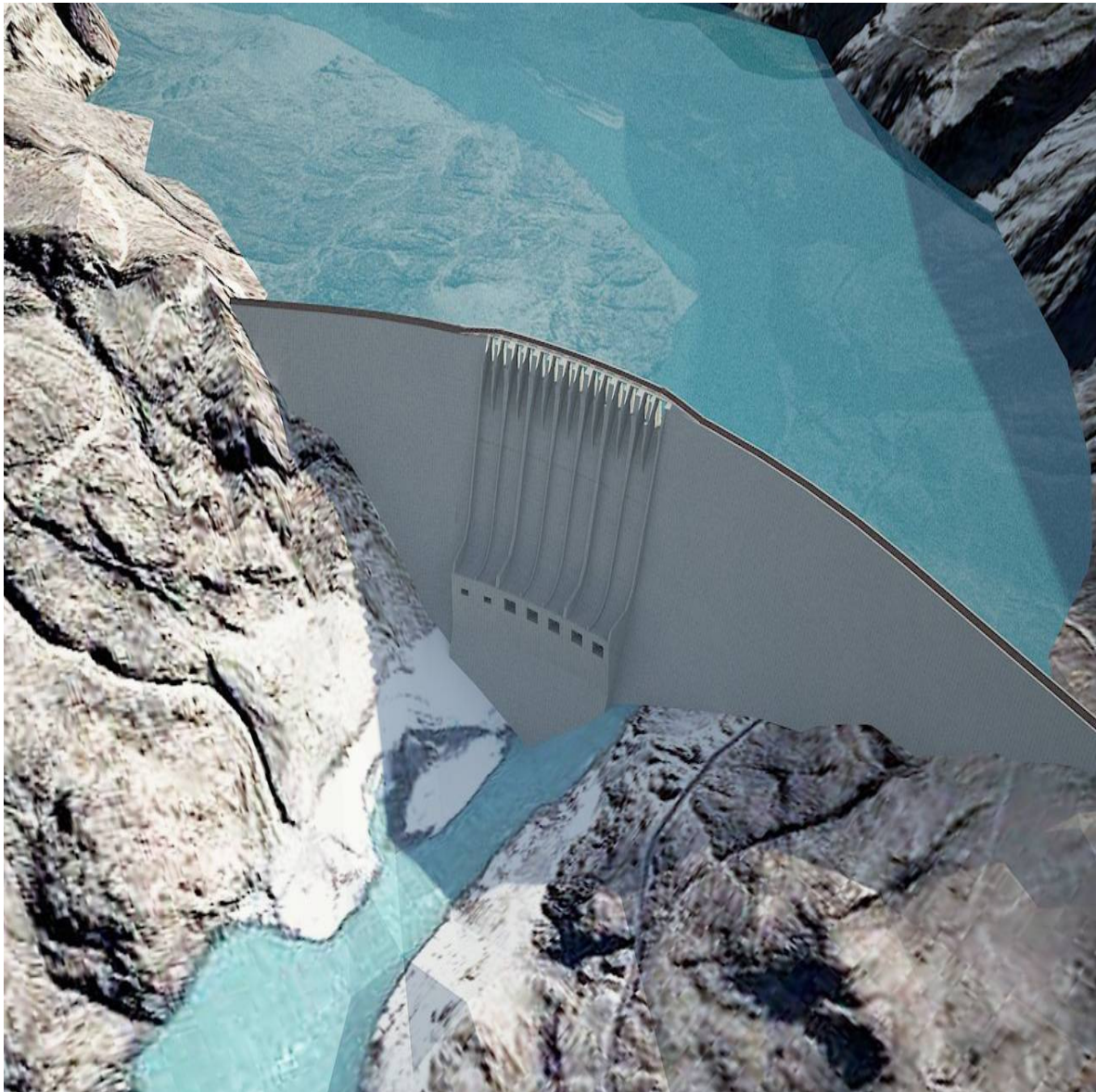




# DIAMER BASHA DAM PROJECT

Status as on June-20, 2011

WAPDA web site

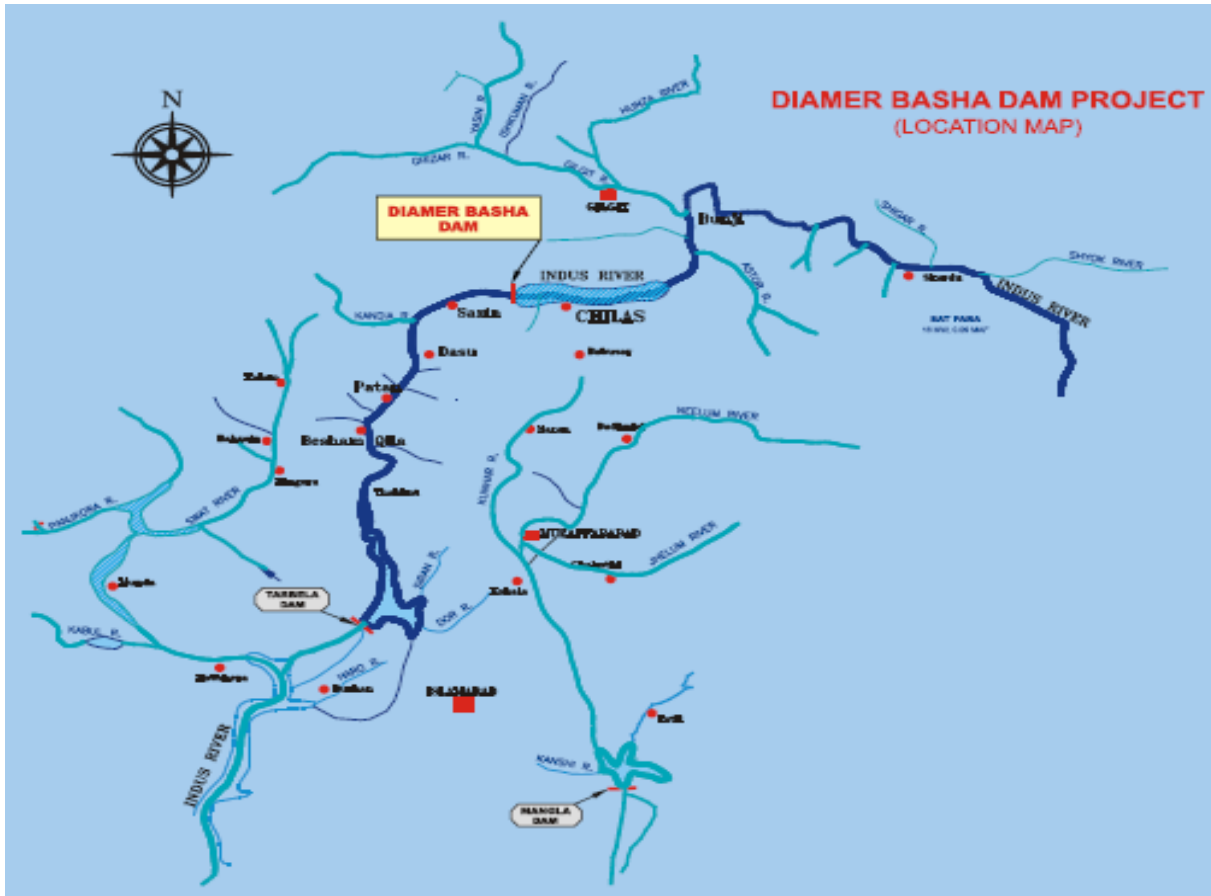


PAKISTAN WATER AND POWER DEVELOPMENT AUTHORITY

# DIAMER BASHA DAM PROJECT

## LOCATION

Diamer Basha Dam Project (DBDP) is proposed to be located on the Indus River 315 km (195 miles) upstream of Tarbela Dam site, about 180 km (113 miles) below the town of Gilgit and about 40 km (24 miles) downstream of Chilas, the district headquarter of Diamer in Gilgit-Baltistan.



## DESCRIPTION OF PROJECT STUDIES

The techno-economic evaluation / feasibility studies of DBDP have been carried out over the last 26 years. Notable among these are the following three (3):-

### Feasibility Report MONENCO - 1984

In 1984, a report titled "Basha Storage and Power Project – Feasibility" was prepared by Montreal Engineering Company (MONENCO) of Canada. They proposed a 200 meter high zoned earth / rock fill dam with central core and concrete cut off to bed rock, underground power house on the left bank of the river Indus, installed generation capacity 3360 MW with annual energy generation about 14000 Gwh corresponding to Full Supply Level (FSL) of 1160 masl having storage capacity of 5.7 MAF.

## Feasibility Report NEAC - 2004

In June 2002, Wapda assigned the task of preparing a detailed project feasibility report to a joint venture NEAC, comprising of renowned international & national engineering firms with M/s. NESPAK as a leading firm.

In August, NEAC submitted “Basha Diامر Dam Project – Feasibility Report”. They recommended a Roller Compacted Concrete (RCC) gravity dam of 282 meter height above bed rock, two (2) underground power houses of 4500 MW total installed capacity, 2250 MW each, on right and left banks. Average annual energy generation was estimated around 18,300 Gwh out of which about 16,800 Gwh was at Basha and additional 1450 Gwh at Tarbela. Live storage capacity at FSL of 1170 masl was 7.3 MAF.

## Design Report in DBC - 2008

Diامر Basha Consultants (DBC), a joint venture of international & national consulting firms, M/s. Lahmeyer International Germany as lead firm was engaged by Wapda in July 2005 for *Review of Feasibility Report, Engineering design and Tender Drawings / Documents already done by M/s. NEAC*. DBC have completed detailed engineering design of the project by June-30, 2008. Main features are given below:-

### MAIN FEATURES OF DBDP

- **Main Dam**

Maximum Height	272 m
Type	Roller Compacted Concrete (RCC)
  
- **Diversion System**

2 No. Diversion Tunnels (right side)
1 No. Diversion Channel (right side)
Upstream and Downstream Cofferdams
  
- **Main Spillway**

No. of gates	14
Size of gate	11.5 x 16.24 m
  
- **Reservoir**

Full Supply Level	1160 masl
Crest Elevation Level	1170 masl
Gross Storage	8.1 MAF (10.0 BCM)
Live Storage	6.4 MAF (7.9 BCM)
Min. operating level	1060 masl
  
- **Outlets In Dam Body**

Low level	2
Flushing	5

➤ <b>Power House(s)</b>	2
Total Installed Capacity	4500 MW
Location and Type	Underground, one each on right and left side
No. of Units	12 each of 375 MW
Average Generation	19208 Gwh/year
	(Diamer Basha = 18097 Gwh/year)
	(Tarbela = 1111 Gwh/year)
➤ <b>PC-I Cost</b>	Rs.894.257 billion (with FEC Rs.312.943 billion)
➤ <b>EIRR</b>	15.3%
➤ <b>FIRR</b>	8.04%
➤ <b>Benefit/Cost Ratio</b> (Discount Rate 12%)	1.43

### CONCERNED AUTHORITIES

➤ <b>Sponsoring</b>	Government of Pakistan
➤ <b>Execution</b>	Water & Power Development Authority (WAPDA)
➤ <b>Operation &amp; Maintenance</b>	Water & Power Development Authority (WAPDA)
➤ <b>Concerned Federal Ministry</b>	Ministry of Water & Power, GoP

### ENVIRONMENT IMPACT ASSESSMENT

➤ No. of villages affected	32
➤ No. of households / families affected	4228
➤ Population affected	30,350
➤ Agricultural land submerged	2660 acres
➤ Length of KKH submerged	100 km
➤ Length of KKH relocated	140 km
➤ Prehistoric rock carvings	33000 Nos.
➤ Infrastructure	Electricity Lines, Roads etc.
➤ Total land to be acquired	37,419 Acres
	(Private Land = 18,014 Acres)
	(Govt. Land = 19,405 Acres)

- Nine Model Villages with all the amenities shall be built for resettlement of the affectees.
- Selected important rock carvings shall be displayed in a museum in Chilas others shall be preserved in situ.
- Resettlement and Environment management plans have been prepared on the international norms.

## MAIN PROJECT IMPLEMENTATION

Implementation / construction activities of main project shall commence in 2012-2013 and completion is envisaged in 2020-2021. Implementation of the main project has been divided in 5 Lots as discussed below:-

Lot No.	Description
LOT-1	Concrete Dam and Related Structures including Diversion Tunnels and Permanent Access Bridge. (Local Rs.87680 + Foreign Rs.58480 = Total Rs.146160 million)
LOT-2	Underground Power House Works and Related Structures (Left and Right Banks) (Local Rs.40960 + Foreign Rs.13840 = Total Rs.54800 million)
LOT-3	Hydro-Mechanical Equipment and Hydraulic Steel Structures (Local Rs.3360 + Foreign Rs.30400 = Total Rs.33760 million)
LOT-4	Power Plant Generation Equipment (Left and Right Bank) (Local Rs.8240 + Foreign Rs.74160 = Total Rs.82400 million)
LOT-5	Electrical High Voltage Equipment and Power Plant Electrical Equipment (Left and Right Bank) (Local Rs.8720 + Foreign Rs.76320 = Total Rs.85040 million)

## GOP'S APPROVALS

- Main PC-I of Diamer Basha Dam Project for Rs. 894257 million with F.E.C Rs. 312943 million was approved by ECNEC on August 20, 2009.
- PC-I (Part-1) for land Acquisition and Resettlement was approved by ECNEC on November 06, 2008 for Rs. 60000 million with F.E.C Nil. Its cost is included in the Main PC-I.
- PC-I for KKH By-pass, Shatial-Thore Nullah to Existing KKH was approved by ECNEC on August 20, 2009 for Rs. 3844.432 million with F.E.C Nil. Its cost is also included in the Main PC-I.
- Revised PC-I of Thakot bridge was approved by CDWP on June 08, 2010 for Rs. 647.000 million.
- Diamer Basha Dam Project was approved unanimously by Council of Common Interests (CCI) on 18.07.2010 for National Consensus.

## CONFIDENCE BUILDING MEASURES

- A Vocational Training Institute (VTI) has been setup in Chilas which shall provide training to the locals in different trades so that locals shall be employed by the contractors for Main Project.
- Wapda shall up grade three (03) schools, three (03) hospitals in different areas of Gilgit-Baltistan and a Cadet College in Chilas, Establish a Trauma centre and Gilgit Scout Wing for security purpose and convert Khapku Fort into Museum, provide financial assistance for Polo Team.

## **BENEFITS OF THE PROJECT**

- 8.1 MAF Gross storage and 6.4 MAF Live storage of water will be available for supplementing irrigation supplies. Weighted annual value of storage water worked out as Rs.50,824 million.
- This reservoir would act as silt trap, which in turn would have direct effects on existing and proposed reservoirs on Indus downstream of Diamer Basha Dam Project.
- Enhance the potential life of Tarbela reservoir by 35 years.
- Water impounded by reservoir shall help to mitigate downstream flood losses. The avoidance of flood damages cost would be even much more than Rs.2, 331 million per annum.
- Designated installed capacity is 4500 MW with an average annual energy generation of 19,208 GWh. The total average annual power benefits shall be Rs.106,604 million.
- The releases from DBD reservoir shall be utilized at different proposed dam sites between Diamer Basha and Tarbela reservoirs for production of cheap hydroelectric power.
- Power transmission to be developed under this project will provide corridor for the proposed projects like Dasu, Pattan, Bunji etc. in Gilgit-Baltistan and Khyber Pakhtunkhwa.
- Employment opportunities (direct employment = 13,561 persons & indirect employment = 2.5 million persons), particularly to the locals during the construction and operation.
- Economic and social development of Gilgit-Baltistan and Khyber Pakhtunkhwa.
- The project will pay back its cost in 8 years.

## **FINANCING ARRANGEMENTS**

- Asian Development Bank (ADB) Reconnaissance Mission Reviewed the Project during March-April, 2009. The Bank Aide Memoire had been approved by Wapda and GoP. ADB's pre-condition of National Consensus for funding DBDP is fulfilled as Council of Common Interests (CCI) unanimously approved DBDP on 18.07.2010. ADB in a meeting held on 24.05.2011 has been agreed as follows:-
  - 1) ADB Pakistan Mission would send a Concept Paper to WAPDA.
  - 2) ADB would send a "Loan Appraisal Mission" for Diamer Basha Dam Project at the earliest.
  - 3) ADB would also allocate project Number to DBD Project and communicate to WAPDA in June 2011.
- Islamic Development Bank (IDB) is agreed for partially financing DBDP by financing US \$ 100 million. Wapda approached US Aid for help in financing the project.

- US Aid has agreed to finance / reimburse a part of the expenses made by Wapda so far. US Aid has also assured grant of US \$ 200 million each year for the project. Project proposal has been taken up with the Saudi Fund for Development. Japan Bank of International Cooperation (JBIC) has also been approached for the arrangement of financing in construction of DBDP.
- During the visit of honorable President of Pakistan, the Kuwait Fund for Arab Economic Development has been agreed to finance the project. Wapda has requested Economic Affairs Division (EAD) GoP to approach the Kuwait Fund for lending of their technical & commercial group for appraisal of the project.
- Rs.15 billion (Wapda self financing = Rs.10 billion & GoP funding = Rs.5 billion) have been allocated by GoP for financial year 2010-2011.
- The Economic Coordination Committee (ECC) of the Cabinet considered the summary dated 6<sup>th</sup> January, 2011, submitted by Ministry of Water & Power on **“Proposal for Funding of PKR 20 Billion for Diamer Basha Dam Project”** and allowed WAPDA to raise funds of Rs.20 billion (with tax exemption) under Government of Pakistan guarantee from the market through TFCs/SUKUKs to be repaid by WAPDA from its own resources.
- WAPDA is negotiating for loan from Employees Old Age Benefit Institution (EOBI).

## **CURRENT STATUS OF PRE-CONSTRUCTION OF MAIN CONTRACTS**

Numerous pre-requisite activities regarding development of infrastructure are underway. Current status of these activities is as under:-

### **Construction of bridge at Thakot on Indus River**

- Thakot bridge is complete.

### **Land Acquisition**

- Priority Land Acquisition has started.
- Economic Coordination Committee (ECC) of the Cabinet, GoP on 29.06.2010 has approved the revised Compensation Rates recommended by Ministerial committee constituted by Prime Minister. Federal Cabinet in its meeting held on 14.07.2010 has endorsed decision of the ECC of the Cabinet, resultantly Land Compensation Cost has increased from Rs.26.4 billion to Rs.41.8 billion.
- WAPDA has provided funds to the tune of Rs.3050 million for payment of Compensation to affectees in Gilgit-Baltistan. Distribution of compensation to affectees in Project Colony & Composite Model Village at Harpan Das is in progress.
- Rs. 92 million transferred to DCO Kohistan for acquisition of land in Khyber PakhtunKhwa.
- One Window Compensation Cell has been established by Deputy Commissioner, Diamer.

### **KKH Relocation**

- 100 km of KKH will be submerged due to impounding of reservoir, this portion is to be re-located on higher elevation. The Executive Committee of the National Economic Council (ECNEC) in its meeting held on 26.05.2011 considered the proposal for change of Executing Agency from NHA to WAPDA and took the following decision:
  - a) NHA will execute the subject project on the same approved cost and design/specification by completing the requisite re-tendering process within weeks.
  - b) WAPDA will transfer the requisite funds to NHA. Minister for Water & Power will discuss with WAPDA and NHA to chalk out time schedule to ensure completion of the project on fast track basis.

### **KKH Up-gradation**

- NHA is executing this work.

### **Project Colony in Thor Valley**

Wapda has planned construction of Project Colony in Thor Valley, Chilas, Distt. Diamer through 15 packages. 09 packages are awarded and remaining 06 in pipeline.

### **Composite Model Villages**

The construction work of Composite Model Village-II (Harpan Das).is planned through 7 contract packages. One package has been awarded and due to re-planning of Composite Model Village-II, processing of further packages is being held up.

### **Ceremony for Commencement of Project**

Preparation for Ceremony for commencement of Diamer Basha Dam Project is in progress.