

Power Generation

Power Chain

Capacity & Generation Mix

Hydel, Coal & RLNG Power Projects

Renewable Energy Projects

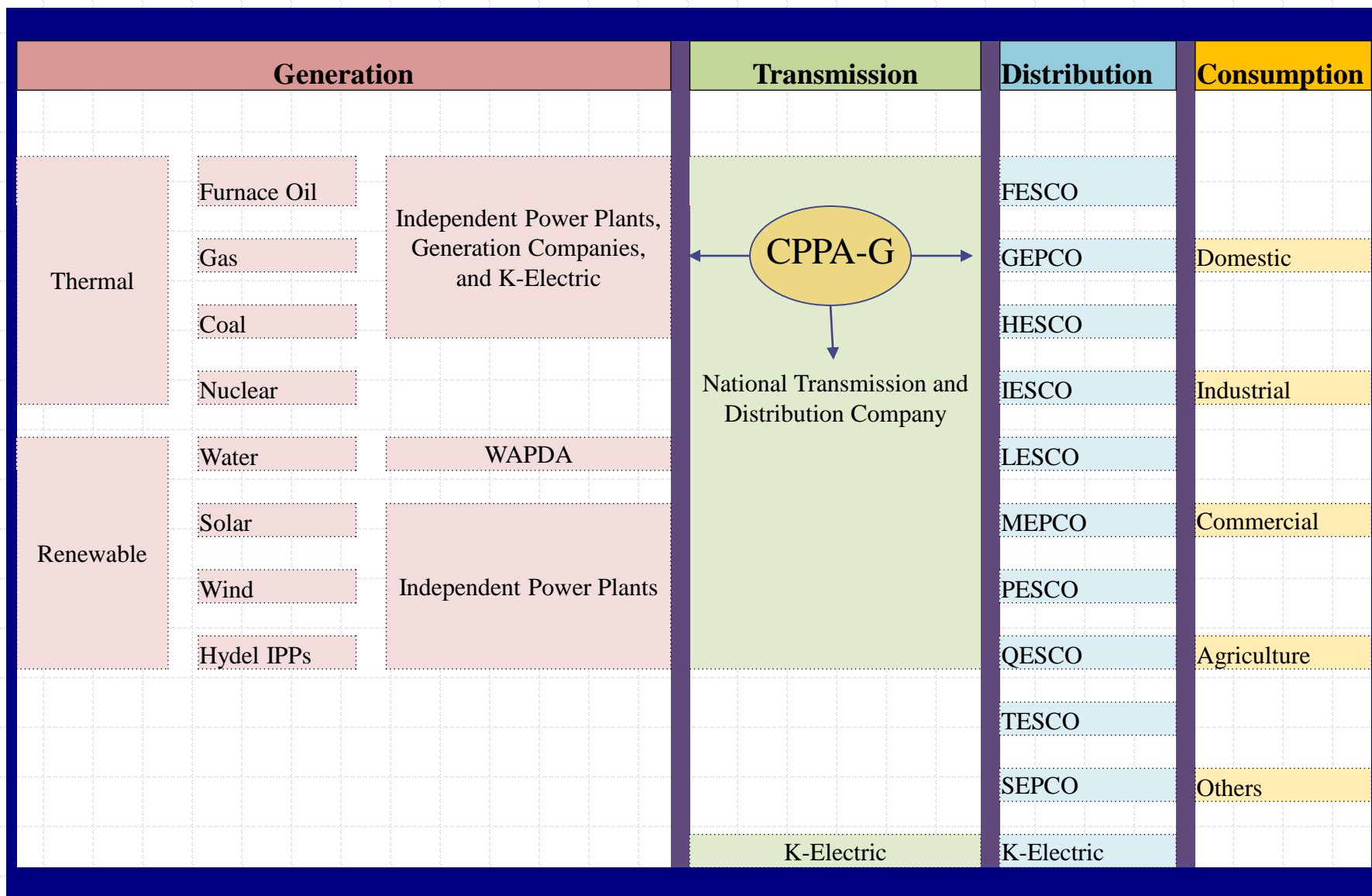
PACRA Universe

Risk Bubble

Bibliography

April 2018

Power Chain



Capacity & Generation

Capacity Source		Dependable Generation Capacity (MW)											
		Mar-18	Mix		Jun-17	Mix		Mar-17	Mix		Jun-16	Mix	
			%	%		%	%		%	%			
Thermal	IPPs	14,538	45.2%	68.4%	12,083	41.9%	67.3%	9,208	36.0%	63.5%	7,932	33.5%	63.8%
	GENCOs	4,762	14.8%		4,762	16.5%		4,478	17.5%		4,676	19.7%	
	K-Electric	2,295	7.1%		2,295	8.0%		2,295	9.0%		2,247	9.5%	
	Others (CPPs/SPPs)	378	1.2%		282	1.0%		282	1.1%		282	1.2%	
Hydel	WAPDA	6,902	21.5%	22.6%	6,902	23.9%	24.7%	6,902	27.0%	27.8%	6,902	29.1%	30.0%
	IPPs	368	1.1%		213	0.7%		213	0.8%		213	0.9%	
Nuclear	Nuclear plants	1,295	4.0%	4.0%	955	3.3%	3.3%	955	3.7%	3.7%	615	2.6%	2.6%
Wind	IPPs	882	2.7%	2.7%	732	2.5%	2.5%	650	2.5%	2.5%	304	1.3%	1.3%
Solar	IPPs	388	1.2%	1.2%	352	1.2%	1.2%	352	1.4%	1.4%	400	1.7%	1.7%
Bagasse	IPPs	322	1.0%	1.0%	273	0.9%	0.9%	258	1.0%	1.0%	139	0.6%	0.6%
Total		32,130	100%	100%	28,850	100%	100%	25,593	100%	100%	23,710	100%	100%

Generation (Actual)



	9MFY18	9MFY17	FY17	FY16	FY15	FY14	FY13
Generation (GWh)	106,335	82,669	114,763	112,362	105,420	103,857	102,989
Growth (%)	28.6%	15.0%	2.1%	6.6%	1.5%	0.8%	4.4%
Capacity Factor (Utilization)	56%	51%	50%	54%	52%	56%	50%

- ◆ Thermal – the largest source of electricity generation
- ◆ Addition of Nuclear, Wind, Solar and Bagasse based IPPs
- ◆ Moderate rise in thermal & hydel resources

Generation Mix (Fuel) and Cost

Source	9MFY18			FY17			FY16			FY15		
	Generation (%)	Energy Cost (%)	Cost/Unit (PKR/KWh)	Generation (%)	Energy Cost (%)	Cost/Unit (PKR/KWh)	Generation (%)	Energy Cost (%)	Cost/Unit (PKR/KWh)	Generation (%)	Energy Cost (%)	Cost/Unit (PKR/KWh)
Hydel	24.4%	0.0%	-	27.1%	0.0%	-	30.5%	0.0%	-	30.9%	0.0%	-
Wind	1.4%	0.0%	-	1.2%	0.0%	-	0.2%	0.0%	-	0.4%	0.0%	-
Solar	0.6%	0.0%	-	0.6%	0.0%	-	0.2%	0.0%	-	0.0%	0.0%	-
Nuclear	7.7%	1.6%	1.0	5.0%	1.0%	1.0	3.4%	0.9%	1.2	4.7%	0.9%	1.2
Coal	8.6%	9.0%	5.1	0.9%	0.6%	3.3	0.1%	0.1%	4.5	0.1%	0.1%	4.6
Gas	33.7%	42.2%	6.1	30.9%	36.5%	6.0	32.1%	37.5%	5.2	27.4%	21.9%	5.0
Bagasse	0.9%	1.1%	6.1	0.7%	0.8%	5.5	0.5%	0.6%	5.8	0.2%	0.2%	6.2
Mixed	0.6%	0.8%	6.8	0.2%	0.3%	6.8	0.2%	0.4%	7.1	1.0%	1.5%	8.9
RFO	20.7%	41.6%	9.8	31.6%	55.6%	8.9	31.1%	55.0%	7.9	32.0%	66.4%	13.0
Import	0.5%	1.0%	10.8	0.4%	0.9%	10.6	0.4%	1.0%	10.5	0.4%	0.7%	10.0
HSD	0.9%	2.6%	13.9	1.4%	3.8%	13.7	1.3%	3.7%	13.0	2.8%	7.8%	17.7
Total	100.0%	100.0%	4.9	100.0%	100.0%	5.0	100.0%	100%	4.5	100%	100%	6.3

- ◆ Reliance on RFO generation gradually declining
- ◆ HSD – most expensive source of generation
- ◆ Hydel – cheapest source of generation

Generation Mix (Entity) and Cost

Source	9MFY18			FY17			FY16			FY15		
	Generation (%)	Energy Cost (%)	Cost/Unit (PKR/KWh)	Generation (%)	Energy Cost (%)	Cost/Unit (PKR/KWh)	Generation (%)	Energy Cost (%)	Cost/Unit (PKR/KWh)	Generation (%)	Energy Cost (%)	Cost/Unit (PKR/KWh)
IPPs	51.9%	69.4%	7.4	39.1%	59.6%	7.8	40.6%	62.0%	6.8	42.4%	67.6%	10.0
WAPDA (Hydel)	19.1%	0.3%	0.1	26.8%	0.7%	0.1	29.5%	0.6%	0.1	29.9%	0.5%	0.1
GENCOs	11.5%	15.2%	7.4	16.0%	24.8%	7.9	15.2%	22.7%	6.7	11.2%	19.8%	11.1
K-Electric	7.6%	11.1%	8.2	8.8%	11.3%	6.5	8.3%	11.9%	6.4	8.8%	9.1%	6.4
Two Nuclear plants	6.2%	1.1%	1.0	5.1%	1.1%	1.1	3.4%	0.9%	1.2	4.7%	0.9%	1.2
Wind\ IPPs	1.1%	0.3%	1.6	1.2%	0.1%	0.6	0.2%	0.0%	0.0	0.5%	0.0%	0.0
Bagasse	0.7%	0.8%	6.7	0.8%	0.9%	5.8	0.1%	0.1%	6.5	0.0%	0.0%	-
Hydel IPPs	0.6%	0.04%	0.4	0.9%	0.1%	0.5	1.0%	0.2%	1.1	1.0%	0.1%	0.4
Others (CPPs/SPPs)	0.5%	0.7%	7.3	0.2%	0.3%	6.8	1.2%	0.6%	2.4	1.0%	1.4%	8.9
Solar	0.5%	0.2%	2.6	0.6%	0.2%	2.1	0.0%	0.0%	0.7	0.0%	0.0%	-
Mainly from Iran	0.4%	0.7%	10.8	0.4%	0.9%	10.6	0.4%	1.0%	10.6	0.4%	0.7%	10.0
Total	100.0%	100.0%	5.6	100.0%	100.0%	5.1	100%	100%	4.5	100%	100%	6.3

- ◆ IPPs continue to contribute significant share in generation followed by WAPDA
- ◆ GENCOs inefficient source

Future Capacity

- ◆ To meet energy needs of the country government has taken various steps to increase generation capacity.
- ◆ In next three years generation capacity is expected to increase by ~13,756MW
- ◆ Long term Hydel electricity projects and thermal projects will add ~17,930MW beyond 2021

Future Capacity - MWs										
Year	Thermal		Hydel		Alternative IPPs				Nuclear (Govt.)	Total
	IPPs RLNG	IPPs Coal	WAPDA	IPPs	WIND	SOLAR	BAGASSE	Total		
Upcoming										
CY18	2,116	1,320	2,379	-	449	486	869	1,804	-	7,619
CY19	1,263	2,143	310	102	114	52	45	211	-	4,029
CY20	-	1,980	128		-	-		-	-	2,108
Total	3,379	5,443	2,817	102	563	538	914	2,015	-	13,756
CY21 & Beyond	-	2,610	8,070	4,950	100	-	-	100	2,200	17,930
Grand Total	3,379	8,053	10,887	5,052	663	538	914	2,115	2,200	31,686

Demand & Supply during Peak Hours

	Generation Capability (MW)	Demand during Peak Hours (MW)	Surplus / (Deficit) (MW)
Actual			
FY12	12,320	18,940	(6,620)
FY13	14,600	18,827	(4,227)
FY14	16,170	20,576	(4,406)
FY15	16,500	21,701	(5,201)
FY16	17,261	22,559	(5,298)
Projected			
FY17	20,106	23,816	(3,710)
FY18	24,640	25,140	(500)
FY19	26,663	26,439	224
FY20	29,059	27,725	1,334
FY21	33,776	29,082	4,694

◆ As per NEPRA's state of industry report, Pakistan would be electricity surplus by FY19

Hydel Electricity Generation

- ◆ Potential of ~60,000 MW of hydel electricity generation
- ◆ Installed capacity – 7,116 MW
- ◆ Most (97%) of the installed hydro power capacity is owned by Pakistan Water and Power Development Authority (WAPDA) while only 3% is owned by private sector
- ◆ Currently contributing ~25% to the total national capacity
- ◆ KPK government – PEDO is in the process of constructing 350 micro dams which will generate ~3000 MW
- ◆ KPK has an estimated power potential of generating nearly 30,000 MW

Hydel Electricity Generation

◆ Tarbela – the largest source of hydel electricity generation

◆ Nominal addition in the capacity of WAPDA in recent years

WAPDA Installed Capacity (MW)					
Sr. #	Project	share	March-18	June-16	June-15
1	Tarbela	50%	3,478	3,478	3,478
2	Ghazi Barotha	21%	1,450	1,450	1,450
3	Mangla	14%	1,000	1,000	1,000
4	Warsak	3%	243	243	243
5	Chashma	3%	184	184	184
6	Dubair Khwar	2%	130	130	130
7	Allai Khawar	2%	121	121	121
8	Golen Gol	2%	108	-	-
9	Jinnah	1%	96	96	96
10	Khan Khawar	1%	72	72	72
11	Rasul	0%	22	22	22
12	Jabban	0%	22	22	22
13	Dargai	0%	20	20	20
14	Gomal Zam	0%	17	17	17
15	Nandipur	0%	14	14	14
16	Shadiwal	0%	14	14	14
17	Chichoki	0%	13	13	13
18	Kurram Garhi	0%	4	4	4
19	Renala	0%	1	1	1
20	Chitral (Hydel)	0%	1	1	1
	Total	100%	7,010	6,902	6,902

IPPs Installed Capacity (MW)					
Sr. #	Project	share	March-18	June-16	June-15
1	Star Hydro	40%	147	-	-
2	Laraib Energy	23%	84	84	84
3	Malakand - III	22%	81	81	81
4	Jagran AJ&K	8%	30	30	30
5	Pehur	5%	18	18	18
6	Head Maralla	2%	8	1	1
	Total	100%	368	214	214

Upcoming Hydel Projects

WAPDA Projects under construction					
Sr. #	Project	Location	Capacity (MW)	Status	Expected Completion
1	Tarbela 4th Extension	Indus River, Tarbela, KPK	1,410	Near completion	2018
2	Neelum Jehlum		969	Wet testing in Feburary 2018	2018
3	Mangla Dam upgradation	Jhelum River, Punjab	310		2019
4	Keyal Khwar	Indus River, Kohistan, KPK	128	Physical progress ~90%	2020
5	Tarbela 5th Extension	Indus River, Tarbela, KPK	1,410	PC-1 approved	2021
6	Dasu I	Indus River, Kohistan, KPK	2,160	Pre-qualification of contractor completed	2023
7	Diamer Basha	Indus River, Chilas, KPK	4,500	Ready for construction	2024
	Total		10,887		

Upcoming IPPs					
Sr. #	Project	Location	Capacity (MW)	Status	Expected Completion
1	Gulpur Hydropower Project	Poonch River, Gulpur, AJ&K	102	FC achieved/Under Construction	2019
2	Karot Hydropower Project	Jhelum River, Rawalpindi	720	FC achieved/Under Construction	2021
3	Suki Kinari Hydropower Project	Kunhar River, KPK	870	FC achieved/Under Construction	2022
4	Kohala Hydropower Project	Jhelum River, Kohala, AJ&K	1,124	FC in progress	2025
5	Azad Pattan Hydropower Project	Jhelum River, AJ&K	640	FC in progress	2025
6	MahI Hydropower Project	Jhelum River, AJ&K	640	LOI issued	2025
7	Kaigah Hydropower Project	Kaigah, Indus River, KPK	548	Feaseability study completed	2026
8	Turtonas-Uzghor Hydropower	Golen Gol River, KPK	58	Feaseability study in progress	2026
9	Athmuqam Hydropower Project	Neelum River, AJ&K	350	Feaseability study in progress	2026
	Total		5,052		

Coal Power Projects

- ◆ Pakistan is producing only 8.6% of its electricity from coal. However, worldwide 46% of electricity is produced from coal
- ◆ Pakistan has total coal reserves of 185 billion tonnes. The Thar coalfield in Sindh has 175 billion tonnes of coal
- ◆ To cater the energy needs of the country the government is pursuing coal power projects in the country
- ◆ Plants are being installed both on imported and local coal basis
- ◆ NEPRA has issued different tariff for local coal and imported coal
- ◆ Tariff is also dependent on size and capacity of the plant

Upcoming Coal Based & RLNG Power Plants

Location	Company	Capacity	Coal	Status	Expected Completion
Port Qasim	Sinohydro Resources Limited	1,320	Imported	Near Completion	2018
Thar	Engro Power Gen Thar Limited	660	Thar	FC Achieved	2019
Port Qasim	Grange Power Limited	163	Imported	FC in progress	2019
HUB	Hub Power Company Limited	1,320	Imported	FC in progress	2019
Thar	Thar Energy Limited	330	Thar	FC Achieved	2020
Thar	Thal Nova Power (Pvt.) Limited	330	Thar	FC in progress	2020
Thar	Thar Coal Block-I Power Generation Co. Ltd	1,320	Thar	FC in progress	2020
Port Qasim	Siddiqsons Energy Limited	330	Thar	FC in progress	2021
Port Qasim	Lucky Electric Power Company Ltd.	660	Thar	FC in progress	2021
Gawadar	China Communication Construction Co. Ltd.	300	Imported	Tariff determination in	2021
Thar	Oracle Coal Fiels	1,320	Thar	Project proposal to be submitted	2021
Total		8,053			

Location	Company	Capacity	Gas	Status	Expected Completion
Bhikki	Quaid-e-Azam Thermal Power (Pvt.) Ltd	463	RLNG	Combined cycle to be commissioned	2018
Baloki	National Power Parks Management Co	800	RLNG	Open cycle to be commissioned	2018
Baloki	National Power Parks Management Co	423	RLNG	Combined cycle to be commissioned	2018
Haveli Bahadur Shah	National Power Parks Management Co	430	RLNG	Combined cycle to be commissioned	2018
Jhang	Punjab Thermal Power Ltd	1,263	RLNG	FC in progress	2019
Total		3,379			

Upcoming Alternative Projects-Wind

Location	Company	Capacity	Status	Expected Completion
Jhimpir	Jhampir Wind Power Limited	50	IA in progress	2QCY18
Jhimpir	Hawa Energy Pvt. Limited	50	IA in progress	2QCY18
Jhimpir	Hartford Alternative Energy Pvt. Limited	50	FC achieved	2QCY18
Jhimpir	Three Gorges Second Wind Farm Pakistan Limited	50	FC achieved	2QCY18
Jhimpir	Three Gorges Third Wind Farm Pakistan (Pvt.) Limited	50	FC achieved	2QCY18
Jhimpir	Tricon Boston Consulting Corporation Pvt. Limited (A)	50	Feaseability study approved	2QCY18
Jhimpir	Tricon Boston Consulting Corporation Pvt. Limited (B)	50	Feaseability study approved	2QCY18
Jhimpir	Tricon Boston Consulting Corporation Pvt. Limited (C)	50	Feaseability study approved	2QCY18
Gharo	Zephyr Power Pvt. Limited	50	Feaseability study approved	4QCY18
Jhimpir	Western Energy Pvt. Ltd	50	Feaseability study in process	1QCY19
Nooriabad	China Sunec Energy Pvt. Limited	50	EPA & IA in progress	1QCY19
Gajju	Burj Wind Energy Pvt. Limitd	14	Feaseability study in process	1QCY19
Jhimpir	Trans Atlantic Energy (Pvt.) Limited	50	Feaseability study in process	In Process
Jhimpir	Shaheen Foundation PAF	50	Feaseability study in process	In Process
Total		663		

- ◆ Pakistan has the potential to generate more than 50,000 MW electricity through Wind. GoP tasked AEDB to produce 5% of total generation through RE by 2030
- ◆ Projects highlighted in Red were supposed to be completed in 2017
- ◆ Delayed due to Tariff finalization

Upcoming Alternative Projects-Solar

Location	Company	Capacity	Status	Expected Completion
Bahawalnager	Bukhsh Solar (Pvt.) Ltd.	10	FC achieved	Apr-18
Bahawalnager	Safe Solar Power Pvt. Ltd	10	FC achieved	Apr-18
Jehlum	Blue Star Pvt. Ltd.	1	FC achieved	May-18
Jehlum	Blue Star Electric Pvt. Ltd.	1	FC achieved	May-18
Khushab	AJ Power (Pvt.) Ltd	12	FC achieved	May-18
Jehlum	Access Solar Pvt. Ltd	11	FC achieved	May-18
Nooriabad	Integrated Power Solution	50	FC in progress	Jun-18
Nooriabad	Jafri & Associates	50	FC in progress	Jun-18
Nooriabad	Solar Blue Pvt. Ltd.	50	FC in progress	Jun-18
Jehlum	Access Electric Pvt. Ltd.	10	FC achieved	Jun-18
Dadu	R.E. Solar I Pvt. Ltd.	20	FC in progress	Jun-18
Dadu	R.E. Solar II Pvt. Ltd.	20	FC in progress	Jun-18
Rahim Yar Khan	Janpur Energy Limited SPV: Jan Solar (Pvt.) Ltd	12	FC in progress	Jul-18
Muzafargarh	Janpur Energy Limited SPV:Lalpir Solar Power (Pvt.) Ltd	12	FC in progress	Jul-18
Chakwal	Siddiqsons Solar Ltd	50	FC in progress	Jul-18
Bahawalnager	Adamjee Power Generation Pvt. Ltd.	10	FC in progress	Dec-18
Attock	ET Solar (Pvt.) Ltd.	50	FC in progress	Dec-18
Thatta	ET Solar (Pvt.) Ltd.	25	FC in progress	Dec-18
Sindh	ACT Solar (Pvt.) Ltd.	50	FC in progress	Dec-18
Bahawalnagar	Asia Petroleum Limited	30	FC in progress	Dec-18
Chakwal	First Solar (Pvt.) Ltd.	2	FC in progress	Dec-18
Thatta	Forshine (Pakistan)	50	FC in progress	Jun-19
Sialkot	Crystal Energy (Pvt.) Ltd	2	FC in progress	May-19
Total		538		

- ◆ Pakistan has the potential to generate 2.9mln MW of solar energy potential. Projects highlighted in Red were supposed to be completed in 2017
- ◆ Delayed due to Tariff finalization

Upcoming Alternative Projects-Sugar

Location	Company	Capacity	Status	Expected Completion
Layyah	The Thal Industries Corporation Ltd	41	EPA/IA signed	2018
Ghotki	M/s Alliance Sugar Mills Ltd.	30	LOI Stage	2018
Chiniot	Safina Sugar Mills Ltd.	20	LOI Stage	2018
Mianwali	Almoiz Industries Ltd.	36	Achieved FC	2018
Rahim Yar Khan	Ethad Power Generation Limited.	76	LOS Stage	2018
Mandi Bahaudin	Shahtaj Sugar Mills Ltd	32	LOS Stage	2018
Faisalabad	Chanar Energy Limited	50	Achieved FC	2018
Muzafargarh	Sheikhoo Power Ltd.	30	LOI Stage	2018
Rajanpur	M/s Indus Energy Limited.	31	LOS Stage	2018
Rahim Yar Khan	M/s Hamza Sugar Mill Ltd (Unit-II)	30	LOI Stage	2018
Jhang	M/s Hunza Power (Pvt.) Ltd.	50	LOS Stage	2018
Bahawalpur	M/s Bahawalpur Energy Ltd.	31	LOS Stage	2018
Mirpurkhas	M/s Mirpurkhas Energy Ltd.	26	LOI Stage	2018
Tando Muhammad Khan	M/s Faran Power Ltd.	27	LOI Stage	2018
Bahawalpur	M/s Ittefaq Power (Pvt.) Ltd.	31	LOS Stage	2018
Tando Allahyar	M/s Mehran Energy Ltd.	27	LOI Stage	2018
Jhang	M/s Lume Energia (Pvt.) Ltd	12	LOS Stage	2018
D I Khan	M/s Alman Seyyam (Pvt.) Ltd	35	LOI Stage	2019
Rahim Yar Khan	M/s Sadiqabad Power (Pvt) Ltd.	45	LOI Stage	2019
Ghotki	M/s Gotki Power (Pvt) Ltd.	45	LOI Stage	2019
D I Khan	M/s Al-Mughnee Industries (Pvt.) Ltd	40	LOI Stage	2019
Mirpurkhas	M/s Digri Gen Limited	25	LOI Stage	2019
Bhakkar	M/s Darya Khan Power Generation (Pvt.) Ltd	40	LOI Stage	2019
Khairpur	M/s Ranipur Energy (Pvt.) Ltd	60	LOI Stage	2019
Rahim Yar Khan	M/s Hamza Sugar Mills Ltd (Unit-III)	15	LOI Stage	2019
Sargodha	M/s Popular Energy (Private) Limited	30	LOI Stage	2019
Total		914		

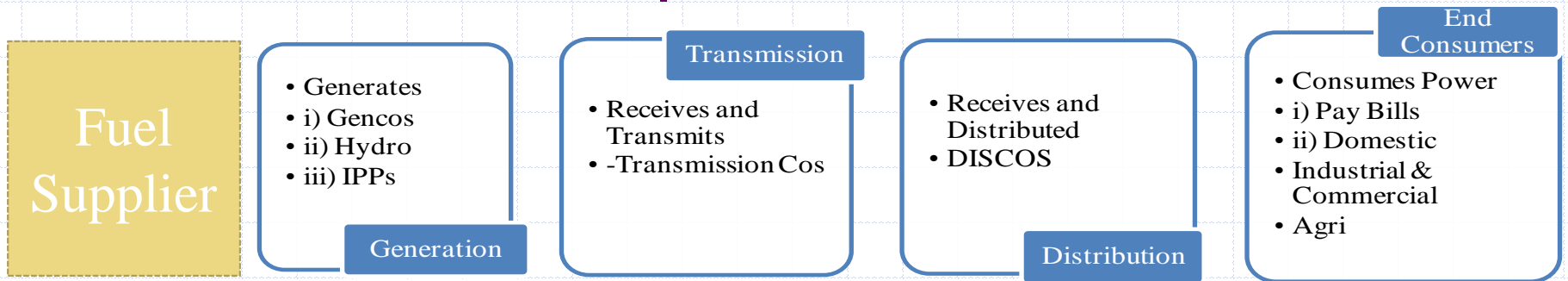
- ◆ Pakistan being the fifth largest sugarcane producer in the world has the potential to generate more than 2,000 MW electricity through Co-Generation.
- ◆ Projects highlighted in Red were supposed to be completed in 2017
- ◆ Delayed due to Tariff finalization

Rating Universe

Capacity Source	PACRA Universe	Capacity (MW)	Life (years)	Status	Ratings
Hydel	WAPDA-Debt Instruments	6902	Varies	Running	AAA
K-Electric	K-Electric Limited	2295	Varies	Running	AA/A1+
Thermal	Hub Power Company Limited	1292	30	Running	AA+/A1+
	PakGen Power Limited	365	30	Running	AA/A1+
	LalPir Power Limited	362	30	Running	AA/A1+
	Kohinoor Energy Limited	131	30	Running	AA/A1+
	Atlas Power Limited	225	25	Running	AA-/A1+
	Foundation Power Company Daharki Limited	180	25	Running	AA-/A1+
	Sapphire Electric Company Limited	225	30	Running	AA-/A1+
	Nishat Power Limited	200	25	Running	A+/A1
	Nishat Chunian Power Limited	200	25	Running	A+/A1
	Halmore Power Generation Company Limited	225	30	Running	A+/A1
	Saif Power Limited	225	30	Running	A+/A1
	Liberty Power Tech Limited	196	25	Running	A+/A1
	Habibullah Coastal Power Co (Pvt.) Limited	140	30	Running	A/A1
	Engro PowerGen Thar (Pvt.) Limited	660	30	Under construction	A/A1
Wind	Master Wind Energy Limited	52.8	20	Running	A/A1
	ACT Wind (Pvt.) Limited	30	20	Running	A-/A2
Solar	Harappa Solar (Pvt.) Limited	18	25	Running	A-/A1
Bagasse	Chiniot Power Limited	62	30	Running	A+/A1
Total		13,986			

Capacity Source	JCR Universe	Ratings
Thermal	Kot Addu Power Co. Ltd.	AA+/A1+
	National Parks Power Management Co (Pvt.) Ltd	AA+/A1+
	Quaid-e-Azam Thermal Power (Pvt.) Limited	AA/A1+
	Sindh Nooriabad Power Co Limited (TFC I & II)	A-
	Zephyr Power (Pvt) Limited	A-/A2
K-Electric	K-Electric Limited	AA/A1
Solar	Quaid-e-Azam Solar Power (Pvt.) Limited	AA-/A1+
Wind	Foundation Wind Energy I Limited	A+/A1
	Foundation Wind Energy II Limited	A+/A1

Risk Bubble | Where to find it?



Circular Debt | Build up over the years

Receivables (PKR bln)					
	Dec-17	Sep-17	Jun-17	Jun-16	Jun-15
PSO	248	219	213	180	181
OGDCL	132	119	119	111	121
PPL	114	107	99	57	59
Attock Petroleum & Shell	11	14	13	9	9
Total	505	460	444	357	370

Sector Outlook

Challenges

Rising Circular Debt

Expensive and unsustainable fuel mix

Tariff subsidies pressure on fiscal reserve

Supply deficit: Low capacity; High T&D losses

GENCOs: Inefficient; Expensive; Weak governance

Developments

High foreign investment (CPEC: 16 projects; 13,530MW; \$21.813bln)

Power subsidies increased in FY18 budget (PKR 134bln; FY17: PKR 118bln)

3600 MW RLNG based Power Plants to start generating electricity in FY19

Merger of PPIB and AEDB is still under process

NEPRA has been recommended under Ministry of Water & Power as part of new regulations

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4. Water and Power Development Authority of Pakistan www.wapda.gov.pk
5. Alternative Energy Development board : <http://www.aedb.org>
6. National Electric Power Regulatory Authority : <http://www.nepra.org.pk>

Note : All year wise Electricity Statistics of Pakistan relate to Fiscal Year (which starts from July 17 and ends in March 18)

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