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USAID ENERGY POLICY PROGRAM

QUARTERLY PROGRESS REPORT

October-December 2015



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Contract No: AID-EPP-I-00-03-00004

Order No: AID-391-TO-12-00002

Submission Date: January 13, 2016

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ACRONYMS

AEAI	Advanced Engineering Associates International, Inc.
CPPA	Central Power Purchasing Authority
DGPC	Director General Petroleum Concessions
DISCO	Distribution Company
DGPC	Director General Petroleum Concessions
ECC	Economic coordinating Committee
ECIL	Engineering Consultants Int. Pvt. Ltd.
EPP	Energy Policy Program
FSRU	Floating Storage and Regasification Unit
G2G	Government-to-Government
GENCO	Generation Company
GOP	Government of Pakistan
GSC	Grid Systems Construction
GSO	Grid Systems Operation
ISGS	Interstate Gas System
JPCL	Jamshoro Power Company Limited
kV	Kilovolts
LEAP	Long-Range Energy Alternatives Planning System
LNG	Liquefied Natural Gas
LSA	LNG Services Agreement
MPNR	Ministry of Petroleum and Natural Resources
MW	Megawatt
MWP	Ministry of Water and Power
NEPRA	National Electric Power Regulatory Authority
NPCC	National Power Control Center
NPCL	Northern Power Generation Company Limited
NTDC	National Transmission and Dispatch Company
PESCO	Peshawar Electricity Supply Company
PIL	Project Implementation Letter
PPA	Power Purchase Agreement
PQA	Port Qasim Authority
SSGC	Sui Southern Gas Company
USAID	United States Agency for International Development
USG	United States Government
WAPDA	Water and Power Development Authority
WPPO	WAPDA Power Privatization Organization

EXECUTIVE SUMMARY

During the reporting quarter (October - December 2015), EPP continued to provide monitoring and implementation support for the seven ongoing G2G Signature Energy Projects. At the end of December 2015, EPP's efforts have improved the financial performance of energy sector entities by \$999 million. This represents approximately 11.5% of the 2012 circular debt. As of December 2015, \$153.49 million has been disbursed to the Government of Pakistan (GOP) implementing partners, and 1013 megawatts have been added to the national grid of Pakistan, while the 1075.2 megawatts of transmission throughput capacity have been added to the PESCO and NTDC networks.

Geared towards achieving targeted goals, program interventions and activities continued. EPP visited Tarbela power station to monitor the installation and commissioning of Supervisory Control and Data Acquisition System (SCADA). SCADA system will help add to the sustainability of the power plant operations. EPP advised WAPDA to expedite the invoices of equipment that has already been installed and procured under Tarbela phase II as that will help in expediting disbursements of about \$3.5 million to WAPDA/GOP.

PROJECT MONITORING AND EVALUATION

Energy Policy Program facilitated USAID towards its visit to the Jamshoro power station carried out to monitor ongoing rehabilitation work. It was important to ensure that the remaining work is completed by the project completion date. Once all the work is completed, it will translate into adding to the reliability and sustainability of the operations of the power plant.

EPP team visited the Guddu Power Plant to monitor the installation of bypass dampers on GT-7 and 8 and inspected the new equipment while troubleshooting minor issues arising during the course of installation. Subsequently, a report in this regard was submitted to USAID.

Moreover, senior energy experts of EPP visited Guddu power plant to monitor the installation of bypass dampers on GT-7 & 8, and inspected the new equipment while troubleshooting minor issues arising during the course of installation. Subsequently, EPP submitted a report to USAID to this effect.

EPP facilitated USAID officials to visit the Muzaffargarh power station to inaugurate the rehabilitated equipment. As a result of this intervention, EPP restored 500 MW to the national grid thereby exceeding its target rehabilitation of 475 MWs, which has benefitted 4.63 million people.

POLICY AND REFORM

USAID EPP team visited EETPL LNG Terminal and FSRU at Port Qasim. EETPL technical team and the FSRU crew jointly briefed the team on the implementation and operation of the project. The visit to the terminal was followed by a meeting with Chairman PQA during which technical assistance provided by USAID EPP was discussed and reviewed.

Presentation on Milestone-5 covering technology, infrastructure, field development plan and wellhead breakeven cost for Shale Gas exploitation was made on October 8 2015 to the Minister for Petroleum and Natural Resources and was attended by Advisor Petroleum, Secretary, Additional Secretary, Chief Technical Officer, DGPC, USAID officials and LMKR/ KMR representatives.

USAID EPP's LNG consultant assisted the PQA pilots in carrying out FMBS study at Siport Spain and firmed up the conclusions of the study in relation to navigation of QFLEX vessels in the existing channel in light of SOPs.

A presentation on the Oil and Gas program covering LNG import, support to DGPC on Upstream Oil and Gas and Shale Gas/Oil Resource and Technology assessment was made on November 12

2015, which was attended by USAID, MPNR (DGPC and its staff, Deputy Director, DG Liquid Gases and Chief Technical Officer MPNR), consultants and AEAI professionals. MPNR appreciated the support provided by USAID in undertaking the program on Oil and Gas.

CAPACITY BUILDING

Energy Policy Program (EPP) identified opportunities for staff training in the long- and short-term programs (especially for women and youth) in order to ensure their involvement in the energy sector. Data was collected from stakeholder organizations related to employee statistics, hiring practices, and gender specific policies, which provides a baseline of female participation in the energy sector and proposes steps to increase their participation. The baseline comprised interviews, surveys, and site visits of and from Pakistan's transmission, hydro and thermal generation, alternative energy, and the oil and gas authorities.

In various capacity building trainings conducted for the key stakeholders in GOP organizations, the female participation rate in trainings increased by 8% compared to the previous year, i.e. from 17% in FY 2014 to 25% in FY 2015.

Last but not the least, EPP conducted a public forum on 'Clean Energy Potential & Utilization' at the COMSATS Institute of Information & Technology Islamabad on December 28, 2015 as part of the targets set by the Mission Strategic Frameworks (MSF). Thus far, eleven out of the target of twelve public forums have been conducted.

COMPONENT I: PROJECT MONITORING AND IMPLEMENTATION

During this quarter, EPP facilitated Jamshoro in obtaining tax exemption letter for equipment worth \$1.8 million. This will help in expediting the procurement and installation of the remaining equipment. EPP also facilitated GENCOs and WAPDA in preparing the quarterly accrual report.

EPP facilitated USAID in drafting the Amendment of Activity Agreement and Action Memorandum for Tarbela Phase-I to extend the completion date to complete the procurement of remaining equipment—Rotor Poles. Rotor poles will ensure sustainability of the already achieved 128 MW and operations of the rehabilitated units.

EPP provided updates to USAID on the procurement of equipment and also advised WAPDA to expedite the procurements. The Mangla project will add 90 MW to the national grid.

EPP also provided updates to USAID on the installation of remaining equipment at Jamshoro, Guddu and Muzaffargarh Thermal Power Stations. The remaining equipment will add to the sustainability and reliability of the power plants.

Table I below summarizes the results achieved through Government-to-Government (G2G) projects during the reported quarter (Oct-Dec 2015).

Table I: Quarterly Results Achieved through G2G Projects

Projects	USG Funding (\$ Million)	Disbursed (\$ Million)	Completion Date	MW Gains/Benefits	
				Target	Achieved (December 2015)
Tarbela (Phase-I)	16.50	15.55	12/31/15*	128.0 MW	128.0 MW
Jamshoro	19.32	19.32	6/30/16	150.0 MW	270.0 MW
Guddu	19.12	18.91	12/31/15	75.0 MW	80.0 MW
Muzaffargarh	15.77	15.71	3/31/16	475.0 MW	500.0 MW
Gomal Zam	45.00	45.00	Completed	17.4 MW	17.4 MW
Satpara	26.00	26.00	Completed	17.6 MW	17.6 MW
Mangla	150.00	13.00	12/31/17	90 MW	In progress
Tarbela (Phase-II)	25.00	PIL Signed	12/31/17	20 MW	In progress
Total	316.71	153.49		973 MW	1013

* WAPDA/Tarbela submitted a time extension request to USAID

REHABILITATION OF TARBELA HYDROPOWER PLANT

Phase-I: EPP experts visited Tarbela power station to inspect the installation and commissioning of Supervisory Control and Data Acquisition System (SCADA). The SCADA system will add to the reliability and sustainability of the power plant operations. WAPDA will submit a claim of \$100,000 upon installation, which is expected by mid-Jan 2016.

EPP also facilitated USAID in drafting Amendment of Activity Agreement and Action Memorandum to extend the completion date to complete the procurement of remaining equipment (Rotor Poles). Rotor poles will ensure sustainability of the already achieved 128 MW and operations of the

rehabilitated units. Further, EPP also facilitated WAPDA in preparing the quarterly accrual report for Tarbela phase I.

Phase-II: EPP experts met WAPDA/Tarbela to expedite the invoices of equipment that are already been installed and procured under Tarbela phase II. These invoices will help in expediting disbursement of about \$3.5 million to WAPDA. EPP also facilitated WAPDA in preparing the quarterly accrual report for Tarbela phase II.



SCADA System Servers installed at Tarbela



Display of the installed SCADA System

MANGLA DAM REHABILITATION PROJECT

During the reporting quarter, EPP provided updates to USAID regarding procurement of equipment and also advised WAPDA to expedite the procurements. The Mangla project will add 90 MW to the national grid. EPP also facilitated WAPDA in preparing the quarterly accrual report.



A view of the Mangla Power Station

MUZAFFARGARH THERMAL POWER STATION REHABILITATION PROJECT

In this quarter, EPP provided updates to USAID on the progress of installation of the remaining equipment. The remaining equipment will add to the sustainability and reliability of the power plant. EPP also facilitated GENCOs in preparing the quarterly accrual report.

EPP provided updates to USAID on the progress of remaining equipment installation. The remaining equipment will add to the sustainability and reliability of the power plant. EPP also facilitated GENCOs in preparing the quarterly accrual report.



A view of the Muzaffargarh Thermal Power Station

GUDDU THERMAL POWER STATION REHABILITATION PROJECT

During the quarter, EPP facilitated USAID in arranging a meeting with Chief Executive Officer of Guddu to discuss the progress of remaining works. The remaining works will add to the sustainability of the power plant. EPP also facilitated Guddu in preparing the quarterly accrual report.



A view of the Guddu Thermal Power Station

JAMSHORO THERMAL POWER STATION REHABILITATION PROJECT

During the quarter, EPP provided updates to USAID on the progress of remaining equipment installation at Jamshoro power plant. The remaining equipment will add to the sustainability and reliability of the power plant. EPP also facilitated Jamshoro in getting tax exemption letter of equipment worth \$1.8 million which will help in expediting the procurement and installation of the remaining equipment. Furthermore, EPP also facilitated Jamshoro in preparing the quarterly accrual report.



Jamshoro Thermal Power Station

COMPONENT 2: POLICY AND REFORM

SUPPORT TO MINISTRY OF PETROLEUM AND NATURAL RESOURCES

Shale Gas

- Milestone-6 report covering the regulatory and legal aspects is finalized. The final report has been forwarded to USAID and DGPC.
- Shale gas guidance document has been finalized after improvement by AEAI to match the scope. The document will be shared with USAID and DGPC after QC.
- Work on the compilation of all the reports under the program with report summary as well as the training and workshop material as part of Milestone-7 continued during the month.
- All the hardware and software for DGPC office has been delivered.
- Coordination with LMKR is underway to provide storage solution for the hard copies of the shale gas/oil study technical data for DGPC so that it is not damaged.

SUPPORT TO NATIONAL TRANSMISSION AND DESPATCH COMPANY

Strategic Business Plan Update

The revised draft, with editorial changes in the Strategic Plan and Key Performance Indicator Scorecard was submitted to the NTDC Board Chairman on December 22nd. The submission was acknowledged by the Chairman who informed us that the previous version of the plan was circulated among board members and senior management of NTDC for review and feedback. Their comments are expected in the coming month. The targets set out in the Plan will be used for evaluating the performance of NTDC Management.

Load Shedding Report

The report on Impact of USAID Intervention on Load Shedding Hours was shared with USAID. This report identifies the benefits of USAID interventions on both planned and unplanned load shedding. The calculations are based on the data obtained from NPCC. In the draft submitted, few additions pertaining to source of average annual load shedding hours and the benefits of additional throughput capacity were requested by USAID. Changes will be made and a revised report will be resubmitted.

SUPPORT TO MINISTRY OF FINANCE

- Assistance was provided to Corporate Finance Wing, MOF in preparation of their views/ comments on the Standard Revolving Account Agreement to be signed between CPPA/NTDC and IPPs investing in power generation using RLNG as fuel. This account will be equivalent to 22% of total monthly invoices of RLNG based IPPs.
- Assistance was provided in clearance of tax exemption proposals from FBR in respect of four (04) Hankook Lori Cranes forwarded by Economic Affairs Division.
- Assistance was provided to Corporate Finance (CF) Wing of MOF in order to workout financial arrangements for North-South Gas Pipeline to be constructed for supply of RLNG to be imported from Qatar.
- Assistance was provided to CF Wing of MOF to scrutinize and settle the arrears claims of tariff differential subsidy submitted by K-Electric through Ministry of Water and Power for the year 2013-14.
- Assistance was provided to CF Wing of MOF to settle the arrears claims of LESCO, GEPCO and PESCO pertaining to supply of electricity to AJK government. In this regard, a meeting was

also attended by EPP representative, which was chaired by Additional Finance Secretary (CF) on December 16, 2015. Joint Secretary (Power), Ministry of Water and Power also attended.

- Assistance was provided to Corporate Finance Wing, MOF on the draft Request for Proposals (RFP) prepared by PPIB/Ministry of Water and Power regarding 1000 MW RLNG Based Power Projects.

Impact

- Assistance provided by the AEAI Consultant helped the Ministry of Finance to formulate their views/ comments on various policy issues.

COMPONENT 3: NEW PROJECTS, PLANNING, AND DEVELOPMENT

Nothing to report in this quarter.

COMPONENT 4: NEW ACTIVITIES

PESHAWAR ELECTRIC SUPPLY COMPANY

Thus far, 1,075.2 MW of transmission throughput capacity have been added to the PESCO and NTDC network as a result of USAID/EPP's technical and financial assistance.

Crane Mounted Trucks: During the quarter, customs clearance of trucks and cranes has been completed and these have been delivered to the vendor for assembling. The crane-mounted trucks would be delivered to PESCO in early January 2016 and a demonstration to the PESCO staff would be provided. Project is likely to close by mid-January 2016.



Crane-mounted trucks assembled with cranes

Power Transformer Program: All punch list items pertaining to 40 MVA power transformers were attended and cleared by the vendor. Oil purification plants were delivered to PESCO in November. The demonstration on operation and maintenance of these plants was given to the PESCO staff in the first week of December 2015.

Circuit Breakers: Thirteen 132kV circuit breakers were installed in the PESCO network, thereby completing all 20. Seventeen of the 20 installed are in service while the remaining three will be commissioned once PESCO resolves wiring issues at the respective sites. The project is expected to end mid-January 2016.

NATIONAL TRANSMISSION AND DESPATCH CENTRE

G2G Projects: Activity Agreement of Power Transmission System for Wind Power Projects in Sindh Wind Corridor for \$43 million was signed by USAID and NTDC. The agreement now needs the approval of Economic Affairs Division (EAD). Draft on the cost reasonableness analysis and project implementation letter for this project is under review.

Revised Rapid Environment Assessment (REA) report of transmission line for evacuation of power from Patrind Hydropower Plant was reviewed by EPP and USAID and the comments forwarded to the consultant for further revisions.

NTDC System Studies: Intermittent renewables final reports on all three tasks have been received and shared with stakeholders. Final teleconference took place in Lahore on December 15, 2015. All questions raised by the stakeholders have been answered but NTDC Planning still has few queries to discuss; written acknowledgement from NTDC awaited.

Testing Equipment for Grid System Operations: Two shipments were handed over to NTDC, whereby six of nine shipments have been delivered to NTDC. Exemption for three shipments was granted and their clearance is in process. On delivery, the vendor will also provide a demonstration of the testing equipment for the NTDC staff.

Auto Transformer Program: The second transformer, removed from Mardan 220 kV GS after augmentation with new 250MVA transformer, has been installed and energized at Shahi Bagh 220kV GS this month. Commissioning of this transformer helped add 160 MVA throughput capacity to the NTDC network.



150 MVA Repaired Power Transformer at
500 kV Sheikh Muhammadi GS



160 MVA Augmented Power Transformer from 220 kV
Mardan GS Installed at 220 kV Shahibagh Grid Station

- FAT of repaired 220/132 kV 160MVA transformer at HEC was once again unsuccessful. A revised schedule has been received with the testing of transformer scheduled on January 12, 2016. The project is expected to complete by end of January 2016.
- FAT of the repaired 500/220kV 150MVA transformer was successfully completed. The transformer is now at Sheikh Muhammadi 500kV grid station where it will be utilized as a spare.
- All punch list items pertaining to 250 MVA transformers were attended and cleared by the vendor.

Live Line: The missing live line tools have been distributed among eight out of nine DISCOs. However, handover to the last DISCO is expected to complete by early January.

Strategic Business Plan: After submission of the Strategic Business Plan (SBP) in September 2015, an addendum to the report consisting of performance measurement scorecards along with modified final draft of the NTDC SBP has been presented to the Chairman BOD NTDC and is currently under review by the board members.

PROGRAM SUPPORT ACTIVITIES

GENDER ACTIVITIES

Increased Female Participation: Energy Policy Program (EPP) identified opportunities for staff training in the long- and short-term programs (especially for women and youth) in order to ensure their engagement in the energy sector. EPP collected data from stakeholder organizations related to employee statistics, hiring practices, and gender specific policies. The data provides a baseline of female participation in the energy sector and proposes steps to increase their participation. The baseline comprised interviews, surveys, and site visits of and from Pakistan’s transmission, hydro and thermal generation, alternative energy, and the oil and gas authorities.

In various capacity building trainings conducted for the key stakeholders in GOP organizations, the female participation rate in trainings increased by 8% compare to the previous year, from 17% in FY 2014 to 25% in FY 2015. Similarly, in FY15, 27% (7 of the 26 participants) females from National Transmission & Despatch Company (NTDC) participated in the U.S. Exchange Visit Program to learn about grid, market, and commercial operations related to the grid station.

In FY15, 21% females (15 out of 71 participants) from NTDC were trained in ‘Best Practices in Hydro Operations and Maintenance’ training program; 14% females (1 out of 7 participants) were trained in ‘Storage Area Network’ training program; 25% females (6 out of 24 participants) were trained in ‘Real Time Power System Simulator’ training program at NTDC in Lahore, and 26% females (12 out of 47 participants) were trained in ‘Design Center’.



MONITORING & EVALUATION

PakInfo: EPP is in the process of drafting PakInfo's close-out report. To date, EPP's accomplishments have been updated in the document with January 2016 data entries to follow. Once completed, the report will be shared with USAID for Q2 FY2016 PakInfo reporting.

Public Forum: So as to meet the Mission Strategic Framework's (MSF) set targets, EPP conducted a public forum on 'Clean Energy Potential & Utilization' at COMSATS Institute of Information & Technology Islamabad on December 28, 2015. To date, eleven out of the target of twelve public forums have been accomplished.



Confidential information redacted

Confidential information redacted

PROGRESS IN NUMBERS

Table 3 below provides the EPP indicators, targets, and achievements for the reporting Q1 2016. **Table 4** presents EPP Indicators by component for the quarter.

Table 3: EPP Indicators and Achievement for the Q1 2016

Indicator	Unit	LOP Target	Achieved in Q1 2016	Total Achieved as of Q1 2016	LOP % Achieved as of Q1 2016
I.a: GWh of energy sold	GWh	7880	3,798.34	13,176.5	167%
I.1.a: Number of beneficiaries with improved energy services due to United States Government assistance	Individuals	13,624,226	6,936,516	23,142,816	170%
I.1.b: GWh of energy availability	GWh	7880	3,798.34	13,176.5	167%
I.1.c: MW available to meet power sector demand as a result of USG assistance	MW	1,303	542	2,088.2	160%
I.1.1.a: MW of electrical power added or saved as a result of USG improvements	MW	875	0	1,027.2	117%
I.1.1.b: Efficiency of thermal power plant tests completed	No.	3	0	3	100%
I.1.1.c: Number of USG supported installations and operations and maintenance improvements	No.	181	9	178	98%
I.1.1.d: Number of transmission bottlenecks resolved	No.	121	8	135	112%
I.1.4.a: Public and private funds leveraged by the USG for energy infrastructure projects	U.S. \$	193.5 Million	0	178.5 Million	92%
I.2.1.a: Number of key policies and regulations in various stages	No.	12	5	51	425%
I.2.2.a: Number of policies following international best practices	No.	6	1	5	83%
I.2.2.b: Number of board recommendations following international best practices	No.	4	0	3	75%
I.2.3.a: Number of best practice-driven systems created, improved, and implemented	No.	10	1	10	100%
I.2.4.b: Number of public forums resulting from USG assistance in which government officials and citizens interact	No.	12	2	11	92%

Table 4: EPP Indicators by Component for the Reporting Q1 2016

Indicator	Unit	Component	LOP Target	Achieved in Q1 2016	Total Achieved as of Q1 2016	LOP % Achieved as of Q1 2016
I.I.a: Number of beneficiaries with improved energy services due to United States Government assistance	Individuals	Total	13,624,226	6,936,516	23,142,816	170%
		I-Generation	7,993,106	0	9,382,406	117%
		IV-Transmission Throughput Capacity	5,477,544	6,936,516	13,578,678	248%
		IV – Transmission Added/Saved	153,576	0	181,732	118%
I.I.b: GWh of energy availability	GWh	I & IV	7880	3,798.34	13,176	167%
		I-Generation	4,796	0	5,642.29	118%
		IV-Transmission Throughput Capacity	2999.4	3,798.34	7,435.49	248%
		IV – Transmission Added/Saved	84	0	99.50	118%
I.I.c: MW available to meet power sector demand as a result of USG assistance	MW	I & IV	1,303	542	2,088.2	160%
		I-Generation	863	0	1,013	117%
		IV-Transmission Throughput Capacity	428	542	1,061	248%
		IV – Transmission Added/Saved	12	0	14.2	118%
I.I.I.a: MW of electrical power added or saved as a result of USG improvements	MW	I & IV	875	0	1027.2	117%
		I-Generation	863	0	1,013	117%
		IV – Transmission Added/Saved	12	0	14.2	118%

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