The financial section will also administer the capital expenditure budget, which is under the supervision of the AWB

Experience shows that AWBs manage to collect their own Abiana with own staff if sufficient management support is provided. As the formation of FOs progresses and as they take over Abiana collection, the area in which AWBs collect Abiana is gradually reduced. At the end of this process it might be decided to include one or two senior revenue staff as well as a number of Abdars. The latter should however primarily be recruited from existing staff. In the case of outsourcing of abiana to third parties, the Finance section would supervise the contractors.

2.3.2. Section Information Technology

The AWB will be a highly computerized organization. This is an absolute prerequisite for cost effective and quality performance. This means that all professional staff will have to work with computers. There will be a local area network in the office of the Managing Director and the adjacent offices of the Divisions. There will be connections to the offices of the Subdivisions, which will have their own computers, some times at large distances. The AWB may operate an own website or choose to participate in the website of SIDA which will eventually play a major role in achieving transparency in water distribution.

2.3.3. Section Human Resource Management and Development

This section will frame staff policies and administer the affairs of the employees of the AWB. It will assist the management at every level in carrying out the rightsizing strategy. It will propose general and specific training and staff development programmes Staff is seen as the principal asset and the main production means for the knowledge and service organization, which AWB is intended to be.

2.3.4. Section Customer Relations

The section Customer Relations is to be seen as the marketing department of the AWB. Its first task will be to administer the contracts with the water users: FOs and other agricultural and non-agricultural water users. This will also include taking legal action if necessary against non-compliant water users, against encroachments or offences against the regulations of the AWB. For these tasks it will have senior clerks

as well as the external legal advisor (for drafting contracts and advising on legal actions, to be hired on a need basis).

Its second task will be to assist FOs in their registration, to assist AWB and FOs in bringing about IDMT-agreements, to support the development of the FOs, to monitor their performance and to serve as liaison (if necessary as mediator) between the AWB (especially the Sub-divisional staff) and the FOs in their mutual contacts. For this task the section will have Assistant Managers, Social Mobilization.

2.3.5. Communications / Awareness

It will take a long time before the reforms in the water management will have rooted and the new organizations have found their place in society. Also, it is necessary to raise the awareness of the public with regard to water issues in general (water scarcity, water quality, economic and effective use of water for all purposes). Therefore, it is highly desirable to create capacity to enable the AWB to promote its organization and its performance, to raise the awareness among the public about water issues.

2.3.6. The Director's Office

The Director's Office has tasks related to correspondence and records. It supports the Managing Director, the Board of Management and its members and assists in preparing the AWB Board meetings.

2.4. Irrigation and Drainage divisions

It is proposed to initially maintain the structure and numbers of professional staff in the present irrigation and drainage divisions. The reason for this is that it is undesirable to perform two major change operations at the same time. To perform the change from the working style of a governmental organization to the working style of an autonomous organization run on sound business principles will already require a tremendous effort of all involved. It will also bring about a high degree of uncertainty. It is not desirable to burden the staff involved with yet another major change. If necessary it can be done later. This is a matter to be decided by the Board and the Management at that time and at a more advanced stage of development. In case of broad acceptance by staff however, some adaptations however could be implemented earlier.

The identification of capital expenditure, their preparation and execution will be carried out by the XENs, if minor capital expenditure is concerned. If major capital expenditure is to be carried out, use will have to be made of a special project organization, which may include consultants.

3. Equipment

3.1 Offices, Furniture and air-conditioning

Professional staff can only achieve the desired productivity and quality in an environment, which is up to modern office standards. The proposed numbers are minimum requirements.

3.2. IT (Computers, laptops, printers, UPS, software etc)

High performance (high productivity, high degree of accuracy in handling data, low degree of failures,) can only be achieved by a high degree of automation in the office. Standard requirement is 1 computer per member of the professional staff. Computer skills are a basic functional requirement for all professional staff. Fewer computers and less supporting equipment will immediately result in lower productivity, and a higher error-level in data management.

3.3. Vehicles. Motors and bikes

Almost all professional staff members will make numerous business trips. Vehicles have been proposed in the project.

3.4. Multimedia projector

The AWB staff members will very frequently be required to give presentations on reforms and the role and activities of the AWB to very different audiences on a wide variety of occasions. Without MMP such presentations cannot be given.

3.5. Water management equipment

The equipment for water management purposes will consist of meters, gauges, dumpy levels and sounding rods. This equipment is necessary to measure the water levels and the discharges on a continuous basis. Continuous water discharge measurement is absolutely necessary in order to establish accurate data on water flow, which at present are not sufficiently available. They are also necessary to re-establish confidence in the water distribution.

4. Training

Training will be needed to bring the staff on the required level of knowledge and skills. This will include management training and development, for which project training funds would be utilized.

5. Staff ToRs

Overview of staff to be procured from the market / by open procedures

The activities mentioned hereunder are the main elements of the job. Complete job descriptions are in the process of being drafted.

Director AWB

general manager of the AWB
manager and stimulator of the transition process
supervises GMs
secretary to the Board
external representation AWB
participation in NDP and SIDA meetings

General Manager Operations

- reports to the Director AWB
- supervises XENs / Canal Managers
- sets standards for operations and maintenance, aiming at transparency and cost effectiveness
- supervises capital expenditure (if any)
- participates in preparing business plans, budget plans, periodical accounts

General Manager Finance/Admin/Customer Relations

- reports to the Director AWB
- supervises section heads within the department Finance/Administration/Customer Relations

- sets standards for Finance and Accounting, hrm/d, IT, aiming at transparency, accountability and cost effectiveness
- drafts internal business procedures
- supervises capital expenditure (if any)
- participates in preparing business plans, budget plans, periodical accounts

Assistant Manager Finance and Accounts

- reports to GM Finance/Admin/CR
- prepares advice on financial policy matters
- keeps the accounts and financial administration
- assists other managers and in financial matters
- manages the land and housing properties of the AWB
- assist external auditors

Assistant Manager IT

- reports to GM Finance/Admin/CR
- prepares advice on IT policy matters (e.g. procurement, software choices etc)
- manages local area network email and internet connections
- assists other managers in IT matters

Help desk operator

- reports to Assistant Manager IT
- assists Assistant Manager IT in his tasks
- assists users in solving problems during work

Manager HRD

- reports to GM Finance/Admin/CR
- prepares advice on HRD policy matters
- assists other managers in HRD matters (recruitment, compensation, performance appraisal, disciplinary action etc)
- manages Personnel Information System

Assistant Manager HRD

Reports to Manager HRD

Assists in the preparation of advice on HRD policy matters

Assists other managers in HRD matters (recruitment, compensation, performance appraisal, disciplinary action etc)

Manages Personnel Information System

Manager Customer Relations

- reports to GM Finance/Admin/CR
- Organizes the liaison of CR with the FOs and other water users on all water related issues
- To ensure that all customer related issues are addressed with the responsible manager
- Assist other managers with issues directly related to FOs and other water users based on suggestions of CR & Social Mobilization staff
- Manages CR & Social Mobilization staff

Assistant Manager Social Mobilization

- reports to Manager CR
- assist the social mobilization process of Farmers' Organizations (FOs)

- assist Farmers' Organizations in their internal development and in their dealing with the AWB
- Assists AWB especially XENs/DOs and AXENs/SDOs in their contacts with Farmers' Organizations.
- Monitor the compliance of AWB and FOs with the IDMT agreement and signal non-compliance and problems to FOs and to the higher management of the AWB
- data management with regard to FOs

Assistant Manager Communication

- reports to Manager CR
- prepares advice on Communication matters
- assists managers with regard to communication matters
- establishes and maintains contact to media and press
- organizes publicity about and promotion of AWB activities

ANNEXURE – E

ANNEXURE – E

Terms Of Reference /Main Description

of Formation of FOs under wsip

2.

3. **1. Farmers' Organizations**

The FOs will be established on the distributaries and minors on the basis of Water Course Associations (WCAs) and Drainage Beneficiaries' Groups, i.e. unions of farmers on individual water courses or drainage infrastructure, which are the constituting members of the FOs and form its General Body. Tasks of the FOs are:

- operation and maintenance of their distributaries, minors and water courses
- the equitable distribution of irrigation water to the farmers
- maintenance of their drainage infrastructure
- Collection of revenue (abiana, drainage cess and other) from the farmers through the WCAs.
- Paying the AWB for the water received from them.

A contract will be made to regulate the water services between AWB and FO. Ultimately there will be close to 1400 FOs throughout Sindh.

THE ESTABLISHMENT OF FOS AND THE SOCIAL MOBILIZATION PROCESS

The establishment of the FOs in AWBs command area is highly desired and is part of reforms process. AWBs have shown keen interest to support this initiative. The SIDA under its main task of support the FOs in its growth and development intends to organize (and execute this scheme) the FOs through its Social Development Cell of Transition Department in collaboration with the respective Area Water Boards where FOs are to be formed. Such initiative by SIDA had been taken from time to time.

There are 14 Canals out of which 04 have been transferred into 03 AWBs in Sindh province. The social mobilization work which is mainly formation of Farmer Organization has almost been completed in Nara Canal AWB, where out of 170, 162 FOs have been formed/ registered. The formation work is in process in other AWBs under SOFWM Project and NDP re-programming. The WSIP project will fund formation activity if some FOs remain unformed in AWBs canal command area.

Current status of Social mobilization/FO formation in AWBs (Nov 2006)

AWB	Total to be formed	Formed earlier (before SOFWM and NDP-R Project)	Remaining to be formed by (tentative)		Actual formed up to Nov 06	Remarks
			Agri. Deptt (SOFWM project)	SIDA (NDP Project)		
Nara Canal	170	162	Nil	8	162	Currently the formation process is underway through both ongoing projects. However, there is a risk involved in NDP reprogramming, as the project is likely to end in 2006-07. Therefore some FOs (say 50) would remain unformed. Therefore WSIP would support if such situation exist during WSIP execution.
Ghotki Feeder Canal AWB	94	12	40	42	25	
Left Bank Canal AWB	105	13	60	32	43	
Total AWBs	369	187	100	82	230	

The establishment of Farmers' Organizations infact is a social mobilisation process and will require teams of experienced professional staff, working in teams, to establish the required number of FOs within the time and quality parameters of the project. The formation of adequately trained and prepared FOs is essential if the FOs are to be able to undertake their tasks and responsibilities as viable and effective units.

1. 2. Methodology for Formation of FOs

In principle, the social mobilization methodology successfully used by the International Irrigation Management Institute (IIMI) in the Nara Canal command area is applicable to replicate, with modifications based on lessons learned from previous social mobilisation activities, in other areas of Sindh. The method consists of a stepwise process. The same methodology being applied currently will be followed.

2. 3. Capacity Building and Training

AIMS, OBJECTIVES AND METHODOLOGY OF CAPACITY BUILDING

Capacity building is an essential part of the process of the establishment of viable FOs. The capacity building program, to be carried out by professional staff who have undergone Training of Trainers (TOT) training, should have the following aims:

- Facilitate the institution building process
- Transfer basic organisational and financial skills
- Enhance the technical know-how of irrigation and drainage management
- Create an awareness of provisions for external support that will enable the FO to undertake its business functions

- Ensure that the FOs understand their role and responsibilities as a business organisation

The following fields are identified where the water users (FO members) need to develop their capacity for a smooth functioning of their organizations and be capable of operating and maintaining the water distribution and drainage system(s) within their own environment. They will receive basic trainings in the areas mentioned below. The aims are therefore to create:

General

- a general understanding of the aims and objectives of the reform process
- a general understanding of the nature, the role and tasks of the FOs in the reform process
- a general understanding of the legal framework (SWMO 2002), as well as regulations as and when they become available

Management and organisation

- Initial training in effective communication and conflict resolution (based on Case Studies)
- Introduction to business planning
- Record keeping: what records to keep, why and how?
- *On request from eligible FO members (e.g. Word, Excel, e-mail, internet) only:* provision of basic computer skills, to be used for keeping records, collection and storage of data, correspondence, etc.

Finance

- Basic financial management: keeping a cash book and account books

Water management

- Project planning and implementation (including urgent rehabilitation): the role of the FO as principal/client
- Introduction to the basics of the operation and maintenance of their own irrigation and/or drainage system
- Water discharge measurement and recording of data

Revenue collection

- crop assessment, collection of water service charges (abiana, drainage cess) and other revenue, as well as the maintenance of records

Acquisition of these skills and an understanding of the topics indicated above, through a successful training Programme, is a condition for signing an IDMT-agreement and successfully taking over of the management of the infrastructure from the AWB.

METHODOLOGY

All Professional Staff working in Social Mobilisation will receive Training of Trainers (TOT) training, preferably from a well-reputed training institute or service provider. They will organise training courses at locations suitable to all members of each FO. Maps, drawing sheets, flip charts should be used during training. The participants should be encouraged to share their experiences on every aspect of the contents of the training. The language of instruction, and all material provided to the members of an FO, should be Sindhi or local.

The latest communication techniques/equipment such as multi media, overhead projectors should be used to deliver the training material properly and to maintain attention of participants. In the technical sessions discharge measurement equipment should include current meters, weirs and/or flumes. The theoretical/conceptual knowledge should be augmented with practical sessions both in the training location and in the field (learning by doing, participatory learning). Printed material should be made available to the participants, e.g. SWMO 2002 (Sindhi version), FO Regulations (if appropriate), action plans for operation and maintenance of irrigation and drainage system, users manuals, draft Irrigation and Drainage Management Transfer (IDMT) Agreement documents, and discharge measurement training notes.

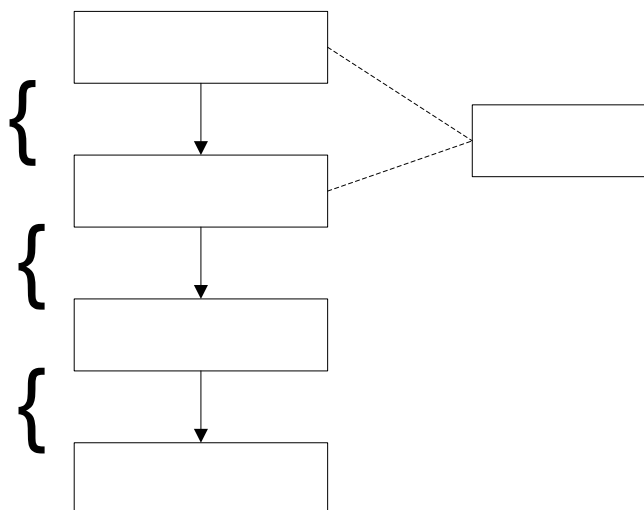
4. Linkage between AWB and FO

The FOs, and the Area Water Board (AWB), from whom they receive their irrigation water are two key partners of this new set up of irrigation management. Efforts should be made to get both partners to come closer to understanding each other. Several meetings are suggested to be arranged between them. Officials of AWB should be invited to participate in the training and capacity building programs. Regular meetings between Assistant Executive Engineers (SDOs) in a branch canal and “their” FOs on water distribution and maintenance issues and participation of AWB officials in a variety of programs organized by the FOs could create a better functioning interface. Such an interface could reduce the communication gap between the two key stakeholders significantly.

3.

5. Management Transfer

The preparation for the transfer of the management of the irrigation and drainage infrastructure will start as soon as the registration of an FO has been completed with SIDA or the Regulatory Authority. Before transfer training should be provided as described in section 2.2 of this ToR. The Field implementation Committee with the assistance of the Farmer Organization Councils and AWBs is responsible for the evaluation of the capacity building of the FOs. The ideal outline of the procedure is shown in the schedule below.



6. BUDGET

A block provision is envisaged in the cost of strengthening and capacity building of FOs under project component A. The budget of other support as needed/Misc would be utilized if FO formation would be required and target of current FO formation activity is not met.

TRAINING ACTIVITIES THROUGH SIDA TRAINING CENTRE UNDER WSIP

1. Objective

With the reforms in the Irrigation Sector in Sindh the organizational capacity of the Farmer Organizations becomes crucial to the performance of the irrigation system. So far the main thrust of the Farmer Organizations has been representational rather than professional and managerial. To improve water management at distributory and minor level and also at canal level it is crucial to build the capacity of Farmer Organisations in improved water management, revenue collection, FO administration, water saving and crop and livestock production and others. At present there are 220 FO's in place, with 150 more to be formed under the SOFWM and NDP. There would still be a small room for WSIP to undertake FO formation activities.

The number and responsibilities of the FO's requires a large, dedicated and long-term training effort through the services of a small set up of Training Centre. The centre needs to familiarize the FO key staff with the primary management processes at minor and distributory level.

Training and capacity building further needs to be extended to the lower cadres in the Area Water Boards – a group that is crucial to irrigation performance and to the reform process, but that is generally ignored in skill up-gradation. This group requires training in the different work processes associated with irrigation modernization and needs to be familiarized with the new institutional requirements and operational procedures under the reforms. A special concern is the retraining of AWB staff now posted at distributory and minor level. With the signing of the IDMT's the role of this cadre will change. Retraining is required – to make them more eligible for employment by FO's or for employment elsewhere.

2. Organization

The training centre would be part of transition department SIDA. The SIDA has already notified the training centre and has re-activated their training activities. The centre will have small nucleus of staff to be deputed by SIDA. The In charge of Training Centre will report to SDS/DGMT. The GMT would overall supervise the activities.

The centre will have a location in a fixed place (Hyderabad), but not have a fixed location for the training activities.

3. Training package

The training package should be flexible, as training requirements and demands will change. The research and studies program implemented under WSIP for instance is expected to result in new techniques and working methods, which will be disseminated through the FO training.

FO board and FO staff

Institutional reforms in Irrigation and Drainage
Introductory Water Management Reforms
Basic HRM procedures and conflict management
Effective communication and conflict management
O&M and Community Contract Management
Business planning and project preparation

Project planning and implementation
Financial audit and FO transparency
Irrigation campaign planning
Basic computer skills
On farm water management
Improving crop and livestock productivity
Gender integration and poverty alleviation
Environmental management and mitigation
Income generation and resource mobilization
Organizational linkage and Income Generation
Group dynamics and leadership development

AWB field staff

Orientation on Irrigation Reforms
Upstream control on Cross Regulators
Revenue assessment and administration
SWMO 2002
Controlling Direct Outlets
Environmental management and mitigation
Retraining distributary/ minor level staff

Similarly trainings for SIDA, AWB and FO staff and management will be initiated through high profile management and development programme so that SIDA could implement the project effectively and function as per mandate of SWMO-02. Other off the shelf and tailor made courses and national and international learning tours would also be organised.

4. Activities

To develop the centre the following activities are to be supported under WSIP:

- Appointment and funding of nucleus staff (included in SIDA core staff)
- Curriculum development
- Training of trainers
- Upgrading of facilities
- Implementation of the program

5. Implementation of training program

The training program is based on the assumption that 369 FO's will be served by the centre in addition to AWBs, SIDA, IPD, PCMU-WSIP and other key GoS staff in course of the next four years. The training will be undertaken through SIDA Training Cell in close coordination with SDC, Transition Department SIDA, local, national and international institution/organisations. The courses of small duration will also be carried out in well known national and international institutes.

6. Budget

Some funding is already provided in the component E (project management, coordination component, technical assistance and training).Detail cost would be identified in consultation with PCMU before implementation of training activities.

Gender Mainstreaming and Women's Empowerment under Sindh WSIP for Integrated and Sustainable Water Management in the Sindh Province

Introduction

1. This working paper describes the activities proposed under Component A of WSIP on Capacity building and social mobilization, to be undertaken to support the involvement and participation of women farmers and mainstreaming gender issues for integrated and sustainable water management. The document was prepared as a result of a series of meetings held with officers of SIDA, NDP and IPD, representatives of Area Water Boards, Farmer Organizations, Women Farmer Groups and Women Activists, and Civil Society Group. Field visits to undertake stakeholders and gender analyses were organized in Mirpurkhas and Sanghar, Nara Canal AWB Command.

2. Men and women have differential incentives for investing time, labour and capital in water management activities, reflecting gender differences in responsibilities, their access to and control over productive resources, including water and the benefits from irrigated agriculture. Women and men are generally responsible for different water-related tasks at the household level; and generally women have unequal access to water-related resources and decision making bodies at all levels. Research and practical experience demonstrate that effective, efficient and equitable management of water resources is only achieved when men and women are equally involved in consultation processes and in the management and implementation of water-related services. A gender balance ensures that the roles and responsibilities of women and men are mobilized to best effect; the creativity, energy and knowledge of both sexes contribute to making water schemes and eco-systems more sustainable; and the benefits and costs of water use accrue equitably to all groups.

3. Experience has shown that gender analysis can help irrigation planners and policy makers improve the performance of the irrigation schemes. There are three broad areas in irrigated agricultural production systems where gender analysis can help create more effective, equitable and sustainable irrigation policies and programmes:

- a) Irrigation design: where it is necessary to identify who will be using the water, the amounts needed, at what times and for what purpose;
- b) Legal, administrative and organizational arrangements: ensure women's use and control of land and irrigation water is fundamental. Land and water allocations should be to the individual farmers rather than to the households. All farmers who own, rent or work on irrigated plots should be members of Water users' associations, and women also be guaranteed leadership positions;
- c) Implementation: devise the water delivery schedules in order to accommodate both men and women's needs with respect to quantity and quality of water, and timing. Access to training, credit and technology (i.e. introduce gender-friendly technologies so that women may not be marginalized as they are not technology specialists) should be ensured to both men and women.

I. Analysis of the Socio-economic Factors of the Sindh Water Sector with a Gender Perspective

4. The Government of Pakistan has made a commitment to empowering women and has established the Ministry of Women's Development (MOWD) as the implementing agency to achieve this. As follow-up to the Beijing Platform for Action, adopted by the Government of Pakistan at the Fourth World Conference on Women (1995), MOWD has prepared in 1998 a National Plan of Action (NPA) and in 2002 a National Policy for Development and Empowerment of Women. The National Policy is guided by

guarantees in the Constitution of Pakistan “to international instruments on human rights, as the reiteration of the Islamic principles of justice and equality” and by “non-discrimination and gender equity at all levels”.

Some efforts were also undertaken to integrate gender analysis in some recent policy-related documents (i.e. draft Water Policy and National Environment Policy).

5. The Legal and Institutional Framework of Water Management in the Province of Sindh is established in the Sindh Water Management Ordinance No. XL of 2002 (SWMO) which stipulates tasks, powers and organizational structures, including the principles of participation and membership. SWMO applies equally to male and female landowners and leaseholders (tenants with formal, documented rights and obligations, without covering other forms of tenancy, namely of *haris* -sharecroppers), and does not provide gender specific actions concerning water management transfer. SIDA accepts a programme principle of gender sensitivity and equity for all stakeholders.

6. Rural areas in Sindh Province rely more on traditional practices concerning property and women’s status than on national or provincial legislation. Existing social and cultural biases, inequitable inheritance laws and the inadequacies of legal structures further limit ownership and control by women. Although some attempts at addressing women’s needs in domestic water management and water projects have been made, their specific needs remain largely invisible in the agenda of water institutions and are inadequately considered in terms of water policies, strategies, programmes and conservation initiatives. Women are often not recognized as vulnerable group in terms of impact nor as a legitimate group to engage with in the effort to ward off the impending water-related difficulties. They are still not adequately recognized as a party in the current national debate on dams, water distribution and competing demands. The delineation of water and land regimes could assist securing the livelihoods of not only women landowners but also the landless men and women.

7. As the Water sector is still often considered outside the purview of women as such, there are only a few women who have become prominent in this area as planners, managers, technicians, researchers, professionals and members of decision-making bodies. Human and social indicators in Pakistan show that, in spite of improvements in some indicators, in comparison to men, women are still lagging behind especially in the Education sector (i.e. Literacy Rate, Gross primary enrolment and Labour force participation). Women also earn lower wages than men in the agricultural labour.

8. Few women own agricultural lands (or control their lands, even if owned) or manage these lands and therefore their rights to water are ill-defined. Land ownership by women has increased due to the Land reforms undertaken by various Governments which fixed ceilings on personal holdings of land. Women often see themselves in ways that are directed by male dominant viewpoints, and hence think that domestic water supply is their only responsibility. Major concerns were reported by women in the rural communities on hygiene and water-borne diseases related to the poor water quality available in the villages. Given the interplay of formal and customary laws in inheritance to the disadvantages of women, they have perfunctory ownership in a majority of cases with little control to buy or sell. Women manage the household economy and the rising prices of water which results in cuts elsewhere. So far little policy or programmatic action has been taken to lessen the burden of women carrying water for domestic use. Irrigation and agriculture use up to 97 percent of Pakistan’s freshwater resources, and the rest is left for all other uses, including drinking water, supplies for municipal and industrial uses and for maintaining the river courses, and the crucial freshwater interface in coastal areas.

9. Seventy-three percent of women in rural areas are economically active, and in agricultural households 25 percent of fulltime workers (defined as one who does only agricultural work) and 75 percent of part-time workers are women. The major agricultural activities performed by women farmers are related to crop and livestock production, post-harvest management, marketing and other activities like threshing, winnowing, cleaning, drying, making bins and storing. Nevertheless, the global commitments

covering water do not specifically address the issues of equitable division of power, work, access to or ownership of environmental entitlements (including water and land) between men and women.

10. Regarding the political participation, some institutional reforms were attempted to move towards farmer management of the irrigation and drainage systems. Nevertheless, there are still no women in the SIDA Board and the Area Water Boards, with some attempts under way to introduce gender focal points; and the membership of women in the Farmer Organizations and the Water Course Associations is still limited. This is mainly related to the fact that women with land rights are still often not in control of their property and therefore do not participate in Farmer Organizations and decision-making bodies. Women landholders, by being more actively involved in agriculture, are more motivated to get organized and could play a major role in Farmer Organizations, if special amendments can be made at legal level to let them become members or at least invite them to attend the information and training activities. There is an increasing number of Women's groups among community-based associations of water users, and a rise in women membership in Community groups focusing on drinking water and sanitation issues. A recent study has shown that women represent 33 percent of the local elected bodies.

11. Women have to gain education, experience and exposure in the technical aspects of water-related issues before being allowed to actively participate in decision-making. Few training and capacity building programmes have been designed to facilitate gender mainstreaming and support strategic gender needs at grassroots level for water and sanitation interventions, and develop the skills needed to promote the participation of both men and women. Unless women have a clearly defined entitlement over water and land resources, their interest in participation in water-related issues is likely to be low, with limited potential for proactive gender policies and strategies in the Water sector. Special support should be given to women's roles in the productive sphere (i.e. producing, buying and selling) as a critical factor for their empowerment and to ensure gender justice. This can be accompanied by awareness raising and gender education of men in order to enable women and girls to more actively participate in the development of the agriculture and water sectors (i.e. permission to attend meetings with Women's groups and Farmers organizations, and interact with NGO teams).

12. Very few research studies on water in Pakistan have actually carried out a gender analysis and assessed the gender impacts. Gender-disaggregated data is rarely available or rudimentary. There is still a need for well-structured compilation of data regarding women's membership in local councils and community groups. Regular demographic and statistical reports have no reference to water or refer to drinking water and sanitation, but are not disaggregated by gender. Some data is available from projects documents usually covering local areas. Informed gender analysis is a rarity and there is an urgent need for social assessments that can provide frameworks for the incorporation of issues like participation, poverty focus and gender analysis in the design and delivery of project interventions to beneficiaries, particularly poor and women beneficiaries, and project-affected people. Gender budgeting could also be used as a tool to measure whether public expenditure matches gender commitments and what allocations are made for men and women in the Water sector and provide information on gender disaggregated beneficiary analysis.

13. Not all groups of women are disadvantaged and for example rich land owning women farmers or women in professional cadres of water agencies may be better off and more "empowered" than a male field hand or site inspector. Some studies of the gender impact of drainage projects in Districts Sanghar and Nawabshah in Sindh, where women actively participated, have shown that they were able to identify the advantages that accrued as a result of their interventions for improving drainage. Through organized women's groups, they participated in the maintenance and management of channels, as self appointed "policewomen". Women's participation should be envisaged in all stages of local discussions and developments, and maintaining irrigation and drainage infrastructure. Media can also play an important role in disseminating this type of successful experiences and in raising awareness among policy and

decision-makers and the male population on the important role that rural women can play in the Water sector.

14. In the enclosed Annex I are reported five Tables with some of the main results of the discussions held with different stakeholders during the field visits, reflecting the perceptions and opinions collected at grassroots level, while carrying out a gender and stakeholders analyses. Several of these conclusions and recommendations will be used in the identification of the activities proposed for this Sub-Component.

II. Activities under WSIP

Approach

15. In the identification and formulation of the activities proposed in this Sub-Component, which aims at mainstreaming gender issues and empowering women for the integrated and sustainable water management in the Sindh Province, it was adopted the approach proposed by FAO Socio-economic and Gender Analysis (SEAGA) Programme. SEAGA¹ is an approach to development based on the analysis of socio-economic factors, and participatory identification of the priorities and potentials of both men and women at field, intermediate and macro levels. The Programme has three guiding principles: a) Gender roles and relations are of key importance; b) Disadvantaged people are a priority in development initiatives; and c) Participation is essential for sustainable development. It includes three types of analysis:

1. Development context analysis – socio-economic patterns that support or constraint water management interventions;
2. Livelihood analysis – flow of activities and resources through which men and women make their living;
3. Stakeholders' priorities for development – understand the priority problems and recognize the stake of all participants in achieving the success of the irrigation project.

16. For the formulation of this Sub-component some specific activities tailored to women and girls are proposed to reduce the gender gap and empower the most vulnerable socio-economic groups in the agriculture and water sectors. This approach will contribute to gender equality in the access to and control over productive resources of men and women, and their active participation in the water management in the Sindh Province. In operational terms six main actions were identified and the detailed Cost estimate is included in Annex II:

A. GENDER-SENSITIVE INSTITUTIONAL SETTING

17. Under this Sub-component the Legal and Institutional Framework of Water Management in the Sindh Province will be reviewed and amended to make it more gender balanced, with specific actions to be promoted at policy level for mainstreaming gender issues and ensuring women's representation in SIDA Board, AWB and FOs.. This will include some special measures to assist integrating women sharecroppers in the Legal framework so that they can take part in the Farmer Organizations. A fixed quota (i.e. 30 percent) could be considered for women's participation in the FOs and a minimum number of women farmers in their Board of management. Moreover, special amendments will be made to recognize the legal status of Women's Groups. Both SIDA and AWB Commands will make special efforts to select additional women engineer officers (i.e. Assistant executive engineers) to assist in the social mobilization process.

¹ SEAGA Handbooks and Technical Guides, including the SEAGA Irrigation Sector Guide, are accessible on FAO web page at: <http://www.fao.org/sd/seaga>

B. INFORMATION AND AWARENESS RAISING ACTIVITIES

17. A series of information and training activities are suggested to collect statistics disaggregated by sex and raise awareness on the specific problems and needs of men and women among different stakeholders involved in the water sector (namely personnel of SIDA and other governmental staff, AWB, NGOs, Farmer Organizations, Women's Groups, women and men farmers not directly related to any specific community organization). The proposed activities include:

i) Gender-sensitive Data collection, analysis and utilization and Gender-sensitive indicators

18. Research and collection of data disaggregated by sex and other important socio-economic variables, in the form of surveys, case studies and rapid or participatory appraisal techniques, will be conducted to understand the current situation of men and women in different settings so that appropriate actions can be taken. A two-way information flow will be promoted: for decision-makers at different levels to enable them to act with the support of all facts; and for rural men and women to give them a better understanding of their own development and the capacity to take responsibility for it, reducing the gender gaps. Sex-disaggregated information that can be collected includes, among other, the social history of the scheme, the impact of the irrigation scheme on different socio-economic groups; cropping patterns, allocation of land in the scheme, water allocation and usage within the scheme, farm income and off-farm employment data, organization and management structure of the scheme, and technical and organizational constraints faced by men and women that influence the scheme performance and benefit distribution. The results of the research will be widely disseminated among policy and decision-makers to ensure a better understanding of the situation of men and women farmers and formulate gender-specific actions.

A series of (both quantitative and qualitative) gender-sensitive Impact/Output indicators will be identified to monitor gender-related progress or change over time as a result of the different activities proposed by the WSIP Project; to assess how the Project is promoting the participation of the most marginalized socio-economic groups and is contributing to their empowerment. This will include also some Gender budgeting to assess the specific allocations made by WSIP for men and women in the water sector. It is recommended to address gender concerns at three levels: a) national level (i.e. poverty rate sex-disaggregated or women share in labour force in agriculture and non-agriculture); b) ministerial level (i.e. share of women participating in the management of FOs); and c) project/local level (i.e. male, dual or female farming system or inclusion of women in management fora). Special arrangements will be made with local NGOs and research institutions to carry out the surveys and assist with data collection and analysis.

ii) Organization of Training workshops on collection, analysis and dissemination of Sex-disaggregated data

19. A series of training workshops and one training of trainers (TOT) course will be organized on collection and analysis of sex-disaggregated data, based on a training needs assessment and tailored to the specific audience. The duration of the workshops will vary from three days to two weeks (for the TOT) and each one will be organized at provincial level to provide training and technical support in gender and statistics. The target of the capacity building programme will be the personnel of the National Statistics Office, the Ministry of Water and Power, the Ministry of Food, Agriculture and Livestock, and the Ministry of Women's Development, and representatives of some local/national NGOs and research institutions involved in data collection and analysis. The total number of direct beneficiaries of the training programme will be 250 national experts; and the final beneficiaries will be women and men farmers when gender-sensitive actions will be implemented based on the better understanding of their

needs and priorities.

iii) Creation of a Database on Socio-economic factors with a gender perspective

20. It is suggested to start creating this Database in a pilot AWB (i.e. Nara Canal Area – Water Board where 162 FOs on distributaries and 4000 WCAs on water courses are already established) before extending it to the whole Sindh Province and at national level. Existing maps and other documents will be complemented with women and men’s local knowledge on water sources and uses; percent of female-headed households in different socio-economic groups, women’s membership in local councils and community groups, etc. A local/national NGO can coordinate the establishment of the Database, together with the Training needs assessment. The direct beneficiaries will be policy and decision-makers involved in agriculture and water management, while the ultimate beneficiaries of the well-structured compilation of gender-disaggregated data will be men and women, and the most marginalized socio-economic groups in the rural communities.

iv) Establishment of Information Centers in selected rural communities

21. The idea of establishing pilot Information centers in ten rural communities is to provide farmers and rural entrepreneurs with updated information on agricultural and non-agricultural activities and issues such as employment opportunities, commodity prices, market trends, rational use of pesticides, new water-related gender-friendly technologies, labor-saving technologies, training opportunities, rural sector support measures, production incentives, inheritance rights, etc. Men and women farmers could use this information for their economic empowerment in order to reduce the role of the “middle man”. They could analyze different possibilities for improving their livelihoods and assume responsibility at different levels of the decision-making, management and planning processes.

For this purpose some computer centers could be established and computer literacy courses be provided in selected rural communities to facilitate the access of this information, with separate sections or courses for women to ensure that they can equally benefit from these services. These Information centers can be managed by SIDA or by local NGOs, preferably women’s NGOs, with the active involvement of men and women in the rural communities. An appropriate communication strategy (i.e. periodical bulletins and rural radio programmes) will be developed to ensure that information is properly disseminated among different socio-economic groups based on their experience and education level, making special efforts to reach the most marginalized men and women in remote rural communities. The direct beneficiaries will be men and women users of the Information centers and participants of computer literacy courses in the ten selected rural communities; while the ultimate beneficiaries will be men and women farmers and people involved in non-agriculture activities and their households.

v) Organization of Awareness raising events and Information Campaigns to sensitize on gender-related and women’s empowerment issues

22. On the basis of collected sex-disaggregated data, a series of awareness raising seminars and workshops will be organized for different audiences at local, provincial and national levels. The main objectives of these events will be to sensitize on the important role of women in the agriculture and water sectors; and to support the on-going social mobilization process in order to encourage women’s participation in FO and Women’s groups and involve them in the reform process, the management and maintenance of the irrigation scheme and business planning. These activities will also aim at encouraging the political commitment to gender issues and women’s empowerment, and at mainstreaming gender issues in the water sector. Special attention will be given to raise the awareness of women owners of their land and with water rights, and to increasingly involve also male and female sharecroppers and other farmers working in the water and agriculture sectors.

A series of information campaigns will be organized on the occasion of the international day of water, women, youth, etc through the preparation of information materials and the organizations of information seminars. Based on the successful experience of other countries it is recommended to establish an annual Woman's Award in recognition of the contribution of a woman farmer to encourage the exchange of lessons learned and success stories. These information and awareness raising events will be organized by SIDA, with the active participation of representatives of FOs, Women's groups and other local groups, committed women and men from rural communities, and the relevant media. Men should be actively involved in the planning of these events and in the selection of the women for the Award; and young women and girls should be invited to attend in order to increasingly involve them in community's activities and decision-making. The final beneficiaries of these activities will be men and women in rural communities and their local organizations.

C. CAPACITY BUILDING AND SKILLS DEVELOPMENT

i) Training and skills development activities

23. A series of training and skills development workshops, and whenever possible training of trainers courses, will be organized for women and men farmers at community level, governmental officers, representatives on NGOs and stakeholders from other sectors on different issues, based on a preliminary training needs assessment to be carried out in coordination with FOs, Women's Groups, local NGOs and water officers from SIDA. The workshops will cover both technical issues as well as "life skills" which are particularly relevant for women with poor self-esteem and little experience in decision-making. Special efforts should be made to involve girls and young women, who are traditionally carrying out reproductive tasks, and can rarely attend community's activities and participate in Women's groups. As suggested by different stakeholders during the field visits, a preliminary list of topics to be addressed in the capacity building programme could include:

- Gender analysis and participatory tools;
- Integration of gender analysis in water management;
- Water and drainage systems management and maintenance;
- Technology selection based on the situation of men and women farmers, to ensure the technology matches with their operational capacity and strength;
- Inheritance rights;
- Hygiene and water sanitation;
- Natural resources management;
- Bookkeeping and numeracy;
- Enterprise development, business planning and marketing;
- Livestock rearing;
- Information management and computer literacy;
- Team building and self-esteem,
- Embroidery, carpet making and other handicraft;
- Adult literacy.

To identify the specific training needs of different target groups and plan the capacity building programme it is suggested to collaborate with Women's Councils and local groups and NGOs (i.e. Civil society networks and Strengthening participatory organization, SPO) to join efforts and make a better use of available human and financial resources. Special efforts should be made to ensure that representatives of the main stakeholders and the most marginalized socio-economic groups are invited in the training needs assessment and the planning of the workshops. Moreover, it is recommended to establish a close cooperation with UNDP Gender support programme called "Women political schools", inviting them to share their experience on how women can benefit from the local government and exchanging training

materials. The direct beneficiaries will be 1000 people who will attend the training workshops and the ultimate beneficiaries will be women and men in the rural communities, and particularly the most vulnerable groups. The duration of each workshop will vary from one day to two weeks in the case of the TOT course, based on the topic of the training and time availability of the participants. Separate or mixed training workshops will be organized and appropriate venues be identified taking into account the local socio-cultural context to ensure that men and women of different age and ethnic groups can participate.

ii) Development of training materials and modules

24. Once the needs for technical and skills development training are identified, appropriate institutional arrangements will be established for the organization of the training events with international, national and local institutions, with the active participation of NGOs with a long experience in education, training and awareness raising activities. Existing training materials will be adapted and new manuals and case studies will be prepared based on the knowledge and education level of the target groups, based on the Adult learning theory. According to the socio-cultural contexts either separate or mixed training courses will be organized at times and venues convenient for the audience. SIDA and its Social Development Cell of Transition Department will play an active role in outsourcing this activity.

D. MICRO PROJECTS FOR WOMEN'S EMPOWERMENT WITH A MICROFINANCE COMPONENT

25. In view of the current marginalization of many women farmers and women not directly involved in the agriculture and water sector, it is suggested to identify a series of micro projects (i.e. agro-industry) addressed specifically to women and girls working in and off-farm activities. As some women might not have any property rights and therefore no guarantee to access credit from formal institutions, it is suggested to establish a Revolving fund of US\$ 150,000 to provide them with a micro credit to start new enterprises or purchase small equipment for their agricultural activities (i.e. hand pumps). The micro credit (ranging from 20 to 50 US\$) could be given to Women's groups to encourage the organization of women and girls in the rural communities. Assistance might also be provided with business skills development and the establishment of micro saving facilities to ensure that women can actually benefit from the new income; and training in basic bookkeeping and numeracy for illiterate women and girls. This activity could be implemented in collaboration with the Local Government and Councils existing at three levels, preferably Women's Councils.

The planning of this activity will foresee an analysis of the economic, social and institutional patterns that can support or constrain small enterprise development; and the assessment of current and potential livelihood systems of rural women and girls. An analysis of the different stakeholders who may be involved in the planning and management of the micro projects and microfinance schemes, should also be foreseen together with the participatory assessment of existing and potential microfinance institutions. A series of information sessions should also be foreseen to inform women and marginalized people in the rural communities on available microfinance products and services. It is expected that over 1000 women and girls can directly benefit from the micro projects and the business skills development; and the ultimate beneficiaries will be rural men and women and their households, and the different institutions that will be involved in this activity.

E. SUPPORT TO THE SOCIAL MOBILIZATION FOR THE FORMATION OF WOMEN FARMER GROUPS

26. Currently very small initiatives for formation of women farmer groups are being undertaken by SDC SIDA; and limited information is available on women landowners and sharecroppers. Special

support should be provided to SIDA and its Social Development Cell and the local communities with the identification of women landowners and the establishment of new Women's Groups and Farmer Organizations. In addition, it is highly recommended to foresee some special measures to involve in the FOs also women without property rights, as in most cases they are the most active in the agriculture sector and could provide substantial contributions to the FOs and Women's Groups. Awareness raising sessions on gender issues and life skills (i.e. confidence) may also be foreseen for SIDA Social Development Cell, the staff from the Social Welfare Department of the Secretary of Sindh Province and other local institutions involved in the social mobilization process.

F. GENDER-INCLUSIVE INFRASTRUCTURE DEVELOPMENT AND REHABILITATION

27. In view of the fact that WSIP foresees a major component for Infrastructure development and rehabilitation, it is recommended that gender issues are taken into account during the rehabilitation work to avoid negative gender impacts (i.e. during the reconstruction work of the drainage channels a foot bridge might be damaged and women could be obliged to walk longer distances to fetch water); and gender-friendly technologies (i.e. a pump or tool to be easily managed by women) are introduced. For this purpose a small *ad hoc* Local committee will be established at community level to look at Infrastructure development and rehabilitation from a gender perspective, inviting a few representatives of women farmers during the planning and implementation phases to share their concerns and priority interests. The final result could be to create new economic opportunities for both men and women in the rural communities, maximize gender benefits and minimize any potential negative gender impact.

III. Implementation mechanisms

28. For the implementation of the activities recommended under this Sub-component a **Local Committee for Mainstreaming gender issues and Empowering women in the water sector in Sindh Province** will be established, with the participation of the following institutions: SIDA and its Social Development Cell, NDP and IPD, Local Government and Councils (particularly Women's Councils), representatives of Area Water Boards, Farmer Organizations, Women Farmer Groups and Women Activists, Civil Society Group and any Youth group. A cooperation will also be established with other international organizations (i.e. UNDP Gender Support Programme "Women political schools") to exchange training and information materials, and share experience in gender mainstreaming. The Local Committee will be responsible of coordinating, in collaboration with the Project Coordination Unit and the national/international consultants, all activities proposed under this Sub-component.

29. As mentioned under Point 27 a small *ad hoc* Local committee will be established at community level to ensure that gender issues are taken into account in the activities foreseen under the Major Component of the Project on Infrastructure development and rehabilitation to avoid negative impacts on some socio-economic groups. The Committee will include some representatives of SIDA, NDP and IPD, local NGOs and selected members of Women farmer groups and any other available organization existing at community level.

30. For the implementation of the activities described above it is recommended:

- A national sociologist specialized in Gender and water management issues will be part of the Project Coordination Unit and the Local Committee during the whole duration of the project. He/she will be responsible to review the Legal and institutional framework for Sindh Province and relevant legal documents, making specific recommendations for amendments to create a gender-sensitive institutional setting. He/she will also assist with the monitoring and evaluation of

the project's activities with a gender perspective and will coordinate the gender budgeting;

- An international gender specialist will participate in the foreseen activities and provide technical backstopping to the WSIP Project in three missions (date and duration will be defined at a later stage by the Project team while preparing the detailed Work plan). He/she will assist the national sociologist with the implementation of the activities of this Sub-component; with the establishment of the Local Committee; and with the formulation of gender –sensitive indicators for the monitoring and evaluation, and with the Gender budgeting;
- Several national and international consultants will be hired during different phases of the project to assist with the planning and organization of all the activities described from A to F. International experts will include specialists in statistics and gender-sensitive monitoring and evaluation, gender analysis in the water sector and gender-sensitive microfinance; while the national experts will include local facilitators, specialists in gender analysis, statistics, monitoring and evaluation, bookkeeping and numeracy, microfinance, water management, agro-industry and micro projects set up;
- During the project implementation of the activities for women's empowerment and social mobilization it is recommended to invite some representatives from village institutions, and boys and girls;
- A close collaboration will be established with local and national NGOs and especially women NGOs, including the Strengthening Participatory Organization and the Rural Support Group, in view of their long experience with training and sensitization activities at local and national levels. These organizations will assist with the preparation and adaptation of training and information materials; and the organization and facilitation of information campaigns and capacity building events.

Budget: Some funding is already provided in the component E (project management, coordination component, technical assistance and training).Detail cost would be identified in consultation with PCMU before implementation of training activities.

ANNEXURE – F

ANNEX – F

ELIGIBILITY CRITERIA FOR SELECTION AND PRIORITIZATION OF DISTRIBUTARIES / MINORS AND BRANCH CANALS

Distributary Improvement.

Eligibility Criteria

Existing as well as newly formed FOs will be eligible for assistance for improvement of distributary / minor canals. For the formation of new and existing FOs the following criteria will apply.

FO Formation:

The distributary / minor canals, on which FO is to be formed, fall within one of the notified AWBs. 2/3rd of the command area of FO is covered by WCAs/

The information required by the Regulatory Authority, including certified copy of Register of abiana payers and leaseholders, is submitted as per Water Management Ordinance 2002.

The flow chart of activities for improvement of distributary / minor canals is shown on mat page.

Distributary Improvement Eligibility Criteria:

FO is registered with the Regulatory Authority.

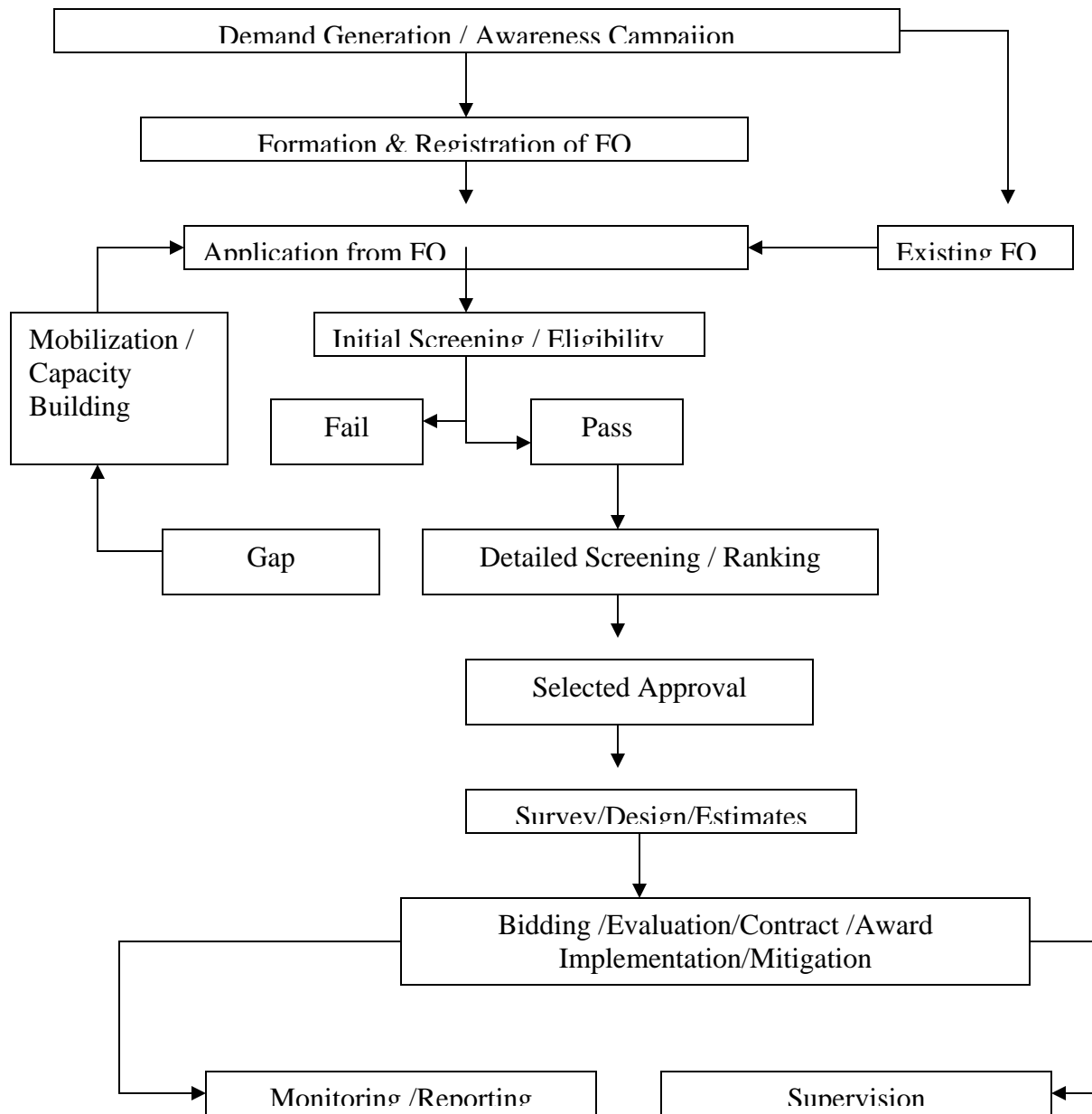
FO Performance is satisfactory as indicated by Abiana Collection, performance in O&M and availability of business plan.

There is no need for improvement e.g. loss of free board, absence of berms, degradation of channel, section and inspection path of discharges at the tail, damaged, structures outlets.

NOTE:

If the FO fails to qualify under any of the above eligibility criteria, the FO will be asked to rectify the short falls within a given date and then re-apply. Full assistance / capacity building efforts will be extended to the FO by the field team.

Flow Chart of Activities for FO Formation & Distributary Improvement.



Ranking/ Screening Criteria

If the sub project passes the eligibility criteria, it will be screened using the criteria described below and would be taken up for implementation if it seems a minimum score of 40%. In case the demand exceeds implementation capacity or project targets, then all the applicants will be screened as per following criteria and a priority-ranking list will be prepared. The ranking / screening criteria for distributary improvement sub-divided into seven categories as described under watercourse improvement for calculating the score.

Location of Distributary /Minor on the main/branch canal.

Proportion of Small Farmers at Distributary/Minor.

Participation Proportion of WCA in FO.

Ground Water Quality.

Ground Water Depth.

Women's Participation.

Hari (sharecropper) participation.

Branch Canal Improvement.

There is provision of improvement of branch canals feeding the distributaries on which FOs have been formed. The improvement of the Branch Canals will be under taken by the AWB on purely technical and need grounds. In general, the cost of the works will not exceed Rs. 2400 per ha of the area served by these canals. Schemes with higher unit cost would be improved only if technical viability is assured and economic rate of return is greater than 12 percent.

Preference (a higher Weightage in prioritization criteria) would be given to Branch Canals on the basis of:

Need for improvement

Preference would be given to branch canals on which distributaries /minors and watercourses are being improved under the project.

ANNEXURE – G

ANNEX G: PROJECT COSTS

PAKISTAN: Sindh Water Sector Improvement Phase-I Project

The total project cost is estimated at Rupees 10.7 billion (US\$175 million equivalent). See tables attached for details. The foreign exchange component is estimated about Rs. 2.324 Billion (US\$38.1 million) and taxes and duties are about Rs. 1.0 billion (US\$14.5 million).

The cost for rehabilitation of main and branch canals and distributaries are based on cost estimates for similar works carried out in Pakistan on canals in Sindh as well as in other Provinces under different projects. Based on such sample of canal works estimates were made for cost per acre of command area and used as unit rates. These unit rates were then applied to estimate the cost of rehabilitation for the canals in the project area. For distributaries /minor the cost of rehabilitation /Improvement is based on the actual CCA of each distributary. For Ghotki and Nara canals cost per acre is assumed as Rs. 1,200 per acre or about (US\$50 per ha) and for Left Bank canals which have higher discharges about 1,680 per acre (US\$70 per ha). For rehabilitation of canals unit cost per acre is taken as Rs. 960 (US\$40 per ha). Price and physical contingencies are added to these costs. These costs are considered based on the recent experience and reasonable for rehabilitation/improvement of the canal system.

Costs for strengthening for SIDA, AWBs, FOs, PCMU etc, are based on the equipment, vehicle cost collected from the market and recent bids. Similarly cost of staff salary and operating expenditures are based on recent estimates. The cost for consulting services are based on the scope of work required, expected ToRs and staff month required for carrying out such assignments.

The base costs, estimated as of July/August 2005 are then projected to negotiations date and project start date using national and international inflation.

ANNEXURE- I

Annexure – I

Economic and Financial Analysis PAKISTAN: Sindh Water Sector Improvement Project

Summary of Benefits and Costs:

The proposed project interventions would result in raising rural incomes and securing the availability of water for a broad range of purposes for and tail end farmers by promoting and strengthening institutional reforms and making investments that facilitate better integrated water management and irrigation modernization. The project will increase agricultural productivity on a total area of about 1.837 million ha, as a result of improved availability, reliability and equity of water deliveries, and adoption of improved on-farm water management and agronomic practices by farmers. Direct quantifiable project benefits would include annual incremental agricultural production with estimated value of Rs 3.4 billion (June 2006 prices) and creation of additional 4.39 million workdays per year of farm labor at full development due to increased cropping intensity and yields. Indirect and non-quantifiable benefits would include reduced drainage requirements; reduced soil salinity risks; reduced incidence of stagnant pools of water and decrease in mosquito-borne diseases; and reduced negative impact of waterlogging on buildings, roads and other public infrastructure. The Economic Rate of Return (ERR) of the project is estimated at 18.2 percent. The ERR is robust and not very sensitive to variations in the project costs or benefits.

Main Assumptions:

The main benefits from the improvement of irrigation system would be an increase in the proportion of irrigated land in terms of increase in cropping intensity and yields, particularly for the farmers at tail end of the system who would get adequate supply of water in timely manner. The investment would take place over a five-year period and the life of the project with normal maintenance has been estimated at 25 years in addition to the project completion period of 5 years.

Investment and O&M Costs. The cost at each Area Water Board (AWB) level has been estimated separately. The common costs have been distributed based on the area of each AWB. The total investment cost including construction activities and institutional support during the implementation period has been worked at about Rs 10.7 billion (US\$175.0 million). However, the cost of component-C, which covers feasibilities studies for rehabilitation of barrage, preparation of master plan for flooding and drainage on left bank of Indus and designating measures for development of Indus delta and coastal zone, has been excluded from the analysis. The operational costs are about Rs 143 million annually.

Improved Management. It has been observed in several projects in Pakistan and elsewhere that increased participation of farmers in O&M results in reduced cost, improved quality of O&M, and improved equity of water distribution within distributary, branch canal and main canal commands. While there is insufficient information to quantify the financial and economic benefits of the change in management from a public sector run system to one managed by farmers, it is clear that benefits do accrue. However, in the present analysis, the benefits of change management have not been accounted.

Area Benefited. The physical interventions supported by the project include improvement of 9 main and branch canals in Ghotki, Nara, and Fuleli canal systems and 173 distributaries in Ghoti Nara and Left Bank AWBs including Akram Wah. All these project interventions would lead to improvement in water delivery and application efficiency. The extent of areas benefiting from these interventions is summarized below.

Area Water Board	Million Hectare
Ghotki AWB	0.346
Nara AWB	0.908
Left Bank AWB	0.573
Total Area	1.827

Since the project area under multiple interventions would overlap, the benefited area would fall under the following broad categories;

- (i) Areas where all interventions including distributary and branch canal improvement would be carried out.
- (ii) Areas where only distributary improvements would take place.
- (iii) Areas where the improvements are being carried out at tertiary level under other projects, the impact of ongoing projects would also enhance the total productivity in the project area.

The extent of area falling in each of the above categories cannot be estimated accurately, for attributing the benefits to the WSIP for the purposes of financial and economic analysis. Therefore, only the area served by canal commands in the three Area Water Boards has been taken into account for estimating the project benefits, and a conservative approach has been adopted while making the assumption for estimating increase in intensity and yields.

Cropping Intensities. Data on land utilization statistics, (Water Stress Quantification in Sindh Pakistan by Water Watch and other published data) has been used to estimate baseline cropping intensities based on the average of last three years. As indicated above the extent of areas benefiting from various project interventions or a combination thereof cannot be estimated precisely. Moreover, it is general observation that if there is any increase in the water supply, the farmer prefers to cultivate more area instead of increasing number of watering to the existing crops. Therefore, an increase of 3% in cropping intensity in the project area, at full development has been assumed due to the WSIP-I. Based on such assumptions, with the project, the cropping intensity would increase from 101% to 104%.

Table 1: Average Crop Yield per Acre (Kg) and Intensities (%)

Crops	Yield Kg/Acre			Cropping Intensities (%)		
	Baseline Year 0	Future WOP Year 10	Future WP Year 10	Baseline Year 0	Future WOP Year 10	Future WP Year 10
Kharif Crops						
Rice (Irri)	842	842	892	25	25	25
Millet	346	346	374	3	3	3
Cotton	612	612	661	25	25	26
Kharif Fodders	7,287	7,287	7,651	3	3	3
Kharif Vegetables	2,909	2,909	3,084	4	4	4
Rabi Crops						
Wheat	804	804	884	29	29	30
Rabi Fodders	11,932	11,932	12,529	2	2	2
Rabi Vegetables	3,742	3,742	3,967	3	3	4
Perennial crops	-	-	-	-	-	-
Sugarcane	23,675	23,675	25,806	4	4	4
Orchard	1,776	1,776	1,829	3	3	3
Overall				101.00	101.00	104.00

WOP = Without Project; WP=With Project

Source: Water Watch; Crops Area Production by MOF&A; Statistical Book Year 2002

Crop Yields. Published statistics (Crop Area and Production by Districts 1999-2000 to 2001-2002, Ministry of Food and Agriculture Government of Pakistan) have been used to estimate pre-project crop yields. The estimates of future yields Without Project (WP) are based on the average yield increases achieved in the areas where the irrigation structures are already improved under other projects including National Drainage Program. **Table 1** summarizes the projected yields and cropping intensities. It also shows the expected impact on area of cropping intensity and yields under without and with the project scenarios.

Agricultural Production. Based on the above assumptions, the incremental production as a result of the project is summarized below:

Table 2: Annual Production (000 tons)

Crops	Baseline Year 0	Future WP Year 10	Incremental Production
Kharif Crops			
Rice	399.4	424.2	24.8
Cotton	620.0	656.2	36.2
Maize	19.6	20.9	1.3
Kh Fodders	2,096.8	2,224.8	128.0
Kharif Pulses	18.0	19.0	0.9
Kharif Vegetables	612.8	662.9	50.1
Rabi Crops			
Wheat	1,466.4	1,548.5	82.0
Rabi Fodders	2,925.8	3,104.4	178.6
Rabi Vegetables	368.3	398.2	29.9
Perennial Crops			
Sugarcane	2,198.6	2,332.7	134.1
Orchards	144.4	153.1	8.7

Key: Future WP: Future with project (at full development)

Without Project: The present practice of deferred and poor maintenance of the system would continue, which would result in the decrease in the crop yields and cropping intensity. However, for this analysis, a conservative approach has been adopted assuming that the present level of crop yields and intensities would be maintained over the period of thirty years, and no increase or decrease in the yields or intensities has been accounted for.

Though the cropping pattern and magnitude of crop yields varies a little bit in the three AWBs, as shown in table-3, yet the analysis has been carried out by developing overall average crop budgets and other cash flows for simplicity.

Prices. For the financial and economic analysis, prices of inputs and outputs have been expressed in June 2005 constant values. Farm budget analysis is based on prevailing market prices. Economic evaluation is done using economic prices. Financial and economic prices used in the analysis are given in **Table 4**.

Economic Analysis

Methodology and Assumptions. The economic value of project benefits has been calculated by estimating incremental outputs and inputs at parity prices. For non-traded commodities economic prices have been calculated by applying a standard conversion factor (SCF) of 0.9. Economic project cost has been calculated by applying the SCF and excluding taxes and duties. Cost of all project components has been taken into account. The project life is assumed to be 30 years including construction period of 5 years. A discount rate of 10% has been assumed for calculation of NPV.

Economic Rate of Return. The project’s economic rate of return (ERR) is estimated as 18.2%.

Sensitivity analysis/Switching values of critical items. The project ERR is robust and not very sensitive to variations in the project costs or benefits. Switching values have been computed to determine the effects of increase in costs and decrease in benefits. The analysis shows that the ERR is more sensitive to reduction in benefits than increase in costs. The ERR remains more than 12% even if the costs increase by 10% or benefits decrease by 10% or combination of both. ERR for the project would reduce to 10% if the cost increases by more than 95 percent or the benefits decrease by more than 49 percent. Hence risks that economic returns would not be realized are minimal.

ERR Response %

Scenario	EIRR
a. Base Case	18.2
b. Cost overrun by 10%	17.0
c. Benefit Reduced by 10%	16.8
d. Combination of b. & c.	15.6

The details of economic analysis are shown Appendix-I and those of financial analysis are Appendix-II

Farm Income Analysis: The project would benefit about 595,100 farm families with an average family size of 6.8 persons per family. Of these, families operating farms less than 12.5 acres with an average farm size of 4.2 acres are nearly 484500 (81%); families operating farm size from 12.5 acres to 25 acres comes to 66400 (11%); from 25 acres to 50 acres, number of families is estimated nearly 28300 (5%) and families holding farm size above 50 acres comes to about 15900 (3%). The overall average farm size has been worked out as 7.6 acres. The farm budget analysis has been worked out separately for each AWB for their respective farm sizes for the small, medium and large farms. The estimated change in farm incomes (in financial prices) for large, medium and small farm models has been illustrated at **Table 3**. The project will result an increase of farm incomes ranging from 7% to 9% at all the three AWB levels.

Additional Labor Days Generated by the Project: The project will increase agricultural productivity on a total area of more than 1.8 million ha, as a result of improved availability, reliability and equity of water deliveries, and adoption of improved on-farm water management and agronomic practices by farmers. It would need additional man days at farm for harvesting additional produce under with project conditions. Difference of farm labor required in the bench mark and at full development reflected in the crop budgets for each crop is considered as the additional labor required under the with project situation (as no increase has been assumed under without project scenario). As such, additional farm days have been estimated as 22 person days per acre per year. Projecting the same at project level, it has been estimated that the project would generate 4.39 million workdays per year of farm labor at full development due to increased cropping intensity and yields.

In addition the project would create labor days for skilled and unskilled labor during the construction of the project. These have been estimated as 4.1 million days (11,250 person years) of skilled labor and 5.47 million person days (15000 person years) of unskilled labor over a period of five years.

Table 3: Benchmark and Future Crop Yields and Intensities by AWB Level

Crops	Average Crop Yield per Ha						Average Cropping Intensity %					
	Baseline			Full Development			Baseline			Full Development		
	GCAWB	NCAWB	LBCAWB	GCAWB	NCAWB	LBCAWB	GCAWB	NCAWB	LBCAWB	GCAWB	NCAWB	LBCAWB
Kharif Crops												
Rice	2,350	1,980	1,900	2,420	2,040	1,960	10.3	0.6	28.2	10.6	0.6	29.0
Cotton	1,550	1,460	1,530	1,590	1,500	1,580	28.2	30	7.6	29.0	30.9	7.8
Maize	580	570	620	600	590	640	5.8	1.5	0.1	6.0	1.5	0.1
Kh Fodders	23,410	22,510	22,240	24,110	23,190	22,910	6.2	6.3	2.3	6.4	6.5	2.4
Kharif Pulses	460	470	470	470	480	480	3.7	2.7	0.2	3.8	2.8	0.2
Kh Vegetables	7,750	7,560	7,340	8,140	7,940	7,710	5.7	5.3	2.2	5.9	5.5	2.3
Rabi Crops												
Wheat	2,660	1,980	2,130	2,730	2,030	2,180	47.5	39.5	25.9	48.9	40.7	26.7
Rabi Fodders	24,470	23,600	22,560	25,210	24,310	23,240	9.1	7.7	3.8	9.4	7.9	3.9
R Vegetables	3,470	3,290	3,060	3,650	3,450	3,220	7.4	7.8	2.5	7.6	8.0	2.6
Perennial Crops												
Sugarcane	39,240	36,890	39,560	40,420	38,000	40,750	3.3	2.9	3.4	3.4	3.0	3.5
Orchards	3,950	4,400	4,300	4,070	4,530	4,420	1.36	2.4	1.15	1.4	2.5	1.2
Overall							128.6	106.7	77.4	132.4	109.9	79.7

Key: GCAWB= Ghotki Area Water Board; NCAWB=Nara Canal Area Water Board; LBCAWB Left Bank Area Water Board

Source: Water Watch; Crops Area Production by MOF&A; Statistical Book Year 2002; Crop Reporting Center Sindh

Table 4: Prices Used in Financial and Economic Analysis
(Farmgate Prices 2005 Price Level)

	Description	Unit	Financial	Economic
A	Outputs			
1	Yields			
	Kharif Crops			
	Rice (Irri)	Rs/kg	7.25	6.71
	Millet	Rs/kg	9.50	8.55
	Cotton	Rs/kg	31.25	28.38
	Kharif Fodders	Rs/kg	0.75	0.68
	Kharif Vegetables	Rs/kg	5.15	4.64
	Rabi Crops			
	Wheat	Rs/kg	10.00	10.92
	Rabi Fodders	Rs/kg	0.95	0.86
	Rabi Vegetables	Rs/kg	5.00	4.50
	Sugarcane	Rs/kg	1.25	1.29
	Orchard	Rs/kg	7.00	6.30
2	By-Products			
	Cotton	Rs/kg	1.30	1.17
	Rice (Irri)	Rs/kg	-	-
	Wheat	Rs/kg	1.25	1.13
B.	Inputs			
3	Seed			
	Rice (Irri)	Rs/kg	9.06	8.16
	Millet	Rs/kg	11.88	10.69
	Cotton	Rs/kg	39.06	35.16
	Kharif Fodders	Rs/kg	22.00	19.80
	Kharif Vegetables	Rs/kg	75.00	67.50
	Wheat	Rs/kg	12.70	11.43
	Rabi Fodders	Rs/kg	1.21	1.09
	Rabi Vegetables	Rs/kg	6.35	5.72
	Sugarcane	Rs/kg	1.59	1.43
	Orchard	Rs/Plant	8.89	8.00
4	Fertilizers			
	Nitrogen (N)	Rs/Nkg	21.87	24.11
	Phosphorus (P)	Rs/Nkg	33.70	31.95
	Potash (K)	Rs/Nkg	20.17	21.66
	Farm Yard Manure	1000 Kg	300.00	270.00
5	Pesticides			
	Rice (Irri)	Rs/Spray	350	315
	Cotton	Rs/Spray	650	585
	Kharif Vegetables	Rs/Spray	320	288
	Sugarcane	Rs/Spray	550	495
	Wheat	Rs/Spray	310	279
	Rabi Vegetables	Rs/Spray	400	360
	Sugarcane	Rs/Spray	400	360
	Orchard	Rs/Spray	300	270
6	Tractor Labor	Rs/Hour	250	225
7	Manual Labour	Rs/Day	100	90
8	Water Rates (abiana), Land Tax and Local & Drainage			
	Rice (Irri)	Rs/Acre	391.87	181.87
	Millet	Rs/Acre	285.33	75.33
	Cotton	Rs/Acre	303.09	93.09
	Kharif Fodders	Rs/Acre	249.85	39.85
	Kharif Vegetables	Rs/Acre	352.14	142.14
	Rabi Fodders	Rs/Acre	249.85	39.85
	Rabi Vegetables	Rs/Acre	352.14	142.14
	Sugarcane	Rs/Acre	391.87	181.87
	Orchard	Rs/Acre	652.14	142.14

ANNEXURE – K

Annex-K

Establishment of Project Coordination and Monitoring Unit (PCMU) for Sindh Water Sector Improvement Project Phase-I (WSIP-I)

The Planning and Development Department as the overseer of all development activities in Sindh will monitor the project implementation and address policy issues affecting implementation of the Project. For providing proper Project Management Support, Guidance, Monitoring and Coordination, a Project Coordination and Monitoring Unit (PCMU) is to be established under the Administrative control of Planning & Development Department, GoSindh. The Unit will monitor and coordinate all project implementation activities and would be responsible for carrying out project monitoring and evaluation studies.

The specific functions of the Unit are given as under:

- ⇒ Coordinate with all Project Implementing Agencies (PIAs) particularly Irrigation & Power Department (IPD), Sindh Irrigation & Drainage Authority (SIDA), Area Water Boards (AWBs), Farmer Organizations (FOs) etc, maintain liaison with Government Departments at Federal and Provincial level and also Project Donors in implementation of the project and facilitate in arrangement of meetings / visits of the project Donor in consultation with Implementing Agencies;
- ⇒ Monitor all Project implementation activities including implementation of Project Environmental Management Plan (EMP) as well as individual sub-project specific Environmental and Social Plans (ESP) through Monitoring & Evaluation (M&E) Consultants;
- ⇒ Coordinate with Project Management Consultants/Agent (PMC/A) for: (a) recruitment and supervision of all project consulting services, (b) recruitment of key staff of project and (iii) developing and maintaining website showing the status of all procurement actions as well as implementation status of the project;
- ⇒ Act as Secretariat of the Project Steering Committee (PSC) headed by ACS (Dev.); apprise the PSC about the project implementation performance and highlight any impediments in implementation of the project requiring attention of PSC for further guidance/action.
- ⇒ Arrange to carry out strategic studies; manage training activities and technical assistance; coordinate with implementing agencies in conducting various studies; feasibility studies; preparation of Master Plans / Flood Management Plan and research studies under the project;
- ⇒ Address key policy and institutional reform issues of water sector in Sindh by proposing research studies, strategies and actions etc required to achieve the reform objectives and to apprise PSC for direction to this effect;

- ⇒ Review the project implementation on regular monthly/quarterly basis and issue implementation progress report accordingly;
- ⇒ Provide support and guidance in the transition process i.e. transfer of management responsibility of irrigation and drainage system to water sector entities as defined in SWMO-02;
- ⇒ Establish a complaint handling mechanism with oversight by PMC/A
- ⇒ Follow up for timely implementation of critical actions by the various executing agencies on the recommendations of the Donors and other forums.

To manage the above role and responsibilities, the unit shall comprise following three wings / sections as per organogram given as **Appendix-I** which will provide advice/help to Project Coordinator in implementation of the project:

1. Monitoring and Evaluation
2. Coordination and Water Management/Engineering
3. Administration and Accounts

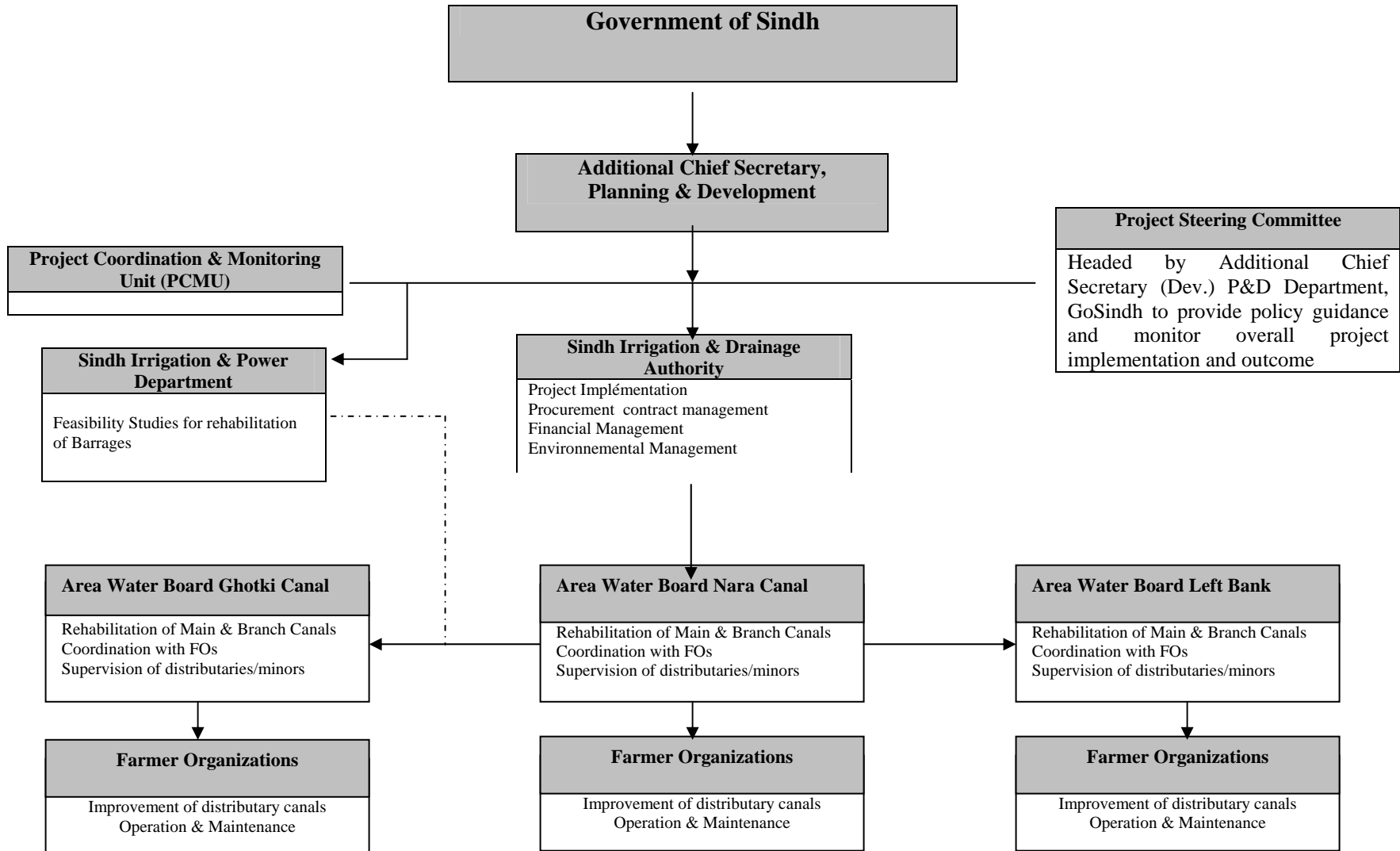
- 1. Monitoring and Evaluation Wing:** The wing would be dealing with Monitoring and Evaluation of the project activities and supervision of the Environmental Management and Social Action Plans through M&E Consultants. Follow up for timely implementation of critical actions by various executing agencies. The wing will be headed by M&E Specialist with supporting staff in the field of agriculture economics, hydrology/irrigation & drainage, environment and social issues.
- 2. Coordination and Water Management /Engineering Wing:** This wing will be headed by senior irrigation professional with technical supporting staff of irrigation/drainage, MIS, GIS, procurement/contract management and legal expert. The wing would be responsible for coordination of the project implementation activities and to coordinate with Project Management Consultants/Agent (PMCA) for recruitment and supervision of all project consulting services and recruitment of project staff.
- 3. Administration and Accounts Wing:** This wing will take care of office internal administration affair including HRM, financial management, accounting/budgeting and audit affairs etc and also arrangement of meetings /visits of the project Donor etc.

The key staff of the Unit would be procured from the market according to the selection criteria given at **Appendix-II**. However, the services of personnel working in government departments/organizations would be hired on transfer or deputation basis provided they meet the selection criteria for the positions.

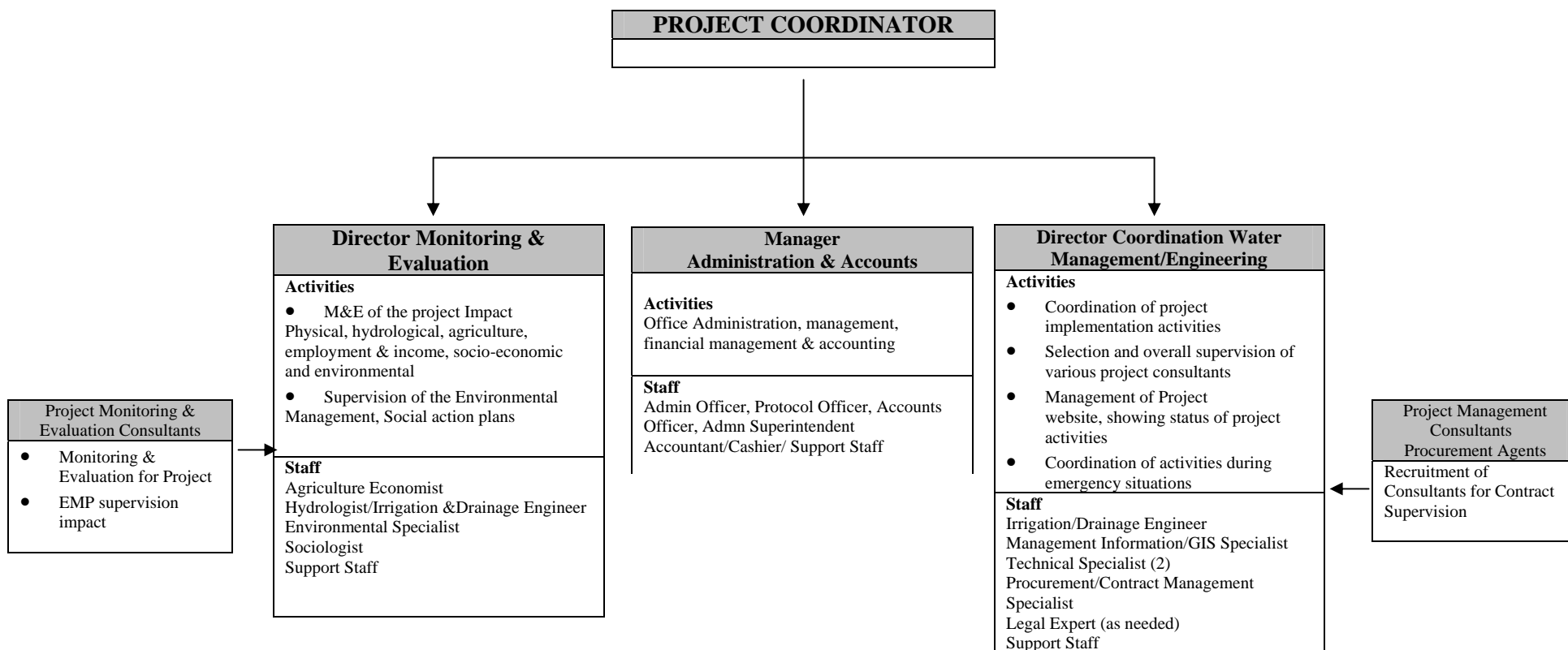
The office premises along with all assets of Provincial Coordinator, NDP Sindh created under NDP within the P&D Department would be used as the office of PCMU. However, some assets will be procured on need basis in addition to the useable assets already available.

Chart-I

SINDH WATER SECTOR IMPROVEMENT PROJECT PHASE-I (WSIP-I)



**SINDH WATER SECTOR IMPROVEMENT PROJECT PHAS-I (WSIP-I)
PROJECT COORDINATION & MONITORING UNIT (PCMU)**



Sindh Water Sector Improvement Project Phase-I (WSIP-I)

Selection criteria for procurement of key staff of PCMU:

The key professional staff of the Unit would be procured from the market. However, the services of personnel working in government departments/organizations would be hired on transfer or deputation basis provided they meet the following selection criteria for the positions. The selection criteria would be finalized with the World Bank before procurement.

Director Monitoring & Evaluation: M&E of the project activities and project impact plus supervision of Environmental Management and Social Action Plans. Master's degree in Agriculture / Engineering / Economics / project management with at least ten years experience in designing and implementing M&E of Development Projects and at least five years specific experience in Project Impact Evaluation. Preference will be given to those possessing PhD degree.

Director Coordination & Water Management/Engineering: Coordination of project implementation activities. Master's degree in Engineering preferably in water resources planning with at least ten years experience in project planning, designing and contract Management of water resources. Preference will be given to those having degree in Management in addition to the Masters in Engineering.

Agriculture Economist: Master's degree in Economics / Agriculture Economics with at least seven years experience in relevant field in water sector projects.

Hydrologist /irrigation & Drainage Engineer: Degree in Water Resources Engineering/Hydrology with seven years experience in project planning and preparation with five years specific experience in M&E of irrigation & Drainage Projects. Preference will be given to the postgraduate degree holders.

Environmental Specialist: Monitoring of the environmental impact of the project. Master's degree in Environment / hydro ecology or other relevant discipline with five years experience in environmental screening / assessment / impact of water sector projects including familiarity with Government and Donor's environmental guidelines.

Sociologist: Master's degree in Social Sciences preferably in sociology or rural development with at least five years experience in social development.

Management Information /GIS Specialist: Establish the MIS/GIS data base. Master's degree in MIS or Computer Sciences or GIS and Remote Sensing with five years experience in Information Management in spatial framework, Statistical Analysis and three to five years specific experience in establishment and use of GIS data base and

use of Remote Sensing for planning, Implementation and M&E of Rural Development Projects.

Procurement /Contract Management Specialist: MBA/Graduate in engineering having full knowledge of principles of procurement of works, goods and services of donors as well as public sector development projects and modern office practices procedure and methods for at least five years.

Manager Administration and Accounts: MBA/MPA/CA with major in Human Resources and \ or Finance. At least seven years experience in general personnel administration, including experience in financial management having ability to handle work independently.

Administrative Officer: MBA/MPA/Master's degree in Social Sciences with five years relevant experience in public or private organizations.

Protocol Officer: Graduate preferably in management with three years relevant experience in public or private organizations. Diploma in Public Relation will be added qualification.

Accounts Officer: MBA/M.Com with three years post graduate experience in accounting principles and practices or B.Com with five years experience in finance and accounts in public and private organizations.

Project Coordinator: Responsible for overall Project Coordination and Monitoring of the Project implementation. Master's degree in Agriculture / Engineering / Social Sciences/ Project Management with fifteen years experience in project management. Preference will be given to those possessing PhD degree.

ANNEXURE – L

Annex-L Responsibility Matrix

Organization	Responsibility
Planning & Development Department through Project Coordination & Monitoring Unit (PCMU)	<ul style="list-style-type: none"> ⇒ Overall Project Management and Coordination ⇒ Policy Guidance and monitor overall project implementation ⇒ Settle issues hinder the project implementation.
Irrigation & Power Department	<ul style="list-style-type: none"> ⇒ Carry out feasibility studies for rehabilitation of barrages under component-C of the project ⇒ Coordination in preparation of Master Plan for Indus left Bank, delta and coastal zone under component C2 of the project ⇒ Facilitating operation of canals system during project implementation and construction activities.
Sindh Irrigation & Drainage Authority (SIDA)	<ul style="list-style-type: none"> ⇒ Overall project Implementing Agency. ⇒ Procurement Contract Management ⇒ Financial Management ⇒ Management Information System ⇒ Environment Management ⇒ Preparation of master plan for flood ad drainage management on the left bank of Indus river and plans for delta area and coastal zone. ⇒ Social Mobilization
Area Water Boards (Ghotki Feeder, Nara Canal and Left Bank)	<ul style="list-style-type: none"> ⇒ Implementation of Civil works for improvement of main and branch canals ⇒ Coordination with FOs, entering in to IDMT with FOs. ⇒ Improvement of drainage system under component B3 of the Project.
Farmers Organizations (FOs)	<ul style="list-style-type: none"> ⇒ Implementation of civil works for improvement of distributary and minors ad operation and maintenance. ⇒ Carry out works under community contract basis. ⇒ Maintain income and expenditure account.
Organization	Responsibility

<p>Project Coordination & Monitoring Unit (PCMU)</p>	<ul style="list-style-type: none"> ⇒ Coordination and Supervision ⇒ Monitoring and evaluation of the project implementation. ⇒ Supervision of overall project environmental management plan as well as social plan. ⇒ Coordinate for carrying out various studies under the project. ⇒ Act as secretariat of Project Steering Committee (PSC)
<p>Project Consultants:</p> <ul style="list-style-type: none"> ➤ Project Management Consultants/Agent (PMCA). ➤ Project Monitoring & Evaluation (M&E) Consultants. ➤ Project Implementation Consultants (PIC). ➤ Studies Consultants. 	<ul style="list-style-type: none"> ⇒ Recruitment and supervision of consulting services under the project and support in recruitment of key staff of the Project. ⇒ Monitoring the project impact as well as supervision of EA/EMP and social action plan. ⇒ Support SIDA / AWBs and FOs in survey, designs and construction supervision and Engineer of major civil works contract of main and branch canals. ⇒ Preparation of feasibility studies of Barrages and master plan for Design and plan for flood ad drainage management on the left bank of Indus River and plans for delta area and coastal zone.

ANNEXURE – M

Annexure - M
JOB DESCRIPTION

<i>S.#</i>	<i>Name of Post</i>	<i>Qualification Experience</i>	<i>Job Description</i>
1.	Managing Director SIDA	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Management methods and procedures, organization and functions; • Current social, political and economic trends related to the powers and functions of the Board and operating problems of public utilities (privately or publicly owned); • Applicable laws, rules and regulations regarding relevant operations; • Principles of effective public relations and interrelationships with community groups and agencies, private businesses and firms and other levels of government. <p>Ability:</p> <ul style="list-style-type: none"> • Provide effective leadership and coordinate the activities of an important public agency; • Analyze, interpret, summarize and present administrative and technical information and data in an effective manner; • Appraise situations and people accurately and quickly and adopt an effective course of action; • Select, supervise, train and evaluate staff. <p>Experience :</p> <ul style="list-style-type: none"> • 10 years related experience. • Should have such qualification, technical back ground and practical experience in the profession relevant to this job description. 	<ul style="list-style-type: none"> • To plan, direct and review the activities of the Sindh Irrigation and Drainage Authority. To perform the statutory duties prescribed by law. To fulfill the duties as member and secretary of the Board of Constitution of SIDA. • Propose strategic goals and objectives, policies and priorities to the Board. • Implement the goals and objectives, policies and priorities approved by the Board. • Chair the meetings of the Board of Management and promote its functioning as coordination platform. • Supervise, guide and review the activities of SIDA in all its areas of activities. • Supervise the preparation of the budget, operational plans, policy documents for all activities of SIDA. • Supervise the preparation of reports on progress and realization of periodical and annual reports on all activities of SIDA. • Supervise the execution of the budget and decide reallocations. • Supervise all staff matters (hiring, developing, promoting salary matters, disciplinary matters firing)policies. • Supervise the execution of the primary business processes (operations and maintenance of infrastructure for irrigation, drainage and flood protection, identification, preparation and execution of capital expenditure in these infrastructure). • Supervise all activities with regard to environmental, research and development. • Supervise all activities with regard to the transition of the water management system, such as promoting the establishment of Area Water Boards and Farmers' Organizations and organizing support for them in their development.

		<p>Education:</p> <ul style="list-style-type: none"> • BE. (Civil) /M.E (Hydraulics) with MBA or MPA preferred. 	<ul style="list-style-type: none"> • Supervise all activities with regard to monitoring and evaluation of the transition and other organizations. • Represent SIDA in the community. • Promote the reform process and its goals.
2.	General Manager (Transition)	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Principle and practices of management and originations; • Modern principles, practices, and techniques of organization; • Personnel management and human resource development methods; • Applicable laws, rules and regulations pertaining to the operation of SIDA . <p>Ability to:</p> <ul style="list-style-type: none"> • Introduce staff retrenchment programmes, including negotiation with labour and staff unions; • Develop and implement organizational innovation within SIDA; • Develop and implement innovative personnel policies (including training); • Contribute to the development of Area Water Boards and Farmer Organizations in this process; <p>Experience & Education:</p> <ul style="list-style-type: none"> • Any combination of experience and education that could likely provide the required knowledge and abilities would be qualifying. A typical way to obtain the knowledge and abilities would be: <p>Experience:</p> <ul style="list-style-type: none"> • Experience in administrative culture. • Sustained senior-level management experience in an existing administrative culture undergoing 	<ul style="list-style-type: none"> • To plan, implement and monitor the strategy for institutional reform of the water management system. • To advise the Managing Director and the Board of Management on matters of transition and change and to support SIDA in its organizational development. • To advise the Area Water Boards and their management on their organizational development and support them in their development. • To design the development programme for the Area Water Boards and to supervise its implementation. • To establish the parameters for monitoring and evaluation of the AWBs performance and o make recommendations to the SIDA and the AWBs on the basis of such evaluations. • To supervise the social mobilization leading to the formation of Farmers' Organizations and their registration. • To supervise the organization of the support given to Farmer's Organizations. • To establish the parameters for monitoring and evaluation of the Farmers' Organizations' performance and to make recommendations to the SIDA and the AWBs on the basis of such evaluations. • Supervise the implementation of the operational goals and objectives, policies and priorities with regard to human resources development, e.g. the execution of staff regulations, performance evaluation, training programmes etc. • Supervise the implementation of the communication strategy of SIDA, its operational goals and objectives, policies and priorities. • Prepare the budget, and the operational plans of the department.

		<p>extensive change. The incumbent would ideally be drawn from the private sector and have had a successful track record in large scale organizational change programmes and restructuring.</p> <p>Education:</p> <p>Master's degree in economics, business or social sciences.</p>	<ul style="list-style-type: none"> • Supervise the execution of the budget for the transition department. • Supervise all staff matters (hiring, developing, promoting salary matters, disciplinary matters firing) policies with regard to the transition department.
3.	<p>General Manager (Operation)</p>	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Principles and practices of irrigation, drainage and flood protection operations, management and organization; • Economics and financing of irrigation, drainage and flood protection; • Principles and practices of civil engineering as applied to the field of water distribution engineering; • Methods, material, techniques and equipment used in the construction, operation and maintenance of irrigation, drainage and flood protection facilities; • Applicable regulatory codes and laws related to the development, construction and operation of a irrigation drainage and flood protection facilities; • Current literature and sources of information regarding utility engineering and operation; • Principles and practices of organization, administration, budget and personnel management. <p>Ability to:</p> <ul style="list-style-type: none"> • Plan, organize , staff and direct a large and diversified 	<ul style="list-style-type: none"> • To plan, direct and review the management and engineering activities of the Sindh Irrigation & Drainage Authority, to provide highly responsible, professional and technical staff assistance; and to ensure the Authority fulfills its statutory duties in respect of the distribution of water and the provision of drainage and flood protection. When required the job holder will assume the responsibilities of Acting Managing Director SIDA. • Develop and implement goals, objectives, policies and priorities; • Plan, direct and review the construction, operation and maintenance of irrigation, drainage and flood protection infrastructure and systems; • develop overall policies, financial resources and facility plans for the irrigation, drainage and flood protection facilities in conjunction with staff members and consultants; • confer with managers to review current and proposed projects, schedules, organization and personnel problems; • review and sign engineering drawings, work orders and purchase orders for the various facilities within his responsibility; • prepare and administer the departmental budget; • direct and participate in the preparation of technical and administrative reports; • present reports and recommendations

		<p>organization in a manner conducive to full performance and high morale;</p> <ul style="list-style-type: none"> • Delegate authority and responsibility; • Schedule and program work on a long term basis; communicate clearly and concisely, orally and in writing; • Formulate and present policy recommendations; • Select, supervise, train and evaluate staff. <p>Experience & Education:</p> <ul style="list-style-type: none"> • Any combination equivalent to experience and education that could likely provide the required knowledge and abilities would be qualifying. A typical way to obtain the knowledge and abilities would be: <p>Experience:</p> <ul style="list-style-type: none"> • Equivalent to a Master's Degree from an accredited college or university with major course work in water Resources Management. <p>Education:</p> <p>ME. (Hydraulics)</p>	<p>to the SIDA Board and to the MD SIDA and to the Management Team;</p> <ul style="list-style-type: none"> • develop general procedures for control of activities. • Participate in professional activities and speak before water users and community groups regarding plans and policies; • Direct and participate in the preparation of the Capital Improvement Plan of the irrigation, drainage and flood protection services; • Coordinate SIDA's activities with other Government bodies and with outside agencies; • Select, supervise, train and evaluate staff; <p>Other Duties:</p> <ul style="list-style-type: none"> • All others duties as may be prescribed or requested by the Board.
4.	General Manager (Finance)	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Principles and practice of financial planning and control; • Modern principles, practice and techniques of accounting, financing and budget systems; • Applicable laws, rules and 	<ul style="list-style-type: none"> • Install and maintain suitable accounting, financial and budgetary systems both at head office and other locations of the Authority (Regions, Circles, Divisions and other units); • Advise the financial directors/mangers of the AWBs on accounting and financial systems and procedures; • prepare the rolling five year

		<p>regulations pertaining to the financial status and operation of the authority;</p> <ul style="list-style-type: none"> • Standard computer programs (eg, Word and Excel); • Computerized accounting systems; • Modern office practices, procedures methods and equivalent; • Credit control. <p>Ability to:</p> <ul style="list-style-type: none"> • Negotiate financial issues on behalf of the Authority at the highest levels of Government. • Prepare a variety of financial statements and reports using standard computer programs such as Word or Excel; • Establish and maintain effective working relationships; • Communicate effectively, orally and in writing; • Train and direct less experienced accounting personnel. <p>Experience & Education:</p> <ul style="list-style-type: none"> • Any combination equivalent to experience and education that is likely to provide the required knowledge and abilities would be qualifying. <p>Experience:</p> <ul style="list-style-type: none"> • A typical way to obtain the knowledge and abilities would be: at least 10 years successful experience at senior management level in a major enterprise or parastatal entity of which at least 5 years would have been in the private sector. <p>Education:</p>	<p>capital expenditure plan of the Authority ;</p> <ul style="list-style-type: none"> • plan, organize and direct the preparation, implementation and control of SIDA's annual operating and capital expenditures budgets. • Prepare and regularly update statements concerning the revenue, expenditure and financing/subsidy requirements of the Authority projected on a rolling five year basis (the five year business plan;) • Overhaul radically the existing revenue base of the Authority; • Monitor the year-on-year rate of recovery of revenue (water and drainage service charges), and improve collection inter alia by pro-active enforcement of the Authority's legal powers; • Monitor the economical aspects of the real estate of SIDA and draft proposals for the Board concerned with their management. • Coordinate funding with Government, donor agencies and Banks; • Introduce a system of internal audit by devising and introducing internal controls in the accounting and financial operations of the Authority, and by monitoring their effectiveness; • Supervise and evaluate staff; • Keep abreast of laws and regulations affecting the financial operations of SIDA ; • Present reports and recommendations on accounting and financial matters to the Managing Director and to the SIDA Board; • Prepare the annual accounting statements of the Authority; • Liaise with the external auditors regarding the annual accounting statements; • Monitor the efficiency and effectiveness of the Financial and Accounting Department.
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		<ul style="list-style-type: none"> Professional qualification in Accountancy (Chartered Accountant, Certified Accountant or Cost and Management Accountant), preferably also with an MBA Finance. 	
5.	General Manager & (Research Development)	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> Principles and practices of Research and Development as applied to water management including irrigation, drainage and flood protection. Applicable federal and provincial laws, rules and regulations pertaining to the operational responsibilities of SIDA; and Formulate, implement and update policies, studies and research programmes with a view to solving/eliminating and preventing problems emerging within the network e.g. water logging and salinity; Manage contractual relationships with a network of research partners; Manage departmental resources including funds and staff. <p>Experience & Education:</p> <ul style="list-style-type: none"> Any combination equivalent to experience and education that could likely provide the required knowledge and abilities would be qualifying. A typical way to obtain the knowledge and abilities would be; <p>Experience:</p> <ul style="list-style-type: none"> Sufficient responsible 	<ul style="list-style-type: none"> Maintain up-to-date knowledge of any laws and regulations which relate to SIDA's responsibilities for Research and Development and keep SIDA in compliance; Prepare, monitor and manage the R&D budget; Setup an Advisory Committee for Research and Development with representative of stakeholders and research institutes, to discuss needs for Research and Development; Keep up to date with Water Management research in and outside Pakistan. Strengthen SIDA's knowledge base by collecting suitable publications (both from within Pakistan and from other parts of the world); In conjunction with advisory committee and in close collaboration with other managers within SIDA and the irrigation and drainage network, develop Research and Development programme; Specify and outsource Research and Development projects to improve water management, irrigation, flood protection and drainage; Evaluate Research and Development results with advisory committee. As appropriate, disseminate research findings within SIDA, to SIDA's research. Supervise and evaluate departmental support staff; <p>Others Duties:</p> <ul style="list-style-type: none"> All other duties as may be prescribed or requested by the Board.

		<p>experience in R&D, including supervisory experience, to demonstrate possession of the knowledge and abilities listed above. The job holder's on work within a related field will have been published.</p> <p>Education:</p> <ul style="list-style-type: none"> • Ph.D/ M.E (Hydraulics) in Irrigation from an accredited college or university. 	
6.	Secretary	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Modern principles, practices and techniques of public administration and organization; management and administrative methods, techniques and contemporary issues; • Analyse administrative and management problems and to make, recommend and implement policy and procedural changes; • Effectively plan, direct, supervise and coordinate the administrative activities and work of SIDA; • Interpret governmental laws and regulations and develop working policies and procedures to comply with them; • Understand the technical workings of irrigation and drainage and communicate the work of SIDA to the general public in non-technical terms; • Correspond clearly and concisely orally and in writing with Area Water Boards, Farmers Organization and Government agencies; • Make effective public presentations; • Make decisions in accordance with proper interpretation of 	<ul style="list-style-type: none"> • Propose to the Managing Director (MD) of the Board of Management (BoM) operational goals and objectives, policies and priorities with regard to the administrative systems and procedures and support functions within SIDA. • Implement the operational goals and objectives, policies and priorities approved by the MD or the BoM. • Supervise, guide and review the support activities, such as maintenance of buildings installations and equipment, record keeping, document handling and processing, copying other secretarial and clerical activities, transport, security etc. • Supervise the preparation of the budget, operational plans, policy documents for the support activities. • Supervise the preparation of reports on progress and realization of periodical and annual reports as far as support activities are concerned. • Supervise the execution of the budget for the support functions. • Supervise all staff matters (hiring, developing, promoting salary matters, disciplinary matters firing) policies with regard to the support staff • As Secretary of the Board of Management

		<p>laws, regulations and policies;</p> <p>Experience & Education:</p> <ul style="list-style-type: none"> Any combination of experience and education that could likely provide the required knowledge and abilities would be qualifying. A typical way to obtain the knowledge and abilities would be: <p>Experience:</p> <ul style="list-style-type: none"> 15 years of management or administrative senior level experience with combination of education. Sufficient years of increasingly responsible management or administrative experience in a governmental or equivalent organization to demonstrate possession of the above knowledge and abilities, including supervisory experience; Some experience of working in organizations linked to irrigation and drainage is preferred; <p>Education:</p> <p>Master's Degree in Law with MBA.</p>	<ul style="list-style-type: none"> Prepare agendas and working papers for the meetings of the Board. Draft reports and decision lists of the meetings of the board and its subcommittees. <p>Other Duties</p> <ul style="list-style-type: none"> All other duties as may be prescribed or requested by the Board.
7.	<p>Social Development Specialist / DGM Transition.</p>	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> Water management and its role in agriculture; Principle and practices of community and rural development; Public and private sector considerations in the establishment of AWBs and Farmers Organization; AWBs and Farmers Organization issues, including : relevant organization, law, finance, marketing, purchasing, strategic planning, member 	<ul style="list-style-type: none"> plans and schedules a wide range of assistance for people interested in forming new Area Water Boards and Farmers' Organizations including initial planning, feasibility determination. Community involvement and acceptance, the creation and implementation of a business plan and the development of regulations. Outsource social mobilization activities and manages relevant contractual relationships; Provides training for key staff of Area Water Boards, Farmers' Organization and other officers together with relevant educational materials.

		<p>relations and education.</p> <ul style="list-style-type: none"> • Programmes and methods for sustaining the financial viability of the network; • Community agencies and resources; • Federal and provincial ordinance, policies and procedures related to agricultural and economic development; • Management principles. <p>Ability to:</p> <ul style="list-style-type: none"> • Identify and respond to the issues, concerns and needs of the farming community; • Cultivate and maintain positive working relationships with members of the public and community organization, business leaders, other staff of SIDA, the Area Water Boards and representatives of other government and economic development agencies; • interpret and explain SIDA's policies and procedures; <p>Experience:</p> <ul style="list-style-type: none"> • sufficient years of increasingly responsible professional experience in public economic development, rule development, or public administration involving related programme development to demonstrate possession of the knowledge and abilities listed above. <p>Education:</p> <ul style="list-style-type: none"> • equivalent to a Master's degree from an accredited college or university with a degree in public or business administration, rural planning, community development, economics or a closely related 	<ul style="list-style-type: none"> • Helps SIDA and Area Water Boards to remain responsive to the needs of the farming community; • Provides technical assistance to existing Area Water Boards and farmer's Organization facing specific problems or challenges including, for example, new supply constraints or threats to financial viability; • Ensure the compilation and maintenance of website information useful to Area Water Boards and to Farmers' Organization; • Creates partnerships with commercial lending institutions, to provide financing for Area Water Boards and Farmers' Organizations. • Makes presentations to farming and community groups to promote public understanding of Farmers' Organization; • Analyse industry structure and AWBs and Farmers' Organization operational practices to determine the changes required to maintain or achieve a customer oriented supply system; • Surve as a catalyst in bringing together the best available resources, working closely with AWBs, Farmers' Organizations and other public and private institutions to develop solutions to specific problems; • Cultivates and maintains positive working relationships with other staff of SIDA, Government departments especially the Ministry pf Agriculture. Government agencies Area Water Boards, Farmers' Organizations' Councils and NGOs; • Supervise the maintenance of a storehouse of information about AWBs and Farmers' Organization which is made to the farming community through reports, publications and videos covering all aspects of AWBs and
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		field.	<p>Farmers' Organization operations and reflecting significant achievements by AWBs and Farmer's Organizations and the most advanced thinking of the leaders of AWBs and Farmers' Organizations;</p> <ul style="list-style-type: none"> • Manages and supervise the Manager SM and Gender, Social Development staff, supervise SDC and any other professional, supervisory, administrative and support staff allocated to the unit; • Performs other duties as assigned.
8.	Manager Communications.	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • The policies and procedures of SIDA; • Public information and communications programme development and implementation; • Effective methods of collection, preparation and presentation of facts and information for and to the public and media, including formatting of materials for publications and news releases; • Pertinent federal and provincial laws, ordinances, codes and regulations impinging on the operation of SIDA. • Principles and practices of budget preparation and administration; • Modern office practices and procedures. • Articulate concepts verbally and in writing in clear, concise, and accurate language; • Make effective, tractful presentations to individuals and public groups; 	<ul style="list-style-type: none"> • Develop and implement a communications strategy in order to inform the public of local issues and events and promote community involvement in and awareness of SIDA activities; • Coordinate news release and other public information with various SIDA departments, officials and media representatives; • Research, develop and coordinate media presentation, exhibits, reports, periodical SIDA newsletters prepared for the SIDA Board, the public or for employees. • Create and maintain a website presenting data on all aspects of the services provided by SIDA including data on water distribution. • Write, lay out and distribute publications, articles, press releases, information material (folders, leaflets); • Coordinate and monitor contracts with specialist suppliers to insure budget, communication and marketing problems are resolved; • Train staff in communication aspects of their actions. • Monitor perception of SIDA among stakeholders including SIDA employees, Area Water Boards, Farmer's Organization, government other agencies relevant NGOs, farmers and the media;

		<ul style="list-style-type: none"> • Analyse, evaluate, recommend and coordinate a variety of public information and community relations events and programmes; • Assist in accomplishment of the SIDA’s goals and objectives; • Interpret and apply federal and provincial laws, ordinance, codes and regulations impinging on the operation of SIDA; • Monitor contracts; • Develop and maintain a harmonious working relationship with SIDA employees, Area Water Boards, Farmers Organization, Government, other agencies, relevant NGO’s farmers and the media; • Prepare and administer the public information budget. <p>Experience & Education:</p> <p>Experience:</p> <ul style="list-style-type: none"> • Sufficient years of increasingly responsible experience in an agency comparable to the SIDA performing budgeting and other administrative work and interpreting and presenting a unified information and communication programme to the public. <p>Education:</p> <ul style="list-style-type: none"> • Equivalent to a Master’s Degree from an accredited college or university with major course work in marketing, communications, public relations, public or business administration, or a closely 	<ul style="list-style-type: none"> • Serve as SIDA representative an/ or as staff for committees, community meetings, neighborhood events and before other governmental bodies; • Answer inquiries from and provide information to the public; • Receive and, if necessary, refer public complaints to appropriate agency or department for disposition; • Conduct tours of SIDA facilities • Assist in the reception of visiting dignitaries, groups or classes; • Prepare the public information office budget; • Develop and implement methods and materials to promote special events sponsored by the SIDA; • Coordinate special events; • Respond to requests for information from the public, SIDA staff, radio, television, and news media; • Perform related duties as assigned.
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		related field.	
9.	Manager Human Resources Development	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Principles and practices of public human resources administration; • Statistical concepts and methods; • Considerable expertise in the areas of job evaluation, wage and salary administration, recruitment and selection, equal employment opportunity and general analytical procedures; • Laws and regulations affecting public human resources management; • Modern office methods and procedures, including automation; • Principles and practices of supervision; • Management and budgeting. <p>Ability to:</p> <ul style="list-style-type: none"> • Communicate clearly and concisely, orally and in writing; • Lead and train professional and technical staff in the conduct of their work; • Identify problem areas; • Collect and analyse data, draw valid conclusions from available information and project consequences of decisions and recommendations; • Resolve conflict situations; • Analyse and interpret laws, regulations, policies and procedures; plan, supervise and evaluate the work of professional and technical staff; • Establish and maintain cooperative and effective relationships with those contacted in the course of the work; • Prepare studies and reports concerning complex matters 	<ul style="list-style-type: none"> • Supervise and participate in recruitment activities; • Supervise, train and evaluate professional and technical staff; • Develop, interpret and administer Personnel Rules and Regulations; • Develop evaluate and validate selection instruments and methods; • Supervise and conduct job grading studies; • Write job descriptions and recommend salary rates for new posts; • Supervise and participate in organization and staffing studies; • Develop, drive, monitor and coordinate mechanisms for the management of individual and group performance throughout the SIDA; • Counsel employees, management, Area Water Boards, outside agencies and the public on personnel related matters where required; • Supervise, coordinate and participate in special projects or programmes as assigned; • Prepare departmental budget; • Participate in the development and implementation of goals, objectives, polices procedures; • Prepare a variety of correspondence and reports; • Represent the SIDA at relevant professional gatherings and/ or public meetings; • Oversee and participate in the computerization of personnel records; • Investigate and attempt to resolve complaints regarding Personnel Department actions or interpretations; • Prepare information on agenda items for meetings of the SIDA Board; • May make presentations before the SIDA Board, Area Water Boards, employee and community

		<p>and situations;</p> <ul style="list-style-type: none"> • Set priorities, meet deadlines and make sound decisions on a variety complex personnel matters. <p>Experience & Education:</p> <ul style="list-style-type: none"> • Any combination equivalent to experience and education that could provide the required knowledge and abilities would be qualifying. A typical way to obtain the knowledge and abilities would be: <p>Experience:</p> <ul style="list-style-type: none"> • 5 years related experience. • Sufficient progressively responsible professional experience in general personnel administration, including some experience leading or directory the work of others; <p>Education:</p> <ul style="list-style-type: none"> • MBA / MPA or Masters in Social Sciences with Law Degree. 	<p>organizations and other interested groups.</p> <p>Other Duties:</p> <ul style="list-style-type: none"> • All other duties as may be prescribed or requested by the Board.
10.	Deputy Director – Irrigation and Flood Protection	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Principles and practices of irrigation and flood protection operations, management and organization; • Economics and financing of irrigation and flood protection; • Principles and practices of civil engineering as applied to the field of water distribution engineering; • Methods, material, techniques and equivalent used in the construction, operation and maintenance of 	<ul style="list-style-type: none"> • Develop and implement goals, objectives, policies and priorities; • Plan, direct and review the construction operation and maintenance of irrigation and flood protection infrastructure and systems; • Develop overall policies, financial resources and facility plans for the irrigation and flood protection facilities in conjunction with staff members and consultants;

		<p>irrigation and flood protection facilities;</p> <ul style="list-style-type: none"> • Applicable regulatory codes and laws related to the development, construction, and operation of irrigation and flood protection facilities; • Current literature and sources of information regarding utility engineering and operation; • Principles and practices of organization, administration, budget and personnel management. <p>Ability to:</p> <ul style="list-style-type: none"> • Plan, organize, staff and direct a large and diversified organization in a manner conducive to full performance and high morale; • Delegate authority and responsibility; • Scheduled and program work on a long term basis; communicate clearly and concisely, orally and in writing; • Formulate and present policy recommendations; • Select, supervise, train and evaluate staff. <p>Experience:</p> <ul style="list-style-type: none"> • Sufficient responsible experience in irrigation, drainage and flood protection facilities planning, coordinating and financing to demonstrate possession of the knowledge and abilities listed above <p>Education:</p> <ul style="list-style-type: none"> • Master's Degree or equivalent from an accredited college or university with major course work in civil or agriculture engineering. 	<ul style="list-style-type: none"> • Coordinate with senior staff in barrages; • Confer the managers to review current and proposed projects, work schedules, organization and personnel problems; • Review and sign engineering drawings, work orders and purchase orders for the various facilities within his responsibility; • Prepare and administer the departmental budget; • Direct and participate in the preparation of technical and administrative reports; • Present reports and recommendations to the SIDA Board and to the MD SIDA and to the Management Team; • Develop general procedures for control of activities; • Participate in professional activities an speak before water users and community groups regarding plans and policies; • Direct and participate in the preparation of the Capital Improvement Plan of the irrigation and flood protection services; • Coordinate SIDA's activities with other Government bodies and with outside agencies; • Select, supervise, train and evaluate staff; • Perform related duties as assigned; • Collaborate with colleagues to ensure that the distribution of workload is even;
11.	Deputy Director – Drainage and Capital Works.	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Principles and practices of drainage operations, management, and 	<ul style="list-style-type: none"> • Develop and implement goals, objectives, policies and priorities; • Plan, direct and review drainage and capital works; • Develop overall policies, financial resources and facility plans for

		<p>organization;</p> <ul style="list-style-type: none"> • Economics and financing of irrigation, drainage and flood protection; • Principles and practices of civil engineering as applied to water distribution engineering; • Methods, material, techniques and equipment used in the construction of irrigation, drainage and flood protection facilities; • Applicable regulatory codes and laws related to the development, construction, and operation of irrigation, drainage and flood protection facilities; • Current literature and sources of information regarding utility engineering and operation; • Principles and practices of organization, administration budget and personnel management; • Perform related duties as assigned. • Plan, organize, staff and direct a large and diversified section in a manner conducive to full performance and high morale; • Delegate authority and responsibility; • Schedule and programme work on a long term basis; • Communicate clearly and concisely, orally and in writing; • Formulate and present policy recommendations; • Select, supervise, train and evaluate staff. <p>Experience & Education:</p> <ul style="list-style-type: none"> • Any combination equivalent to experience and education that could likely provide the required knowledge and abilities would be qualifying. A typical way to obtain the knowledge and abilities would be: <p>Experience :</p> <ul style="list-style-type: none"> • Sufficient responsible experience in irrigation, drainage and flood protection facilities planning, 	<p>drainage and capital works in conjunction with staff members and consultants;</p> <ul style="list-style-type: none"> • Confer with assigned Managers to review current and proposed projects, work schedules, organization and personnel problems; • Review and sign engineering drawings, work orders and purchase orders for the various facilities within his responsibility; • Prepare and administer the drainage and capital works budget; • Direct and participate in the preparation of technical and administrative reports; • Present reports and recommendations to the SIDA Board and to the MD SIDA and to the Board of Management. • Develop general procedures for control of activities; • Participate in professional activities and speak before water users and community groups regarding plans and policies; • Direct and participate in the preparation of the Capital Improvement; • Coordinate SIDA's activities with other Government bodies and with outside agencies; • Select, supervise, train and evaluate staff; • Perform related duties as assigned.
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		<p>coordinating and financing to demonstrate possession of the knowledge and abilities listed above.</p> <p>Education :</p> <p>Master's Degree or equivalent from an accredited college or university with major course work in civil or agriculture engineering.</p>	
12.	Manager Finance	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Generally accepted accounting principles and practices; • Government accounting principles and practices; • Principles of financial administration, including budgeting and reporting; • Standard computer programs (eg. Word & Excel); • Computerized accounting systems; • Modern office practices, procedures, methods and equipment; • Credit control. <p>Ability to:</p> <ul style="list-style-type: none"> • Maintain the books of account; • Prepare a variety of financial statements and reports using standard computer programs such as Word & Excel; • Establish and maintain effective working relationships with others; • communicate effectively, orally and in writing; • train and direct less experienced accounting personnel. <p>Experience & Education:</p> <ul style="list-style-type: none"> • Any combination equivalent to experience and education that is likely to provide the required knowledge and abilities would be 	<ul style="list-style-type: none"> • Install and maintain suitable accounting, financial, budgetary and information systems both at head-office and other locations of the Authority (Regions, Circles, Divisions and other units); • Advise the financial directors/managers of the AWBs on accounting and financial systems and procedures; • Prepare the rolling five year capital expenditure plan of the Authority; • Plan, organize and direct the preparation, implementation and control of SIDA's annual operating and capital expenditure budgets; • Prepare and regularly update statements concerning the revenue, expenditure and financing/subsidy requirements of the Authority projected on a rolling five years basis (the five year business plan); • Overhaul radically the existing revenue base of the Authority; • Monitor the year-on-year rate of recovery of revenue (water and drainage service charges), and improve collection inter alia by proactive enforcement of the Authority's legal powers; • Coordinate funding with Government donor agencies and banks; • Introduce a system of internal audit by devising and introducing internal controls in the accounting and financial operations of the Authority and by monitoring their effectiveness; • Supervise and evaluate staff; • Keep abreast of laws and regulations effecting the financial operations of

		<p>qualifying. A typical way to obtain the knowledge and abilities would be:</p> <p>Experience:</p> <ul style="list-style-type: none"> • At least 7 years successful experience at management level in a major enterprise or parastatal entity of which at least 3 years would have been in the private sector. <p>Education:</p> <p>C.A /CM&A / MBA Finance / M.Com.</p>	<p>SIDA;</p> <ul style="list-style-type: none"> • Present reports and recommendations on accounting and financial matters to the Managing Director and to the SIDA Board; • Prepare the annual accounting statement of the Authority; • Liaise with the external auditors regarding the annual accounting statement; • Monitor the efficiency and effectiveness of the Financial and Accounting Department.
13.	Manager Procurement	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Standard computer programs like Word and Excel; • Principles of procurement of goods and services; • Vendor sourcing and contracts; • Modern office practices, procedures and methods. <p>Ability to:</p> <ul style="list-style-type: none"> • Prepare a variety of procurement documents using standard computer programs such as Word and Excel; • Establish and maintain effective working relationships with others; • Communicate effectively orally and in writing. • Train and direct less experienced personnel of the department. <p>Experience & Education:</p> <ul style="list-style-type: none"> • Any combination equivalent to experience and education that is likely to provide the required knowledge and abilities. A typical way to obtain the knowledge and abilities would be: 	<ul style="list-style-type: none"> • Responsible for the procurement activity from its initial stages through the award of the bid. • Maintain and develop relationships with vendors. • Assist departments in the formulation of their requests, processing requisitions by determining that material quantities are correctly specified. • Prepare documents and records of bidding and contractual documents to solicit bidders and award contracts according to SIDA policies and procedures. • Perform liaison duties between department, vendors and administration of SIDA. • Perform other related duties as may be assigned by the GM Finance.

		<p>Experience:</p> <ul style="list-style-type: none"> • A minimum of two years experience in a major purchasing environment. <p>Education:</p> <ul style="list-style-type: none"> • College graduate in either in Marketing, Management or Business administration in a reputable university. 	
14.	Legal Advisor	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • Existing laws and regulations affecting operations of SIDA. • Applicable regulatory codes and laws related to the development, construction and operation of irrigation, drainage and flood protection facilities. • Principles and practices of organization, administration and personnel management. <p>Ability to:</p> <ul style="list-style-type: none"> • Formulate and present policy recommendation. • Interact with external legal personalities and entities as a representative of SIDA. • Provide sound legal advice to SIDA officers and staff. • Train and supervise support staff assigned in the unit. <p>Experience & Education:</p> <ul style="list-style-type: none"> • Any combination equivalent to experience and education that is likely to provide the required knowledge and abilities would be qualifying. A typical way to obtain the knowledge and abilities would be: 	<ul style="list-style-type: none"> • Review, update and implement the applicable legal framework for SIDA and the AWBs. • Structure the appropriate legal instruments for drafting of contracts. • Review and assist in drafting of contracts, service delivery and transfer of assets. • Give advise on the proper interpretation of the relevant legal prescriptions. • Assist in the establishment of the legal wing of the proposed regulatory Authority. • Establish appropriate linkages with the existing law enforcement and judicial system that would support the institutional arrangement within SIDA and that of the AWBs.

		<p>Experience:</p> <ul style="list-style-type: none"> Sufficient experience in the practice of law and preferably in government offices or institutions. A practicing lawyer in superior Courts. <p>Education:</p> <ul style="list-style-type: none"> LLB preferably of Masters in Law with first class degree in Social Sciences. 	
15.	Manager – IT/Specialist	<p>Qualifications:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> A board range of computer hard and software, including Windows based local Area networks. Relationship Databases. Systems analysis and design Internet technology. <p>Ability to:</p> <ul style="list-style-type: none"> Analyze the hard and software needs of the organization. Design and analyze complex information systems. Guide and supervise contractors carrying out software development. Supervise subordinate staff. Communicates effectively orally and in writing, both in Urdu and in English. Write polices procedures and specifications Troubleshoot hard and software. Give presentations in public. <p>Experience & Education:</p> <ul style="list-style-type: none"> Any combination equivalent to experience and education that is 	<ul style="list-style-type: none"> Analyze the needs for information systems within SIDA. Design the necessary information systems. Prepare tender documents and purchase hard and software that is needed for SIDA. Supervise contractors carrying out software development for SIDA. Administer the database in use by SIDA. Supervise the installation of hard and software. Organize end user training Design procedures for backup of data. Take measures to protect the security of the information systems. Assist in the organization of data collection and exchange. Keep records of the data in use by SIDA. Monitor and assist on the improvement of the quality of the data; In conjunction with the SIDA Management, update the SIDA information strategy advice SIDA Management on all IT related issues. Liaise with AWBs to come to uniform information systems in all organizations. Perform any other related duty.

		<p>likely to provide the required knowledge and abilities. A typical way to obtain the knowledge and abilities would be:</p> <p>Experience :</p> <ul style="list-style-type: none">• 5 years of experience with responsibilities for a variety of hardware and software systems; of which five years Systems Management experience in a complex environment comparable to that of SIDA. Previous experience in a water management, utility or engineering organization would be an asset. <p>Education: Masters in Com: Science / B.E in Microsoft / certified system of Engineering.</p>	
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