The Power Sector

The power sector is composed of the entities which generate, transport and distribute electricity to consumers. The power sector consists of the electrical utility industry, other utilities, industry and commerce which generate and consume electricity, and includes private generators. The power sector is colossal, the global infrastructure is enormous and the financial resources required correspondingly large.

The electrical utilities, merchant generators or independent power producers (IPPs), are the primary tier of the power sector, for they are the only participants whose sole business is the provision of power. In almost every country, whatever the utility structure, state-controlled, mixed or wholly liberalised, there are independent power producers, IPPs, generating power for sale to the grid or specific customers. These differ from captive power producers or auto-producers, which generate for their own needs and sell the surplus. The second tier consists of non-electrical utilities and industrial captive power producers (CPPs).

The electrical utilities overwhelmingly dominate the overall power sector, with 91% of generation, 93% of transmission and 87% of distribution. Captive industrial generators which are recorded account for 5% to 7% of the three segments of GTD, and hidden generators for a further unknown amount.

41% of final electricity consumption is by industry, 23% by commerce and 28% is residential and the balance by public services and railways.

Then there are the industrial and commercial consumers of electricity, who do not generate their own power. The non-generating customers own equipment from the point of connection, principally a substation/transformer and a custodial meter to operate and measure the transfer of power from generator to customer. As operators of this equipment, these customers are participants in the power sector.

Contents:

Executive Summary
- The Power Sector
- Europe
- Middle East
- South and Central America
- Captive Generation
- Distributed Generation
- Supply side measures to reduce man made emissions
- Emission types and end-of-pipe control measures
- Cost reductions and the learning rate for CCS

The Power Sector Report

The Structure Of This Report

1. Introduction To The Power Sector
- The scale of the power sector
- The participants in the Power Sector

2. The Elements Of An Electrical Network

3. Utility Sectors

4. Other Utility Sectors, As Generators And Consumers

5. Industrial And Captive Generation
6. Distributed Power

7. The Use Of Electricity By Sector

8. The Historical Development Of The Power Sector

9. The Development Of Installed Generating Capacity In The Power Sector

10. Installed Generating Capacity By Energy Source, 1990 To 2020

11. Annual Demand For Generating Capacity In The Power Sector, Additions And Replacement

12. Transmission And Distribution Line Lengths By Country

13. Annual Demand For T&D Lines, Additions And Replacement

14. Network Voltages

15. Capital Expenditure

16. Generation Capex By Energy Source

17. Generation Technologies

18. T&D Capex

19. Definition Of The Power Sector Equipment Market

20. Regional And National Equipment Markets For Generation, Transmission And Distribution Equipment
   - CIS
   - Asia Pacific
   - China
   - India
   - Middle East
   - Africa
   - Latin America

21. Sales Of Mechanical Generation Equipment By Region
   - Vendors
   - Boilers
   - Steam turbines
   - Gas turbines
   - HRSG, Heat recovery steam generators
   - Diesel & HFO engines
   - Wind turbines
   - Hydro turbines
   - Solar PV modules
   - Solar PV inverters
   - FGD Flue gas desulphurisation
   - SCR, Selective catalytic reduction/SCNR Selective non-catalytic reduction
   - PM, Particulate removal; ESP, scrubbers, fabric filters/baghouses
   - CPP, Coal preparation plant
   - Fly ash handling plant
   - Compressors
   - Piping
   - Instruments and control equipment

22. Mechanical And Electrical Equipment In Generation, Transmission And Distribution By Region
   - Vendors of T&D equipment
   - Switchgear
   - Other switchgear
   - Lightning arresters
- Energy cable - insulated and uninsulated conductors
- Utility automation - transmission and distribution
- Insulators and bushings, spacers and dampers
- Spacers and dampers
- HVDC
- Steel towers
- Poles of wood, concrete, steel and composite
- Meters and smart technology

23. The Value Chain - From Materials To Capex

24. Price Trends And Factors Driving Prices

25. Land-Based Underground Cables - HV, MV & LV

26. The Submarine Cable Market- Offshore Wind Power, Oil & Gas

27. Advanced Technology, Superconductors

28. The Environmental Equation

29. Aqcs - Air Quality Control Systems

30. Ccs - Carbon Capture And Storage

31. N-1 Standard, N-2, 2N, Redundancy And Replacement
- Network Failure
- Transformer Failure

32. Electrification

33. Currents, Circuits And Phases

METHODOLOGY

Figures
Figure 1: The UK Electrical Power Transmission and Distribution System
Figure 2: The global utility landscape
Figure 3: Composition of the retail cost of electricity
Figure 4: Industry uses of different energy sources in the US
Figure 5: Energy use by type of industry in the US (All types of energy)
Figure 6: % of total machine drive electricity used in manufacturing in the US
Figure 7: Machine drive electricity use as a % of total delivered energy use by each industry in the US
Figure 8: World generation capacity, transmission & distribution lines in circuit km, from 1900-2015
Figure 9: World transmission and distribution lines in circuit km, development from 1900 to 2015
Figure 10: World generating capacity in GW, development from 1900 to 2050
Figure 11: World generating capacity in GW, development by region from 1980 to 2030
Figure 12: Installed capacity by fuel in GW, 1990 to 2020
Figure 13: Installed capacity and annual demand for generating capacity in GW, 1900 to 2050
Figure 14: Cumulative new and replacement demand for generating capacity in GW, 1900 to 2050
Figure 15: New and replacement demand for generating capacity in GW unstacked, 1900 to 2050
Figure 16: Replacement capacity as a % of total annual demand 5 year totals, 2016-2050
Figure 17: Transmission line lengths for major countries, 1900 to 2015
Figure 18: Distribution line lengths for major countries, 1900 to 2015
Figure 19: Installed transmission lines and annual additions '000 km, 1900 to 2050
Figure 20: Installed distribution lines and annual additions '000 km, 1900 to 2050
Figure 21: Annual new and replacement demand for transmission lines in '000 km, 1900-2050
Figure 22: New and replacement demand for distribution lines in '000 km, 1900 to 2050
Figure 23: Global transmission lines by voltage, km, 2014
Figure 24: Global distribution lines by voltage, km, 2014
Figure 25: Distribution voltages in Europe (EU 27)
Figure 26: Total global capital expenditure on Generation, Transmission and Distribution, nominal $ billion 2000 to 2020
Figure 27: Comparison of expenditure on Generation, Transmission and Distribution in real ($2015) and nominal values, 2000 to 2020
Figure 28: Global capital expenditure broken by Generation, Transmission and Distribution, nominal $ billion, 2000 to 2020
Figure 29: Total capex in Generation, Transmission & Distribution 2000-10 compared with 2010-20
Figure 30: Investment surges 1900 to 2015
Figure 31: Total Capital Expenditure on Generation, Transmission and Distribution by region in 2016
Figure 32: Capital expenditure on generation by energy source, nominal $ billion 2000 to 2020
Figure 33: Total Capital Expenditure on Generation, Transmission and Distribution by Region and Year, nominal $ billion, 2000, 2010, 2020
Figure 34: Composition of global capital expenditure Generation, Transmission and Distribution, 2015
Figure 35: Where circuit breakers are used in electricity systems
Figure 36: Commodity price Index 1996 to 2016
Figure 37: Industrial metals prices 2007 to 2016
Figure 38: Labour compensation cost, including direct pay, social insurance expenditures, and labour-related taxes (US = 100).
Figure 39: Labour costs including wages and salaries, social insurance and labour-related taxes
Figure 40: Minimum wages in China in yuan per month 1995 to 2012
Figure 41: Underground cable as a percent of the total network in European countries
Figure 42: Underground cable as a percent of the total network in CIS countries
Figure 43: Underground cable as a percent of the total network in MENA countries
Figure 44: Underground cable as a percent of the total network in Asia Pacific countries
Figure 45: Underground cable as a percent of the total network in Pacific countries
Figure 46: Percent of population in urban areas, 1960-2010 by region
Figure 47: Market shares of different offshore segments
Figure 48: Undersea communications cables linking the world
Figure 49: Possible reductions in GHG emissions by 2050
Figure 50: Beijing after rain and on a day with smog
Figure 51: Sources of emissions
Figure 52: Countries responsible for emissions
Figure 53: The carbon cycle and storage
Figure 54: % of carbon emissions from heat and power generation, 2014
Figure 55: % of carbon emission from the world coal-fired fleet, 2014
Figure 56: Actual and expected operation dates for large-scale CCS projects in the pipeline, by region and lifecycle stage.
Figure 57: Technological learning rates of selected energy related technologies
Figure 58: A high voltage substation with four transformers, three active and one redundant
Figure 59: Additions of electrified households between 2015 and 2050 by region
Figure 60: Countries with greatest population declines by 2050
Figure 61: The Household Electrification Wheel
Figure 62: Population growth % in each decade by region
Figure 63: Average household size, World, 1900 to 2050
Figure 64: World electrification - % of households with electricity, 1900-2050
Figure 65: World electrification - Number of households with and without electricity, 1900-2050
Figure 66: Share of people without electricity access for developing countries, 2008
Figure 67: Regional totals of electrified households 2010 to 2050
Figure 68: Selected major countries - % of households with electricity, 1900-2050
Figure 69: Single phase power
Figure 70: Three phase power
Figure 71: The composition of annual demand for capacity, new plus replacement

Tables
Table 1: Ownership of assets in the power sector by owner type
Table 2: The world's electrical utility landscape
Table 3: Infrastructure of utilities
Table 4: Indian utilities' generating capacity 1947-2015 by fuel
Table 5: Indian captive power plant generating capacity 1947-2015 by fuel
Table 6: Sale of diesel gensets in India by international manufacturers > 1 MW from 1990 to 2004
Table 7: Installed generating capacity in MW, 1980 to 2030, Europe
Table 8: Installed generating capacity in MW, 1980 to 2030, CIS
Table 9: Installed generating capacity in MW, 1980 to 2030, MENA
Table 10: Installed generating capacity in MW, 1980 to 2030, Sub-Saharan Africa
Table 11: Installed generating capacity in MW, 1980 to 2030, Asia Pacific
Table 12: Installed generating capacity in MW, 1980 to 2030, the Americas
Table 13: Installed generating capacity MW by fuel type 1990 to 2020, World
Table 14: Installed generating capacity MW by fuel type 1990 to 2020, Europe
Table 15: Installed generating capacity MW by fuel type 1990 to 2020, CIS
Table 16: Installed generating capacity MW by fuel type 1990 to 2020, Middle East
Table 17: Installed generating capacity MW by fuel type 1990 to 2020, North Africa
Table 18: Installed generating capacity MW by fuel type 1990 to 2020, Sub-Saharan Africa
Table 19: Installed generating capacity MW by fuel type 1990 to 2020, Asia Pacific
Table 20: Installed generating capacity MW by fuel type 1990 to 2020, LAC
Table 21: Installed generating capacity MW by fuel type 1990 to 2020, North America
Table 22: New and replacement demand for generating capacity, MW, 2016 to 2035
Table 23: Total demand for generating capacity, MW, 2016 to 2050
Table 24: New and replacement demand in 5 year segments by region in MW, 2015 to 2030, Europe
Table 25: Total new and replacement demand in 5 year segments by region in GW and % of replacement, 2015 to 2050
Table 26: Transmission line lengths in Ckm, 1980 to 2030, Europe
Table 27: Distribution line lengths in Ckm, 1980 to 2030, Europe
Table 28: Transmission line lengths in Ckm, 1980 to 2030, CIS
Table 29: Distribution line lengths in Ckm, 1980 to 2030, CIS
Table 30: Transmission line lengths in Ckm, 1980 to 2030, MENA
Table 31: Distribution line lengths in Ckm, 1980 to 2030, MENA
Table 32: Transmission line lengths in Ckm, 1980 to 2030, Sub-Saharan Africa
Table 33: Distribution line lengths in Ckm, 1980 to 2030, Sub-Saharan Africa
Table 34: Transmission line lengths in Ckm, 1980 to 2030, Asia
Table 35: Distribution line lengths in Ckm, 1980 to 2030, Asia
Table 36: Transmission line lengths in Ckm, 1980 to 2030, Pacific
Table 37: Distribution line lengths in Ckm, 1980 to 2030, Pacific
Table 38: Transmission line lengths in Ckm, 1980 to 2030, North America
Table 39: Distribution line lengths in Ckm, 1980 to 2030, North America
Table 40: Transmission line lengths in Ckm, 1980 to 2030, Latin America
Table 41: Distribution line lengths in Ckm, 1980 to 2030, Latin America
Table 42: New and replacement demand for transmission lines in Ckm, 2016 to 2035, World
Table 43: Total demand for transmission lines in Ckm, 2016 to 2050, World
Table 44: New and replacement demand for distribution lines in Ckm, 2016 to 2035, World
Table 45: Total demand for distribution lines in Ckm, 2016 to 2050, World
Table 46: New and replacement demand for transmission lines in 5 year segments by region in km, 2015 to 2030
Table 47: Total new and replacement demand for transmission lines in 5 year segments by region in km and % of replacement, 2015 to 2050
Table 48: New and replacement demand for distribution lines in 5 year segments by region in km, 2015 to 2030
Table 49: Total new and replacement demand for distribution lines in 5 year segments by region in km and % of replacement, 2015 to 2050
Table 50: Global transmission lines by voltage, km, 2014
Table 51: Global distribution lines by voltage, km, 2014
Table 52: World - Generation capex by technology, nominal $ million, 2000 to 2020
Table 53: USA - Generation capex by technology, nominal $ million, 2000 to 2020
Table 54: Europe - Generation capex by technology, nominal $ million, 2000 to 2020
Table 55: CIS - Generation capex by technology, nominal $ million, 2000 to 2020
Table 56: Asia Pacific - Generation capex by technology, nominal $ million, 2000 to 2020
Table 57: China - Generation capex by technology, nominal $ million, 2000 to 2020
Table 58: India - Generation capex by technology, nominal $ million, 2000 to 2020
Table 59: Middle East - Generation capex by technology, nominal $ million, 2000 to 2020
Table 60: Africa - Generation capex by technology, nominal $ million, 2000 to 2020
Table 61: LAC - Generation capex by technology, nominal $ million, 2000 to 2020
Table 62: Composition of generation capex over all technologies, 2000 and 2015
Table 63: Some principal cost components of generating capex
Table 64: Cost breakdown of capex in construction of a coal fired plant (equipment at installed cost)
Table 65: Cost breakdown of capex in construction of gas-fired OCGT or CCGT plant (equipment costs at installed cost)
Table 66: Cost breakdown of capex in construction of an oil-fired steam turbine plant (equipment costs at installed cost)
Table 67: Cost breakdown of capex in construction of a diesel or fuel oil reciprocating engine plant
Table 68: Cost breakdown of capex in construction of a wind turbine (equipment at installed cost)
Table 69: Cost breakdown of capex in construction of a solar PV plant (equipment at installed cost)
Table 70: Cost breakdown of capex in construction of a hydro plant (equipment at installed cost)
Table 71: Cost breakdown of capex in construction of an NPP (equipment at installed cost)
Table 72: World - T&D capex by technology, nominal $ million, 2000 to 2020
Table 73: USA - T&D capex, nominal $ million, 2000 to 2020
Table 74: Europe - T&D capex, nominal $ million, 2000 to 2020
Table 75: CIS - T&D capex, nominal $ million, 2000 to 2020
Table 76: Asia Pacific - T&D capex, nominal $ million, 2000 to 2020
Table 77: China - T&D capex, nominal $ million, 2000 to 2020
Table 78: India - T&D capex, nominal $ million, 2000 to 2020
Table 79: Middle East - T&D capex, nominal $ million, 2000 to 2020
Table 80: Africa - T&D capex, nominal $ million, 2000 to 2020
Table 81: LAC - T&D capex, nominal $ million, 2000 to 2020
Table 82: Generation equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, World, 2000-20
Table 83: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, World, 2000-20
Table 84: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, World, 2000-20
Table 85: Ratio of sales of mechanical and electrical equipment in generation and T&D, 2000 to 2020
Table 86: Generation equipment cost at purchase price in nominal $ million, World, 2000 to 2020
Table 87: Transmission equipment cost at purchase price in nominal $ million, World, 2000-20
Table 88: Distribution equipment cost at purchase price in nominal $ million, World, 2000-20
Table 89: Generation equipment cost in nominal $ million, at purchase price, at installed cost and
Table 90: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, USA, 2000-20
Table 91: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, USA, 2000-20
Table 92: Generation equipment cost at purchase price in nominal $ million, United States, 2000-20
Table 93: Transmission equipment cost at purchase price in nominal $ million, USA, 2000-20
Table 94: Distribution equipment cost at purchase price in nominal $ million, USA, 2000-20
Table 95: Generation equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Europe, 2000 to 2020
Table 96: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Europe, 2000-20
Table 97: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Europe, 2000-20
Table 98: Generation equipment cost at purchase price in nominal $ million, Europe, 2000 to 2020
Table 99: Transmission equipment cost at purchase price in nominal $ million, Europe, 2000-20
Table 100: Distribution equipment cost at purchase price in nominal $ million, Europe, 2000-20
Table 101: Generation equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, CIS, 2000 to 2020
Table 102: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, CIS, 2000-20
Table 103: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, CIS, 2000-20
Table 104: Generation equipment cost at purchase price in nominal $ million, CIS, 2000 to 2020
Table 105: Transmission equipment cost at purchase price in nominal $ million, CIS, 2000-20
Table 106: Distribution equipment cost at purchase price in nominal $ million, CIS, 2000-20
Table 107: Generation equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Asia Pacific, 2000 to 2020
Table 108: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Asia Pacific, 2000-20
Table 109: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Asia Pacific, 2000-20
Table 110: Generation equipment cost at purchase price in nominal $ million, Asia Pacific, 2000-20
Table 111: Transmission equipment cost at purchase price in nominal $ million, Asia Pacific, 2000-20
Table 112: Distribution equipment cost at purchase price in nominal $ million, Asia Pacific, 2000-20
Table 113: Generation equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, China, 2000 to 2020
Table 114: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and %
share of capex, China, 2000-20
Table 115: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, China, 2000-20
Table 116: Generation equipment cost at purchase price in nominal $ million, China, 2000 to 2020
Table 117: Transmission equipment cost at purchase price in nominal $ million, China, 2000-20
Table 118: Distribution equipment cost at purchase price in nominal $ million, China, 2000-20
Table 119: Generation equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, India, 2000 to 2020
Table 120: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, India, 2000-20
Table 121: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, India, 2000-20
Table 122: Generation equipment cost at purchase price in nominal $ million, India, 2000 to 2020
Table 123: Transmission equipment cost at purchase price in nominal $ million, India, 2000-20
Table 124: Distribution equipment cost at purchase price in nominal $ million, India, 2000-20
Table 125: Generation equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Middle East, 2000 to 2020
Table 126: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Middle East, 2000-20
Table 127: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Middle East, 2000-20
Table 128: Generation equipment cost at purchase price in nominal $ million, Middle East, 2000-20
Table 129: Transmission equipment cost at purchase price in nominal $ million, ME, 2000-20
Table 130: Distribution equipment cost at purchase price in nominal $ million, Middle East, 2000-20
Table 131: Generation equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Africa, 2000 to 2020
Table 132: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Africa, 2000-20
Table 133: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Africa, 2000-20
Table 134: Generation equipment cost at purchase price in nominal $ million, Africa, 2000 to 2020
Table 135: Transmission equipment cost at purchase price in nominal $ million, Africa, 2000-20
Table 136: Distribution equipment cost at purchase price in nominal $ million, Africa, 2000-20
Table 137: Generation equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, Latin America, 2000 to 2020
Table 138: Transmission equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, LAC, 2000-20
Table 139: Distribution equipment cost in nominal $ million, at purchase price, at installed cost and % share of capex, LAC, 2000-20
Table 140: Generation equipment cost at purchase price in nominal $ million, Latin America, 2000-20
Table 141: Transmission equipment cost at purchase price in nominal $ million, LAC, 2000-20
Table 142: Distribution equipment cost at purchase price in nominal $ million, LAC, 2000-20
Table 143: Sales of generation equipment at purchase price by region and country in nominal $ million, 2000 to 2020
Table 144: Market shares of generating equipment vendors, 2015
Table 145: Sales of boilers at purchase price by region and country in nominal $ million, 2000 to 2020
Table 146: Leaders in industrial boiler production
Table 147: Sales of steam turbines, generators & condensers at purchase price by region and country in nominal $ million, 2000 to 2020
Table 148: Market shares of steam turbine vendors, 2015
Table 149: Sales of gas turbines & generators at purchase price by region and country in nominal $ million, 2000 to 2020
Table 150: Market shares of gas turbine vendors, 2015
Table 151: Sales of HRSG heat recovery steam generators at purchase price by region and country in nominal $ million, 2000 to 2020
Table 152: Leaders in HRSG production
Table 153: Sales of HFO/diesel reciprocating engines at purchase price by region and country in
Table 154: Diesel engine vendors
Table 155: Sales of wind turbine at purchase price by region and country, nominal $ million, 2000-20
Table 156: Global market shares of wind turbine manufacturers, 2015
Table 157: Global market shares of off-shore wind turbine manufacturers, 2015
Table 158: Types of hydro turbine with applications
Table 159: Sales of hydro turbine, generator and regulators at purchase price by region and country in
nominal $ million, 2000 to 2020
Table 160: Global market shares of off-shore wind turbine manufacturers, 2015
Table 161: Sales of solar PV modules at purchase price by region, nominal $ million, 2000-20
Table 162: Global market ranking of top 10 solar PV manufacturers, ranked by MW shipped, 2014
Table 163: Sales of solar PV inverters at purchase price by region, in nominal $ million, 2000-20
Table 164: Global market ranking of top 7 solar inverter manufacturers, ranked by value, 2015
Table 165: Sales of FGD flue gas desulphurization at purchase price by region and country in nominal $ million, 2000 to 2020
Table 166: Top FGD vendors
Table 167: Sales of SCR selective catalytic reduction at purchase price by region and country in nominal $ million, 2000 to 2020
Table 168: Top SCR vendors
Table 169: Sales of particulate removal (ESP, scrubbers, baghouse) at purchase price by region and country in nominal $ million, 2000 to 2020
Table 170: Top PM removal vendors
Table 171: Sales of CPP coal preparation plant at purchase price by region and country in nominal $ million, 2000 to 2020
Table 172: Sales of fly ash coal handling plant at purchase price by region and country in nominal $ million, 2000 to 2020
Table 173: Top coal handling vendors
Table 174: Sales of compressors at purchase price by region, in nominal $ million, 2000-20
Table 175: Compressor manufacturers
Table 176: Sales of piping at purchase price by region, in nominal $ million, 2000 to 2020
Table 177: Piping companies/installers market share in China
Table 178: Sales of instruments and control equipment at purchase price by region and country in nominal $ million, 2000 to 2020
Table 179: Sales of transmission equipment at purchase price by region and country in nominal $ million, 2000 to 2020
Table 180: Sales of distribution equipment at purchase price by region and country in nominal $ million, 2000 to 2020
Table 181: Overall T&D market leaders
Table 182: Sales of power and distribution transformers in all segments at purchase price by region and country in nominal $ million, 2000 to 2020
Table 183: Transformer manufacturers market shares
Table 184: Sales of HV and MV circuit breakers in all segments at purchase price by region and country in nominal $ million, 2000 to 2020
Table 185: Circuit breaker market shares
Table 186: Voltage levels in switchgear categories
Table 187: Sales of other switchgear for generation, transmission and distribution at purchase price by region and country in nominal $ million, 2000 to 2020
Table 188: Sales of lightning arresters for transmission at purchase price by region and country in nominal $ million, 2000 to 2020
Table 189: Switchgear market shares, 2015
Table 190: cable types
Table 191: Sales of insulated cable in the generation, transmission and distribution sectors at purchase price by region and country in nominal $ million, 2000 to 2020
Table 192: Sales of bare conductors in the generation, transmission and distribution sectors at purchase price by region and country in nominal $ million, 2000 to 2020
Table 193: The top global cable manufacturers by industry
Table 194: Cable manufacturers global market shares by country
Table 195: Sales of utility automation technology in all sectors at purchase price by region and country in nominal $ million, 2000 to 2020
Table 196: Sales of insulators and bushings at purchase price by region, in nominal $ million, 2000-20
Table 197: Sales of spacers and dampers at purchase price by region, in nominal $ million, 2000-20
Table 198: Number of HVDC installations
Table 199: Sales of HVDC capacitors at purchase price by region, in nominal $ million, 2000-20
Table 200: Sales of AC filters at purchase price by region and country in nominal $ million, 2000-20
Table 201: HVDC vendors share by MW capacity
Table 202: Sales of steel towers at purchase price by region, in nominal $ million, 2000-20
Table 203: Sales of sub-transmission and distribution poles and assemblies at purchase price by region and country in nominal $ million, 2000 to 2020
Table 204: Sales of meters and smart technology at purchase price by region and country in nominal $ million, 2000 to 2020
Table 205: Global meter market shares 2015
Table 206: Costs and mark-up from Bill of Materials to Capex
Table 207: Manufacturers of subsea power cable and communications cable
Table 208: Installed superconductors
Table 209: Superconductor manufacturers
Table 210: Reductions in emissions by the main AQCS technologies
Table 211: Penetration of end-of-pipe AQCS measures
Table 212: The global coal-fired generating fleet 2015
Table 213: Levelised Cost of Electricity for New-Build Power Plants with and without CCS
Table 214: Electrification in North America - % of households with access to electricity, 1950 to 2050
Table 215: Electrification in Europe - % of households with access to electricity, 1950 to 2050
Table 216: Electrification in the CIS - % of households with access to electricity, 1950 to 2050
Table 217: Electrification in MENA - % of households with access to electricity, 1950 to 2050
Table 218: Electrification in S-S Africa - % of households with access to electricity, 1950 to 2050
Table 219: Electrification in Asia - % of households with access to electricity, 1950 to 2050
Table 220: Electrification in the Pacific - % of households with access to electricity, 1950 to 2050
Table 221: Electrification in Latin America - % of households with access to electricity, 1950 to 2050
Table 222: Products and technologies used in generating plants
Table 223: Products and technologies used in transmission
Table 224: Products and technologies used in distribution

Ordering:

Order Online - http://www.researchandmarkets.com/reports/3795491/

Order by Fax - using the form below

Order by Post - print the order form below and send to

Research and Markets,
Guinness Centre,
Taylors Lane,
Dublin 8,
Ireland.
Fax Order Form
To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit http://www.researchandmarkets.com/contact/

Order Information
Please verify that the product information is correct.

Product Name: Power Sector Report Volume 1: Generation, Transmission and Distribution - Infrastructure, Capex, Equipment Markets
Web Address: http://www.researchandmarkets.com/reports/3795491/
Office Code: SC

Product Format
Please select the product format and quantity you require:

<table>
<thead>
<tr>
<th>Product Format</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDF and Excel - Single User</td>
<td>USD 6397</td>
</tr>
</tbody>
</table>

* The price quoted above is only valid for 30 days. Please submit your order within that time frame to avail of this price as all prices are subject to change.

Contact Information
Please enter all the information below in BLOCK CAPITALS

| Title: | Mr ☐ Mrs ☐ Dr ☐ Miss ☐ Ms ☐ Prof ☐ | First Name: ___________________________ | Last Name: ___________________________
| Email Address: * | ___________________________ | |
| Job Title: | ___________________________ | |
| Organisation: | ___________________________ | |
| Address: | ___________________________ | |
| City: | ___________________________ | |
| Postal / Zip Code: | ___________________________ | |
| Country: | ___________________________ | |
| Phone Number: | ___________________________ | |
| Fax Number: | ___________________________ | |

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check: Please post the check, accompanied by this form, to:
Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer: Please transfer funds to:
Account number 833 130 83
Sort code 98-53-30
Swift code ULSBIE2D
IBAN number IE78ULSB98533083313083
Bank Address Ulster Bank,
27-35 Main Street,
Blackrock,
Co. Dublin,
Ireland.

If you have a Marketing Code please enter it below:

Marketing Code: ____________________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp