Electrical Distribution

November 2015

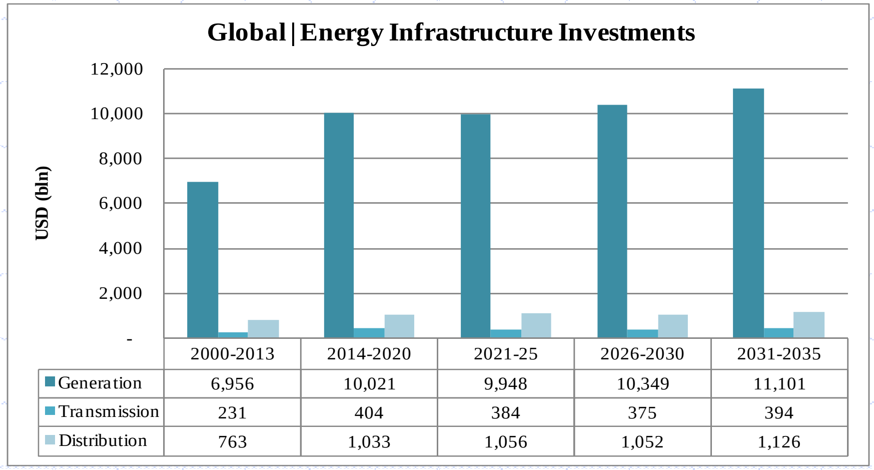
AGENDA

Electrical Distribution

- Global Industry
- Domestic Industry
- Industry Structure
- Outlook

Global Industry

- USD 6.8 trillion investment planned in global T&D till 2035
- 26% investment in Transmission & 74% investment in Distribution
- Asia contributes to 52% of future investments
- Major growth expected in the industry



Global | Investment in Energy Infrastructure, 2014-2035 (USD bln)							
	Transmission			Distribution			T&D
	Additions	Refurbishment	Total	Additions	Refurbishment	Total	Total
North America	153	171	324	263	433	696	**1,020**
Europe	63	94	157	180	409	589	**746**
Oceania	24	40	64	130	219	349	**413**
Asia	689	229	918	1,759	877	2,636	**3,554**
Middle East	45	16	61	131	34	165	**226**
Africa	115	20	135	240	46	286	**421**
Latin America	96	31	127	216	92	308	**435**
Total	**1,185**	**601**	**1,786**	**2,919**	**2,110**	**5,029**	**6,815**

Domestic Industry

- **Supply deficit country**
- **Sustainable demand growth potential**
- **11,104 MW capacity expected to be added in next 5 years**

	Actual		
	Generation Capability (MW)	Demand during Peak Hours (MW)	Surplus / (Deficit) (MW)
FY10	12,751	18,467	(5,716)
FY11	13,193	18,521	(5,328)
FY12	12,320	18,940	(6,620)
FY13	14,600	18,827	(4,227)
FY14	16,170	20,576	(4,406)
	Projected		
	Generation Capability (MW)	Demand during Peak Hours (MW)	Surplus / (Deficit) (MW)
FY15*	18,499	23,242	(4,743)
FY16	18,791	23,711	(4,920)
FY17	20,304	24,871	(4,567)
FY18	23,734	26,105	(2,371)
FY19	26,480	27,408	(928)
FY20	29,895	28,773	1,122

Domestic Industry | Infrastructure Investment

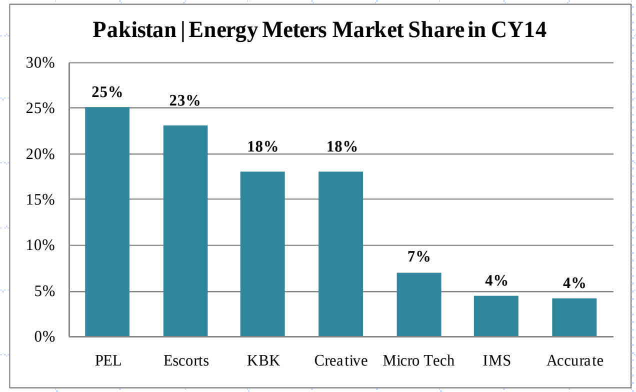
NTDC Grid Station Investment Plan								
Period	500/220 kV Grids				220/132 kV Grids			
	No.	MVA Capacity	Expected COD	Estimated Investment (USD mln)	No.	MVA Capacity	Expected COD	Estimated Investment (USD mln)
New Grid Station								
2014-15	3	4500	2016-17	225	6	3750	2016-17	168
2015-16	1	2250	2017-18	52	4	2750	2017-18	181
2015-16	-			-	3	1500	2018-19	169
Extension								
2014-15	1	450	2015-16	11	1	430	2015-16	8

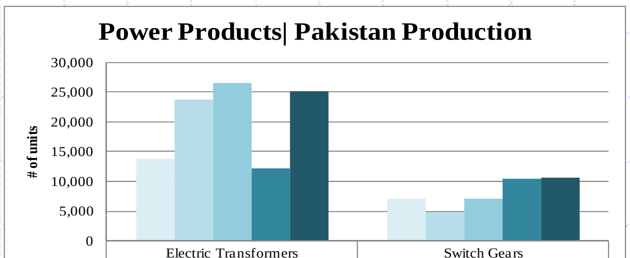
	Amount Injected (in USD mln) to Reinforce/Expand 220 KV K-Electric's Transmission System						Investment Plan (in USD mln) to Reinforce/Expand 220 KV K-Electric's Transmission System					
Description	2012-13			2013-14			2014-15			2015-16		
	FC	LC	Total	FC	LC	Total	FC	LC	Total	FC	LC	Total
Grid Stations			-			-			-	42	7	49
Transmission		0.4	0.4			-	19	3	22	19	3	22
SCADA			-			-			-		2	2
Reinforcement			-			-			-			-
Total	**-**	**0.4**	**0.4**	**-**	**-**	**-**	**19**	**3**	**22**	**61**	**12**	**73**

FC: Foreign Currency
LC: Local Currency
SCADA: Supervisory control and data acquisition

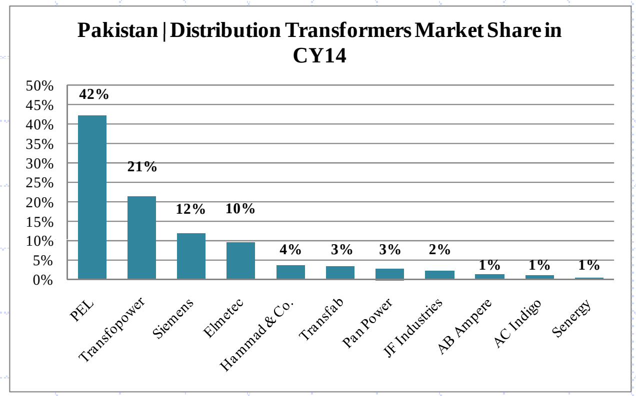
Domestic Industry | Competitors

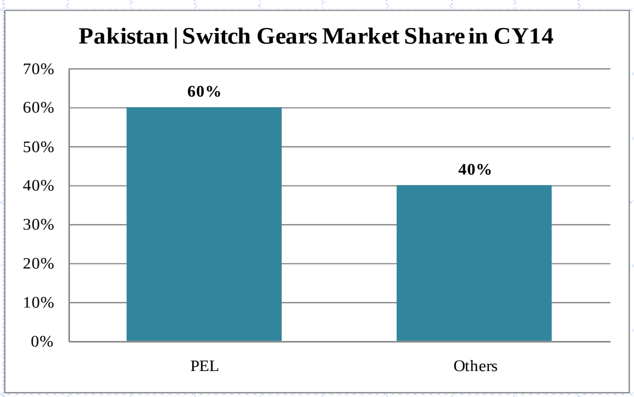
- **PEL market leader in transformers & switch gears**
- **Presence of both foreign & domestic players**
- **Only 2 players in power transformers**

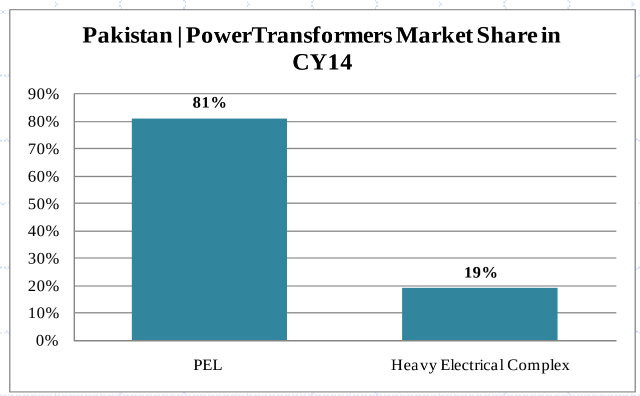




	Electric Transformers	Switch Gears
FY11	13,691	6,973
FY12	23,683	4,749
FY13	26,411	7,065
FY14	12,175	10,373
FY15	25,065	10,446

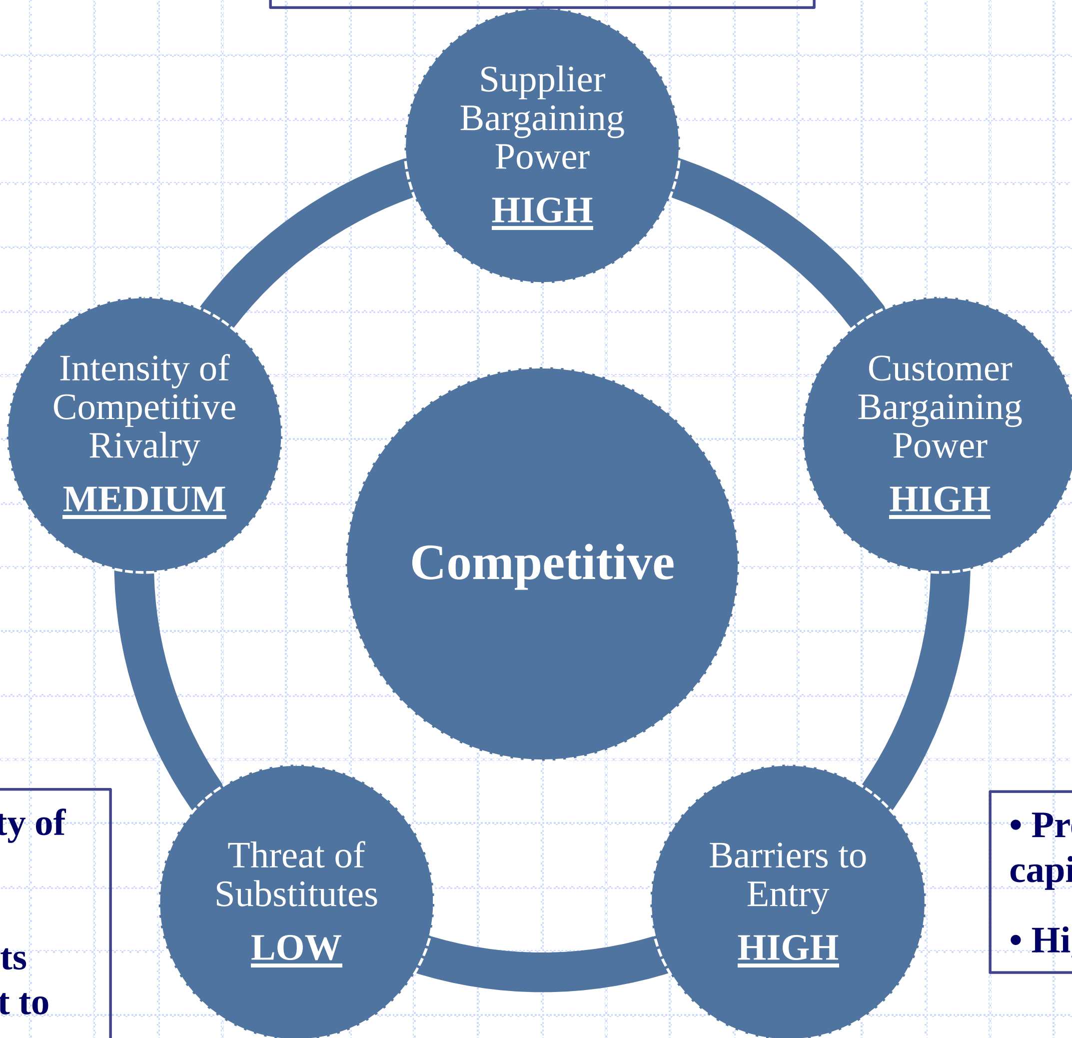






Industry Structure

- Manufacturers have no control over raw material price



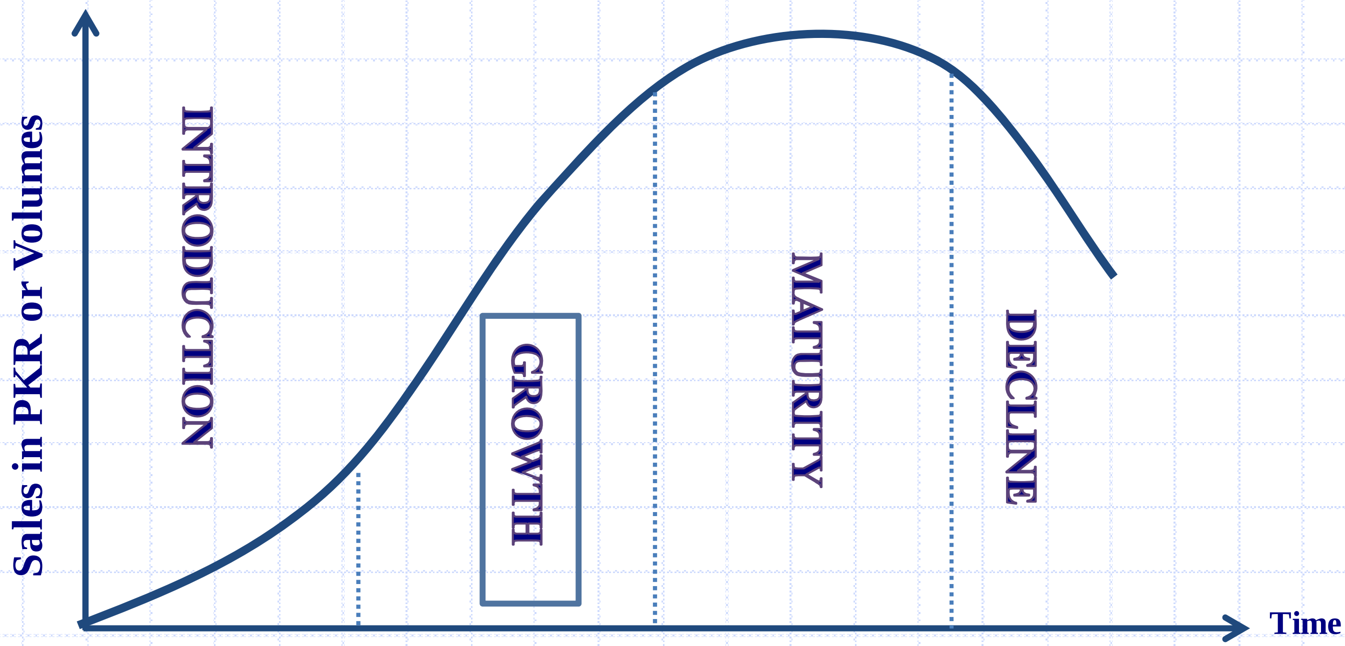
- Competition amongst manufacturers
- Surplus capacity is minimum

- High price sensitivity
- Contracts given to lowest bidder by government owned entities

- Low probability of substitute
- High R&D costs make it difficult to create substitutes

- Project setup is capital intensive
- High R&D costs

Domestic Industry | Lifecycle



Domestic Industry | Outlook

Outlook | Positive

- High investment in infrastructure
- Significance of energy sector for growth
- Demand growth potential is high
- Delay in planned increase of country's generation capacity could slowdown development of transmission & distribution infrastructure

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