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USAID ENERGY POLICY PROGRAM

STEP-I DUE DILIGENCE REPORT DIAMER BASHA MULTI-PURPOSE DAM PROJECT

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STEP-I DUE DILIGENCE REPORT DIAMER BASHA MULTI-PURPOSE DAM PROJECT

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1. INTRODUCTION

The goal of the USAID energy program in Pakistan, focusing on the power sector, is to support the Government of Pakistan (GOP) in adding power generating capacity available to the National Grid, decrease losses in delivery of electric power to customers and increase cost recovery from them. This will be achieved through investment in infrastructure, support to institutional reform through technical assistance and promotion of new technology.

The program is being implemented in three phases. Phase I supports power plant repairs and efficiency improvements, replacement of existing tube well pump motors with more efficient power saving models, and technical assistance to help reform the power distribution companies. Phase II funds two multipurpose dam projects to generate electricity, store water and control flooding. Phase III aims to support GOP in its longer term national development plans by making available funds to provide and promote investments in high-priority, high visibility major energy projects. It will also look at new technology initiatives in a way that encourages IFI, other donors and private sector funding and engages all relevant USG agencies (e.g., OPIC, EXIM). Technical Assistance will also be provided to develop institutional capacity and support energy sector reforms that will encourage public and private investment in the sector.

Energy projects under Phase III will be chosen based upon:

1) Technical feasibility

- a) Will the proposed intervention actually contribute significantly to meeting Pakistan's energy and other vital development needs, while improving the country's energy security?
- b) Does the project use domestic or imported resources?
- c) Does the project result in energy diversification?

2) Cost

- a) Is the cost reasonable?
- b) Can the project's full financing be arranged in a timely fashion?

3) Overall effect

- a) Is the project high visibility?
- b) Is it a high priority for Pakistan?
- c) Will the power generated and other benefits be worth the time and money?

As part of the assistance to be provided by USAID under Phase III, WAPDA, the GOP's implementing agency for the project, has requested funding support to continue work on the 4,500MW hydropower station which is part of the multipurpose Diamer-Basha Dam project.

All projects identified for USG support undergo a two-step Due Diligence process. In Step 1 existing documents and other information is reviewed for adequacy to apply selection criteria and make a recommendation to USG. Step 2 is an in-depth analysis of any additional information required for a USG decision on the project.

USAID tasked AEAI to conduct the Step 1 Due Diligence and confirm facts from WAPDA, evaluate whether the project meets the USAID criteria described above, highlight any

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particular risk or concern that needs to be mitigated or addressed and to make a recommendation.

2. SUMMARY

Support to the Diamer-Basha project will achieve the stated goal of USAID energy assistance to increase power generation capacity available to the National Grid. Hydropower generation will increase by 70% and at 4,500 MW it will be the largest power station in the Country, 1,000 MW more than Tarbela- the current record holder. The project's added benefit to agriculture and flood control makes it more beneficial for the national economy than any other project in Pakistan and it will be an enduring symbol and a substantive statement of USAID assistance to Pakistan which is currently reeling under a worsening energy crisis and has recently been devastated by floods.

The project is technically viable, its cost is reasonable and its overall effect will be monumental.

The Diamer-Basha Multipurpose Dam project will contribute significantly to meeting Pakistan's energy and other vital development needs and improve the country's energy security. Most of the resources needed and to be used, in terms of land, materials and manpower will be local. Most equipment, machinery, consultants and construction expertise will need to be imported. In terms of money, estimates are that 65% cost will be in local currency while 35% cost will be in foreign exchange. On completion, the contribution of hydro (renewable) power to the National Power Grid will rise from its current less than 30% to 70%.

The Government of Pakistan is hopeful that financing for the project will be forthcoming from international loan giving agencies, donor countries and government allocation through Public Sector Development Programs (PSDP). The Asian Development Bank (ADB) has shown interest to take a major role in funding the project and USAID's involvement is expected to encourage others to follow suit. WAPDA is confident that it will get the more than \$1 billion needed on average over life of project and that there will be no delay owing to lack of funds. There are plans to float a project specific Bond if felt necessary but it is early to comment.

The project has very high priority in Pakistan and will gain world-wide visibility when formal ground breaking is announced by the Contractor to be selected. The project will stimulate the local economy during construction and contribute to the national economy when operational. It will be well worth the time and money spent.

USAID involvement will demonstrate its continuing commitment to Pakistan in the manner that assistance was provided to create WAPDA (modeled on the TVA) in 1958, the support provided for the Indus Water Treaty (1960) and its successful implementation culminating in the Tarbela Dam project (1976), the effort that introduced Pakistan to efficient combined cycle power at Guddu (1986), the substantial and sustained support to improve power utility services and the creation of a market for IPPs (1994) in Pakistan.

WAPDA, the GOP implementing agency for the project, has spent Rs 4.7 billion (\$55 million) ¹in development costs since September 2000, when ECNEC approved Rs 900 million

¹ *The rate of \$1 = Rs 85 is used here while in GOP PCI of 2009, \$1 = Rs 80*

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(\$10.6 million) for the project and WAPDA mapped the area by aerial survey. Engineering studies started in 2002. In 2007 ECNEC approved additional almost Rs1.7 billion (\$20 million) for detailed design and a separate PC I (project concept, parameters, objectives and budget approval document) for Rs 60 billion (\$700 million) was approved in 2008 for Resettlement. Based on positive results and progress, in 2009 the Government approved the main PC I for construction of the project for a total cost of almost Rs 950 billion (\$11.2 billion). Financing for the project is expected from international loan giving agencies, donor countries and government allocation through Public Sector Development Programs. WAPDA's allocation, procurement, disbursement and accounting are pursuant to procedures that are well established and are accepted by leading international funding agencies, including USAID.

Of the money spent to date, more than half has gone towards technical studies. This includes surveys, investigative drilling, laboratory analyses, design modeling and paying engineering consultancy costs. Firms from USA, UK, Germany and Canada have worked in support of local engineering concerns to study and design the project. The remaining funds have been spent on preparatory works including access to site and acquisition of land.

The project is now ready for tendering to select consultants for managing the procurement of contractors and for overseeing construction of the project. In preparation for this activity, the area has to be isolated from public and made ready to accept crews, equipment and machinery in the remote valley. WAPDA has to first relocate the main public road, the Karakoram Highway (KKH), passing through the site area, build 'model' villages to relocate people, build offices, labs, accommodation units, stores and small hydropower stations close by to power the site besides other many needed facilities. This is estimated to take at least two years and cost \$275 million. The construction of the Dam and Power Plant will take another 8 years and final cost of project will exceed \$11 billion.

WAPDA has requested USAID support to ease a financing constraint and to demonstrate to other financing agencies that the project is credible and will be built. An immediate allocation of funds for the Diامر-Basha Project from USAID will enable WAPDA to accelerate work and strengthen its case to secure commitment for life-of-project funding that is under consideration at the ADB Board meeting in early May 2011.

3. RECOMMENDATION

USAID approve an immediate disbursement to WAPDA for costs incurred on the project and for work in process to relocate the KKH, to build work and living facilities at site, to construct model villages for displaced locals and to install hydropower generation facilities that will provide electricity to the project.

The amount and schedule of disbursement may be determined in consultation with WAPDA.

To ensure appropriate use of these funds, USAID should also approve effort under the Step 2 Due Diligence of the project:

- 1) To conduct a more detailed investigative audit of project related activities.
- 2) To monitor and verify that procurement continues to be transparent and competitive.

The \$\$ figures in the PC I have been used as basis for estimates here and all figures are rounded off

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3) To confirm that progress is being made at site.

This Step 1 Due Diligence Report and recommendation is based on perusal of project studies and their review reports by international experts, the Government's PC I document, meetings with WAPDA officials including especially the Chairman and his confident fervent insistence that USAID investigate to satisfy itself of the merits of the case and his assurance of WAPDA's commitment to continue to meet best international practice and standards in execution of this project.

4. PREAMBLE

The division of the sub-continent in 1947 was not a pleasant event as Pakistan and India went to war over Kashmir and relations remain sour to this day. Another contentious issue that arose soon after partition between the neighbors, and which could have made matters worse, was the allocation, sharing and use of water. Water was the life blood of the predominantly agricultural population and economy of both nations. However, the international community was cognizant of this issue and took steps to resolve it. Through international mediation and support the matter was amicably resolved by the Indus Water Treaty in 1960. It involved construction of many large water and irrigation projects and completion of the Tarbela Dam in 1976 was the final element of the water sharing plan. Since then populations have practically doubled on both sides of the border and disputes over water have again surfaced and are gaining intensity.

Knowledgeable analysts predict worsening relations between Pakistan and India over water. To avoid the foreseen situation where going to war for survival of its population for lack of water becomes the only solution, Pakistan determined that it has to take steps towards water security and improved water management. After due deliberation, consultation and discussions with stakeholders and international development partners, it has been clearly established that a key element in achieving this objective is the construction of the Diamer-Basha Dam.

The initial justification for the project was to increase storage and improve management of water for flood control and irrigation. However, energy shortage has made the power plant just as vital a need and it greatly improves the economic and financial feasibility of the project. There is a trend of increasing intensity of drought and floods, possibly due to climate change, and early completion of this project would provide capacity and flexibility in controlling the effect of droughts and floods. Whereas effective flood control will be demonstrated as and when unusual river flows are recorded and the benefit from improved irrigation could become visible in due course since annual rainfalls influence agricultural outputs, the production and sale of electric power from the project will immediately begin to pay back the investment.

5. BACKGROUND

No large hydropower capacity has been added in Pakistan since the Tarbela Power Station was commissioned in 1976. Hydropower was then the main contributor of electricity to the National Power Grid and the contribution of hydropower has gone down from about 70% to 30% since then. Meanwhile dependence has grown on thermal generation but thermal power generation has been unable to meet growing electricity demand owing to increasingly unaffordable cost of fuel and ensuing shortages of both furnace oil and natural gas. Pakistan has to immediately take steps that will reduce dependence on imported oil

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and make use of locally available renewable resources. A few small hydropower schemes have added about 320 MW but the expected shortfall in power production during coming years is expected to rise to 5,000 MW.

A growing population and a growing economy dependent on water storages capacity that is gradually and steadily reducing over the past 35 years is making Pakistan a water scarce area. Per capita use of water in Pakistan has dropped from over 5,000 cubic meters in the early 1950s to less than 1,200 and is projected to go below 1,000 cubic meters, the threshold of water famine, by 2017. Irrigation water availability is reducing owing to the silting of existing reservoirs while Pakistan's economy continues to earn as much as 65% foreign exchange earnings from export of goods and commodities dependent on agriculture. Urgent measures have to be taken not only to sustain existing irrigation needs but to enhance water supply for agriculture.

Projections based on data from 2007, by which time the three main reservoirs at Tarbela, Mangla and Chashma had lost over 5 million acre feet (MAF) of storage capacity due to sedimentation, show that by next year (2012) the loss will increase by another 15% and by the year 2017, this loss would be more than 6.6 MAF, almost equal to the original combined capacity of Mangla and Chashma reservoirs. The sustainability of irrigated agriculture in Pakistan is already in serious jeopardy. Storage to replace lost capacity is urgently needed. The creation of water storage capacity at Diامر-Basha is vital for Pakistan.

The population of Pakistan is growing and power supply availability is getting worse by the day as demand greatly exceeds supply, especially at the peak. The energy and water deficient economy is struggling for survival. Construction of the multi-purpose Diامر-Basha Dam that will make available over 6MAF of water and add power generation capacity of 4,500 MW is the safest, most financially viable and best suited option to meet this need.

Additional benefits that accrue from construction of the Diامر-Basha Dam are (1) downstream hydropower schemes (at Dasu, Pattan and Thakot) become viable as water release is regulated in the Indus, (2) life of the Tarbela Reservoir increases due to reduced siltation and (3) water release coordination between the two reservoirs will make better use of water for power at the Tarbela and Ghazi Barotha power stations downstream of Basha while meeting seasonal irrigation water needs in the plains. Many other spin-off benefits from such a project will also invariably accrue to the national economy.

6. THE PROJECT

The site of the proposed project was considered suitable for construction of a dam for storing water and for power generation during many studies undertaken over the years in evaluating the hydro power potential along the Indus River. The first serious Conceptual Feasibility of the project was evaluated by Monenco, Montreal Engineering Consultants under CIDA grant funding in 1984. WAPDA then went through a prolonged evaluation and assessment process with local agencies, provincial governments, funding development partners and at all levels of the Federal Government to establish the need for this dam. As other technically and financially competing options were either constructed or discarded owing to changing circumstances, the Diامر-Basha project gained favor and in September 2000, ECNEC approved Rs 900 million to study the project. WAPDA initiated an international competitive bidding process and in 2002 selected NEAC Consultants (a consortium of NESPAK and ACE from Pakistan, HARZA from USA and Binnie & Partners from UK) to conduct the Feasibility Study. The consultant's report was completed in 2004. The

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Feasibility Report, Detailed Engineering Design and Tender Documents were then subjected to a critical review by another consortium of international consulting firms led by Lahmeyer International from Germany in 2008 and the review added more detail to design and plan.

The project is technically sound, financially feasible, environmentally acceptable and has received unequivocal, comprehensively encouraging positive endorsements by various internationally recognized engineering firms in keeping with the latest and best international engineering practice. The PC I document for the project was approved by ECNEC in August 2009 for overall cost of Rs 894,257 Million (equivalent to \$11,178 Million @ Rs 80=\$1). Project completion time is 10 years and there are explicit provisions for settling the affected people in communities minimizing impact on their enduring way and improving quality of life.

The project has continued to assume higher and higher priority as oil prices rise and dam construction in India on rivers that flow to Pakistan escalates. Funds are required to maintain momentum of effort that is now close to awarding an internationally tendered contract for consultants to act as Owner's Engineer for construction of the project. As per normal practice, the Owners Engineer will provide the final construction design before tendering for construction.

7. TECHNICAL FEATURES

The project site is on the Indus River, as it flows East to West 315 km (195 miles) upstream of the Tarbela Dam and about 180 km (113 miles) below the town of Gilgit or about 40 km (24 miles) downstream of Chilas, the district headquarter of Diamer in Northern Areas, now Gilgit-Baltistan. Geographically, the proposed project is located between Longitude 73° to 75° E and Latitude 35° to 36° N and bounded by districts of Kohistan, Diamer, Gilgit and Chitral lying in south, east, north and west, respectively. The dam will connect Gilgit-Baltistan and Khyber Pukhtunkhwa, with the right (northern) abutment in Gilgit-Baltistan while the left (southern) end of the dam will be in NWFP. The Dam will be constructed of compacted concrete and will be just over 270 meters high with crest length of almost 1 km – 50 meters higher than the Hoover Dam and more than twice as long. The reservoir of water created up the narrow valley will be 100 km long – same as Lake Mead when full but with less than a third the capacity to hold water. Mean annual discharge of Indus River at the site is 50 MAF. The reservoir will hold just over 8 million acre-feet and make available for release 6.4 million acre-feet of water each year – a million acre feet is more than 1.2 billion cubic meters or 1.2 trillion liters or about 500,000 Olympic swimming pools. One acre foot of water covers an acre, about the size of a football field, to a depth of one foot

The dam will have two similar power houses in caverns to be excavated, one on each bank, with total installed capacity of 4,500 MW – more than twice that at Hoover Dam. It is expected that annual power produced will be 18 Billion units – more than 4 times produced at Hoover Dam and enough to meet the needs of almost 4.8 million households in Pakistan (assuming use of 3,000 units a year and 20% loss). 500kV Transmission Lines will carry the power down the Indus valley to the National Power Grid.

It should be kept in mind that the current average cost of sale of power by PEPCO to customers is \$0.10 a unit and at least 20% of the energy produced is lost in the PEPCO system - due to technical and administrative inefficiencies - a fact that NEPRA, the regulator of the power sector, has not addressed despite being responsible for the sector more than 13 years now. By regularly approving increases in tariff but not addressing inefficiencies in

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service, NEPRA fails in its primary purpose to protect the customer's interest. The USAID funded PDIP is working with power distribution companies (Discos) to improve this situation.

8. JUSTIFICATION

The estimate of power demand in Pakistan is about 17,000 MW and is expected to grow to 35,000 MW before 2020. The present installed generation capacity is insufficient and drastic load management/shedding is the only way to maintain integrity of the National Power Grid System. With the gap between supply and demand continuously increasing, generation capacity has to be added very quickly. The estimated deficit will exceed 5,000 MW in coming years and adversely impact GOP plans for economic development.

Electricity from thermal power plants is becoming unaffordable due to rising oil prices. Efforts to develop other renewable resources, including wind power, will not add the quantum of capacity needed. Developing comparatively cheap and renewable hydropower on the Indus River in Northern Pakistan is the only option. The Diamer-Basha Dam Project was identified as the first option to pursue in the 'Hydro Electric Inventory Ranking and Feasibility Studies' carried out in the early 1980s and the Project is one of the major components of WAPDA's Vision 2025 Program planned for implementation. This project is the highest priority of the GOP and is proposed to be implemented with finances arranged from the international loan giving agencies, donor countries and the government's own resources by allocation through Public Sector Development Program.

Based on approval of the 'Vision 2025 Program', a Feasibility Study of the Diamer-Basha Dam was undertaken and detailed 'Engineering Design, Tender Drawings/Documents' have also since been completed. All studies and investigations have been reviewed by International Panels of Experts from time to time. The detailed design and tender documentation of the project cover all aspects of the project, including but not limited to: geotechnical investigations; fundamental/detailed design studies including state-of-the-art analysis and computer modeling techniques, particularly for the dam design; and preparation of bidding documents based on the World Bank and Asian Development Bank guidelines. The project is now at the stage where its implementation needs to be undertaken on priority basis.

The project is justified for the following two reasons:

- 1) Power shortages are becoming a major reason for decline of national economy.
- 2) Depletion of existing water storage has put national food security at risk.

9. ENVIRONMENT & RESETTLEMENT

WAPDA has a long and varied experience with environmental and resettlement issues based on lessons learnt during construction of the Mangla Dam in the 1960s, the Tarbela Dam in the 1970s and more recently, while securing land and satisfying the concerns of environmental NGOs supported by a media led public support for credible scrutiny during construction of the canal feeding the Ghazi-Barotha hydropower project.

For this mega project, the Chairman WAPDA has created an office of Land Acquisition and Resettlement (LA&R) under a General Manager and it is staffed by qualified specialists covering various related disciplines. They are engaged in finalizing the comprehensive Land Acquisition and Resettlement Plan for Diamer-Basha Dam Project in accordance with

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Safeguard Policies of International Financial Institutions, specifically, the Asian Development Bank. A two day Stake Holders Seminar earlier this year has given confidence to locals and donors and set the stage for future activities. A report on the Seminar is at Annex 1.

The local community has already started benefitting from the project as the LA&R was active during the recent floods in the valley and aided affected families in the Diامر District.

The project requires about 37,500 acres of land of which just more than half is Government owned while about 18,000 acres is private land. The reservoir lake will displace less than 30,000 people living in about 30 villages in the roughly 30,000 acres of land to be submerged of which less than 10% or 2,700 acres is under cultivation.

There was expected opposition from locals when initial investigative activities started at site but since then, WAPDA has paid Rs 700 million (over \$8 million) to the regional government for compensating displaced locals from the site for building offices and project construction camps. The land compensation rates were determined by a 3 member Minister's Committee and at the time there was general feeling that too much money was being paid (cultivated land @ \$75,000/acre and barren land @ \$14,000/acre) but WAPDA feels it was money well spent as locals are now welcoming and looking forward to the project.

The project plans to build 3 'model' villages and provide avenues for economic activity for the displaced families. A first step is to enroll and train affected locals in trades to be needed during next ten years construction of the project. The first course is already underway and 60 are being trained.

The other environmental concern relates to ancient rock carvings and the mitigation measure is to relocate them - about 3,000 - to a museum to be built in the area. A Cultural Impact Assessment was conducted by Dr. Hauptmann in collaboration with the Heidelberg Academy of Sciences and Humanities of Germany and their recommendations are part of the Resettlement Action Plan.

The benefit to the local environment by creation of the lake and vibrant, thriving townships inhabited by employed skilled and semiskilled workers will bring economic activity besides introducing the benefits of access to health and education to the remote region. The lake will be a positive addition in the otherwise arid mountain region for flora and fauna and also promote tourism in the picturesque hilly landscape. There are few artificial or natural lakes in Pakistan and the new lake up north will be a welcome addition to the Pakistani landscape.

10. COSTS, SCHEDULE & NEEDS

The Asian Development Bank (ADB) reviewed the project in 2009 and is expected to assume role of lead financial supporter of the project. Project procurement documents are being modified to meet ADB requirements and the project is up for consideration in the ADB Board Meeting scheduled for May 2011.

GOP cost estimates allocate over Rs 93 billion (\$1B+) as Indirect Costs which include Rs 64 billion for procuring land, resettlement of displaced persons and environmental mitigation measures, Rs 24 billion to relocate about 100km of the Karakoram Highways; and Rs 5

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billion to build a project township. It is expected that manpower at site will peak at 12,000 while operating staff, post project completion, will be about 1,200.

The actual project is estimated to cost just over Rs 400 billion (\$5B), including Rs 150 billion (\$1.8B) to build the dam, tunnels and related works, Rs 60 billion (\$0.7B) for underground works and structures, Rs 34 billion (\$0.4B) for hydraulic steel structures and mechanical works, Rs 85 billion (\$1B) for the power plant and another Rs 85 billion (\$1B) for all electrical equipment and switchgear.

Rs 25.5 billion (\$300M) are set aside for Engineering and Management and Rs 1.3 billion (\$150M) for contingency. Other costs like escalation and Interest during Construction is estimated at Rs 384 billion (\$4.5B) bringing total project estimated cost to over \$ 11 billion. Estimates are that 65% costs will be in local currency while 35% is the foreign exchange component of the total project cost.

Costs paid: breakdown of expenditure to date is as follows:

	Description	\$ Million
1	Feasibility Studies	5.390
2	Engineering Design & Tender Documents	21.117
3	Detailed Design & Project Site Preparation	5.452
4	Acquisition of Land & Resettlement	26.775
	Total	58.734

Of the almost \$59 million spent by WAPDA less than half has been paid to secure rights to the project site while most has gone to pay for site investigative works, engineering design, feasibility studies and for basic infrastructure at site to enable the work done so. Details are attached as Annex 2.

WAPDA has started process for construction of access roads, site offices, residential facilities and to relocate portion of the main public road, the KKH that passes through the project area. This is expected to cost over \$230 million and another \$40 million is needed to start construction of identified small hydropower stations at sites close by to provide power during construction. The total amount spent and to be invested in this and coming year adds up to \$330 million and most of this cost will be in local currency with some not very significant foreign exchange component.

This is the current installment of funds required that WAPDA seeks to move forward on the over \$11 billion project.

Holding to a schedule and timely completion of activities is essential to smoothly tie in the myriad activities that have to be done in parallel. Chairman WAPDA quotes \$4 million a day as cost of delay. While the site is being readied for construction the consultants will be hired who will draw up the final design and procurement documents to select a contractor. The site has to be ready to avoid delay in contractor mobilization.

A breakdown of the cost of work planned for this year (about \$90 million) and the coming year (\$140 million) is given below:

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	Description	\$ Millions
1	Project construction camp at Thor (excludes cost of land)	47
2	Relocating part of KKH	70
3	Construction of Model Village I (Thak Das)	40
4	Construction of Model Village II (Harpan Das)	30
5	Construction of Model Village III (Kino Das)	30
6	Consultancy Cost	6
7	Pay & Allowances	3
8	Field Work	3
9	Equipment & Vehicle etc.	2
	Contingency	3
	Total	234

Electricity will be needed at site before work can start. The most economic and feasible option has been chosen following survey, study and selection of three sites to construct small storages and hydro power plants that must be made operational as work builds up at site. The estimated cost is \$40M. Post completion of the dam, the small hydro plants will continue to serve the growing 'model' villages for resettled locals and the many habitats that will invariably spring up close to this major activity in the remote site far up the Indus valley.

	Description	\$ Million
1	15 MW Hydropower Station at TangirNullah	30
2	3.6 MW Hydropower Station at Thor Nullah	7
3	2.0 MW Hydropower Station at ThakNullah	4
	Total	41

Future cost projection: Estimates in million dollars (\$M) for procurement, construction, fabrication, erection, testing and commissioning of the project by entities to be selected through 5 internationally bid and competitive procurement procedures are:

	Description of work	Cost	years
1	Concrete Dam, Structures including Diversion Tunnels & Access Bridge	1,827	9
2	Underground Works and Structures	685	6
3	Hydro-mechanical Equipment & Structures	422	8
4	Power Plant Generation Equipment	1,030	7
5	High Voltage Equipment and Power Plant Electrical Equipment	1,063	7
	Total	5,027	

(63%) Most of this estimate will be local currency cost while 37% will be foreign exchange cost. Interest during Construction (IDC) and foreign exchange fluctuation/escalation is estimated to cost over Rs 360 billion (\$4.5B) while Resettlement and Compensation costs will be Rs 20 billion (\$250M).

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(Note: there is indication that this last item of cost is expected to increase as the PC 1 approved in 2008 for this activity is under revision)

11. PROJECT FINANCING

The GOP has planned the financing for the project to be achieved through a combination of international lenders, donor countries, and government allocation from the Public Sector Development Program (PSDP). The ADB has shown interest to take a major role in funding the project and it has the capacity and standing with Government and the balance sheet and experience to both lend a significant portion and to act as lead arranger for the balance of debt that is required.

USAID can contribute to work with WAPDA as an 'equity partner' in the project, analyzing and supporting their effort to raise all of the financing credits required for the project. The equity partnership will play a major role in the overall determination of financing sources and uses, analyzing financial credentials, generating least cost financing plans, and planning road shows for WAPDA - with ADB as their lead financial backer.

USAID can also sponsor technical resources required to vet the viability of and the legal and financial services needed to secure project credits. One option is to arrange credit through export credit agencies (ECA), e.g., the US Eximbank. Procurement loans from ECAs could take a subordinated position to the senior debt to reduce their risk and therefore the cost of such loans. Advice and assistance can also be provided for possible debt issuance by GOP to the financial markets in the form of long term bonds. If needed, advice and assistance can be provided to secure involvement of sovereign wealth funds, like from the UAE. Each of these avenues to secure credit may require added guarantees from the lead financier, the ADB or the World Bank (WB) may take a position. This may require another level of technical services expertise which USAID could hire and manage for the equity partnership. The outcome would make a substantial contribution to securing least cost funding required for the project.

The project financing for Diامر-Basha would likely be 'off-balance sheet'. Lenders will want to evaluate the risks that are tied to the project only, and its guarantors. There may be no appetite for a structured financing based on the balance sheet of WAPDA. The existing 'circular debt' and the current account payables situation in WAPDA do not reflect well on its financial strength.

In targeting the total financing sources and uses for the project, it will be very important to tie down how much the Public Sector Development Program (PSDP) can provide in a phased construction plan. The US Corps of Engineers advises the US mission that phased construction of dams in the West are often implemented in the hopes of achieving successful funding stages down the road. Analysis of the scenarios that could call upon a healthier Pakistan economy to contribute greater amounts of PSDP funds in subsequent years should be performed.

Once construction risks are absorbed, the plants is working, and revenue begins to be collected, other financing becomes available. Short term, more expensive construction and bridge loans especially, that may be a part of those mentioned above, should be taken out by longer term loans as soon as possible – all with an eye on the longest tenures possible providing lengthier amortization periods, and that avoid refinancing risks. Once

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stabilization of cash flows is achieved, institutional investors and the financial markets may also be interested.

The matter of gaining Carbon credits was investigated by WAPDA and they have commented that credits are not available for a project of this size. This needs confirmation. The size of the global market is around \$60 billion.

12. EMPLOYMENT BENEFITS

The project will generate considerable employment opportunities and a policy decision has already been taken that locals, generally illiterate but hardy like most in rural areas of the Country, who meet the requirements for a position will have priority when hiring. However, the numbers and skills required will vary during construction and after completion of the Project.

Construction Phase

The construction phase of the project can be divided in the preparatory work and actual construction of the Dam and related structures, including the power plant.

Preparatory works will be clearing and leveling of areas, construction of roads, warehouses, offices, living camps, villages for displaced people and small hydropower plants. The core project will be a quantum leap in sophistication and mechanization for construction of the compacted RCC dam and related structures; excavation of tunnels and caverns for the power house; erection and fabrication of steel installations and heavy equipment; and wiring the entire project for control and operation including a high voltage switchyard with outgoing power lines.

It is expected that all contractors will hire most of their unskilled labor from among the locals. Some semi skilled labor could also be employed from amongst the locals and any local skilled professional willing to work will certainly be a part of the project. WAPDA has even started Training Classes and is making arrangements for appropriate vocational training in Chilas, the district headquarters of Diamer District in Gilgit-Baltistan.

Most semi skilled, skilled and professional workers will have to come from outside of the project area – from within Pakistan and from abroad. An estimate is provided in the table below:

Construction Phase	Unskilled & Semiskilled Labor												Man-Years
	Estimate of labor over 12 year construction of project												
	1	2	3	4	5	6	7	8	9	10	11	12	
Preliminary Works	229	1069	970	843	992	983	497	229	74	0	0	0	5886
Core Project	0	760	1780	6460	8480	8860	9020	8860	7700	5210	4060	3350	64540
Total	229	1829	2750	7303	9472	9843	9517	9089	7774	5210	4060	3350	70426
Workers to be Trained	46	290	372	815	1047	1082	1002	932	785	521	406	335	7633

Operational Phase

When the Dam is built and the power station is operational, the labor mix and requirements at site will change, however, by then a robust and thriving commercial community will also have evolved in the surrounding areas owing to the considerable supply and petty contracting business support needed by the project contractors and the disposable income

THE DIAMER-BASHA (Multipurpose) DAM PROJECT

that will have been spent over a decade by the construction labor force. Indirect employment will get a boost from operation of the completed project.

Spin-off Employment

According to 2008 statistics, there were 233,162 industrial units in Pakistan consuming 17,603 GWh or about 26% of the electricity supplied by WAPDA from the National Grid. These units employed 9.47 million peoples among a total employed labour force of 45.18 million.

Diamer Basha Dam Project will increase generation by 21,525 GWh – most at site and some at downstream power stations at Tarbela, Ghazi-Barotha and Chashma. Assuming the present trend about 20% of this annual generation (or 5,596 GWh) would be utilized by the industry. Assuming 15% conveyance losses, this would deliver 4,756 GWh to customers. Presently, industry is providing employment to 1 person for every 1,800 GWh used per year. By this estimated correlation, the additional annual industrial employment would be 2.64 million people.

Live storage of 6.4 MAF from the reservoir should provide additional 6.15 MAF at canal heads lower down the river. Assuming 44% irrigation efficiency, additional water available for crops will be 2.71 MAF. Based on the average water requirements of 2.21 acre foot (AF) per cropped acre, about 1.23 million acres (MA) additional area could be cropped from this extra water made available. As typical cropping pattern requires 29 man days input per annum in the agricultural sector, this will add work for 100,000 persons a year.

Additional employment under subsidiaries is roughly estimated as 40,000 persons per year. Total estimated individual employment after execution of the project comes to 2.8 million persons per annum as per break-up in Table below: -

Estimated Indirect Employment after Execution of Diamer Basha Dam Project

#	Economy Sector	Estimated Employment Generation			
		Attributing Factor	Project Contribution At Consumer end	Persons/ Unit (No)	Total (No)
1.	Industrial (Additional Generation)	Expansion	4756 GWh ^(a)	1800 KWh ^(c)	2,640,000
2.	Agricultural (Additional Water)	Additional Cropped Area	1.23 MA ^(b)	29 Man-days	100,000
3.	Subsidiaries		-	-	40,000
Total					2,780,000

(a) Assuming improvements and a loss of 15% by then in the 21,525 GWh additional annual energy generation attributable to the project and assuming that 26% of this will be utilized in industry.

(b) Additional cropped area/year.

(c) Energy delivered per person at consumer end.

13. RISKS & ISSUES

Harnessing nature is a risky business since nature is unpredictable beyond what can be inferred from what is historically known, studied and recorded at a certain location. The

THE DIAMER-BASHA (Multipurpose) DAM PROJECT

Indus is fed by streams, glaciers and rains all of which are prone to effects of Global Warming and changing weather patterns. The decision to construct the Diامر-Basha Dam is pursuant to the study and evaluation of such risks by world class experts and these are proposed to be mitigated by the steps that are planned to be taken, by incorporation in the design and construction plan, when building the dam.

Examples of overcoming such risk and successfully harnessing the might of nature flowing through rivers are many. The Hoover Dam in USA was one such project that was built when it was said it could not be built, and it has stood the test of time. More recently, the Tarbela Dam was a similar effort by the international community of engineering experts and despite severe cost over runs, has paid for itself many times over. The road to development exacts a price and Pakistan has determined it has no option but to willingly pay the price of constructing this Dam. It is seeking support from friends to help it travel safely along the challenging road ahead.

The underlying risk of altering nature is to be assessed and mitigated and managed. Every risk will have to be balanced against the mitigating costs and implication on schedule. The overall project risk is guaranteed by the government and people of Pakistan.

Generally accepted risks are given below:

Technical: WAPDA is confident that this is a low risk issue as the subjects of hydraulics, soil investigation, seismic safety, geo-mechanical evaluation, technical calculations, excavation, tunneling and dam design are known and well established sciences supported by robust computer programs. As is the norm, WAPDA has conducted 'potential failure analysis' to simulate the extreme conditions that will eventually lead to failure of a structure and the limits measured are used in design of the dam. Even then unknowns cannot be ruled out and factors of safety and contingencies are incorporated in final engineering designs and implementation plans. The most effective mitigating action to reduce technical risk is to choose wisely when appointing the Consultant and choosing the Contractor.

Financial: The Government hopes to reduce this risk by associating the Asian Development Bank as the lead financing partner in this project. Involvement of the ADB will provide comfort to other international institutions and reduce the perception and effect of Country Risk and accordingly reduce the financing risk for the project. USAID involvement is seen as a first step to reduce the existing financial risk to the project.

Contracting: Chairman WAPDA has assured that there will be no compromise on selection of the Consultant and later, the Construction Contractor. Cost will not be a primary concern. However, the state of the global heavy construction market could influence the appetite for undertaking this complex project. Cost and completion of large projects anywhere in the World is to an extent dependent on state of the industry. For example, delay in start of the Three Gorge Dam in China yielded below estimate bids for the Ghazi-Barotha Project in Pakistan and many bids were received. Pakistan could pick and choose. The sooner Consultants are selected to start working on the procurement of Contractors, the more certain the project will become. Pakistan has no option now but to build the project. The sooner they start, the clearer the picture, the more the certainty and lesser the risk.

Delays: Cost, and therefore the success, of a construction project is highly sensitive to time. Lack of funding commitments and failure to secure the site early on are two reasons that

THE DIAMER-BASHA (Multipurpose) DAM PROJECT

costs have gone up significantly for the project. Following approval of the PC I for Resettlement in 2008, WAPDA wanted to move to construct facilities while firming up the project PC I. Lack of funding support, political wrangling and delays in approvals caused the schedules to slip. WAPDA feels the project has lost 4 years and cost estimates may still change. Timing uncertainty and risk of delays will exist till the contract for construction is signed. As mentioned earlier also, the Chairman WAPDA has put this cost at \$4 million per day.

Political: The Diamer-Basha Dam is located in a remote area well known for its rugged terrain and the fiercely independent and militant inhabitants. Armed conflict over a family or tribal dispute is common. Construction of the dam will introduce many 'alien' interventions to the remote region. WAPDA is aware of such issues and concerns and is hoping to mitigate the risk through early involvement of socially sensitive programs. The participation of locals and the proceedings and results of the LA&R stakeholders seminar (Annex 1) is an encouraging sign. The fact that the project covers both the Gilgit-Baltistan and the Khyber-Pukhtunkhwa area may stimulate effort to gain benefits and score political points but so far no contentious issue has surfaced. WAPDA is aware of this reality and proposes to satisfy all parties by dividing the construction of the many project related facilities in both areas.

An issue that will need to be addressed is the matter of construction of the High Voltage Transmission Line to evacuate power from the Dam site to the National Power Grid – a few hundred kilometers away. Construction of Transmission Lines is under purview of the National Transmission and Dispatch Company (NTDC). Some collaborative agreement, allocating responsibilities and consequences, will need to be arranged and signed between WAPDA and NTDC to ensure that the line is there before the power becomes available.

USAID review of this Report will determine Step 2 Due Diligence for the Project

Annex 1

(Step 1 Due Diligence)

PAKISTAN WATER AND POWER DEVELOPMENT AUTHORITY



TWO DAYS STAKE HOLDERS SEMINAR ON LAND ACQUISITION AND RESETTLEMENT DIAMER BASHA DAM PROJECT

(JANUARY, 6-7, 2011)

AT

**WAPDA ADMINISTRATIVE STAFF COLLEGE,
ISLAMABAD**

LAND ACQUISITION AND RESETTLEMENT WING

**PROCEEDINGS OF TWO DAYS STAKE HOLDERS
SEMINAR ON LAND ACQUISITION AND RESETTLEMENT
DIAMER BASHA DAM PROJECT**

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TWO DAYS STAKE HOLDERS SEMINAR ON LAND ACQUISITION AND RESETTLEMENT DIAMER BASHA DAM PROJECT

1. INTRODUCTION

A two days awareness seminar was conducted during January 06-07, 2011 for all stakeholders of Diامر-Basha Dam Project. The seminar envisaged to sensitize all concerned about the details of the project and to discuss various issues in respect of Land Acquisition, Resettlement and restoration of livelihood of the Affectees. The seminar aimed at providing an opportunity to the stakeholders to express their views freely and present valuable suggestions for the execution of Diامر-Basha Dam Project of national importance.

DAY - 1: (JANUARY 6, 2011)

2. PROCEEDINGS

2.1 Participation

A two days stakeholder's seminar on Land Acquisition and Resettlement was held at WAPDA Staff College, Islamabad on 06th & 07th January, 2011. Among the invitees were all the stakeholders, prominent amongst those included Members of Legislative Assembly (MLAs) from Gilgit-Baltistan, Minister and representatives of Government of Gilgit-Baltistan, Leader of the Opposition (Gilgit-Baltistan Assembly), Ulemas, Members of Dam Action Committee, representatives from National and Local NGOs, members of Civil Society and officers of all concerned Government Departments. The seminar was inaugurated by the Chairman WAPDA. Her Excellency, Ms Robin Raphel, US Ambassador to Pakistan and Mr. Rune Stroem, Country Director, Asian Development Bank were the Chief Guests. At the Opening Session held on 6th January, 2011, Haji Gulber Khan, Minister for Health, Government of Gilgit-Baltistan and Mr. Bashir Ahmed Khan, Lear of Opposition for Gilgit-Baltistan Assembly were also present as Guest of Honor.



The seminar was inaugurated by the Chairman WAPDA. Her Excellency, Ms Robin Raphel, US Ambassador to Pakistan and Mr. Rune Stroem, Country Director, Asian Development Bank were the Chief Guests. At the Opening Session held on 6th January, 2011, Haji Gulber Khan, Minister for Health, Government of Gilgit-Baltistan and Mr. Bashir Ahmed Khan, Lear of Opposition for Gilgit-Baltistan Assembly were also present as Guest of Honor.

3. SPEECHES

The highlights of the proceedings of various speeches delivered by the distinguished guests on first day of the seminar (January 06, 2011) are mentioned below:

3.1 Mr. Shakil Durrani, Chairman (WAPDA)

Chairman WAPDA in his opening address welcomed Her Excellency, US Ambassador, Country Director of ADB; representative from USAID, IDB, JICA, AFD, NGOs; Members of Civil Society; the representatives of Government of Gilgit-Baltistan; MLAs from Gilgit-Baltistan Assembly; Ulema's and other stakeholders of Diامر-Basha Dam Project for participation in the Seminar. The Chairman elaborated the role



of WAPDA in construction of Mega Hydropower Projects in Pakistan. He highlighted the resettlement issues of the project affectees and various concerns of international financial organizations. He said, "Today's gathering of stakeholder reveals that WAPDA believes in participation and consultation. He advised that the seminar should be made useful. We should develop consensus by mutual wisdom on various issue of Land Acquisition and Resettlement of Diامر-Basha Dam Project. He also stressed that the views and opinions may be given frankly and further told that the valuable suggestions of the participants will be documented and incorporated in the Resettlement Action Plan for our guidance. He apprised that WAPDA has created a new Organization of Land Acquisition and Resettlement (LA&R) under a General Manager wherein WAPDA has recruited competent specialists of different disciplines.

They are engaged in the preparation of comprehensive Land Acquisition and Resettlement Plan for Diامر-Basha Dam Project in accordance with Safeguard Policies of International Financial Institutions. He added that we are all conscious of the fact that the Government and the people of Gilgit-Baltistan have offered their valuable lands and are willing to sacrifice their abodes for this supreme national cause. He offered WAPDA's firm resolve to save and preserve archeological and heritage sites of Diامر District and to establish a museum at Chilas. The Chairman appreciated the services rendered by the LA&R team during recent floods for the flood affected persons of Diامر District and thereby winning the confidence of local community. He also desired to establish a Cadet College at Chilas.

The Chairman WAPDA praised and acknowledged the role of Asian Development Bank for providing advisory services to the WAPDA team which is engaged to work for Diامر-Basha Dam Project. He also appreciated and thanked Her Excellency, Ms Robin Raphel, for US assistance in Water Sector Projects of WAPDA.

3.2 Mr. Rune Stroem, Asian Development Bank (ADB)

Mr. Rune Stroem (Country Head, ADB) in his address to appreciate the efforts of WAPDA for arranging this Seminar where all the stakeholders have been provided a platform to build consensus on the construction of Diامر-Basha Dam Project and open discussion on the resettlement issues. He introduced Asian Development Bank as "multinational financing institution which finances mega projects." He outlined three elements of the Safeguards Policy, the first being the land acquisition, which he said "must be fair and transparent. It was told that ADB is reviewing the Diامر-Basha Dam Project in terms of excess price land that is to be acquired and the price so fixed is to be paid as has been agreed upon in a timely manner".



The second element of the Safeguard Policy is "Resettlement" which not only covers relocation of affected people but also includes provision of educational, health facilities besides formulating sustainable livelihood programs for the affected persons.

Mr. Rune Stroem emphasized and regarded "environment" as the third element of the Safeguard Policy in which "we need to look at all the environmental impacts of the projects and have the sufferings mitigated from the areas which are impacted. These mitigations should be transparent and understood by all." In this regard he stressed for a close liaison and coordination with all the stakeholders. He hoped to look forward to help WAPDA as well as Government of Pakistan to enhance the capacity of hydropower

generation to overcome power scarcity. He further added: “we need this kind of stakeholder gatherings to ensure that everyone understands and have a forum to debate different challenges and identify ways to arrive at the appropriate solution. We possibly can find out ways for the development of Pakistan and Diامر-Basha Dam area as well as for the improvement of the people in the neighborhood. We look forward to work in partnership with all of you, as well as with WAPDA and Govt. of Pakistan. We look forward a facility that can not only keep reducing the current load shedding in the country but also increase water resources in the country. Pakistan is facing two major problems, one being the electricity production and the other, inadequate water storage. We look forward to help WAPDA as well as Govt. of Pakistan in the generation of electricity and development of water resources.”

3.3 Ms. Robin Raphel, US Ambassador

Her Excellency the US Ambassador Ms Robin Raphel addressed the seminar and said that the United States would support Pakistan in the energy sector. This beautiful auditorium, a gift of US Government , she added: “ I am here to demonstrate US support for Pakistan in its efforts to increase badly needed investment in energy sector like Diامر-Basha Dam Project. Hydropower as we all know is expensive to produce and once it is produced it is very environmental friendly. It provides not only energy but also water storage. Because well all know that Pakistan needs to be very careful in the near future in managing its water supply.”



We all know that after these floods, how important flood control can be.” She said that there is need to reform tariffs and resolve the debt issues to keep the energy sector moving on sustainable ground. In this regard she referred to the Pak-US Strategic Dialogue in October 2010 and said that all these issues have been highlighted in these dialogues.

Regarding the resettlement and land acquisition issue, she added: “the issue safeguard the land acquisition and resettlement are very important to the groups that will help finance the projects and donors who will provide support in other ways. This issue of safeguards both from people and environment has become impressively more important over the period of time. I am extremely impressed and heartened by this gathering of the stakeholders by WAPDA initiative to bring everyone together so there is a better understanding of how this process will roll out that the stakeholders have a voice and at the end of the day visiting it again when the dam is complete and everyone has become more prosperous and stable because of this major effort.” She ended by thanking the Chairman WAPDA for inviting her to this seminar.

3.4 Mr. Bashir Ahmad, Opposition Leader, Gilgit- Baltistan

Subsequently, Mr. Bashir Ahmad, MLA/Leader of Opposition paid special thanks to WAPDA for arranging the seminar. He assured total support for this mega project from the people and the Government of Gilgit-Baltistan. He reiterated that although people District Diامر would be sacrificing their homes, lands and graves their forefathers but they are still courageous enough to support DBD Project in the best national interest. The presence of large



number of stake holders from Chilas representing people of all walks of life was a manifestation of participation and commitment.

4. PRESENTATIONS

The detail of presentations made on the first day of seminar is given as below:

4.1 Dr. Raheal Ahmad Siddiqui, General Manager (LA&R)

Dr. Raheal Ahmad Siddiqui, General Manager (LA&R) gave a detailed presentation on Land Acquisition & Resettlement of Diamer-Basha Dam Project. He introduced the LA&R Wing of WAPDA which had played an active role in restoring the confidence of the affectees of the project area.



He further dilated that WAPDA's LA&R team extended all possible support & assistance to local people during a devastating flood at Chilas. The people appreciated the relief measures taken by the LA&R team. He further assured all out support to people/stakeholders of Diamer District & DBD Project Affectees through Resettlement Action Plan which will be finalized through mutual consultation. WAPDA has so far transferred the Land Acquisition compensation amounting to Rs.700 million to Gilgit-Baltistan Government for disbursement. He elaborated that special efforts are being made for the preservation of Rock Carvings, establishing a museum and restoration of heritage buildings.

To establishing a better monitoring mechanism regarding the compensation to be given to Affectees, One Window operation will be introduced wherein the services of NADRA will be utilized for making it transparent and foolproof system, Special initiatives in education, health, sports, heritage, tourism, and livelihood restoration sectors will be introduced.

A WAPDA PRO Team from Chilas would also take part in Babusar PRO festival this summer. He further pointed out that WAPDA's Vocational Training Institute at Chilas had become functional from 7th December, 2010. This Vocational Training Institute will play a significant role in providing trained local manpower which will be utilized during the construction of DBD Project. He concluded by paying special thanks to all the stakeholders, Ulemas and participants from District Diamer for attending this seminar.

The GM (LA&R) assured the house that the Government will take strict security measures for the safety of the foreigners and the staff working on the dam site. He also pointed out that the current airstrip, which was built in 1930, would be submerged when the proposed dam will be full to its capacity. To facilitate an easy access to the dam site and project area, an International Airport at Chilas would be needed. Initially, the proposal has not been found feasible by the Civil Aviation Authority. The case is being taken up by the Govt. of Gilgit-Baltistan in this regard. MLA's and other delegates from Gilgit – Baltistan fully endorsed this idea.

4.2 Mr. Vakar Zakria, Hagler Bailly

Mr. Vakar Zakria of Hagler Bailly Pakistan made a presentation on “An Opportunity for Enhancement of Environment & Livelihood” focusing DBD Project. He expressed that Diamer-Basha Dam is a great challenge which may be accepted as an opportunity to open a road for progress for Gilgit-Baltistan. He further pointed out that while preparing the Resettlement Action Plan, the livelihood of local people may be given top priority. Their culture, art & architect, may be preserved and cottage industry may be promoted. He also presented the following recommendations:-



- WAPDA may commission a Master Plan for development and resettlement utilizing international and local expertise
- Creation of a Development Authority with local, provincial and federal representation to oversee implementation of the master plan
- Expansion of the infrastructure plan to include an international airport to improve access to the area and the region
- Completion of EIA and the EMP

4.3 Mr. Sibtain Ahmad, Deputy Commissioner, Diamer (Chilas)

The Deputy Commissioner, Diamer District in his presentation highlighted the details about the land acquisition and assured payment of land acquisition according to the rates agreed in the Ministerial Committee meeting held on 10th March, 2010. The highlights of his presentation are as follows:



Out of Court settlement of land disputes between Affectees and provincial government achieved.

- Receipt of first ever amount of compensation of Rs.700 million from WAPDA paid.
- Notice under Section-4 of the LAA, 1894 was issued on 28th October, 2010 and consequently, Revenue Authorities and other officials got the legal authority to enter upon the lands to be acquired and start their work
- After preliminary survey and measurements, Notice under Section-5 of the LAA, 1894 was issued on 2nd November, 2010 and pasted on conspicuous places in the colony area inviting objection from the owners if any.
- Finally after disposing off the objections received in reply to Section-9, Award of land has to be passed, signed and announced on 3rd January, 2011 in Chilas, the first ever Award of the DBD Project.
- Total land acquired is 1194 Kanals and the entire process was completed in a period of 3 months.

4.4 Mr. Hammad Naqi Khan - WWF

Mr. Hammad Naqi Khan of WWF Pakistan (World Wild Life Fund for Nature) made a comprehensive presentation on “**Impacts of Mega Hydro Power Project on Ecology**”. He emphasized on necessity of environmental and cultural impact assessment studies in three major categories i.e. upstream, on site and downstream areas. He talked about the damage caused to environment by improved access of humans, building roads, laying of transmission lines, and introduction of exotic species. He informed the participants that the valleys of dam site are habitats of Markhor and Black Bear which will be disturbed by the intervention. But he updated the participants regarding the positive impacts of Mega Hydropower Project provided the environmental impact is mitigated. He further stated that this dam can provide a wetland habitat for various species of water fowls.



He made the following recommendation:-

- Comprehensive Assessment of all environmental options, alternatives & impacts
- Comply with all relevant national laws as well as international guidelines and best practices
- Conduct a comprehensive EIA and document detailed ecological baseline information
- Allocation of chunk of fund for the rehabilitation of damaged ecosystems.

4.5 Concluding Speech by Member (Water) WAPDA

Expressing his concluding address of the seminar's first day proceedings, Syed Raghیب Abbas Shah, Member (Water) WAPDA appreciated the efforts of organizers to hold a successful seminar with participation of real stakeholders. He apprised the participants that the construction of Diamer-Basha Dam Project will bring in revolution in socio-economic uplift of the people. He reminded the house that the projects are for the people and people are not for the projects. He assured that WAPDA will fulfill all its commitments which have been made with the affectees of the project. The Member (Water) categorically told, “We will do more than the people can expect”. WAPDA will invest in health and education sectors to benefit the people in the Project Area. He further disclosed that a Vocational Training Institute has also been made functional by WAPDA to produce skilled manpower which will be absorbed in the project.



The Member (Water) also emphasized that the stakeholders will be involved in every stage of decision making and nothing will be kept secret from them. He further told that steps will be taken to gap up trust deficit between the WAPDA and the affectees. He thanked all the participants for attending this seminar and making it meaningful in real sense.

DAY - 2: (JANUARY 7, 2011)

5. PRESENTATIONS

5.1 Mr. Saeed Iqbal, ASF

First presentation on "Promotion of the Marketing of Horticulture Products in the Project Area" was given by Mr. Saeed Iqbal of Agri Business Support Fund (ASF). After briefly introducing Agri Business Support Fund (ASF) and its achievements, he enlightened the participants about the benefits of growing offseason vegetables by using tunnel farming and discussed various techniques which could be used for value addition of their fruits and agri products.

Mr. Saeed Iqbal gave following suggestions for improvement of horticulture crops in District Diamer:

- Capacity building of local community in Value Addition and Processing Techniques
- Offseason vegetables production by using modern techniques
- Improvement in access to markets (peas and other horticulture crops)
- Introduction of certified varieties of walnut and cherries
- Certified seed production
- Community Facility Centres (CFCS) and collection marketing.

5.2 Mr. Shakeel A. Ramay, Sustainable Development Policy Institute (SDPI)

Second presentation of the day was regarding Food Security and Livelihoods in Diamer-Basha Dam Project which was given by Shakeel Ahmad Ramay from Sustainable Development Policy Institute (SDPI). SDPI has conducted a detailed study in 2008 on this project area. He talked about scarcity of arable lands, displacement strategy means to increase livelihood and importance of sharing information with project Affectees. He suggested alternative business for Soniwals and ensuring food security in the project area and added that exclusion of women from livelihood plans would not be appropriate, even in a strict tribal society.

He elaborated the food absorption as a term used for the output gained by utilizing the available food. He informed the participants that food absorption is very low in the project area therefore Diamer is a food insecure area.

5.3 Mr. Aslam Malik (NESPAK)

Mr. Aslam Malik (NESPAK), in his presentation suggested that Irrigation and Research Centers may be established in the project area. The people will be benefited with the latest techniques of irrigation and agriculture. A proposal also came from the participants that Diamer Poverty Alleviation Programme should also be introduced and the concerned NGO may be encouraged to take up this task.

5.4 Mr. Aimal Khattak, SANGI

Mr. Aimal Khattak from SANGI was called upon to make presentation on Resettlement Policy framed by SANGI in yesteryears so that all the stakeholders including officers of WAPDA could give their inputs regarding this policy. However, Mr. Aimal Khattak instead of presenting the Resettlement Policy regarding mega projects, chose to make rhetoric political speech which had nothing to do with much talked about

“Resettlement Policy”. During the question answers session, many stakeholders from various quarters raised serious reservations regarding the role of SANGI viz-a-viz mega projects.

6. SPEECHES

6.1 Mr. Attaullah, President Dam Action Committee, DBDP

During the question answer session, General Manager (LA&R) invited Mr. Attaullah, President Dam Action Committee Diamer to come up on the stage and express his views. Mr. Attaullah highlighted issues and pointed out some of the reservations of the people of Diamer District. He appreciated the role of LA&R Wing for taking everybody into confidence. However, he pointed out that there are 2 or 3 offices of WAPDA working in the dam area which lack mutual cooperation with each other. WAPDA needs to streamline its own departments and promote coordination and harmony within its own ranks. He ended up by demanding that employment must be given to local people in order to reduce poverty in the area. He thanked WAPDA for inviting all the real stakeholders from Diamer District and Gilgit-Baltistan and providing them an opportunity for the first time to express their views in a free environment.

Mr. Atta Ullah also stressed the need to readdress the grievances of the people through committees constituted by WAPDA and District Administration. The Dy. Commissioner informed that such committees have already been constituted and are functional on ground.

6.2 Concluding Address by Chairman WAPDA

Chairman WAPDA in his concluding address expressed his sincere thanks to all the participants, Members of the Civil Society, NGOs, guests from Gilgit-Baltistan and all the officers of various Government Departments.

He appreciated Land Acquisition and Resettlement Wing of WAPDA for successful organizing this stakeholders seminar in Islamabad. The Chairman also assured the delegates from Gilgit-Baltistan that WAPDA would take care of the genuine needs of local people and would accommodate the affectees during employment process in the project area subject to fulfilling all cordial formalities. The Chair also reiterated that WAPDA will fulfill its commitments made with the people of the project area. It was told that he has already directed to start some welfare projects for the people in the area of health, education and sports.





LA&R Team with Chairman WAPDA and other Guests

The Chairman specifically thanked the Govt. of Gilgit-Baltistan and District Administration Chilas for taking keen interest and assistance not only to make this seminar a success but also to provide administrative support to WAPDA for expediting Land Acquisition and resolving day to day problems of the people at Chilas. He hoped that WAPDA will continue to hold such seminars in future also to benefit the stakeholders. The Chairman assured that the valuable suggestions and views of the participants will be documented for our future guidance. Chairman WAPDA presented shields and certificates to all the participants of the seminar. After this brief ceremony, the seminar proceedings came to an end.

7. SUGGESTIONS AND RECOMMENDATIONS

Based on the presentations and mutual discussions in two days stakeholder seminar, some valuable suggestions were brought to light by the participants that are worth keeping on record. These are summarized as under:

- Off-season vegetables can be a good source of income and prove to be a sustainable livelihood. Measures may be taken to promote and introduce such vegetables in the project area.
- Marketing and processing of fruit and vegetables might prove to be a great source of income generation. Serious efforts need to be taken in this regard.
- Resettlement Plan of Thor Valley Affectees was not included in the RAP by DBC Consultants. LA&R team and Deputy Commissioner Diamer have visited the valley and interacted with the affectees. Their final option to resettle will be incorporated in the RAP.
- Chilas Development Authority may be established to handle development of infrastructure and provision of civic amenities to the people of Chilas and other affectees in the project area.

- Airstrip at Chilas may be reactivated to establish an airport for making an easy access to the project area.
- Grievance Resolution Committees may be constituted in the Project Resettlement Office (PRO) at Chilas.
- WAPDA may commission a Master Plan for Development and Resettlement utilizing international and local expertise
- EIA may be carried out with detailed ecological baseline information
- Capacity building at all levels in the LA&R may be carried out
- There is a need to develop a better sense of understanding and coordination between the WAPDA office located at Chilas and the Project Affectees/public representatives
- To inculcate a sense of ownership and sharing the benefits of the projects, the stakeholders feel that they may be given priority of employment in all project activities and WAPDA should fulfill its commitments with the stakeholders

Annex 2

(Step 1 Due Diligence)

Di Amer-Basha Dam Feasibility Studies (2002-2004)

Description	Work done	Money spent (US \$ million)	
<p>Conducted by JV of consultants Lead firm: NESPAK Principal Partners: Associated Consulting Engineers Binnie Black & Veatch, UK MWH, USA In Association with: BARQAAB Consulting Services National Development Consultants BAK Consulting Engineers Pakistan Engineering Services Engineering General Consultants Development & Management Consultants</p>	<ul style="list-style-type: none"> - Collection of hydro geological and metrological data - Aerial Survey & Mapping - Topographic Survey - Over 7 km of drilling in 101bore holes - 616 m tunneling in 2 exploratory audits - Geological Survey & Mapping. - Hydraulic Model Studies - Sedimentation Studies 	<ul style="list-style-type: none"> - General and Administrative Expenses - Consultancy costs, including Panel of Experts - Field Investigation, Survey and Laboratory works - Machines, Equipment & Vehicles 	<p>0.556</p> <p>3.912</p> <p>0.920</p> <p>0.002</p> <p style="text-align: right;">Total 5.390</p>

Detailed Engineering Design & Tender Documents (2005-2009)

Description	Work done	Money spent (US \$ million)	
<p>Conducted by JV of consultants Lead firm: Lahmeyer International GmbH, Germany In Association with: National Development Consultants BARQAAB Consulting Services Pakistan Engineering Services AMEC, Canada</p>	<ul style="list-style-type: none"> - almost 10km drilling in 65 bore holes - 1,438m of tunneling in 3 exploratory audits - Studies and Analyses – e.g.: Civil works, Soil stress analysis, Modeling and Limitations, RCC mix and placement, Underground deformation, Foundations and slopes, Hydraulic dimensioning, Transient flows, Hydraulic models, Diversion risk, Sedimentation accumulation/flushing & riverbed studies, Stability and stress under seismic loading, Seismic design, Seepage, Reservoir filling/stability. 	<ul style="list-style-type: none"> - General and Administrative Expenses - Consultancy cost, including Panel of Experts - Field Investigation, Survey and Laboratory works - Machine Equipment & Vehicles 	<p>2.261</p> <p>13.933</p> <p>4.418</p> <p>0.504</p> <p style="text-align: right;">Total 21.117</p>

Construction of Infrastructure & firming up gaps in Engineering Design (2007- to date)

Description	Work done	Money spent (US \$ million)	
Conducted by JV of consultants Lead firm: Lahmeyer International GmbH, Germany In Association with: National Development Consultants BARQAAB Consulting Services Pakistan Engineering Services AMEC, Canada	- Geological Investigations for Model Villages - Survey for Model Villages - Survey & Resettlement plan - EIA Studies - Collection of additional hydro geological and metrological data - Model studies - Bid documents	- General and Administrative Expenses - Consultancy cost, including Panel of Experts - Field Investigation, Survey and Laboratory works - Machine Equipment & Vehicles <p align="right">Total</p>	2.446 1.665 1.341 - <p align="right">5.452</p>

Acquisition of Land and Resettlement

Description	Status		Money spent (US \$ million)	
Acquisition of Land & Resettlement	Land required is about 37,500 acres- of which 18,000 acres is private and 19,500 acres is Government land. Area acquired so far is:		ECNEC approved PC-I for Rs.60.00 billion on 06 Nov 2008	<p align="center">26.775</p>
I	Land for Wapda Colony at Thor, Ghilas, Distt. Diamer, Gilgit-Baltistan	150 Acres		
II	Land for Contractor's Camps in Kohistan/ Dasu (under process).	160 Acres		

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