



SAARC Seminar on “Role of Private Sector In Regional Power Trade”



Regional Power Trading in the Perspective of NTDC Capacity and Demand

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1. WAPDA, a vertically integrated utility, was established in 1958.
2. Major functions of WAPDA Power Wing:
 - Generation (Hydro and Thermal)
 - Transmission
 - Distribution

Unbundling of WAPDA - 1992

Power Sectors Reforms aimed at corporatizing and commercializing the restructured entities.

#	Function	Restructured Entities
1	Hydro Generation	Owned & Operated by WAPDA
2	Thermal Generation	4 GENCOs
3	Transmission	National Transmission and Dispatch Company (NTDC)
4	Distribution	10 Distribution Companies

Distribution Companies - DISCOs

Punjab	KPK	Sindh	Baluchistan
LESCO (Lahore)	PESCO (Peshawar)	HESCO (Hyderabad)	QESCO (Quetta)
GEPCO (Gujranwala)	TESCO (Tribal Area)	SEPCO (Sukkur)	
MEPCO (Multan)			
FESCO (Faisalabad)			
IESCO (Islamabad)			

National Transmission and Dispatch Company (NTDC)

- NTDC incorporated on 6th November 1998
- Started commercial operation on 24th Dec 1998
- Owner and operator of the national grid
- Territorial jurisdiction all over Pakistan except for Karachi Electric Supply Company (KESC) for Karachi area
- A national grid company under the control of GoP

NTDC: Major Functions

1. Central Power Purchasing Agency (CPPA)
2. System Operator (NPCC)
3. Transmission Network Operator
4. Contract Registrar and Power Exchange Administrator

NTDC: Role As CPPA

Single Buyer Plus Model

For delivery through 500 kV, 220 kV and 132 kV Network to the Distribution Companies, CPPA procures power from:

- a. X-WAPDA GENCOs;
- b. WAPDA Hydro Function; and
- c. Independent Power Producers (IPPs)

NTDC: Role As System Operator

National Power Control Centre

- Ensure secure, safe and reliable operation of the network
- Control and dispatch of generation facilities
- Dispatch generation facilities in most economical manner

NTDC: Role As Transmission Network Operator

For 500 and 220 kV Transmission Systems

- Operation and Maintenance
- Planning and Design
- Expansion/Augmentation

NTDC: Role As CRPEA

Contract Registrar and Power Exchange Administrator

- Recording, novation and monitoring of contracts relating to bilateral power trading system

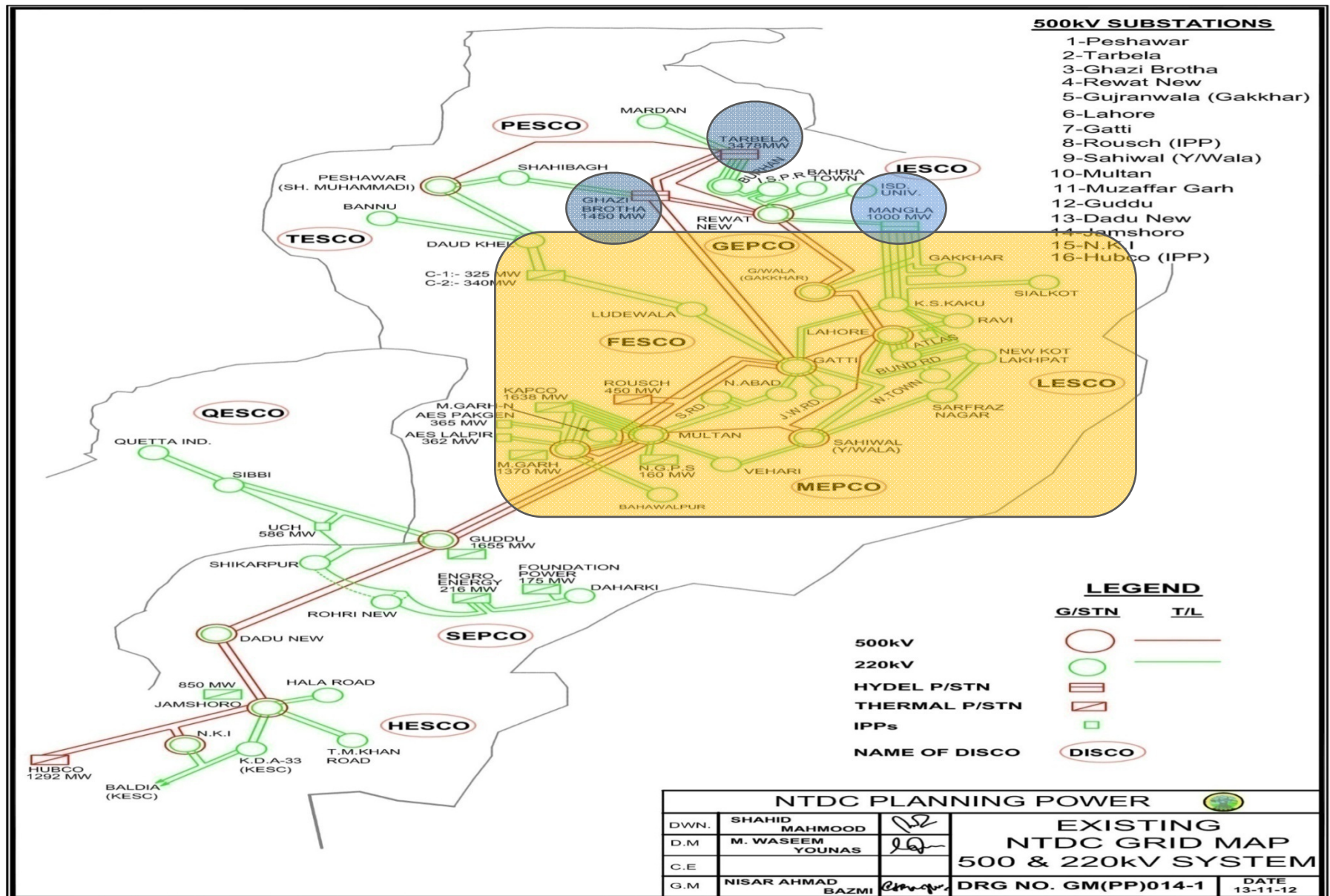
NTDC 500 & 220 kV Grid Stations

Year	500 kV Grid Stations		220 kV Grid Stations	
	No.	Capacity (MVA)	No.	Capacity (MVA)
1980	0	0	5	1,563
1985	2	1,350	10	3,106
1990	6	4,974	14	4,402
1995	7	6,774	18	6,210
2000	9	8,274	24	8,636
2005	9	8,274	26	9,688
2011	12	14,850	27	16,494

NTDC Transmission Lines

Year	500 kV Circuit (km)	220 kV Circuit (km)
1980	315	2,101
1985	1,239	2,422
1990	1,863	2,922
1995	3,315	3,848
2000	4,094	5,498
2005	4,344	6,993
2011	5,078	7,427

NTDC Transmission Network



Generation Sources (MW)

30th June 2012

Ownership/Type	Capacity (MW)	Capacity (%)
Hydro Power		
WAPDA	6,516	31.8%
IPPs	111	0.5%
Total Hydro	6,627	32.4%
Thermal Power		
X-WAPDA GENCOs	4,785	23.4%
IPPs around 30 Nos.	8,381	41.0%
Nuclear	650	3.2%
Total Thermal	13,816	67.6%
Grand Total	20,443 MW	

Energy Generation (Million kWh)

July 2012 – June 2013

Ownership/Type	Energy (Million kWh)	Energy (%)
Hydro Power		
WAPDA	28,206	31.4%
IPPs	436	0.5%
Total Hydro	28,642	31.9%
Thermal Power		
X-WAPDA GENCOs	12,602	14.1%
IPPs	43,717	48.7%
Nuclear	4413	4.9%
Total Thermal	56,615	68.1%
Grand Total	89,721	16

Load Forecast NTDC, KESC and Country (MW)

Year	NTDC	KESC	Country
2011-12	19,400	3,021	22,199
2012-13	20,401	3,240	23,407
2013-14	21,556	3,484	24,792
2014-15	22,761	3,762	26,261
2015-16	24,018	4,157	27,896
2016-17	25,352	4,592	29,647
2017-18	26,810	5,067	31,562
2018-19	28,353	5,587	33,604
2019-20	30,036	6,144	35,822
2020-21	31,757	6,752	38,127

Historical Surplus / Deficit (MW)

Year	Available Capability	Computed Peak Demand	Surplus/ Shortfall
2001-02	10,894	10,459	435
2002-03	10,958	11,044	-86
2003-04	11,834	11,598	236
2004-05	12,792	12,595	197
2005-06	12,600	13,847	-1,247
2006-07	13,292	15,838	-2,546
2007-08	12,442	17,398	-4,956
2008-09	13,637	17,852	-4,215
2009-10	13,445	18,467	-5,022
2010-11	13,193	18,521	-5,328
2011-12	13,733	20,058	-6,325

Consumers Vs Consumption Pattern

Consumers Category	No. of Consumers (30 th Jun 2012)		Consumption (Jul 2011 - Jun 2012)	
	Nos.	%age	Billion units	%age
Domestic	17,798,395	85.42%	30.383	42.58%
Commercial	2,482,702	11.80%	4.563	6.39%
Industrial	286,401	1.36%	18.402	25.79%
Agricultural	286,287	1.36%	8.414	11.79%
Others	12,826	0.06%	9.598	13.45%
Total	21,046,611		71.368	

Current Challenges

1. **In-adequate addition** of new generation capacity since restructuring of power sector in 1998
2. To encourage private sector, public sector investments on thermal generation capacity were ceased
3. Private sector did not deliver up to the expectations due to various reasons including unrealistic tariff (**highly subsidized by the government**)
4. Unprecedented demand-supply gap

Current Challenges...continued

5. Domestic gas reserves are depleting sharply. Current demand stands at **6 billion CFD** and supply is **4.34 billion CFD** - shortfall of **25%**.
6. By the year 2019-20, demand will be **7.3 billion CFD** whereas supply will be restricted to **2.5 billion CFD**.
7. Planned generation addition of **17,000 MW** during the next **10 years** is not sufficient. Another **5,000 MW** must be added by **2016** to bridge the gap.
8. Addition of **22,000 MW** generation capacity requires a hefty investment of around 45 billion US\$.

Prioritized Wish List

1. Diversity in supply sources;
2. Low supply cost;
3. System Adequacy; and
4. System Energy security

Strengths

1. A well defined institutional structure for the power sector
2. Unbundling of vertically integrated utility into various entities such as GENCOs, NTDC and DISCOs implemented
3. Power Sector Regulator - National Electric Power Regulatory Authority (NEPRA) established in pursuant to the enforcement Electric Power Act, 1997
4. Transmission Grid Code and Distribution Code enforced.
5. Private Sector managing over 40% of total demand.
6. Karachi Electric Supply Company handed over to the private sector with licenses for generation, transmission, and distribution to Karachi

Strengths...continued

7. Private Power Infrastructure Board (PPIB) established with the mandate to promote private sector investment as One-Window facility to investors.
8. Provincial private power cells have been formed in four provinces to promote private investment in the power sector, especially hydro power.
- 9. Pakistan is impressed with the regional success stories** such as India – Bhutan Electricity Trade (2,500 MW Power Transfer Capacity, India-Nepal (60-100 MW Electricity Trade) and ongoing projects of power trade between India – Bangladesh and India – Sri Lanka.

SEC's Perception

1. Stage is set for a proactive role of GoP and NTDC as far as regional interconnections and regional power trading is concerned.
2. SEC is confident that events like this seminar and overwhelming participation of SAARC Member States especially India would also encourage NTDC to expedite its regional interconnection initiatives

Thank
You