



GLOBAL ELECTRICITY TSO PROFILES AND BENCHMARKING REPORT

Global Transmission Research has just released the second edition of the Global Electricity TSO Profiles and Benchmarking Report. The report provides detailed profiles of 210 transmission system operators (TSOs) and developers operating in over 100 countries in six regions - North America, Latin America, Asia Pacific, Europe, the Middle East and Africa.

The report has 1750+ pages and comprises six distinct sections.

Part 1 provides the executive summary of the report.

Part 2 provides a comparative analysis of the key TSOs in terms of growth in network size, capital expenditure and expected investment.

Part 3 provides a benchmarking analysis of the TSOs, in terms of operational performance and financial performance.

Part 4 provides an inter-TSO comparative analysis, in terms of growth in network size, capital expenditure, operational performance, financial performance and expected investment, for each of the six regions: North America (45 TSOs), Latin America (42 TSOs), Asia Pacific (53 TSOs), Europe (44 TSOs), the Middle East (10 TSOs) and Africa (16 TSOs).

Part 5 provides detailed profiles of 210 TSOs and developers operating in over 100 countries in six regions: North America, Latin America, Asia, Europe, the Middle East and Africa. The report covers two countries in North America, 13 countries in Latin America, 23 countries in Asia Pacific, 37 countries in Europe, nine countries in the Middle East, and 15 countries in Africa. Each profile provides historical data from 2011 to 2015 and future projections up to 2020.

For each TSO profile, we have attempted to cover the following parameters:

- Key facts
- Growth in transmission network, 2011-15
 - Line length, by voltage
 - Substation capacity, by voltage
 - Number of substations/transformers, by voltage
- Operational performance indicators, 2011-15
 - 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, 2011-15
 - 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, 2016-20
 - Network expansion plans
 - Expected investment
- o Recent contract awards
- o Key contacts

Part 6 (Appendix) of the report includes a note on the research methodology and sources. It also provides a list of acronyms. A note on key definitions has also been provided in this section.

The report is 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 is available in the PDF format. It is priced at USD4,400.

For subscriptions, please contact:

Americas

Yasmeen Chopra

Mobile: +1 905 228 6419

E-mail: Yasmeen.Chopra@globaltransmission.info

Rest of the world

Shruti Kumar

Mobile: +91 8447528984

E-mail: Shruti.Kumar@globaltransmission.info

Website: www.globaltransmission.info

Table of Contents

PART 1 EXECUTIVE SUMMARY	8	4.5.3 Capital expenditure, 2011-15	195
PART 2 INTER-TSO COMPARISON (SIZE AND GROWTH)	13	4.5.4 Operational performance, 2011-15	197
2.1 Overview	14	4.5.5 Financial performance, 2011-15	202
2.2 Growth in transmission network, 2011-15	18	4.5.6 Expected investment, 2016-20	207
2.3 Capital expenditure, 2011-15	26	4.6 Africa	209
2.4 Expected investment, 2016-20	30	4.6.1 Overview	210
PART 3 INTER-TSO COMPARISON (BENCHMARKING ANALYSIS)	34	4.6.2 Growth in transmission network, 2011-15	212
3.1 Operational performance, 2011-15	35	4.6.3 Capital expenditure, 2011-15	215
3.2 Financial performance, 2011-15	41	4.6.4 Operational performance, 2011-15	217
Part 4 Inter-TSO Comparison by Region	54	4.6.5 Financial performance, 2011-15	219
4.1 North America	55	4.6.6 Expected investment, 2016-20	228
4.1.1 Overview	56	PART 5 TSO PROFILES BY REGION, BY COUNTRY	230
4.1.2 Growth in transmission network, 2011-15	59	5.1 North America	231
4.1.3 Capital expenditure, 2011-15	62	5.1.1 Canada	232
4.1.4 Operational performance, 2011-15	65	5.1.1.1 AltaLink, L.P.	233
4.1.5 Financial performance, 2011-15	69	5.1.1.2 ATCO Electric Limited	240
4.1.6 Expected investment, 2016-20	80	5.1.1.3 British Columbia Hydro and Power Authority (BC Hydro)	248
4.2 Latin America	83	5.1.1.4 ENMAX Power Corporation (EPC)	254
4.2.1 Overview	84	5.1.1.5 Hydro One Networks Inc.	259
4.2.2 Growth in transmission network, 2011-15	88	5.1.1.6 Hydro-Québec TransÉnergie Inc.	266
4.2.3 Capital expenditure, 2011-15	93	5.1.1.7 Manitoba Hydro	273
4.2.4 Operational performance, 2011-15	96	5.1.1.8 Nalcor Energy	280
4.2.5 Financial performance, 2011-15	100	5.1.1.9 New Brunswick Power (NB Power)	287
4.2.6 Expected investment, 2016-20	113	5.1.1.10 Nova Scotia Power Incorporated (NSPI)	294
4.3 Asia Pacific	116	5.1.1.11 SaskPower	301
4.3.1 Overview	117	5.1.2 USA	308
4.3.2 Growth in transmission network, 2011-15	121	5.1.2.1 Ameren Corporation	311
4.3.3 Capital expenditure, 2011-15	128	5.1.2.2 American Electric Power (AEP)	317
4.3.4 Operational performance, 2011-15	132	5.1.2.3 American Transmission Company (ATC)	325
4.3.5 Financial performance, 2011-15	136	5.1.2.4 Bonneville Power Administration (BPA)	331
4.3.6 Expected investment, 2016-20	149	5.1.2.5 CenterPoint Energy	337
4.4 Europe	153	5.1.2.6 Clean Line Energy Partners (CLE)	343
4.4.1 Overview	154	5.1.2.7 Consolidated Edison (Con Edison)	348
4.4.2 Growth in transmission network, 2011-15	157	5.1.2.8 Dominion Resources, Inc.	354
4.4.3 Capital expenditure, 2011-15	163	5.1.2.9 Duke Energy	360
4.4.4 Operational performance, 2011-15	166	5.1.2.10 Entergy Corporation	368
4.4.5 Financial performance, 2011-15	172	5.1.2.11 Eversource Energy (formerly Northeast Utilities (NU))	374
4.4.6 Expected investment, 2016-20	186	5.1.2.12 Exelon Corporation	383
4.5 Middle East	189	5.1.2.13 FirstEnergy Corporation	391
4.5.1 Overview	190	5.1.2.14 Great Plains Energy	399
4.5.2 Growth in transmission network, 2011-15	192	5.1.2.15 Avangrid	405
		5.1.2.16 ITC Holdings	412
		5.1.2.17 MidAmerican Energy	419
		5.1.2.18 National Grid USA	426
		5.1.2.19 NextEra Energy	432
		5.1.2.20 NorthWestern Energy (NW Energy)	439
		5.1.2.21 NV Energy	445
		5.1.2.22 Oklahoma Gas and Electric Company (OG&E)	452
		5.1.2.23 Oncor Electricity Delivery	459

Table of Contents

5.1.2.24 Pacific Gas and Electric Corporation (PG&E)	465	5.2.7 Guatemala	730
5.1.2.25 PacifiCorp	471	5.2.7.1 Empresa de Transporte y Control de Energía Eléctrica (ETCEE)	731
5.1.2.26 Pepco Holdings (PHI)	478	5.2.7.2 Fersa Sociedad Anónima (Fersa SA)	737
5.1.2.27 PNM Resources	485	5.2.7.3 Transportadora de Energía de Centroamérica S.A. (TRECOSA)	743
5.1.2.28 PPL Electric Utilities Corporation	492	5.2.7.4 Transportista Eléctrica Centroamericana, S. A. (TRELEC)	748
5.1.2.29 Public Services Electric & Gas (PSE&G)	501	5.2.8 Mexico	755
5.1.2.30 Southern California Edison (SCE)	508	5.2.8.1 Comisión Federal de Electricidad (CFE)	756
5.1.2.31 Southern Company	515	5.2.9 Paraguay	764
5.1.2.32 Tennessee Valley Authority (TVA)	521	5.2.9.1 Administración Nacional de Electricidad (ANDE)	765
5.1.2.33 Westar Energy	527	5.2.10 Panama	774
5.1.2.34 Xcel Energy	533	5.2.10.1 Empresa de Transmisión Eléctrica S.A. (ETESA)	775
5.2 Latin America	542	5.2.11 Peru	783
5.2.1 Argentina	543	5.2.11.1 Abengoa Peru S.A.	784
5.2.1.1 Compañía de Transporte de Energía Eléctrica en Alta Tensión Transener S.A. (Transener)	544	5.2.11.2 Consorcio Energético de Huancavelica S.A. (CONENHUA)	790
5.2.2 Bolivia	550	5.2.11.3 Consorcio Transmataro S.A. (CTM)	795
5.2.2.1 Empresa Nacional de Electricidad (ENDE)	551	5.2.11.4 Etenorte S.R.L.	801
5.2.2.2 ENDE Transmisión S.A.	558	5.2.11.5 Eteselva S.R.L.	805
5.2.2.3 ISA BOLIVIA S.A. (ISA Bolivia)	565	5.2.11.6 ISA Perú S.A.	809
5.2.3 Brazil	570	5.2.11.7 Red de Energía del Perú S.A. (REP SA)	814
5.2.3.1 CELG Geração e Transmissão S.A. (CELG GT)	571	5.2.11.8 Red Eléctrica del Sur S.A. (Redesur)	820
5.2.3.2 Companhia Hidro Elétrica do São Francisco (Chesf)	578	5.2.12 Uruguay	827
5.2.3.3 Companhia Energetica de Minas Gerais (Cemig)	588	5.2.12.1 Administración Nacional de Usinas y Trasmisiones Eléctricas (UTE)	828
5.2.3.4 Companhia Estadual de Geração e Transmissão Energia Elétrica (CEEE GT)	595	5.2.13 Venezuela	834
5.2.3.5 Companhia de Transmissão de Energia Elétrica Paulista (CTEEP)	602	5.2.13.1 Corporación Eléctrica Nacional (CORPOELEC)	835
5.2.3.6 Copel Geração e Transmissão S.A. (Copel GeT)	610	5.3 Asia Pacific	842
5.2.3.7 Centrais Elétricas Brasileiras S.A. (Eletrobrás)	619	5.3.1 Afghanistan	843
5.2.3.8 Centrais Elétricas do Norte do Brasil S.A. (Eletronorte)	628	5.3.1.1 Da Afghanistan Breshna Sherkat (DABS)	844
5.2.3.9 Eletrosul Centrais Elétricas S.A. (Eletrosul)	637	5.3.2 Australia	851
5.2.3.10 Furnas Centrais Elétricas S.A. (Furnas)	645	5.3.2.1 AusNet Services (Transmission) Ltd	852
5.2.3.11 State Grid Brazil Holding S.A. (SGBH)	654	5.3.2.2 ElectraNet Pty Ltd	858
5.2.4 Chile	661	5.3.2.3 Powerlink Queensland	864
5.2.4.1 AES Gener S.A.	662	5.3.2.4 Tasmanian Networks Pty Ltd (TasNetworks)	871
5.2.4.2 ENGIE ENERGÍA CHILE S.A. (formerly E-CL S.A.)	668	5.3.2.5 TransGrid	877
5.2.4.3 Transelec S.A.	675	5.3.2.6 Western Power	885
5.2.4.4 Transnet S.A.	681	5.3.3 Azerbaijan	891
5.2.5 Colombia	687	5.3.3.1 Azerenergy JSC	892
5.2.5.1 Empresa de Energía de Bogotá (EEB)	688	5.3.4 Bangladesh	898
5.2.5.2 Empresa de Energía del Pacífico S.A. E.S.P. (EPSA)	695	5.3.4.1 Power Grid Company of Bangladesh (PGCB)	899
5.2.5.3 Empresas Públicas de Medellín E.S.P. (EPM)	701	5.3.5 Cambodia	908
5.2.5.4 Interconexión Eléctrica S.A. (ISA)	708	5.3.5.1 Electricité du Cambodge (EDC)	909
5.2.5.5 TRANSELCA S.A. E.S.P.	715		
5.2.6 Ecuador	721		
5.2.6.1 TRANSELECTRIC S.A.	722		

Table of Contents

5.3.6 China	915	5.3.15 New Zealand	1124
5.3.6.1 China Southern Power Grid (CSG)	916	5.3.15.1 Transpower	1125
5.3.6.2 State Grid Corporation of China (SGCC)	922		
5.3.7 India	928	5.3.16 Pakistan	1131
5.3.7.1 Gujarat Electricity Transmission Company Limited (GETCO)	929	5.3.16.1 K-Electric	1132
5.3.7.2 Karnataka Power Transmission Corporation Limited (KPTCL)	937	5.3.16.2 National Transmission and Despatch Company (NTDC)	1140
5.3.7.3 Madhya Pradesh Power Transmission Company Limited (MPPTCL)	944	5.3.17 Philippines	1147
5.3.7.4 Maharashtra State Electricity Transmission Company Limited (MSETCL)	951	5.3.17.1 National Grid Corporation of the Philippines (NGCP)	1148
5.3.7.5 Powergrid Corporation of India Limited (POWERGRID)	958	5.3.18 Singapore	1154
5.3.7.6 Rajasthan Rajya Vidyut Prasaran Nigam Limited (RVPNL)	968	5.3.18.1 Singapore Power (SP)	1155
5.3.7.7 Transmission Corporation of Andhra Pradesh Limited (APTransco)	975	5.3.19 South Korea	1160
5.3.7.8 Adani Transmission Limited (ATL)	982	5.3.19.1 Korea Electric Power Corporation (KEPCO)	1161
5.3.7.9 Essel Infracore Limited (EIL)	985	5.3.20 Sri Lanka	1167
5.3.7.10 Kalpataru Power Transmission Limited (KPTL)	988	5.3.20.1.1 Ceylon Electricity Board (CEB)	1168
5.3.7.11 Reliance Infrastructure Limited (RInfra)	991	5.3.21 Thailand	1174
5.3.7.12 Sterlite Technologies Limited (STL)	994	5.3.21.1 Electricity Generating Authority of Thailand (EGAT)	1175
5.3.8 Indonesia	998	5.3.22 Uzbekistan	1184
5.3.8.1 Perusahaan Listrik Negara (PLN)	999	5.3.22.1.1 Uzbekenergo	1185
5.3.9 Japan	1007	5.3.23 Vietnam	1190
5.3.9.1 Chubu Electric Power Company (Chubu EPCo)	1008	5.3.23.1.1 EVN National Power Transmission Corporation (EVN NPT)	1191
5.3.9.2 Chugoku Electric Power Company (Chugoku EPCo)	1015	5.4 Europe	1196
5.3.9.3 Hokkaido Electric Power Company (Hokkaido EPCo)	1022	5.4.1 Austria	1197
5.3.9.4 Hokuriku Electric Power Company (Hokuriku EPCo)	1029	5.4.1.1 Austrian Power Grid AG (APG)	1198
5.3.9.5 J-POWER (Electric Power Development Company Limited)	1035	5.4.1.2 TINETZ - Stromnetz Tirol AG	1205
5.3.9.6 Kansai Electric Power Company (Kansai EPCo)	1040	5.4.1.3 Vorarlberg Übertragungsnetz GmbH (VÜN)	1208
5.3.9.7 Kyushu Electric Power Company (Kyushu EPCo)	1047	5.4.2 Belgium	1211
5.3.9.8 Okinawa Electric Power Company (Okinawa EPCo)	1054	5.4.2.1 Elia System Operator SA (Elia)	1212
5.3.9.9 Shikoku Electric Power Company (Shikoku EPCo)	1060	5.4.3 Bosnia and Herzegovina	1219
5.3.9.10 Tohoku Electric Power Company (Tohoku EPCo)	1065	5.4.3.1 Independent System Operator in Bosnia and Herzegovina (ISO B&H)	1220
5.3.9.11 Tokyo Electric Power Company (Tokyo EPCo)	1072	5.4.4 Bulgaria	1227
5.3.10 Kazakhstan	1078	5.4.4.1 Electricity System Operator (ESO)	1228
5.3.10.1 Kazakhstan Electricity Grid Operating Company (KEGOC)	1079	5.4.5 Croatia	1234
5.3.11 Laos PDR	1085	5.4.5.1 Hrvatskog operatora prijenosnog sustava d.o.o. (HOPS)	1235
5.3.11.1.1 Electricite du Laos (EDL)	1086	5.4.6 Czech Republic	1243
5.3.12 Malaysia	1092	5.4.6.1 CEPS A.S.	1244
5.3.12.1 Sabah Electricity Sdn Bhd (SESB)	1093	5.4.7 Denmark	1250
5.3.12.2 Syarikat SESCO Berhad (SESCO)	1098	5.4.7.1 Energinet.dk	1251
5.3.12.3 Tenaga Nasional Berhad (TNB)	1103		
5.3.13 Myanmar	1110		
5.3.13.1 Ministry of Electric Power (MOEP)	1111		
5.3.14 Nepal	1116		
5.3.14.1 Nepal Electricity Authority (NEA)	1117		

Table of Contents

5.4.8 Estonia	1259	5.4.24 Norway	1416
5.4.8.1 Elering OÜ	1260	5.4.24.1 Statnett SF	1417
5.4.9 Finland	1266	5.4.25 Poland	1425
5.4.9.1 Fingrid Oyj	1267	5.4.25.1 Polskie Sieci Elektroenergetyczne S.A (PSE)	1426
5.4.10 France	1273	5.4.26 Portugal	1434
5.4.10.1 Reseau de Transport d'Electricite (RTE)	1274	5.4.26.1 Rede Eléctrica Nacional SA (REN)	1435
5.4.11 Georgia	1283	5.4.27 Romania	1443
5.4.11.1 Georgian State Electrosystem JSC (GSE)	1284	5.4.27.1 Transelectrica S.A.	1444
5.4.12 Germany	1292	5.4.28 Russia	1453
5.4.12.1 50Hertz Transmission GmbH (50Hertz)	1293	5.4.28.1 Federal Grid Company of Unified Energy System (FGC UES)	1454
5.4.12.2 Amprion GmbH	1301	5.4.29 Serbia	1462
5.4.12.3 TenneT TSO GmbH	1307	5.4.29.1 Elektromreža Srbije (EMS)	1463
5.4.12.4 TransnetBW GmbH	1315	5.4.30 Slovakia	1471
5.4.13 Greece	1321	5.4.30.1 Slovenska Elektrizacna Prenosova Sustava AS (SEPS)	1472
5.4.13.1 Anaxartitos Diacheiristis MetaforasIllektrikis Energeias (ADMIE)	1322	5.4.31 Slovenia	1480
5.4.14 Hungary	1329	5.4.31.1 ELES d.o.o	1481
5.4.14.1 MAVIR Zrt.	1330	5.4.32 Spain	1488
5.4.15 Iceland	1337	5.4.32.1 Red Eléctrica de España S.A (REE)	1489
5.4.15.1 Landsnet HF	1338	5.4.33 Sweden	1497
5.4.16 Ireland	1346	5.4.33.1 Svenska Kraftnät (SvK)	1498
5.4.16.1 EirGrid Plc	1347	5.4.34 Switzerland	1506
5.4.17 Italy	1355	5.4.34.1 Swissgrid AG	1507
5.4.17.1 Terna S.p.A	1356	5.4.35 Turkey	1514
5.4.18 Latvia	1364	5.4.35.1 Türkiye Elektrik İletim A.?. (TEIAS)	1515
5.4.18.1 Augstsprieguma Tīkls AS (AST)	1365	5.4.36 Ukraine	1522
5.4.19 Lithuania	1372	5.4.36.1 Ukrenergo	1523
5.4.19.1 Litgrid AB	1373	5.4.37 United Kingdom	1531
5.4.20 Luxembourg	1381	5.4.37.1 National Grid Electricity Transmission Plc (NGET)	1532
5.4.20.1 Creos Luxembourg	1382	5.4.37.2 Scottish Hydro Electric Transmission Limited (SHE Transmission)	1540
5.4.21 Macedonia	1389	5.4.37.3 Scottish Power Transmission Plc (SPT)	1547
5.4.21.1 Makedonski Elektro Prenosen Sistem Operator A.D. (MEPSO)	1390	5.5 Middle East	1555
5.4.22 Montenegro	1398	5.5.1 Bahrain	1556
5.4.22.1 Crnogorski Elektroprenosni Sistem A.D. (CGES)	1399	5.5.1.1 Electricity and Water Authority	1557
5.4.23 Netherlands	1407	5.5.2 Iran	1562
5.4.23.1 TenneT TSO B.V.	1408	5.5.2.1.1 Iran Power Generation Transmission & Distribution Management Company (TAVANIR)	1563

Table of Contents

5.5.3 Israel	1568	5.6.10 Nigeria	1698
5.5.3.1 Israel Electric Corporation (IEC)	1569	5.6.10.1 Transmission Company of Nigeria (TCN)	1699
5.5.4 Jordan	1575	5.6.11 South Africa	1705
5.5.4.1 National Electric Power Company	1576	5.6.11.1 Eskom Holdings SOC Limited (Eskom)	1706
5.5.5 Kuwait	1582	5.6.12 Tanzania	1713
5.5.5.1 Ministry of Electricity and Water	1583	5.6.12.1 Tanzania Electric Supply Company (TANESCO)	1714
5.5.6 Oman	1588	5.6.13 Tunisia	1721
5.5.6.1 Oman Electricity Transmission Company (OETC)	1589	5.6.13.1 Société Tunisienne de l'Electricité et du Gaz (STEG)	1722
5.5.7 Qatar	1596	5.6.14 Uganda	1727
5.5.7.1 Qatar General Electricity & Water Corporation	1597	5.6.14.1 Uganda Electricity Transmission Company Limited (UETCL)	1728
5.5.8 Saudi Arabia	1603	5.6.15 Zambia	1736
5.5.8.1 Saudi Electricity Company (SEC)	1604	5.6.15.1 ZESCO Limited	1737
5.5.9 United Arab Emirates	1613	PART 6 APPENDIX	1744
5.5.9.1 Dubai Electricity & Water Authority (DEWA)	1614	6.1 Key definitions	1745
5.5.9.2 Abu Dhabi Transmission & Despatch Company (TRANSCO)	1619	6.2 Sources and methodology	1748
5.6 Africa	1625	6.3 Acronyms	1750
5.6.1 Algeria	1626		
5.6.1.1 Société Algérienne de Gestion du Réseau de Transport de l'Electricité (GRTE)	1627		
5.6.2 Botswana	1633		
5.6.2.1 Botswana Power Corporation (BPC)	1634		
5.6.3 Egypt	1641		
5.6.3.1 Egyptian Electricity Transmission Company (EETC)	1642		
5.6.4 Ethiopia	1649		
5.6.4.1 Ethiopian Electric Power (EEP)	1650		
5.6.5 Ghana	1656		
5.6.5.1 Ghana Grid Company Limited (GRIDCo)	1657		
5.6.6 Kenya	1663		
5.6.6.1 Kenya Power	1664		
5.6.6.2 Kenya Electricity Transmission Company Limited (KETRACO)	1670		
5.6.7 Morocco	1676		
5.6.7.1 L'Office National d'Electricité et de l'Eau Potable (ONEE)	1677		
5.6.8 Mozambique	1682		
5.6.8.1 Electricidade de Moçambique (EDM)	1683		
5.6.9 Namibia	1691		
5.6.9.1 Namibia Power Corporation (Proprietary) Ltd (NamPower)	1692		

Sources and Methodology

Global Transmission Research's industry analysts have utilised various primary and secondary research sources in preparing this report. Primary sources include data and statistics obtained through telephone and email questionnaires sent to various utilities, transmission companies, transmission system operators and industry regulators. Extensive secondary research has been conducted by our analysts and research associates. These secondary sources include, but was not be 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 are appropriately cited within this report.

These primary and secondary research sources, combined with our industry expertise, have been synthesised into the qualitative and quantitative analysis which has been presented in this report. The data and statistics for years 2011 to 2015 are actual figures obtained from the concerned utilities and ministries. In a few cases, where this data was not available, we have used estimates based on information obtained from press/analyst reports or those based on past growth trends. For analysis of the expected network addition and planned investment, we have extensively researched the plan documents of various utilities and governments. Wherever these plans were not available, we have derived the projections based on past growth trends or based on projects planned by the utilities.

The future capital expenditure investment numbers include investments on both new build and renovation and modernisation projects. Also, in several countries, updated transmission plans were released in 2016 and 2017 with revised investment figures. Hence the expected investment numbers mentioned in this report may vary from investment numbers mentioned in our previous reports.

To ensure comparability of financial ratios across TSOs, we have adopted specific formulae for estimating these ratios for all utilities. Hence, the financial ratios estimated in the report may not match with those mentioned by utilities in their annual/financial reports. In some cases, totals may not match due to data being rounded off.

Great care has been taken to ensure that all analysis is well supported by facts. Where facts are not available and assumptions are made, we have explained our assumptions and our methods 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 crucial issues and topical themes relevant to the transmission industry. We publish the Global Transmission Report (a monthly newsletter) and the Global Transmission Weekly (a weekly update). We also operate the website www.globaltransmission.info. These products and services provide information on all the key developments, trends and issues in the sector. We have published several industry-focused research studies such as the Global Electricity Transmission Report, Global High Voltage Transmission Line Projects Report, Global Electricity Transmission Equipment Market Report, Global Electricity TSO Profiles Report, etc.

Our Clients

Our clients include leading industry players across the world, both operators and technology providers such as **ABB, AcierProfilé SBB Inc., AIC-USA, Alberta Electric, Alstom, AltaLink, AMEC, AREVA, ASTER, Axpo AG, Balfour Beatty, BCG, Brookfield, CIMA+, Copperbelt Energy, Crompton Greaves, CTEEP, Doble Engineering, Dow Chemicals, EDF, EFACEC Energia SA, EirGrid, Elia Engineering, Energinet, Energostroyaladka, Eskom, European Investment Bank, G&W Electric, GE Energy, Global Insulator Group, Hatch, HSP Hochspannungsgeräte GmbH, Hyosung, ILJIN Electric Co., International Energy Agency, Interconexion Electrica, Israel Electric, KEC International, LOCWELD, Maxwell Technologies, Micafil, Mott MacDonald, Nexans, Nexant, PFISTERER, PJM Interconnection, Powergrid, Pöyry Energy, PPC Insulators, RED ELECTRICA ESPAÑA, Reliance Energy, Richard Bergner Elektroarmaturen, RTE, SCLE SFE, Shanghai (MWB), Siemens, SNC Lavalin, SO UPS JSC, Statnett, Sterlite, Suez-Tractebel, Suzlon, Swissgrid AG, Tata Power, Terna, Teshmont, Tesmec S.P.A., TradeWind Energy, Trench Group, WORLDENERGY SA and Xcel Energy.**

Order Form

Yes, I would like to purchase the "Global Electricity TSO Profiles and Benchmarking Report" for \$5,000 in PDF format.

Name (Block Letters) _____

Designation _____

Company _____

Mailing Address _____

Telephone _____ Mobile _____

Fax _____

E-mail _____

Payment Options

1. Credit card:

a) **Visa/MasterCard:** To make payments with Visa/MasterCard, please visit http://www.globaltransmission.info/report_shopping_cart.php

b) **American Express:** To make payments with American Express card, please visit http://www.globaltransmission.info/amex_authorisation_form.doc
Please download the AmEx authorisation form from the above link and email the completed form to report@globaltransmission.info

All credit card payments will be subject to standard credit card charges.

2. Wire transfer:

Beneficiary : India Infrastructure Publishing Private Limited
Bank Name : The Hongkong and Shanghai Banking Corporation Ltd.
Bank Address : R-47, Greater Kailash-1, New Delhi-110048, India
Account No. : 094179587002
Swift Code : HSBCINBB

Global Transmission Research is a division of India Infrastructure Publishing Private Limited.

Terms and conditions:

Full payment must be received prior to the purchase. The exchange rate prevailing at the time of purchase will be applicable.

Contact Details

Americas

Yasmeen Chopra
Mobile: +1 905 228 6419
E-mail: Yasmeen.Chopra@globaltransmission.info

Rest of the world

Shruti Kumar
Mobile: +91 8447528984
E-mail: Shruti.Kumar@globaltransmission.info

Website: www.globaltransmission.info