

# PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC2480

<b>Project Name</b>	Dasu Hydropower Stage I Project (P121507)
<b>Region</b>	SOUTH ASIA
<b>Country</b>	Pakistan
<b>Sector(s)</b>	Other Renewable Energy (90%), General water, sanitation and flood protection sector (10%)
<b>Theme(s)</b>	Other economic management (67%), Water resource management (33%)
<b>Lending Instrument</b>	Specific Investment Loan
<b>Project ID</b>	P121507
<b>Borrower(s)</b>	Government of Pakistan
<b>Implementing Agency</b>	WAPDA - DASU PMU
<b>Environmental Category</b>	A-Full Assessment
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<b>Concept Review Decision</b>	

## I. Introduction and Context

### Country Context

Pakistan has important strategic endowments and development potential. The country is located at the crossroads of South Asia, Central Asia, China and the Middle East and is thus at the fulcrum of a regional market with a vast population, large and diverse resources, and untapped potential for trade. The increasing proportion of Pakistan's working-age population provides the country with a potential demographic dividend but also with the critical challenge to make sure young people have access to employment and adequate services. Poverty levels declined in the early part of the 2000s, although over the past two years there have been signs that poverty levels may be increasing again.

The economy is fragile. Pakistan faces significant economic, governance and security challenges to achieve durable development outcomes. The persistence of conflict in the border areas and security challenges throughout the country is a reality that affects all aspects of life in Pakistan and impedes development. The country performs poorly relative to other countries on a range of governance,

corruption and business environment indicators. Pakistan's rebound from the global financial crisis of 2008 has been the weakest in South Asia, with growth averaging 3 percent over the past five years. Short-term macroeconomic imbalances were barely improving when two floods hit the country in 2010 and 2011. Despite some recovery of exports and strong remittances, borderline stagflation continues—modest growth with (until recently) double digit inflation, compounded by unsustainable macroeconomic policies and domestic and international armed conflicts. Private investment has fallen by nearly half over the past five years, putting pressures on ailing foreign exchange reserves. The country now has less than a month of reserves for import coverage.

Pakistan secured an IMF-supported Extended Fund Facility (EFF) of US\$6.6 billion on September 4, 2013. As part of that agreement, the authorities have committed to reducing subsidies to the power sector over the next three years. Making active investments to improve energy supply is essential to managing public reactions to these increasing prices.

### **Sectoral and Institutional Context**

An energy crisis. Access to electricity in Pakistan is on par with other countries of similar income. The number of electrified households has risen from nearly half of Pakistani households (7.8 million) in 1996 to two-thirds (13.4 million) in 2006 and three-quarters (19 million) in 2011. The major electricity consuming sectors of the country (based on 2011-12 data) are: residential (45.3 percent), industry (29.2 percent), agriculture (11.3 percent), commercial (7.6 percent), bulk (4.7 percent) and others (1.9 percent).

Although access to electricity has expanded, service is unreliable. The electricity sector faces a large gap between supply and demand, and widespread load shedding is prevalent. Annual per capita electricity consumption in Pakistan 433 Kilowatt-hours (kWh) is lower than lower middle income country standards, which on average consumed 643 kWhs per person per year in 2008. Moreover, electricity consumption in Pakistan grew by only about 73 percent since 1990 compared to 187 percent in Malaysia and 300 percent in China. Neighboring countries in South Asia such as Bangladesh, Nepal and Sri Lanka witnessed a growth in electrical consumption by about 221, 129 and 159 percent respectively over the same period (World Development Report, 2010).

Generation is only two thirds of peak demand and 6-8 hours a day of load shedding is common. Such shortages have significantly affected the ability of businesses to operate efficiently while also disrupting daily routines for the general population, and have given rise to unrest and violence in the major cities.

The country needs additional generation capacity. Installed capacity essentially stagnated over 2000–2008. By comparison, installed capacity increased by 40 percent in Bangladesh, and 46 percent in India over the same period. After 2008, around 3,000 MW were added, taking capacity to about 22,500 MW by end-2011. But around 10% of total installed capacity is unavailable, however, because of lack of maintenance and lack of fuel. From a peak of 26 percent of total investment and 51 percent of public investment in the mid-1990s, the share of energy (including power) investments had declined to 4 percent and 26 percent, respectively, by 2009/10. During this period, private investment was essentially zero.

Generation costs are now very high. Capital and operational constraints meant that the country was not able to undertake new investments in hydropower. To address continuing energy shortages in the 1990s, Pakistan launched an extensive program to mobilize private sector investments in power

generation. These were primarily concentrated on thermal generation, which typically require smaller investments and have a faster gestation time. As a result, generation mix shifted from two-thirds hydro and one-third thermal in the 1980s to only 30 percent hydro and 70 percent thermal today. The new plants rely on higher priced, dirtier furnace oil.

Hydro is by far the cheapest generation type for Pakistan; less than a fifth of the cost of generation from heavy fuel oil which predominates now. New large hydro plants can generate power for Rs 2.50-3.50 per kWh, compared to Rs 4.5 per kWh for domestic gas combined cycle plants, Rs 4.2 for nuclear, Rs 8.1 per kWh for coal, Rs 16.75 per kWh for fuel oil, and around Rs 21 per kWh for diesel. The project proposed in this PCN will have a major impact on sector performance and finances. It is expected to bring down the average cost of generation for the entire country by 5-12 percent.

A fiscal crisis. Tariffs have not kept up with costs of generation and the uniform national tariff is structured in such a way that it cannot cover the full cost of the power system. While the government has aggressively adjusted tariffs since 2009—and changes in supply costs are promptly incorporated in consumer tariffs—the gap remains. The current average of tariff notified/approved by the Government is PKR 10.96/kWh although the average level required for cost recovery based on average of NEPRA determined tariffs for FY2012-13 is PKR 14.66/kWh. The actual costs are much higher because NEPRA determinations do not include some costs e.g. penalties on late payments to IPPs, non-collection and losses exceeding the targets set by NEPRA.

In recent years, the power sector's fiscal burden on the Government has become unsustainable – averaging Rs 300-400 billion per annum or 15-17 percent of government revenues. Over the last 5 years, government has paid almost Rs. 1.4 trillion (~US\$ 16 billion) in subsidies to the power sector which was enough to build one large dam and is 4 to 6 times the federal expenditure on social and economic services respectively.

The most significant consequence of insufficient revenues and payment indiscipline is a growing debt among the companies in the power supply chain referred to as circular debt which is seriously constraining liquidity and investment in the sector. The Ministry of Water & Power (MOWP) estimated circular sector debt (defined as payables to IPPs, WAPDA and fuel suppliers) to be more than PKR 500 billion as of end May 2013. This does not count the debt that the government has taken to bail the sector out at previous instances – in FY09 a Power Holding Company was created to clean the balance sheets of public sector entities and about Rs. 300 billion of debt was transferred to this company and was later consolidated into government debt. During FY12 another Rs. 240 billion of loans were arranged to finance working capital requirement of public sector entities. More recently, government has issued bonds and has foregone its receivables from the entities to clear the Rs 500 billion stock of circular debt as of May 2013. Circular debt is a symptom of the inefficient and unsustainable energy system that can only be addressed once the underlying causes have been resolved—otherwise it would just reemerge. It is estimated that the payables have started to accrue again at the same rate of Rs. 25-30 billion per month.

The large and growing subsidy requirement, along with Circular Debt, has two important impacts. First, it crowds out borrowing by the power and other energy sector entities for investment in new capacity and blights the further development of existing projects. Second, circular debt creates severe liquidity shortages in the sector as a whole, such that suppliers refuse to provide fuel, generating plants stay idle, maintenance programs lag or are not implemented at all, and spare parts

are unavailable when equipment breaks down (NEPRA 2011).

**Weak Sector Governance.** Overall sector governance remains weak with diluted responsibilities across ministries. The Government – as owner of the utilities - exercises little control over the managements of public utilities. The government is involved heavily in the utilities’ day-to-day operations, with two effects: boards of directors and managements have no incentive to perform their functions efficiently or to the best of their ability, and the government cannot hold them accountable for improving the utilities’ performance. Past efforts at sector reform therefore had limited impacts. Even when PEPCO was empowered to fully implement the reforms, the desired result was not achieved because PEPCO got bogged down in running the companies, rather than restructure them (develop management capacities, systems, and human resources), and prepare them to operate as autonomous, commercial entities. To address these governance and high level leadership challenges, the 2010 FODP Energy Sector Task Force report recommends merging the sector ministries and regulators, and consolidating the authority and responsibility for completing the reforms in one office (a Senior Energy Advisor).

#### Strategies to Address the Challenges

The Government of Pakistan has announced a policy that aims at addressing the issues in the energy sector. National Power Policy 2013 was approved by the Council of Common Interests on July 27, 2013 and reflects on government’s vision and strategy for the sector. The Policy calls for reducing the supply-demand gap by bringing in low cost power generation, reducing theft and technical losses, improving governance and increasing efficiency in energy use. Government also plans to eliminate subsidies by FY16 by increasing tariffs and to add enough capacity to meet projected demand by FY17/FY18. Government is also well aware that a sustainable solution to these very significant challenges will require a broad range of policy, institutional and governance actions in the sector, and has subsequently prepared an action plan with short, medium and long term actions. Some of the key actions required to achieve these objectives are also reflected in the agreement reached with the IMF. Investments such as the one proposed in this PCN are another key aspect of the strategy.

**Expansion of Electricity Generation and Supply.** Any sustainable solution to Pakistan’s energy crisis will require a significant increase in the supply of electricity. The Policy aims to reduce generation cost and meet the growing demand by developing coal (7,000 MW), hydro-power (Indus Cascade development), solar and wind projects, and bagasse-based power generation. In 2011, NTDC undertook National Power System Expansion Plan study covering a period from 2011/12 to 2029/30. It includes a least cost generation expansion plan, transmission plan and network reinforcement requirements for distribution. The plan accorded high priority to the development of hydro generation as this would have a long-term positive impact on costs and therefore tariffs. The Policy also talks about regional transmission networks (e.g. potential import of surplus summer hydropower from Central Asia and interconnection with India) to promote power trade and optimize deficits and surpluses. Programs to improve energy efficiency and promote conservation will be initiated in parallel.

An estimated US\$60-70 billion will be required over the next decade or so to meet the electricity deficit in the country. This is not possible without private sector participation. The Government plans to attract greater private sector investments and for this will set the foundations of energy cities and corridors, and sponsor public-private partnership (PPP) for power projects. Selected hydel

projects under development will also be positioned for privatization. The policy mentions privatization or O&M-based leasing of generation companies, privatizing distribution companies and involving the private sector to build and strengthen the transmission infrastructure.

**Mobilizing Commercial Capital for Power Generation projects.** The World Bank and IFC have a track record in mobilizing private debt financing for large generation projects in Pakistan. One of the Bank's former engagements supported the financing (through an IBRD PRG) of the 1,200MW hydropower project implemented by Hub Power Company Limited. Another successful project supported with World Bank Guarantees and IFC loans was the 586 MW Uch Power Station financing. However, the scale of this project's financing goes beyond what the World Bank and IFC have been able to achieve in their earlier mobilization. The Government of Pakistan in the past also successfully mobilized private and commercial capital financings in other areas of the energy sector, including private investments in the natural gas sector as well as PPP projects in the power distribution sector. On the basis of this positive track record in attracting private and commercial capital for Pakistan's energy sector, innovative financing solutions will be developed for tapping additional and unconventional commercial sources of financing for Pakistan's power sector expansion plans.

**Controlling Operational Costs.** Controlling costs is another critical element of bringing the sector into financial equilibrium over time. This would require a broad range of measures, including, investments to rehabilitate and maintain generation and distribution systems, accelerating production of domestic natural gas for power generation, ensuring strict adherence to least cost criteria (both for investments and operations) and energy efficiency and demand side management measures.

**Improvements in Sector Finances.** The current government has cleared the total outstanding payables of Rs. 500 billion (as of May 2013) owed to IPPs, fuel suppliers and WAPDA by issuing bonds (which were bought by state owned oil and gas companies) and foregoing its receivables that entities owed to the government against repayment of the GOP loans. However, it needs to take steps to avoid its build-up again by reducing the gap between costs and revenues. In line with the agreement with the IMF, the Government has also raised the tariffs for industrial, commercial and bulk categories by 50% (weighted average) on August 5, 2013. This will have an impact of Rs. 140 billion reduction in the tariff differential subsidy estimated for FY 2014. The next phase of tariff increases (due on October 1) is to phase out the subsidy for households who consume more than 200kWh per month, as well as further elimination of subsidies for commercial, bulk supply, agriculture and other consumers. The need is for a sustainable and predictable tariff regime that includes all prudently incurred costs in determined tariffs, closes the gap between determined and notified tariffs, and eliminates the circular debt eventually.

**Improved Sector Governance.** Finally, the Government is cognizant that significant improvements are needed in sector governance, to clarify responsibilities, underpin the importance of commercial and technical factors in decision-making with respect to investment and operations, and enable completion of the reforms to the sector aimed at facilitating further private sector investment. It plans to strengthen the legal framework to prosecute electricity and gas theft, to give incentives for reducing electricity losses. The Government has launched an aggressive anti-theft campaign which will soon be supported by a comprehensive anti-theft legislation. The Government is also preparing a new Electricity Act to modernize governance of the sector. As a first step, the process to enact the amendments to the Penal Code and the Code of Criminal Procedures to strengthen the legal

framework for electricity theft is at final stages. The government has also started establishing a metering tree up to 11kV feeder level which will be extended to high value end consumers through the use of smart meters. However, while the legal and regulatory environment for the energy sector is relatively strong, accountability of individuals within sector institutions is weak. The policy includes a number of areas to improve accountability, including performance contracts, independent monitoring of the contracts, and improving access to information.

Hydropower Generation is Vital and DHP-I is a Key Element of the Indus Cascade. Expansion of hydropower generation is fundamental to address Pakistan's long-term energy issues. Therefore, Government's energy policy supports the development of Indus Cascade that would use the same water to produce electricity several times. The generation mix will begin to shift in favor of hydropower only after large projects of the Indus Cascade are developed bringing some about 12,000 MW of new capacity and over 72,000 Gwhs of energy over next 12-20 years.

23. The proposed DHP-I is an important element of the Bank's strategy to support Pakistan's energy sector. It is a strategic investment that contributes to a structural shift to a low cost, low carbon fuel mix. The Project makes a strong contribution to the energy sector agenda by: (i) contributing to long-term change in the structure of the sector away from high cost heavy fuel oil to low cost cleaner hydropower; (ii) reducing the cost of electricity generation (single-handedly bringing the cost of generation down by 5 to 12 percent for the whole country), (iii) reducing the sector deficit by injecting positive cash flow and saving foreign exchange by displacing imported fuel; and (iv) building the broader institutional capacity of WAPDA to harness the hydropower potential elsewhere in the country.

The proposed DHP-I also sets the stage for a renewed Bank relationship with WAPDA, the agency in charge of development of hydropower resources in Pakistan, and a long-term partner of the Bank that has demonstrated a good track record of performance. Going forward, a long-term strategic engagement with WAPDA, with significant institutional strengthening measures built into this Project design, is an important pillar of the overall Bank strategy for the energy sector in Pakistan. It will assist WAPDA in integrating international technical, environmental and social best practices in its institutional capacity as it implements the long-term strategy to develop a portfolio of large hydropower projects, including successor hydropower projects. Therefore, WAPDA would become a chief entity to move forward the sector and the reform program, thus taking the sector out of the current crisis.

While DHP-I would play a key role in reducing the cost of electricity production, the Bank together with the other development partners of Pakistan is engaging to address other key issues of the sector through other instruments such as Development Policy Credits (DPCs) followed by a Disbursement Linked Operation (DLI).

### **Relationship to CAS**

The Project contributes to the PRSP's objective of poverty reduction through development of sustainable and affordable electricity generation that is vital to economic development. Pakistan's current Country Partnership Strategy (CPS) is centered around four pillars: (i) improving economic governance; (ii) accelerating delivery of human development and social protection services; (iii) improving infrastructure to support growth; and (iv) improving security and reducing the risk of conflict. The Project contributes to the CPS' third pillar of improving infrastructure to support growth by adding low cost electricity to the system, and to energy security by reducing the

country's dependence on imported fuel oil. It will also help to reduce financial deficit in the energy sector and in the overall fiscal accounts of the country. Furthermore, the Project has climate change benefits through the abatement of greenhouse gas (GHG) emissions by developing renewable energy supplies.

## II. Proposed Development Objective(s)

### Proposed Development Objective(s) (From PCN)

The overall project development objective is to facilitate a sustainable expansion of Pakistan's electricity generation capacity. The Project would also support strengthening of WAPDA in the preparation of future hydropower projects and build its capacity in harnessing Pakistan's vast hydropower potential. The Project is a "high-risk-high-reward" operation aimed at providing low cost non-carbon renewable energy.

### Key Results (From PCN)

The following key results are expected from the project:

- (i) Electricity supply of over 8,000 GWh of renewable energy annually to the central grid;
- (ii) Availability of 1,080 MW of additional power generation capacity;
- (iii) Reduction in the overall production cost of electricity due to low cost, low carbon energy by at least 5 percent;
- (iv) Development of subsequent phases of Dasu Hydropower Project; and
- (v) Preparation of a large hydropower project on the Indus River and successful completion of an agreed capacity building program of WAPDA.

## III. Preliminary Description

### Concept Description

#### Description

The proposed Dasu Hydropower Project (DHP) is a run-of-river project located on the Indus River about 240 km upstream from Tarbela dam. It is about 7 km from Dasu town and 350 km from Islamabad. The total size of the project is 4,320 MW. However, given the financing constraint is proposed to be developed in a phased manner starting from 1,080 MW installed capacity initially. The first phase is critical with higher cost (US\$3,667 million) as much of the infrastructure (e.g. site preparation) and social and environmental safeguards have to be developed under this phase. The high upfront cost for Phase 1 is offset by high generation which despite the front-loading of dam and other social and environmental management costs gives good economic returns of more than 20% (excluding environmental benefits). The generation from Phase I is about 8,000 GWh as flows are available in the river to pass through the hydropower plant and gives a very high load factor (85%) for a hydro project. DHP, therefore, is transformational as it will reduce the cost of generation and will contribute to the development of Indus Cascade.

Phased Approach to Development of the Project. The DHP is proposed to be developed in two stages and four phases. Each phase will add 1,080 MW of installed capacity. Stage I comprising Phase I and II would be developed as soon as possible and give an installed capacity of about 2,160 MW. Phase-I would consist of development of major infrastructure including full development of dam, installation of first three units of 360 MW each, tunnels and excavation for the next three units. The objective is to minimize the costs for Phase I keeping in view all the financial

constraints. Phase I could give enough revenue to develop subsequent phases and to support accelerated construction other schemes elsewhere in the country. Another 1,080 MW would be installed under Phase-II of Stage I, which will increase generation to 12,225 Gwhs. Depending on the availability of finances both phases of Stage I can be implemented simultaneously or sequentially. The project would be designed in a manner so that (if possible) subsequent phases can be accelerated and to avoid shutting down and re-starting the construction activity. Stage II would be undertaken after the development of other projects in the Indus cascade to provide sediment control upstream and less need for sediment flushing at the Dasu site.

The project will comprise the following components:

**Component A: Construction of the Main Hydraulic Structure on the Indus River (US\$1,365.3 million).** This component would primarily consist of the civil works required for main dam structure on the Indus River to raise the water level and thus create energy for running the power generating turbines and generators. The spillway structure would be built to pass the floods and Low Level Outlets (LLO) and two flushing tunnels on the right Bank to flush the sediment coming from upstream and deposited in the reservoir. The main dam structure would be constructed with Roller Compacted Concrete (RCC). This project would have an operational storage capacity of 0.82 BCM.

**Component B: Power Generation Facilities (US\$821 Million).** As indicated above the power generation facilities would be developed in two stages and four phases. Four Headrace Tunnels (HTs) would divert water from the reservoir for power generation to the Power House (PH) constructed underground. Water passing through the turbines would be discharged from the power house to the river through four Tailrace Tunnels (TTs). Each Headrace Tunnel would supply water to three generation units of 360 MW each. A total of 12 units with a total installed capacity of 4,320 MW at full development. Similarly each TT would discharge water from three generating units. The underground sub-stations would be constructed to serve the power house. The component would have two sub-components: (B1) works waterways for the power generation facilities; and (B2) Turbines, generators, and electro-mechanical equipment etc. or waterways for power. As indicated about under the DHP-I only one waterway i.e. one HT and one TT would be completed and equipment would be installed for a generation capacity of 1,080 MW.

**Component C: Preparatory and Permanent Works (US\$339.8 Million).** These include access roads, Karakoram Highway (KKH) relocation, construction of 132 kV transmission line from Dubair to Dasu, offices, on-site housing.

**Component D: Transmission Line (US\$348.1 Million).** For transmission of power, a double circuit 500KV line would have to be installed from Dasu to Islamabad (via Mansehra) that can serve two phases i.e. an installed capacity of 2,160 MW. This would be constructed in Phase I even though single circuit line would be adequate for 1,080 MW, following standards double circuit be used to have adequate capacity in case one circuit goes down for some reason. Transmission line would be constructed by the National Transmission and Dispatch Company (NTDC).

**Component E1: Social and Resettlement Management Plan ((US\$584.1 Million).** The Social and Resettlement Management Plan (SRMP) will include designed programs to address social dimensions of the proposed project, including the dam construction and reservoir area as well as the transmission line.



Component E2: Environmental Management Action Plan (US\$30 Million). All construction related environmental issues would be addressed in the construction contracts, thus cost of such measures is included in the construction components. This component would include those issues which are not or cannot be covered under the construction contracts.

Component E3: Flood warning system, watershed and river monitoring (US\$10.0 million). Most of the water resources of the Indus River are derived from glacial melt, and the DHP is designed to withstand probable maximum floods that may be caused by glacial lake outbursts. Nevertheless, continued monitoring of glaciers is crucial for the water security of the country, and useful for developing the knowledge base for the operation of the dam and for planning future hydropower investments in the Indus Basin. This sub-component would support the Glacier Monitoring and Research Center (GMRC) under the WAPDA General Manager Planning for monitoring and research on the Upper Indus Basin (UIB) glaciers.

Component F: Construction Supervision, Monitoring and Evaluation of the Project Impacts and Social and Environmental Management Plans (US\$108 million).

Sub-component F1: Construction Supervision and Implementation Support (US\$100 million). This sub-component would cover the cost of consulting and other services for Project implementation, including construction supervision and Project management support. It would also cover implementation of all activities under the Project, including: procurement, contract administration, quality control, certification of payments, financial management, preparation of any additional designs, and bidding documents, etc.

Sub-Component F2: Monitoring and Evaluation of the Project Impacts and of Social and Environmental Management Plans (US\$8 million). The monitoring and evaluation (M&E) activities would provide continuous feedback to the Government of Pakistan (GoP), Ministry of Water and Power (MoWP) and WAPDA on the Project's performance and impact of its various components, so that corrective actions could be undertaken in a timely manner.

Component G: Project Management Support, Capacity Building of WAPDA, Technical Assistance and Training (US\$60.0 million).

Project cost and Financing.

Total cost of Phase 1 is around US\$3,667 million. The cost estimates are based on October 2012 prices and 10% physical contingencies are added to all works and equipment. Price contingencies are taken as 8% of the base cost. Cost break-up is given in Table 1.

Phased approach to Financing. While the Bank Group (World Bank, IFC and MIGA) is currently proposing a wider comprehensive approach to Pakistan's power generation and distribution sector, this Project is proposed to be supported by IDA on public finance basis, given the magnitude and ambitious implementation of the Project. The Project therefore is proposed to be financed by IDA, and with support from IDA guarantees financing that is raised in the commercial markets in addition to export credit financing for the electrical works. The Bank team will coordinate with IFC and MIGA on the wider sector financing WBG approach.

A sequenced financing package approach to fund such a large and long gestation project (DHP-I) is necessary and optimal that matches with the realistic implementation program on the ground so that funds committed are used and implementing agency does not have to pay for unnecessary commitment fees and interest during construction which could be up to half a billion dollars.

Therefore, financing the DHP-I is proposed through four slices. These slices are shown in Table 2 below. Slice-1 is the subject of this proposed loan will cover preparatory and river diversion works needed to start up the main project works, and to cover the cost of social, environmental management plans, supervision and technical assistance and training etc., these are components part of component A related to river diversion works (about US\$200 million) as well as components C, E, F and G with a total cost of US\$1,332 million. Slice-2 should be for main structure and power facilities all works on the site i.e. component A and B1 with a cost of about US\$2,000 million (or US\$2,500 million). This needs to be mobilized about a year later when the contractors are appointed or nearly selected for such works etc. Slice 3 would be for the transmission line (about US\$350 million). Slice 4 would be for hydro mechanical and electrical equipment (US\$312 or US \$600 million) which is needed in last part of the project when works are complete and manufacturing and installation period is less than half of the main works –this can be mobilized in year three or four.

To start the project first IDA Credit of US\$700 to US\$1,000 million is proposed to finance the startup costs i.e. Slice 1. To finance the remaining cost of the project, the options could be a combination of additional IDA Credits, leveraging existing assets of WAPDA, commercial and export credits.

Project Implementation Arrangements. The project would be implemented by the Water and Power Development Authority (WAPDA) created in 1958 through an Act as an independent authority to provide for unified and coordinated development of the water and power resources of Pakistan . The Authority consists of a Chairman and three Members, one each for Water, Power and Finance, who also act as Managing Directors of their respective sections. WAPDA would be responsible for the execution and implementation of the Project through the Project Management Unit (PMU) established under the office of the General Manager (GM) Hydro Planning. The GM Hydro Planning reports to the Member (Water). After Project Preparation phase is complete and investment phase starts office of the GM Dasu Project would be established and the PMU would be brought under the GM Dasu Hydropower Project. The Transmission line component D would be implemented by NTDC.

Procurement. WAPDA and NTDC has considerable experience in procurement and execution of large civil works contracts. The procurement risk in this Project would be minimized by packaging the works into large contracts tendered through ICB. There shall be a few large consultancy assignments, including for construction supervision, M&E, and design of future projects, etc. Major goods contracts are expected to cover field equipment, vehicles and office equipment, etc. WAPDA would be supported by a properly staffed PMU and Procurement Unit and by two consulting teams, CSCs and M&ECs.

Due to the country environment and the sheer size of the procurement involved, procurement risk is rated substantial. However, to minimize these risks, procurement documentation and record keeping systems, including a website showing the status of procurement of various contracts and their performance would be established. A procurement complaint handling system would also be

established to keep track of any complaints, etc.

**Financial Management.** WAPDA has a well-functioning financial management system and historically it has handled extremely large investment programs. Presently, WAPDA is implementing the Bank financed Tarbela Fourth Extension Hydropower Project with satisfactory financial management arrangements that also includes strengthening of WAPDA's internal audit function. Financial Management arrangements similar to Tarbela IV project are envisaged for Dasu Hydropower Phase I project, including; a separate FM unit under GM Dasu; report based disbursement in a segregated designated account; use of WAPDA's internal control framework; maintaining separate books of accounts for the project; periodic financial and progress reporting; and, annual audit by auditors acceptable to the Bank. Majority of the credit proceeds will be used to finance payments related to implementation of Social and Resettlement Management Plan as well as Environmental Management Action Plan. WAPDA will prepare detailed procedures to process these payments.

#### IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	x		
Natural Habitats OP/BP 4.04	x		
Forests OP/BP 4.36		x	
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11	x		
Indigenous Peoples OP/BP 4.10		x	
Involuntary Resettlement OP/BP 4.12	x		
Safety of Dams OP/BP 4.37	x		
Projects on International Waterways OP/BP 7.50	x		
Projects in Disputed Areas OP/BP 7.60		x	

#### V. Financing (in USD Million)

Total Project Cost:	3667.00	Total Bank Financing:	700.00
Financing Gap:	2300.00		
<b>Financing Source</b>			<b>Amount</b>
BORROWER/RECIPIENT			667.00
International Development Association (IDA)			700.00
Total			1367.00

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