

Chapter 18 | ENERGY

The demand for electricity and various fuels are rising consistently, while lesser availability in the past has widened the gap between the demand and supply. In addition, the challenges confronting by the sector are multi-dimensional in nature that include high cost power generation, higher transmission & distribution losses due to de-rated outlived system and poor revenue collection. Consequently, all these factors give rise to higher tariffs resulting in higher subsidies and circular debt, particularly in power sector. To overcome this gap, multi-dimensional approach has been adopted.

The developments of indigenous energy resources (renewable and non –renewable) are critical for sustainable economic growth as envisioned in the Vision 2025. Pakistan’s electricity generation mix is heavily tilted towards non-renewable sources. The development of the hydro power projects remained on the lackluster due to controversies about major dams despite the large potential of hydro power generation. On fuels side, private investment in the petroleum industry could not be achieved due to security situation in the past.

Government is making concerted efforts to address the energy sector challenges. Almost 74 per cent of CPEC’s estimated outlay is for energy sector. Besides, import of LNG/natural gas and respective inland pipeline infrastructure, kick-starting of 3600 MW LNG projects, 2,150 MW Dassu, 4,500 MW Diamir Basha and 969 MW Neelum Jhelum Hydropower project are major initiatives of the Government to alleviate energy problems. To harness indigenous coal resources Thar Coal based 1200 MW power generation project has achieved financial close under CPEC. Further, renewable potential (wind and solar) are under active exploitation.

Performance review 2016-17

Fuel sector

Oil and gas

The annual production of crude oil was 32.14 million barrels in 2016-17 which is 96.49 per cent of the target of 33.31 million barrels. The domestic production of natural gas was 1.49 trillion cubic feet which is 102 per cent of the target 1.46 trillion cubic feet. The Liquefied Petroleum Gas (LPG) production was 626,170 tons which is 95.87 per cent of the target of 653,117 tons. A total of 71 wells including 27 exploratory and 44 development wells drilled, resulting in 11 oil and gas discoveries to sustain the indigenous oil and gas production. Detail is given at Annex-I.

Shale gas study with USAID assistance has been completed. The study confirmed that Pakistan has 10,159 TCF of shale gas and 2,323 billion barrels of oil resources. Based on the study, pilot projects are being initiated.

The Attock Refinery Limited (ARL) has completed their up-gradation projects i.e., Diesel Hydro Desulphurization (DHDS) and Isomerisation resulting in environment friendly HSD of Euro-II (0.05 per cent Sulphur) specification and enhanced production of 20,000 Tons/month Premier Motor Gasoline (PMG). Similarly National Refinery Limited (NRL) is expected to complete their up-gradation projects of DHDS and Isomerisation by June, 2017. Pak Arab Refinery Limited (PARCO) initiated detailed feasibility study for the state of the art Coastal Refinery having capacity of 250,000-300,000 barrels per day at Khalifa Point near Hub, Balochistan. The study is expected to be completed during 2017.

To promote fuel efficiency, RON 87 PMG has been replaced with RON 92 in November, 2016 and marketing of 95/97 PMG has also been allowed under deregulated environment. Further, from January, 2017 entire imports of High speed Diesel (HSD) shall conform to Euro-II specification.

The Oil and Gas Regularity Authority (OGRA) has granted provisional licenses to 21 new Oil Marketing Companies (OMC's) to establish the requisite infrastructure (storages) in the country. These companies will be granted marketing licenses on satisfactory completion of storage facilities. Further, seven (07) depots are expected to be completed in 2016-17.

Gas consumers addition and pipelines construction

As per targets, 594,059 new consumers were added to Sui Gas Companies. Moreover, SNGPL and SSGCL have added total of 11,189 Km of new transmission and distribution pipelines in their respective jurisdictions. Detail is given at Annex – II.

To transmit imported LNG up-country, the SSGCL construction of 42" dia 342 Km Pipeline project from Karachi (Pakland) to Khairpur (Nara) for transporting 1.2 BCF RLNG dedicatedly to SNGPL is to be commissioned by June, 2017. The Gwadar- Nawabshah LNG Terminal & Pipeline Project envisaging laying of 42" 700 Km pipeline along with LNG terminal of 600 MMCFD capacities at Gwadar, Balochistan, is under implementation. To supply LPG through Air Mix Plants to the areas where pipe gas is economically not feasible, SSGCL is executing two (2) LPG Air Mix Plants at Awaran & Bela, Balochistan through its own resources and the plants are expected to be commissioned in June, 2017. The OGRA issued 21 licenses to LPG sector which include 15 licenses for operation/ marketing of LPG storages and filling, 3 licenses each for storage/refuelling and construction of LPG Air Mix Plants.

Liquefied natural gas (LNG) and natural gas import

During 2016-17, the Pakistan State Oil handled 3.61 million tons of LNG which is 15.40 per cent more than the target of 3.125 million tons. Due to continuous supply of re-gassified LNG into the system, almost all the sectors received enhanced gas supply particularly compressed natural gas sector (CNG).

Import of gas projects

Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline having 56-Inch dia, 1,680 km length and gas volume of 3.2 billion cubic feet of natural gas per day (bcfd) (Pakistan share 1,325 MMcfd) from Turkmenistan was inaugurated in December 2015. In March, 2017, the Front End Engineering & Design (DEED) work in Afghanistan and Pakistan has formally started. The project is expected to be completed by 2020.

Iran-Pakistan Gas Pipeline Project (IP) envisage laying of 42 inches 1,931 Km pipeline having 750 MMCFD capacity could not proceed well due to sanctions on Iran. During Iranian president visit to Pakistan in March, 2016, it was agreed to revive discussions on the project in wake of lifting sanctions on Iran. The MPNR is in process of resolving all the outstanding issues including amendments in the Gas Sales Purchase Agreement (GSPA).

Coal sector

The Geological Survey of Pakistan (GSP) continued various surveys and exploratory drilling operations for coal exploration under the following PSDP funded projects;

- Appraisal of Newly Discovered Coal Resources of Badin Coal Field and its adjoining areas of Southern Sindh.
- Exploration of Tertiary Coal in Central Salt Range, Punjab.

Thar coal development

The Government of Sindh through extensive geological and hydro-logical investigations has developed 12 blocks at Thar including Block-I, II, VI etc. operated by Sino Sindh Resources Pvt Ltd (SSRL), Sindh Engro Coal Mining Company Ltd (SECMC)/Engro Power Thar Ltd. and Sindh Carbon Energy Ltd (Oracle Coalfield, PLC, UK) respectively. Under the joint venture project between GoS and Engro Group, the SECMC achievements includes financial close in April, 2016, land acquisition for mining, EPC contract signed, coal supply agreement with Engro Power Thar Ltd. Signed and Mining & Power EIA obtained.

Outlook and programmes 2017-18

Target for domestic crude oil and natural gas production fixed as 35.45 million barrels and 1.51 trillion cubic feet gas respectively. The supply demand gap in both oil and gas sectors will be met through import of crude oil and petroleum products. The indigenous gas supply will be supplemented through LNG imports to the tune of 9.0 million tonnes.

Total 90 wells (50 exploratory and 40 developments) are planned to be drilled by the Exploration and Production (E&P) companies. OGRA proposed construction of Five (05) new oil storage terminals. Moreover, Five (05) companies have also shown interest in OMC's and they will be granted provisional licenses for setting of infrastructure (storage) after meeting the requisite criteria.

Both SNGPL and SSGCL have plans to add 414,723 new consumers and 10,653 Km of transmission and distribution pipelines in their respective systems/networks. Due to existing limited pipeline capacity and to cater for additional RLNG, the SSGCL will construct 30" dia x 300 Km transmission pipeline in three (03) phases from Nawabshah to Malir which would increase the capacity up to 523 MMCFD. In 2017-18 phase-I i.e. 30" dia x 125 Km from Sindh university to Pakland is proposed. The SSGCL also proposed rehabilitation of 12" x 344 Km Quetta Pipeline Project (QPL) during 2017-18.

The SSGCL will install 10 LPG Air Mix Plants in its franchise area. The OGRA proposed 28 licenses to LPG sector which include 20 licenses for operation/ marketing of LPG storages and filling, 5 licenses for storage and refuelling and 3 licences for marketing of LPG storage, operation of Air Mix Plants and distribution of air-mix LPG through pipeline.

The Gwader-Nawabshah Natural Gas Pipeline and LNG Terminal at Gwader are to be actively persuaded with signing of contract with Chinese EPC contractor, achieving of financial close, completion of land acquisition process and start of construction during 2017-18. Similarly, for North-South Gas Pipeline Project of 42" dia, 1100 Km length having 1.2 BCFD capacity, to transport additional gas volume to up country, Front End Engineering Design (FEED) work, Arrangement of Funds for Land acquisition, SPV for the project and start of construction is planned for the year 2017-18. The LNG import is planned to be increased to 9.0 million tons /annum. In order to enhance handling capacity and capabilities of country with regard to LNG, commissioning of 2nd LNG terminal at Port Qasim expected by August, 2017. Moreover, work on 3rd LNG Terminal having capacity of 600 mmcf/d will start in 2017-18.

The TAPI project activities including achievement of financial close, signing of gas transport/ transit fee agreement and FEED work would be implemented during 2017-18. The implementation on IP project will be reviewed in consultation with the Iranian counterpart to discuss and finalize all outstanding issues including amendments in the GSPA for preparing revised implementation framework for the completion of the project,

The Geological Survey of Pakistan (GSP) will continue exploratory drilling and surveys under the following two on-going projects:

- Appraisal of Newly Discovered Coal Resources of Badin Coal Field and its adjoining areas of Southern Sindh.
- Exploration of Tertiary Coal in Central Salt Range, Punjab.
- In addition to above, the following new projects are also proposed by the GSP:
- Evaluation of Coal Bed Methane in Chamalang Coal Fields, Balochistan
- Investigations for Geothermal Energy in Pakistan
- Technical Study to Assess the Commercial Potential of Coal in Harnai District, Balochistan

The Sindh Engro Coal Mining Company (SECMC) with their Chinese contactors will continue its mining project of 3.8 million tons per annum capacity for supplying Thar coal to 2x 330 MW power plant at Block-II. During 2017-18 the process of over burden removal will continue.

Performance review 2016-17

Power sector

In addition to CPEC investments in power sector, an amount of Rs 405 billion was allocated to power sector projects of generation, transmission and distribution for Ministries of Water & Power and Kashmir Affairs & Gilgit-Balistan and Pakistan Atomic Energy Commission. A total of 3,874.2 MW against the 5,304.25 MW planned in 2016-17 were actualised. Details are given at Table-1:

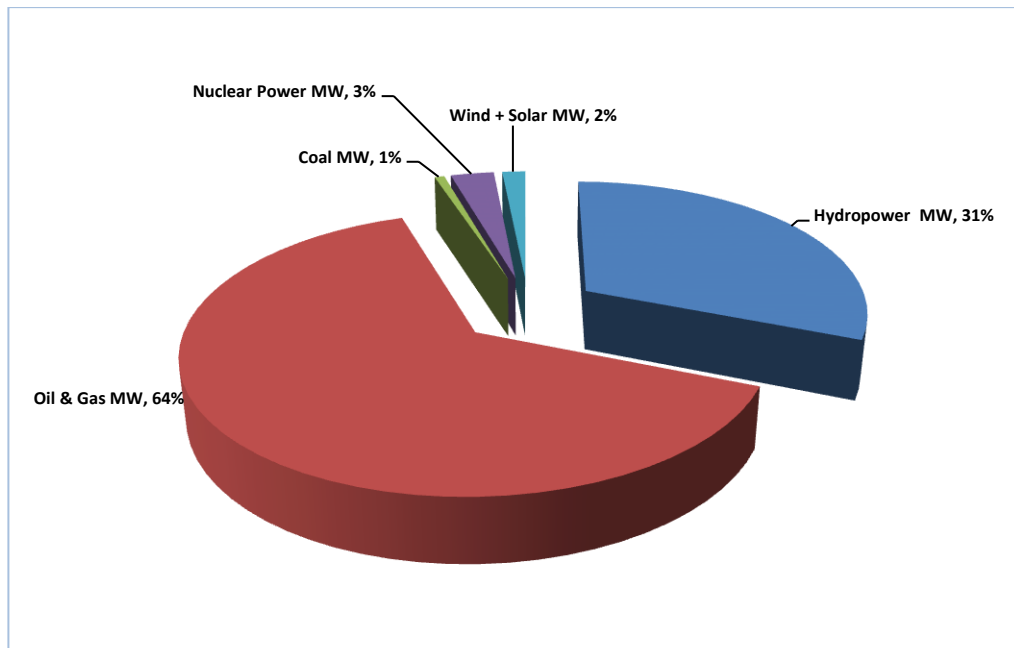
Table-1
Addition in generation capacity 2016-17

Name of project	Agency	Province	Fuel / source	Capacity (MW)	Commissioning date
Chashma-III Nuclear Power Plant	PAEC	Punjab	Nuclear	340	Jul-16
M/s Gul Ahmad Energy Ltd	AEDB	Sind	Wind	50	Aug-16
Appolo Solar Pakistan Ltd	AEDB	Punjab	Solar	100	Aug-16
Crest Energy Pakistan Ltd	AEDB	Punjab	Solar	100	Aug-16
Best Green Energy Pakistan Ltd.	AEDB	Punjab	Solar	100	Aug-16
Yunus Energy Ltd	AEDB	Sind	Wind	50	Sep-16
M/s Master Wind Energy (Pvt.) Ltd	AEDB	Sind	Wind	49.5	Sep-16
M/sHydrochinaDawood Power (Pvt.) Ltd	AEDB	Sind	Wind	49.5	Sep-16
M/s United Energy Pakistan Ltd	AEDB	Sind	Wind	99	Sep-16
M/s TenegaGenerasi Ltd	AEDB	Sind	Wind	49.5	Sep-16
Tapal Wind	AEDB	Sind	Wind	30	Sep-16
Metro Power Company	AEDB	Sind	Wind	50	Sep-16
Hamza Sugar Mills	AEDB	Punjab	Bagasse	15	March-17
Layyah Sugar Mills	AEDB	Punjab	Bagasse	41	Apr-17
Patrind Hydropower Project	PPIB	AJK	Hydel	147	Apr-17
M/s Sachal Energy Development (Pvt.) Ltd	AEDB	Sind	Wind	49.5	Jun-17
Chashma-IV Nuclear Power Plant	PAEC	Punjab	Nuclear	340	June-17
HaveliBahader Shah RLNG GT1/GT2	NPPMCP L	Punjab	RLNG	770	June-17
Bhikki RLNG GT1/GT2	Energy Deptt	Punjab	RLNG	728	June-17
Sahiwal Imported Coal Power Project Unit -I	PPIB	Punjab	Imp. Coal	660	June-17
DaralKhwar Swat	Energy Deptt	KPK	Hydal	36.6	June-17
RanoliaKohistan	Energy Deptt	KPK	Hydal	17	June-17
MachaiMardan	Energy Deptt	KPK	Hydal	2.6	June-17
Total addition 2016-17				3874.2	

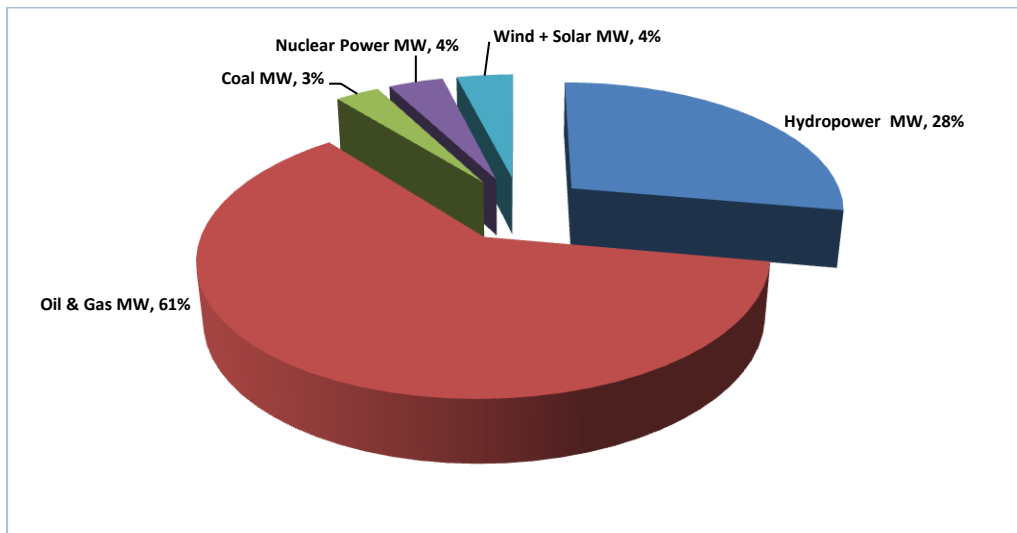
The installed capacity was 22,885 MW in June 2016. An addition of 3874.2 MW was actualised and the capacity has been increased to 26265.2 MW in June 2017.

Shift in energy mix during 2016-17 as compared to 2015-16 is shown in the following two pie charts.

Power generation mix as on June 2016



Power generation mix as on June 2017



Transmission and distribution system

During the year 2016-17, the NTDC transmission has been enhanced by adding 3000 MVA and 2400 MVA on 500 kV and 220 kV systems respectively. The transmission lines were extended by 87 km accordingly. Detail is given at Table-2.

Table-2
Transmission capacity addition

NTDC						
S. No.	Items	Voltage Level	Units	2016-17	2016-17	2017-18
				(Estimates / Planned)	(Actualized / Achieved)	(Targets)
1	Additional installed Capacity	500 kV	MVA	1,800	3,000	1,200
		220 kV	MVA	4,680	2,400	3,000
2	Installed Capacity (Total)	500 kV	MVA	24,624	21,624	22,824
		220 kV	MVA	33,553	27,913	30,913
3	Total addition in transmission lines in kilometers	500 kV	Km	382	9	1,853
		220 kV	Km	347	78	809

A total of 206,960 villages were electrified and 25 million consumers were added in the system. Moreover, 0.3 per cent losses were reduced by NTDC. Further, to cope with increasing power demand all Distribution Companies (DISCO's) enhanced their capacities and capabilities of distribution of power. Detail is attached as Annex-III.

Outlook 2017-18

The projects for power generation of capacity 7524.28MW are expected to come on line. The demand-supply gap is expected to narrow down. As per National Power Control Centre (NPCC), it will almost equate the supply demand with marginal shortfall of 13 MW only by June, 2018. Detail is given in Table-3.

Table-3

Type	UNITS	(2014-15) Average	(2015-16) Average	(2016-17) Average	(2017-18) Average
Installed Capacity (As on 30th June)	MW	22,873	23,044	23,846	33,546
Demand	MW	14,847	15,702	16,587	18,623
Generation	MW	11,111	11,601	12,786	18,610
Shortfall	MW	3,736	4,101	3,801	13

Three wind projects with capacity of 200 MW under CPEC are commissioned, 660 MW of Sahiwal Imported Coal Power Project Unit -I is expected to be commissioned before June-2017 and remaining units are in pipeline and will be commissioned during 2017-18. List of the CPEC projects including coal, hydro and wind is attached as Annexure-IV. It will not only augment supplies in a major way, but also significantly change the energy mix, by reducing the average cost of generation.

The development of hydro power resources is being actively pursued and about 9,551 MW projects are at various stages of construction. Work on 969 MW Neelum Jhelum is in advance stage and overall 91 per cent physical work is completed. The first unit (242 MW) will start generation in Feb-2018 and other 3 units of 242 MW will start generation by March, April and May 2018 respectively. Similarly the Tarbela 4th Extension will start generation of 1,410 MW in 2017-18. Others are at various stages of construction, these are

4,500 MW Diامر Bhasha, 128 MW Keyal Khwar, 106 MW Golan Gol, 2,160 MW Dasu Hydropower Project (stage-1), 34.5 MW Harpo, 243 MW 2nd Rehabilitation of Warsak Hydropower station. Similarly 2,880 MW nuclear power projects are at various stages of construction.

The pre-feasibility and feasibility studies of approximately 18,875 MW hydro projects have been completed. The projects are under various stages of approval, and finances for these projects are being arranged. These are 7,100 MW Bunji Hydropower Project, 310 MW refurbishment and up gradation of the Mangla Generating Unit 1-6, 1,100 MW Kohala, 690 MW Shyok Dam, 665 MW Lower Plas Valley, 496 MW Lower Spat Gah, 40MW Basho, 2,300 MW Pattan, 4,000 MW Thakot, 2,100 MW Dasu stage-II 48 MW Jagran, 26 MW Shagarthang.

Approximately, a total of 4,020 MW thermal projects in the public sector are under construction. These are 1,320 MW Coal fired Power Plant Jamshoro, while construction on two 2,400 MW LNG-based power plants at Haveli Bahadur Shah and Balloki is in advance stage, while 300 MW coal-fired Power Plant Gwadar progressing on fast track basis.

Programmes

Power sector

An amount of Rs395 billion has been allocated in PSDP for various power projects for 2017-18 of the Ministry of Water & Power, Ministry of Kashmir Affairs & Gilgit Baltistan and Pakistan Atomic Energy Commission. The WAPDA, NTDC, GENCOs and DISCOs will invest Rs 385 million from their own resources. The installed power generating capacity is planned to be increased from 26,265 MW in June 2017 to 33,789 MW in June 2018 through an addition of 7,524 MW in NTDC system. The break up is given at Table-4.

Table-4

Name of project	Agency	Province	Fuel / source	Capacity (MW)	Commissioning date
Almoiz Industries Ltd	AEDB	Sind	Bagasse	36	Jul-17
Tarbela 4 Project	WAPDA	KPK	Hydal	1410	Aug-17
United Energy Pakistan Ltd	AEDB	Sind	Wind	99	Sep-17
Shahtaj Sugar Mills Ltd	AEDB	Sind	Bagasse	32	Nov-17
Hamza Sugar Mills Ltd Unit-II	AEDB	Sind	Bagasse	30	Dec-17
Harappa Solar Pvt Ltd	AEDB	Sind	Solar	18	Dec-17
Bhikki RLNG ST	Energy Deptt	Punjab	RLNG	452.1	Dec-17
Jhampir Wind Power Ltd	AEDB	Sind	Wind	49.6	Feb-18
Hawa Energy Pvt Ltd	AEDB	Sind	Wind	50	Feb-18
Neelum Jhelum	WAPDA	AJK	Hydal	969	Feb-18
Golan Gol HPP	WAPDA	KPK	Hydal	108	May 18
Norinco International	Energy Deptt	Sind	Wind	50	Jun-18
Harvey Wind	Energy Deptt	Sind	Wind	50	Jun-18
Zulaikha Energy	Energy Deptt	Sind	Wind	50	Jun-18
Din Group	Energy Deptt	Sind	Wind	50	Jun-18

Gul Ahmed	Energy Deptt	Sind	Wind	50	Jun-18
ACT 2 Wind Energy	Energy Deptt	Sind	Wind	50	Jun-18
Artistic Milliners	Energy Deptt	Sind	Wind	50	Jun-18
Fatima Energy Cogeneration Power Project	PPIB	Punjab	Bagasse	118.8	Jun-18
Hartford Alternative Energy Pvt Ltd	AEDB	Sind	Wind	49.3	Jun-18
RYK Energy Ltd	AEDB	Sind	Bagasse	25	Jun-18
Chanar Energy Ltd	AEDB	Sind	Bagasse	22	Jun-18
Karora HPP Shangla	Energy KPK	KPK	Hydal	11.8	Jun-18
Jabori HPP Mansehra	Energy KPK	KPK	Hydal	10.2	Jun-18
BallokiRLNG	NPPMCPL	Punjab	RLNG	1232.5	Jun-18
Haveli Bahader Shah RLNG ST	NPPMCPL	Punjab	RLNG	451.1	Jun-18
Sahiwal Imported Coal Power Project Unit -II	PPIB	Punjab	Imp. Coal	660	Jun-18
Port Qasim Imported Coal Power Project Unit 1	PPIB/CPEC	Sindh	Imp. Coal	1320	Jun-18
Mini Hydropower Projects	Energy Deptt	Punjab	Hydal	19.88	Jun-18
Total addition 2017-18				7,524	

Transmission and distribution system

To enhance the transmission capacity during 2017-18, about 1200 MVA of 500 kV and 3000 MVA of 220 kV will be installed along with 1853 km of 500 kV and 809 Km of 220 kV of transmission lines as per details given in Table-5.

Table-5
Transmission capacity addition 2017-18

NTDC						
S. No.	Items	Voltage Level	Units	2016-17	2016-17	2017-18
				(Estimates / Planned)	(Actualized / Achieved)	(Targets)
1	Additional installed Capacity	500 kV	MVA	1800	3000	1200
		220 kV	MVA	4680	2400	3000
2	Installed Capacity (Total)	500 kV	MVA	24624	21624	22824
		220 kV	MVA	33553	27913	30913
3	Total addition in transmission lines in kilometers	500 kV	Km	382	9	1853
		220 kV	Km	347	78	809

Further, all Distribution Companies (DISCO's) will continue executing Power Distribution Enhancement projects in different phases for increase in power distribution capacity. Detail is attached at Annex-III.

CASA-1000 Project

CASA 1000 transmission project will transmit 1300 MW by laying 1200 km of transmission lines of hydel power generated in the central Asian states i.e., Tajikistan and Kyrgyz Republic through Afghanistan to Pakistan. The project will not only connect the power transmission lines but will also promote regional connectivity. Prime Minister of Pakistan inaugurated the project on May, 2016 in Dushanbe.

Annex – I

Energy fuel sector
Oil and Gas achievements and targets

Items	Units	Targets 2016-17	Expected achievement up to 30-06- 2017	Per cent Achieve- ments	Targets 2017-18
Production					
Crude Oil	Million Barrels	33.31	32.14	96.49	35.45
Gas	Trillion cft	1.46	1.49	102	1.51
LPG	Tons	653,117	626,170	95.87	644,000
No of wells drilled					
Exploratory	Nos.	90	71	78.89	90
Development	Nos.	48	27	56.25	50
		42	44	104.76	40

Annex –II

Energy fuel sector
Gas consumers, transmission and distribution addition
Achievements and Targets

S.No	Items	Units	Targets 2016-17	Expected achievement up to 30-06-2017	per cent Achievements	Targets 2017-18
Gas Consumers Added						
SNGPL						
	Domestic	Nos.	500,000	500,000	100	300,000
	Commercial.	Nos.	-	-	-	-
	Industrial	Nos.	-	-	-	-
	Sub Total SNGPL	Nos.	500,000	500,000	100	300,000
SSGCL						
	Domestic	Nos.	110,600	93,630	84.66	114,300
	Commercial.	Nos.	-	-	-	-
	Industrial	Nos.	-	-	-	-
	Sub Total SSGCL	Nos.	110,600	93,630	84.66	114,300
	Total SNGPL + SSGCL	Nos.	610,600	593,630	97.22	414,300
Transmission & Distribution Extension by Gas Companies						
SNGPL						
	Transmission & Distribution	Km	10,170	10,170	100	9,330
SSGCL						
	Transmission & Distribution	Km	1,843	1,019	55.29	1,323
	Total SNGPL + SSGCL	Km	12,013	11,189	93.14	10,653

Annex-III

Discos capacity addition
MEPCO

S. No	Items	Units	2016-17 (Estimates / Planned)	2016-17 (Actualized / Achieved)	2017-18 (Targets)
1	Additional installed Capacity	MVA	1171	1073	686
2	Installed Capacity (Total)	MVA	7760.09	7662.09	8446.09
3	Total addition in transmission lines in kilometers	Km	245.66	229.66	464
4	Reduction in System Losses	%	0.4	0	0.2
5	Existing Consumers (Consumers added)	Nos.	5,647,372 (Added during Current year =272,600)	5,524,719 (Ending 01/2017= 149,947)	5,897,372 (Added during the year=250,000)
6	Electrification of Villages / Addition	Nos.	1773	1083	2000
HESCO					
1	Additional installed Capacity	MVA	532	146	366
2	Installed Capacity (Total)	MVA	2185		
3	Total addition in transmission lines in kilometers	Km	146.79	34.86	299
4	Reduction in System Losses	%	25.6	30.6	29.6
5	Existing Consumers (Consumers added)	Nos.	32876	38052	33963
6	Electrification of Villages / Addition	Nos.	500	308	700
FESCO					
1	Additional installed Capacity	MVA	520	291.5	633
2	Installed Capacity (Total)	MVA	5369.6	4854.4	6002.6
3	Total addition in transmission lines in kilometers	Km	210.38	72.38	386
4	Reduction in System Losses	%	10.1 (-0.1)	8.1 (+0.3)	10.00 (-0.1)
5	Existing Consumers (Consumers added)	Nos.	3762565	3680426	3962565
6	Electrification of Villages /	Nos.	550	272	650

S. No	Items	Units	2016-17 (Estimates / Planned)	2016-17 (Actualized / Achieved)	2017-18 (Targets)
Addition					
IESCO					
1	Additional installed Capacity	MVA	461	362	999
2	Installed Capacity (Total)	MVA	5765	5767	6766
3	Total addition in transmission lines in kilometers	Km	298	87	293.5
4	Reduction in System Losses	%	9.37	5.7	9.35
5	Existing Consumers (Consumers added)	Nos.	2,667,612	2,635,612	2,747,612
6	Electrification of Villages / Addition	Nos.	245	191	473
LESCO					
1	Additional installed Capacity	MVA	1264	952	1352
2	Installed Capacity (Total)	MVA		9530	
3	Total addition in transmission lines in kilometers	Km	435.736	233.636	202.1
4	Reduction in System Losses	%	13.35	11.70	12.85
5	Existing Consumers (Consumers added)	Nos.	162084	95036	168567
6	Electrification of Villages / Addition	Nos.	50	36	123
PESCO					
1	Additional installed Capacity	MVA	429.5	305.5	667
2	Installed Capacity (Total)	MVA	5966	5842	6633
3	Total addition in transmission lines in kilometers	Km	108	29	180
4	Reduction in System Losses	%	32	31.5	30
5	Existing Consumers (Consumers added)	Nos.	3182	3154	3277 3% Load Growth
6	Electrification of Villages / Addition	Nos.	5239	2244	Depends on funds availability

S. No	Items	Units	2016-17 (Estimates / Planned)	2016-17 (Actualized / Achieved)	2017-18 (Targets)
QESCO					
1	Additional installed Capacity	MVA	447.7	447.7	175.6
2	Installed Capacity (Total)	MVA	2538.3	2986	3161.6
3	Total addition in transmission lines in kilometers	Km	492	492	170
4	Reduction in System Losses	%	22.7	22.3	22.5
5	Existing Consumers (Consumers added)	Nos.	548,980	586,971	588,352
6	Electrification of Villages / Addition	Nos.	1000	660	1000
TESCO					
1	Additional installed Capacity	MVA	196	196	237
2	Installed Capacity (Total)	MVA	882	882	1119
3	Total addition in transmission lines in kilometers	Km	27	27	33
4	Reduction in System Losses	%	3.9	3.9	2.6
5	Existing Consumers	Nos.	441837	442937	444337
6	Consumers added	Nos.	1100	1100	1400
7	Electrification of Villages / Addition	Nos.	110	110	150
AJK					
1	Additional installed Capacity	MVA	78	0	78
2	Installed Capacity (Total)	MVA	766	766	844
3	Total addition in transmission lines in kilometers	Km	11KV Line = 122.70 0.4 KV Line= 403.50 T/F= 343 Nos.	11KV Line= 993.70 0.4 KV Line =17767.50 T/F = 13141 Nos.	11KV Line = 135.00 0.4 KV Line= 444.00 T/F= 377 Nos.
4	Reduction in System Losses	%	38	37.2	36.9

S. No	Items	Units	2016-17 (Estimates / Planned)	2016-17 (Actualized / Achieved)	2017-18 (Targets)
5	Existing Consumers (Consumers added)	Nos.	4445	575621	6700
6	Electrification of Villages / Addition	Nos.	1664	Electrified= 262 Partially Electrified=1402	106
Gilgit Baltistan					
1	Additional installed Capacity	MW	21	21.3	24.3
2	Installed Capacity (Total)	MVA	172.5	147	49
3	Total addition in transmission lines in kilometers	Km			
4	Reduction in System Losses	%			
5	Existing Consumers (Consumers added)	Nos.	2600	16250	22000
6	Electrification of Villages / Addition	Nos.	3	5	6

Annex-IV

S#	Project Name	Fuel	Location	Capacity (MW)
1	Port Qasim Coal Power Project	Imported Coal	Port Qasim, Sindh	1,320
2	Sahiwal Coal Power Project	Imported Coal	Sahiwal, Punjab	1,320
3	HUBCO Coal Power Project	Imported Coal	Hub, Balochistan	1,320
4	Gwadar Coal Project	Imported coal	Gwader, Balochistan	300
5	Engro Thar Coal Power & Mine Project	Thar Coal	Thar Block-II, Sindh	660
6	Shanghai Electric Coal Power & Mining	Thar Coal	Thar Block-I, Sindh	1,320
7	Oracle Thar Coal Power Project & Mining	Thar Coal	Thar Block-VI, Sindh	1,320
8	HUBCO Thar Coal Power Project	Thar Coal	Thar Block-II, Sindh	330
9	Thal Nova Thar Coal Power Project	Thar Coal	Thar Block-II, Sindh	330
10	Suki Kinari Hydropower Project	Hydro	River Kunhar, KP	870
11	Karot Hydropower Project	Hydro	River Jhelum, Punjab	720
12	Kohala Hydro Power Project	Hydro	River Jhelum, AJK	1,124
13	Matiari-Lahore HVDC Transmission Line	HVDC \pm 660 kV	Sindh & Punjab	4000
14	M/s Hydro China Dawood Power Ltd.	Wind	District Thatta, Sindh	50 MW
15	M/s UEP Wind Power Pvt. Ltd.	Wind	Thatta, Sindh	100 MW
16	M/s Sachal Energy Development (Pvt.) Ltd	Wind	Thatta, Sindh	50 MW
17	Three Gorges Wind Farms (2x50MW)	Wind	Thatta, Sindh	100 MW
18	Quaid-e-Azam Solar Power Park	Solar	Bahawalpur, Punjab	900 MW