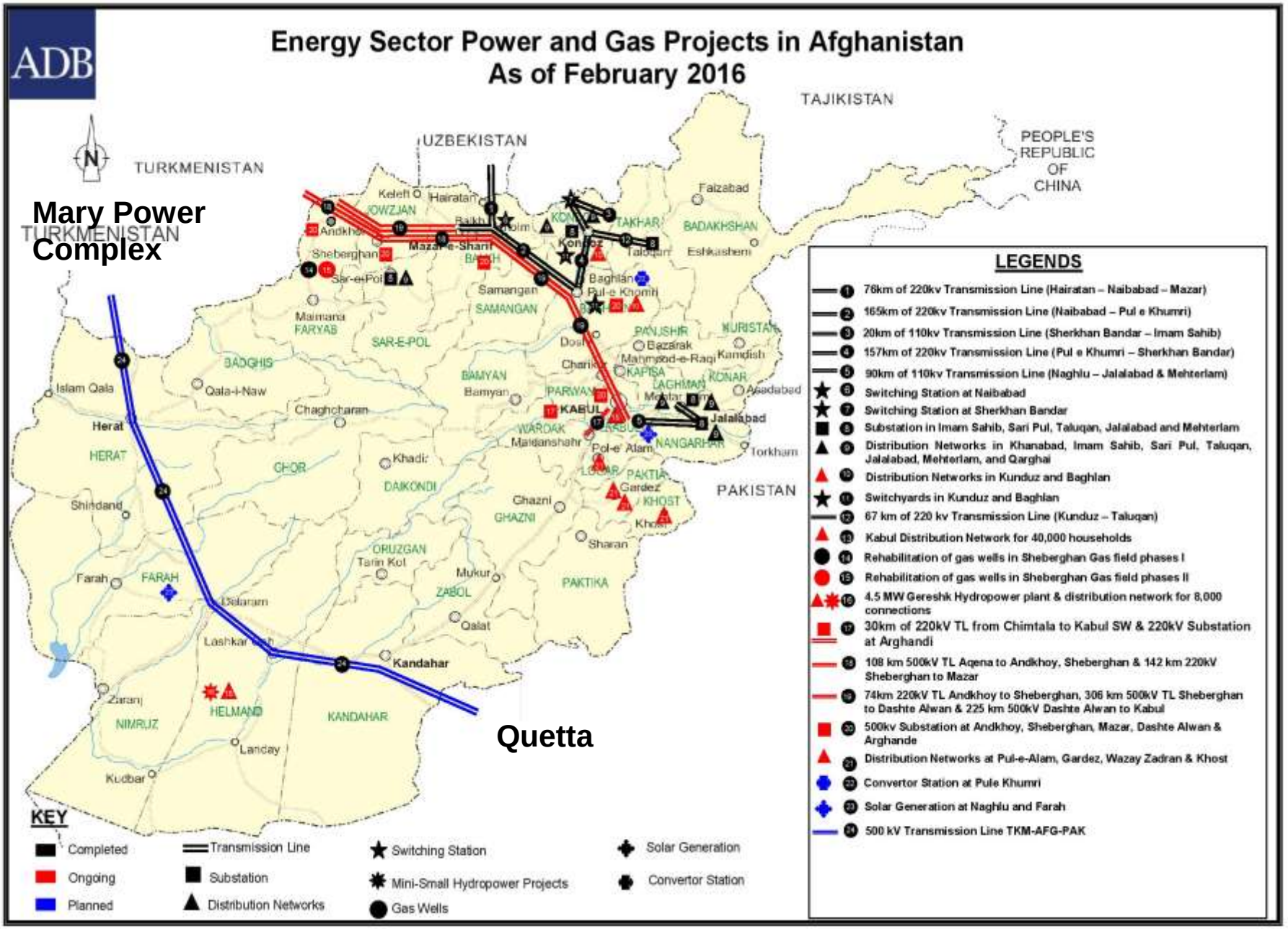
Proposed Turkmenistan-Afghanistan-Pakistan (TAP) Power Interconnection Project

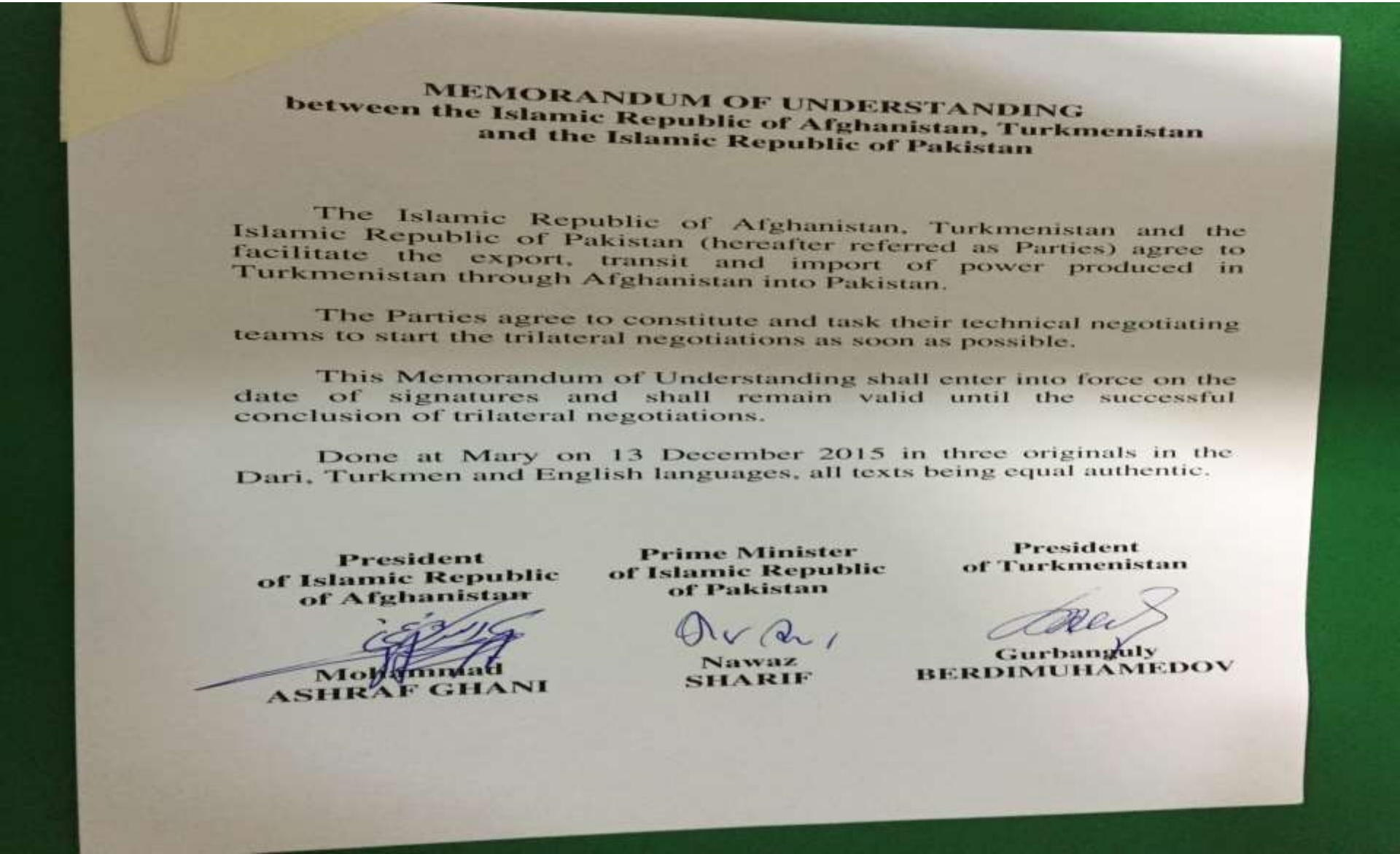
Consultation Meeting with the CAREC National Focal Points

20 Sep 2016

Background


ADB
Energy Sector Power and Gas Projects in Afghanistan
As of February 2016
TAJIKISTAN
UZBEKISTAN
TURKMENISTAN
PEOPLE'S REPUBLIC OF CHINA
PAKISTAN
Mary Power Complex
Quetta
Keleft
Hairatan
Faizabad
JOWZJAN
TAKHAR
BADAKHSHAN
Andkhoy
Mazar-e-Sharif
Sheberghan
Sar-e-Pol
Samangan
Baghlan
Pul-e Khomri
Kondoz
Taloqan
Eshkashem
SAMANGAN
FARYAB
SAR-E-POL
BADGHIS
Maimana
Islam Qala
Qala-i-Naw
Herat
HERAT
Chaghcharan
GHOR
Khadir
BAMYAN
Bamyan
PARWAN
KABUL
WARDAK
Maidanshahr
Jalalabad
NANGARHAR
Torkham
Asadabad
KUNAR
LAGHMAN
KAPISA
PANJSHIR
Bazarak
NURISTAN
Kamdish
Mahmood-e-Raqi
Charikar
Pol-e Alam
LOGAR
PAKTIA
Gardez
KHOST
Khost
Ghazni
GHAZNI
DAIKONDI
Shindand
Farah
FARAH
Tarin Kot
ORUZGAN
Mukur
ZABOL
PAKTIKA
Qalat
Lashkar Gah
Kandahar
Zaranj
NIMRUZ
HELMAND
KANDAHAR
Landay
Kudbar
Sharan
LEGENDS
1 76km of 220kv Transmission Line (Hairatan – Naibabad – Mazar)
2 165km of 220kv Transmission Line (Naibabad – Pul e Khumri)
3 20km of 110kv Transmission Line (Sherkhan Bandar – Imam Sahib)
4 157km of 220kv Transmission Line (Pul e Khumri – Sherkhan Bandar)
5 90km of 110kv Transmission Line (Naghlu – Jalalabad & Mehterlam)
6 Switching Station at Naibabad
7 Switching Station at Sherkhan Bandar
8 Substation in Imam Sahib, Sari Pul, Taluqan, Jalalabad and Mehterlam
9 Distribution Networks in Khanabad, Imam Sahib, Sari Pul, Taluqan, Jalalabad, Mehterlam, and Qarghai
10 Distribution Networks in Kunduz and Baghlan
11 Switchyards in Kunduz and Baghlan
12 67 km of 220 kv Transmission Line (Kunduz – Taluqan)
13 Kabul Distribution Network for 40,000 households
14 Rehabilitation of gas wells in Sheberghan Gas field phases I
15 Rehabilitation of gas wells in Sheberghan Gas field phases II
16 4.5 MW Gereshk Hydropower plant & distribution network for 8,000 connections
17 30km of 220kV TL from Chimtala to Kabul SW & 220kV Substation at Arghandi
18 108 km 500kV TL Aqena to Andkhoy, Sheberghan & 142 km 220kV Sheberghan to Mazar
19 74km 220kV TL Andkhoy to Sheberghan, 306 km 500kV TL Sheberghan to Dashte Alwan & 225 km 500kV Dashte Alwan to Kabul
20 500kv Substation at Andkhoy, Sheberghan, Mazar, Dashte Alwan & Arghande
21 Distribution Networks at Pul-e-Alam, Gardez, Wazay Zadran & Khost
22 Convertor Station at Pule Khumri
23 Solar Generation at Naghlu and Farah
24 500 kV Transmission Line TKM-AFG-PAK
KEY
Completed
Ongoing
Planned
Transmission Line
Substation
Distribution Networks
Switching Station
Mini-Small Hydropower Projects
Gas Wells
Solar Generation
Convertor Station

Signed MOU by Heads of 3 Governments



MEMORANDUM OF UNDERSTANDING
between the Islamic Republic of Afghanistan, Turkmenistan and the Islamic Republic of Pakistan

The Islamic Republic of Afghanistan, Turkmenistan and the Islamic Republic of Pakistan (hereafter referred as Parties) agree to facilitate the export, transit and import of power produced in Turkmenistan through Afghanistan into Pakistan.

The Parties agree to constitute and task their technical negotiating teams to start the trilateral negotiations as soon as possible.

This Memorandum of Understanding shall enter into force on the date of signatures and shall remain valid until the successful conclusion of trilateral negotiations.

Done at Mary on 13 December 2015 in three originals in the Dari, Turkmen and English languages, all texts being equal authentic.

President of Islamic Republic of Afghanistan
Mohammad ASHRAF GHANI

Prime Minister of Islamic Republic of Pakistan
Nawaz SHARIF

President of Turkmenistan
Gurbanguly BERDIMUHAMEDOV

Energy Situation in 3 Countries

Turkmenistan (TKM):

- TKM wishes to export year round power to AFG and PAK. Already exporting power to AFG through 2 interconnections since 2002.
- About 3,500 MW excess power available for exports by 2020
- HVAC Transmission line under construction towards Herat

Afghanistan (AFG):

- 30% electrification rate. 850 MW current peak demand to increase to 3500 MW by 2032
- Transmission ring under construction to connect major load centers
- Indigenous generation & imported power projects under implementation
- Longer term plans to synchronize power grid with TKM

Pakistan (PAK):

- Energy crisis & deficit with significant load shedding (6 hours urban; 8 hours in rural)
- ~ 70% electrification rate

ADB Largest Development Partner

Turkmenistan:

- Presence through TAPI Project, TUTAP Project under construction
- ADB in discussion with government to finance transmission lines in 2016 and rehabilitate gas fired plants thereafter
- Facilitated TKM-AFG power purchase and sales agreement in Nov 2015

Afghanistan:

- Anchor development partner. $1.2 billion in energy portfolio
- New financing facility $1.2 bn approved in Dec 2015
- Facilitated PPSAs with TKM and TAJ

Pakistan:

- Largest development partner – New Transmission MFF for 2016 approval
- Assistance in generation, transmission, distribution, energy efficiency, and policy support.

Summary Progress of TAP Meetings

Decisions Taken - I

1. Two Meetings held on 11 April 2016 and 18 July 2016 in Islamabad; facilitated by ADB; attended by officials from 3 countries
2. As Project Secretariat, ADB leading and facilitating project concept to project commissioning including project preparation, project financing in respective countries through country program and allocation, and finalization of power purchase and sales agreements (PPSA)
3. TAP Country Focal Points nominated

Decisions Taken - II

4. Consultant undertaking due diligence of various routing options and analyze the phased approach for cost effective and technically proficient bulk power transfer. Findings of the options analysis study will be presented early October 2016.
5. Project roadmap to be formally agreed by 3 countries at the side lines of the October 2016 CAREC Ministerial Meeting in Oct in Islamabad.
6. The Project related documentation and protocol will be signed by the 3 governments during the CAREC Ministerial Meeting scheduled in October 2016 in Islamabad.

Progress Todate
&
Next Steps

TAP Interconnector Options Analyzed

1. Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan (TUTAP)
2. 220-kV Interconnect [Khost (AFG) – Bannu (PAK)]
3. 220-kV Interconnect [Kandahar (AFG) – Chaman (PAK)]
4. 220-kV Interconnect [Jalalabad (AFG) – Peshawar PAK)]
5. 500-kV Interconnect (Kabul – Peshawar)
6. Central Asia South Asia (CASA-1000)

Trilateral Meetings

1. Energy Ministers / Officials from 3 countries meeting in September 2016 to agree on power trade framework and priorities
2. AFG and PAK agreed to sequence the TAP Project into 2 phases
   - 1st phase to consider using idle CASA infrastructure (October to April) by complementing TUTAP-CASA infrastructure to wheel power from TKM to PAK.
   - 2nd phase to consider construction of power line from Mary in TKM to Quetta in PAK through TAPI corridor in AFG. Funds will be programmed through ADB's country allocations and program for each country.

Initial Assessment of Routing Options

No	Routing	Remarks
1	TUTAP	Primarily to meet demand for northern, eastern and southern AFG. Limited volume for exports. CASA TUTAP complement under study. Findings will be available by end Sep
2	220-kV Interconnect [Khost (AFG) – Bannu (PAK)] & [Kandahar – Chaman] [Jalalabad – Peshawar]	No possibility for bulk transfer. No room for exports. Weak grid on both sides. Synchronization Issues
3	500-kV (Kabul – Peshawar)	Limited power availability in Kabul for exports
4	CASA-1000	AFG now not part of CASA DC Line. CASA TUTAP complement under study. Findings will be available by end Sep
5	TAP-500	Bulk transfer; Power availability; Strengthens grid of each country; Asynchronous Interconnection

TAP-500 kV (Using Southern AFG Corridor)

Turkmenistan:

- Generation expansion at Mary power complex
- 220-kV (500-kV) transmission line Yolotan-Tahatbazar-Serhetabat (Afghan border) to be commissioned 2018
- ADB preparing project for Board consideration in 2016 / 2017

Afghanistan:

- Plans to build 500-kV from Torghundi (TKM border with Serhetabad) to Spin Boldak (PAK border with Chaman).
- 500/220-kV Substation at Herat and Kandahar
- To be financed through $1.2 billion Energy MFF approved in Dec 2015
- Complete transmission ring in AFG

Pakistan:

- Interconnection with national grid
- Voltage level at Chaman – substation and transmission lines

ADB's as Facilitator & Anchor Development Partner

- ADB will provide technical assistance to establish project secretariat and facilitate
  - analytical studies for systems stability, reliability, and grid interconnection
  - studies for regulatory and legal, technical, commercial, and systems despatch
  - project assessment, including project feasibility, technical design, and preparation,
  - coordinate project planning and provision of financing
  - facilitate energy trade negotiations among the 3 countries,
  - finalize an implementation roadmap

Preliminary Timeline & Way Forward

Action	Timeframe
Ranking of Interconnection Options	October 2016
Signing of MOU among 3 countries	October 2016
Preparation of Feasibility Studies	2017
Approval of Financing	2016 - 2017
Project Execution	2018 - 2022