

AN INTRODUCTION OF CASA- 1000 PROJECT

BY

MUHAMMAD DAUD

**Ex GM Planning/Consultant Planning NTDC/
Member Pakistan Working Group for CASA**

For

SAARC Workshop

Lahore, 30th, September, 2015

CASA-1000 PROJECT

- CASA stands for Central Asia- South Asia.
- 1000 denotes 1000 MW power which Pakistan will get through the proposed project.

CASA-1000 PROJECT

CASA-1000 is a project designed to transmit 1300 MW of surplus electricity from Tajikistan and Kyrgyz Republic through Afghanistan (300 MW) to Pakistan (1000-MW). MOU among four Governments was signed on November 16, 2007 at Kabul.

CASA-1000 Funding Arrangements

An Inter-Governmental Agreement (IGA) was signed in August 2008 to govern and resolve issues critical to the implementation of the project. The secretariat is at Kabul.

The Inter-governmental Council (IGC) ,in which each country is represented by the Minister / Deputy Minister runs the affairs.

The project was to be funded by the WB, ADB and IDB . ADB, expected to contribute 40% of project cost, has decided to pull out of this project.

CASA-1000 PROJECT

1. The project has following major components.
 - A 500 kV HVAC Transmission link (477 kM) between Kyrgyz Republic and Tajikistan.
 - A 500kV \pm HVDC Transmission link (750 kM) between Tajikistan and Pakistan.
 - A 300 MW substation and related facilities for power off-take in Afghanistan (Kabul).
 - A 1300 MW substation and related facilities for power off-take in Pakistan (Peshawar).

CASA-1000 Transmission Line Break up(HVDC)

The approximate total length of the corridor is 750 kM. the total line lengths within each country are summarized in the table below:

Country	Length (km)
Tajikistan	117
Afghanistan	562
Pakistan	71
Total	750

Table 9-5 EPC Cost Estimate for HVDC Tajikistan-Afghanistan-Pakistan and HVAC Kyrgyz Republic-Tajikistan Interconnections (US \$ Million)

Countries	HVDC Component			HVAC Component		HVDC + HVAC Cost
	Converter Stations + Substations	Electrodes	Transmission Line	Substation	Overhead Line	
Tajikistan	128	5	33	9	7	182
Afghanistan	71	5	162	-	-	238
Pakistan	128	5	20	-	-	153
The Kyrgyz Republic	-	-	-	9	151	160
Total EPC Costs	558			176		734

*Estimates include EPC costs only.

With other costs such as owner's engineering (15 MUSD), contingency (74 MUSD) and internal reinforcement of transmission system in relevant countries (34 MUSD), the total costs comes to 873/ - MUSD.

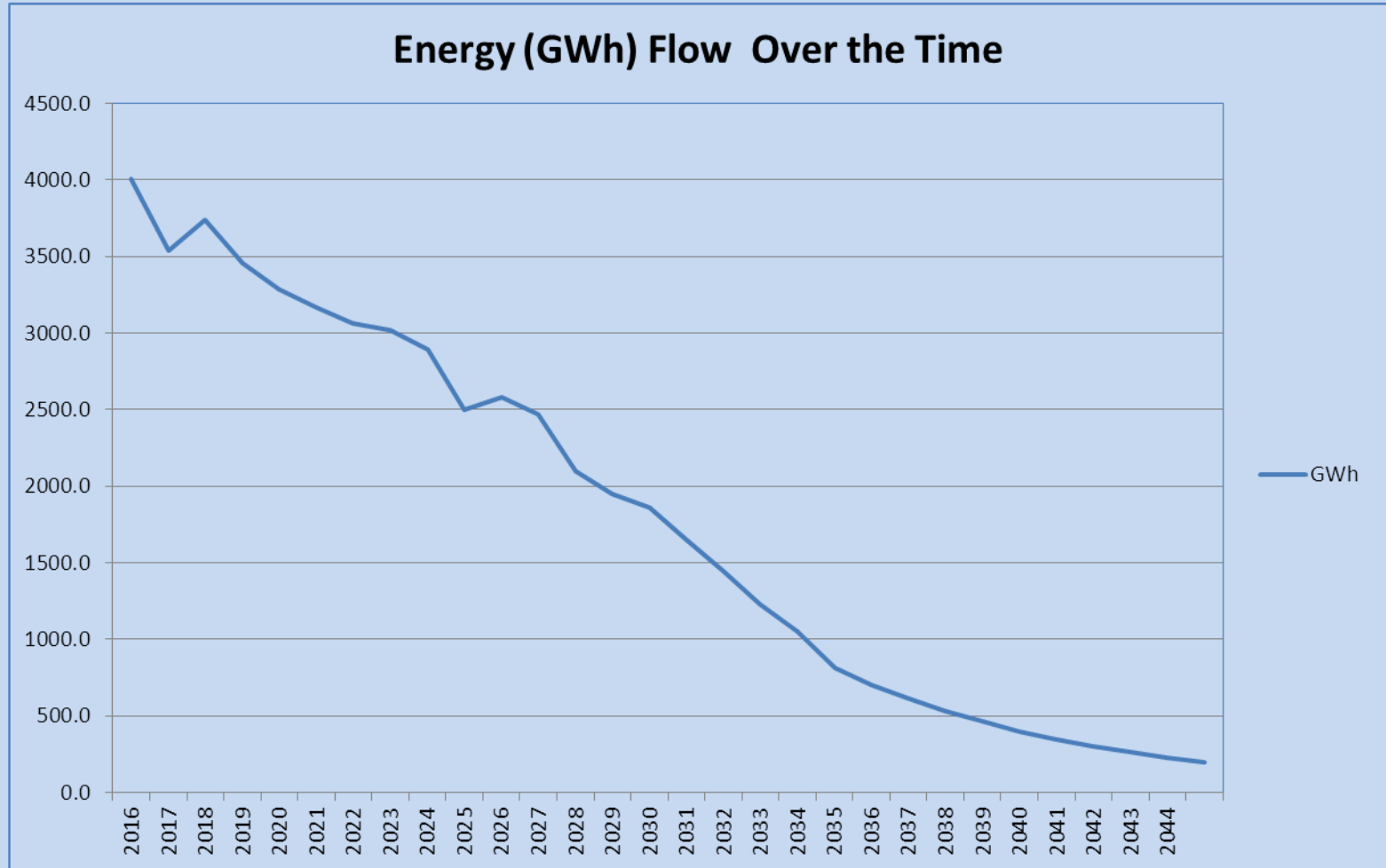
CASA-1000

Cost Break Up

USD Million

CAPITAL EXPENDITURE	KYRGYSTAN	TAJIKISTAN	AFGHANISTAN	PAKISTAN	TOTAL
EPC Costs (AC+DC)	160	182	238	153	733
Environmental & Social Costs	0	2	11	3	16
Network Reinforcement Costs	-	24	4	6	34
Owner's Engineer Cost	3	4	5	3	15
Contingencies	16	18	24	15	73
Total Hard Cost	180	230	282	180	871
Financing/Soft Cost	20	27	25	23	95
Total Project Cost	200	257	307	203	966

CASA-1000 Annual Energy (million kWh) Graph



Per Unit Cost of Transmission

The year-wise transmission charge per unit goes on increasing due to decrease in energy.

Table 10-3 Annual Transmission Costs

Year	Annual Cost of Transmission (¢/kWh)	Year	Annual Cost of Transmission (¢/kWh)
2016	3.37	2031	8.15
2017	3.82	2032	9.34
2018	3.61	2033	10.99
2019	3.91	2034	12.83
2020	4.12	2035	16.52
2021	4.27	2036	19.04
2022	4.42	2037	21.95
2023	4.47	2038	25.30
2024	4.67	2039	29.16
2025	5.42	2040	33.61
2026	5.23	2041	38.73
2027	5.46	2042	44.64
2028	6.44	2043	51.45
2029	6.91	2044	59.30
2030	7.26	2045	68.35

ENERGY IMPORT AND ITS PRICE

Proportion of energy (2016 - 2045)

Kyrgyz Republic **14.673 Billion units**

Tajikistan **39.186 Billion units**

Total **53.859 Billion units**

30 years average **1.795 Billion units**

Expected Energy sale price by

Kyrgyz republic **2.5** ¢/kWh

Tajikistan **1.5** ¢/kWh

- Even now Both Tajikistan and Kyrgyz Republic are facing winter shortages.
- If they put in new generation on Hydel or coal to meet their winter demand, the surplus power in summer will increase and improve the project economics

PRESENT STATUS & FUTURE ACTIONS

- Each country has constituted a working group for deliberation on various issues with other Working Groups and make recommendations as a Joint Working Group (JWG) for approval of IGC.
- Countries were required to hire Legal and Commercial Advisors to assist the countries in negotiations on bi-lateral and multi-lateral agreements.

PRESENT STATUS & FUTURE ACTIONS

- The JWG has agreed for preparations on the basis of Contractual Joint Venture and start negotiations on the standard terms and conditions of the proposed agreements in accordance with agreed commercial principles.
- Further action is subject to approval of the above by the IGC.

FOUR PPAs TO BE SIGNED

1. A PPA between entities designated by the Govts. of **Kyrgyz** Republic and **Pakistan**.
2. A PPA between entities designated by the Govts. of **Kyrgyz** Republic and **Afghanistan**.
3. A PPA between entities designated by the Govts. of **Tajikistan** and **Pakistan**.
4. A PPA between entities designated by the Govts. of **Tajikistan** and **Afghanistan**.



THANK YOU