

GLOBAL ELECTRICITY TSO PROFILES AND BENCHMARKING REPORT

Global Transmission Research will be releasing the third edition of the Global Electricity TSO Profiles and Benchmarking Report. The report will provide detailed profiles of about 220 transmission system operators (TSOs) and developers operating in over 100 countries in six regions - North America, Latin America, Asia, Europe, the Middle East and Africa.

The report will have eight distinct sections.

Part 1 will contain the executive summary of the report.

Part 2 will present the recent trends and developments in the power transmission industry that are impacting the operational and financial state of TSOs.

Part 3 will review the network expansion and modernisation plans of TSOs as well as analyse the capital expenditure programmes of TSOs across the globe.

Part 4 will provide a comparative analysis of the key TSOs in terms of growth in the network size, capital expenditure, expected trends in the network expansion and the planned investment.

Part 5 will provide a benchmarking analysis of TSOs in terms of operational and financial performance.

Part 6 will provide an inter-TSO comparative analysis, in terms of growth in the network size, capital expenditure, operational and financial performance, expected trends in the network expansion and the expected investment for each of the six regions - North America, Latin America, Asia, Europe, the Middle East and Africa.

Part 7 will provide detailed profiles of about 220 TSOs and developers operating in over 100 countries in six regions - North America, Latin America, Asia, Europe, the Middle East and Africa. Each profile will provide historical data from 2014-2018 as well as future projections up to 2023.

Each TSO profile will have:

- ❖ Key facts
- ❖ Growth in transmission network, 2014-18
 - Line length by voltage
 - Substation capacity by voltage
 - Number of substations/transformers by voltage
- ❖ Operational performance indicators, 2014-18
 - Annual transmitted electricity
 - Total unserved power transmission per year
 - Average interruption time
 - TSAIDI
 - TSAIFI
 - Network availability
- Transmission losses
- Transmission line fault level
- Transformer failure rate
- Duration for fault settlement
- Voltage deviation index
- Frequency deviation index
- ❖ Financial performance indicators, 2014-18
 - Revenues/sales
 - Profits/losses
 - Capital expenditure
 - Operational expenditure
 - Return on equity ratio
- Debt to equity ratio
- Profit/revenue ratio
- Revenue/employee ratio
- Operating expenses/revenue ratio
- Operating expenses/employee ratio
- ❖ Future plans and investment, 2019-23
 - Expected trends in the network expansion
 - Expected investment
- ❖ Recent contract awards
- ❖ Key contacts

Part 8 (Appendix) of the report will include a note on the research methodology along with citation of sources. It will also provide a list of acronyms. A note on key definitions will also be included in this section.

The report will be indispensable for any organisation interested in the global electricity transmission industry - utilities, system operators, equipment manufacturers and suppliers, EPC contractors, service and technology providers, investors/lenders, research organisations, industry consultants, regulatory agencies, development institutions, etc.

The report will be available in a Power Point presentation and Excel database format. It is priced at USD5,000. There is also a special "early bird" discount price of USD3,750 (25 per cent discount) for orders and payments received on or before January 11, 2019 and of USD4,375 (12.5 per cent discount) for orders and payments received on or before February 1, 2019.

The report will be released in the last week of March 2019.

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PART 1: EXECUTIVE SUMMARY

This section will provide the key findings of the report. It will highlight the past trends in operational and financial performance of TSOs across the globe. It will also present the expected trends in network expansion of TSOs over the next five years.

PART 2: RECENT TRENDS AND DEVELOPMENTS

The power transmission industry has witnessed significant developments over the past few years, which are impacting the operational and financial state of the TSOs. This section will capture recent changes in regulatory and policy regimes, trends in technology adoption by TSOs, and key market developments such as consolidation, new entrants, mergers and acquisitions, and new financing options available for project execution.

- 2.1 Regulatory and policy developments
- 2.2 Trends in technology adoption by TSOs
- 2.3 Market developments
- 2.4 New financing options and models

PART 3: EXPECTED GROWTH AND INVESTMENT

This section will review the network expansion and modernisation plans of TSOs as well as analyse the capital expenditure programmes of TSOs across the globe.

- 3.1 Review of the network expansion and modernisation plans
- 3.2 Expected investment or capex by TSOs

PART 4: INTER-TSO COMPARISON: SIZE AND THE EXPECTED GROWTH

This section will give a comparison of the past growth in the network and capex of key TSOs across the globe. It will also present the expected trends in network expansion and planned investments of these TSOs.

- 4.1 Overview
- 4.2 Growth in the transmission network, 2014-18
 - ❖ Line length
 - ❖ Substation capacity
 - ❖ Number of substations/transformers
- 4.3 Trends in capital expenditure, 2014-18
- 4.4 Expected trends in network expansion, 2019-23
- 4.5 Expected investment/capex, 2019-23

PART 5: INTER-TSO COMPARISON: BENCHMARKING ANALYSIS

This section will provide a comparison of the operational and financial performance of key TSOs across the globe.

Operational performance indicators will include the annual transmitted electricity, total unserved power transmission per year, average interruption time, TSAIDI, TSAIFI, network availability, transmission losses, transmission line fault level, transformer failure rate, duration for fault settlement, voltage deviation index and frequency deviation index.

Financial indicators will include return on equity ratio, profit/revenue ratio, revenue/employee ratio, operating expenses/revenue ratio and operating expenses/employee ratio.

- 6.1 Overview
- 6.2 Operational performance
- 6.3 Financial performance

PART 6: INTER-TSO COMPARISON BY REGION

This section will contain a comparison of the past growth in network and capex as well as operational and financial performance of TSOs by region. It will also give a comparative analysis of future trends in the network expansion and the expected investment of TSOs in each region.

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 - 6.6.7 Expected investment, 2019-23

PART 7: TSO PROFILES BY REGION AND COUNTRY (IN AN EXCEL DATABASE)

This section of the report will profile about 220 TSOs across the globe. For each TSO, historical data will be provided on the network size, operational and financial performance, and capital expenditure. It will also capture the expected trends in network expansion and planned investment in their grids. A list of recent contract awards by TSOs will also be provided. The section will also give key contact details for each TSO.

- 7.1 Leading TSOs in North America (~ 50 TSOs)
- 7.2 Leading TSOs in Latin America (~ 45 TSOs)
- 7.3 Leading TSOs in Asia (~ 50 TSOs)
- 7.4 Leading TSOs in Europe (~ 45 TSOs)
- 7.5 Leading TSOs in the Middle East (~ 10 TSOs)
- 7.6 Leading TSOs in Africa (~ 20 TSOs)

Notes:

Each TSO profile will have:

- ❖ Key facts
- ❖ Growth in the transmission network, 2014-18
 - Line length by voltage
 - Substation capacity by voltage
 - Number of substations/transformers by voltage
- ❖ Operational performance indicators, 2014-18
- ❖ Financial performance indicators, 2014-18
- ❖ Future plans and investment
 - Expected trends in the network expansion, 2019-23
 - Expected investment, 2019-23
- ❖ Recent contract awards
- ❖ Key contacts

Operational performance indicators will include:

- ❖ Annual transmitted electricity
- ❖ Total unserved power transmission per year
- ❖ Average interruption time
- ❖ TSAIDI
- ❖ TSAIFI
- ❖ Network availability
- ❖ Transmission losses
- ❖ Transmission line fault level
- ❖ Transformer failure rate
- ❖ Duration for fault settlement
- ❖ Voltage deviation index
- ❖ Frequency deviation index

Financial performance indicators will include:

- ❖ Revenues/sales
- ❖ Profits/losses
- ❖ Capital expenditure
- ❖ Operational expenditure
- ❖ Return on equity ratio
- ❖ Debt to equity ratio
- ❖ Profit/revenue ratio
- ❖ Revenue/employee ratio
- ❖ Operating expenses/revenue ratio
- ❖ Operating expenses/employee ratio

PART 8: APPENDIX

- 8.1 Sources and methodology
- 8.2 List of acronyms
- 8.3 Key definitions

Sources and Methodology

Industry analysts of Global Transmission Research will utilise various primary and secondary research sources in preparing this report. Primary sources include the information obtained through questionnaires sent to various utilities, transmission companies, transmission system operators and equipment manufacturers. Several in-depth interviews will be conducted with high-ranking executives and experts from leading equipment suppliers, transmission utilities, transmission companies and industry consultants.

Our analysts and research associates will also conduct an extensive secondary research. These secondary sources include, but are not limited to, websites of utilities; annual reports and financial reports of utilities; investor presentations; analyst reports; government documents, plans and statistical databases; websites of relevant ministries and regulators; websites of relevant industry associations; internal and external proprietary databases; news articles; and press reports. Wherever applicable, all research sources will be appropriately cited in this report.

These primary and secondary research sources, combined with our industry expertise, will be synthesised in preparing this report.

Great care has been taken to ensure that all analysis is well supported by facts. Wherever facts are not available and assumptions are made, we will explain our assumptions and the methodology of estimation.

About the Publishers

Global Transmission Research is a leading provider of information and analysis on the global electricity transmission industry. We publish newsletters and reports. We also organise conferences on key issues and topical themes relevant to the transmission industry.

We publish the **Global Transmission Report** (a monthly newsletter) and **Global Transmission Weekly** (a weekly newsletter). We also operate the website www.globaltransmission.info. In addition, we have published several industry-focused research studies. Please visit our website to learn more about these products.

Our Clients

Our clients include leading organisations across the world such as **3M, ABB, ABEINSA, Alberta Electric System Operator, Alstom, AltaLink, AMEC, Atkins Global, Balfour Beatty, Barclays Capital, Bechtel, BHP Billiton, BKW FMB Energie AG, Boston Consulting Group, Brookfield Renewable Power, Cardiff University, CFE Comision Federal Electricidad, CH2M HILL, Cooper Power Systems, CTEEP, EDF, EFACEC, EirGrid, El Sewedy Cables, Elecnor, Elia, Enel Trade Spa, Energinet.dk, ESB International, Eskom, EU GIG OÜ, European Commission, European Investment Bank, G&W Electric, GDF SUEZ, GE Energy, Hatch, HELLENIC CABLES, Hubbell Power Systems, Hydrogenics, Hyosung, Hythro Power, ILJIN Electric, International Energy Agency, Israel Electric, Kalpataru Power Transmission, KEC International, KEMA, Koncar, MAVIR, Maxwell Technologies, MidAmerican Energy Holdings Company, Mott MacDonald, MWB Shanghai, National Contracting Company, Nexans, Nexant, OTN Systems NV, Parker Hannifin, Pfisterer International, PJM Interconnection, Power Grid Corporation of India Limited, Pöyry, PPC Insulators, Preformed Line Products, Red Eléctrica de España, Reliance Energy, RTE, SAE towers, SaskPower, SCLE SFE, Siemens, Skadden, Arps, Slate, Meagher & Flom LLP, SNC-Lavalin, Southwire, State Grid International Development, Statnett, Swissgrid, TE Connectivity, Terna, The World Bank, Thomas & Betts, Toshiba, Tractebel Engineering, TradeWind Energy, Vattenfall, Volta River Authority, Xcel Energy, etc.**

Order Form

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- Yes, I would like to purchase the "Global Electricity TSO Profiles and Benchmarking Report" for USD4,375 (at 12.5 per cent discount of the normal price of \$5,000).

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