



- Draft -

## **“Note on Data Regarding Countries with Multiple TSOs”**

USAID requested that information be gathered on multiple TSOs in France, Germany and Austria. A sample table was provided, requesting the number of people in the market, the square kilometers of the market, quantity electricity transmitted, including import or export, the annual budget, annual revenue and the number of workers. It is assumed that this data is requested in order to consider a multiple-TSO situation in BiH. This Note responds to that request and also submits additional data that may be helpful when considering a multiple-TSO situation.

The first section includes a link to the summary of the European TSO organization (ETSO) benchmarking report on transmission tariffs in Europe. This report is useful when comparing European TSOs, as well as their transmission tariffs, to each other.

The second section reproduces a benchmarking study of the BiH Transmission Company compared to its neighboring TSOs in Croatia, Slovenia and Serbia. This benchmarking study includes some of the data requested regarding multiple TSOs, such as quantities transmitted and number of employees.

With regard to the third section, which includes the requested data that is available from public sources, REAP made a substitution for one of the requested countries. Because France actually has a single TSO, REAP substituted Switzerland for France to include three countries that have multiple TSOs.

### **1. Link to ETSO Overview of transmission tariffs in Europe: Synthesis 2007**<sup>1</sup>

ETSO report contains the comparative **overview of 2007 transmission tariffs for 25 European countries** as a contribution to understand the components in the transmission tariffs and other regulatory charges.

In order to be comparable, as far as possible, the **tariffs** taken into account cover all of the energy transmission charges, meaning that it includes not only components connected to TSO activities but also other regulatory charges not directly related to transmission costs which are covered through different mechanism in each country. The components taken into account are:

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<sup>1</sup> [http://www.ets-net.org/upload/documents/11.a.%20Final\\_Synthesis\\_2007\\_18-06-08.pdf](http://www.ets-net.org/upload/documents/11.a.%20Final_Synthesis_2007_18-06-08.pdf)

- infrastructure charges (operation and capital),
- loss compensation costs,
- internal congestion costs (but no costs of auctions or market splitting),
- costs of supply of system services,
- costs of system balancing,
- stranded costs, incentives for renewable... if any.

**2. Benchmarking Report on TSO activities in BiH, Croatia, Serbia and Slovenia provided informally by Transco BiH:**

<b>Index</b>	<b>HEP</b>	<b>ELES</b>	<b>EMS</b>	<b>ELEKTROPRENOS</b>
Transmitted energy (GWh)	19 879.0	20 882.0	47 884.0	15 512.5
Length of grid (km)	7175.0	2587.0	9864.0	6310.5
Transformer Capacity (MVA)	10 881.0	3951.0	17 381.5	12 010.5
Number of High Voltage Substations	113	20	95	142
Number of employees	1202	490	1331	1441
Number of employees per km of grid	0.1675	0.1894	0.1349	0.2283
Number of employees per transmitted energy	0.0604	0.0234	0.0277	0.0928

**Note:** In order to do a true comparison, it is necessary to add an additional 50 persons to the number of employees, because the neighboring companies are true TSOs that are comprised of both the wires companies and the operator (in BiH, Transco and ISO).

### 3. Data report on TSO activities in Austria, Germany and Switzerland

#### AUSTRIA

2007	People/ Mkt	Sq km/ Mkt	GWh/ Year	Annual Budget	Annual Revenue	Employees	ETSO/ Member <sup>2</sup>	UCTE/ Member <sup>3</sup>
<b>Austria</b>	8.5 mill	83.872						
<b>TSO:</b>								
<b>1. TIWAG Netz AG (TSO)</b>	200.000 <sup>4</sup>	12,648 <sup>5</sup>				550	Yes	Yes
<b>2. Verbund Group <sup>6</sup></b>					3 billion Eur	2,400 ('06)	Yes	yes
<b>Verbund APG<sup>7</sup> (TSO) 380 / 220 /110 kV</b>		6.520 km (grid length)	36.977 <sup>8</sup>		326.3 mill	708 <sup>9</sup>		
<b>3. VKW Netz AG <sup>10</sup>(TSO) 110/220 kV</b>	164.068	330.1 km (grid length)					Yes	Yes

#### Verbund

- The company has a grid length<sup>11</sup> of 6.520 km with a total transmission capacity of 36.6 billion kWh.<sup>12</sup>

<sup>2</sup> **ETSO** - European Transmission System Operators, <http://www.etsa-net.org/>

<sup>3</sup> **UCTE** – Union for the co-ordination of transmission of electricity, <http://www.ucte.org/>

<sup>4</sup> <http://translate.google.com/translate?hl=en&sl=de&u=http://www.tiwag-netz.at/&sa=X&oi=translate&resnum=1&ct=result&prev=/search%3Fq%3DTIWAG%2BNetz%2BAG%26hl%3Den%26sa%3DG>

<sup>5</sup> TIWAG transport energy to 200,000 customers in the Tyrol (12,648 sq km)  
<http://www.tirolaustria.com/HomePage.html>

<sup>6</sup> <http://www.verbund.at/cps/rde/xchg/internet/hs.xsl/index.htm?rdeLocaleAttr=en> , Verbund Group

<sup>7</sup> Verbund – Austrian Power Grid AG (APG) is subsidiary company of Verbund Group in charge with transmission activities

<sup>8</sup> [http://www.verbund.at/cps/rde/xbcr/SID-3E1B22D8-AE6A5550/internet/APG\\_gb\\_en\\_080321.pdf](http://www.verbund.at/cps/rde/xbcr/SID-3E1B22D8-AE6A5550/internet/APG_gb_en_080321.pdf)

<sup>9</sup> Staff (core area) 272; Staff (including secondments to Group and associated companies) 436

<sup>10</sup> <http://translate.google.com/translate?hl=en&sl=de&u=http://www.vkw-netz.at/&sa=X&oi=translate&resnum=3&ct=result&prev=/search%3Fq%3DVKW%26hl%3Den%26sa%3DG>

<sup>11</sup> Reg some companies: I have only found grid length in km, not area coverage in sq km

<sup>12</sup> <http://en.wikipedia.org/wiki/Verbund>

## VKW-Netz AG

Comment: It is too small company to make further comparison.

## GERMANY

2007	People/ Mkt	Sq km/ Mkt	GWh/ Year	Annual Budget	Annual Revenue €	Employees	ETSO/ membe	UCTE/ member
Germany	82 mill	357.020						
<b>TSO:</b>								
1. EnBW <sup>13</sup>	5.4 mill				14 billion <sup>14</sup> 12 bill (electric)	21.000	Yes	Yes
<b>EnBW Transportnetze AG (TSO) 380/220 kV</b>		3,779.00 km (grid length) <sup>15</sup>						
2. E.ON					100.9 bill	83.434	Yes	Yes
<b>E.ON Netz (TSO)<sup>16</sup></b>	20 mill 265 <sup>17</sup> 230 traders	140.000 km <sup>2</sup> (32.600 km grid length)				1,500		
3. RWE	20 mill (electricity)				43 bill	63,000	Yes	Yes
<b>RWE<sup>18</sup> Energy (sales &amp; grid comp)</b>	15.5 mill				28.5 bill <sup>19</sup>	28,323 transmission and all other services		
<b>RWE Transportnetz Strom GmbH<sup>20</sup> (TSO)</b>	20 mill	11.300 km (grid length)	168.3 billion kilowatt-hours (sale)			280		

<sup>13</sup> <http://www.enbw.com/content/en/index.jsp>

<sup>14</sup> [http://www.enbw.com/content/en/investors/media/pdf/annual\\_reports/ar\\_2007.pdf](http://www.enbw.com/content/en/investors/media/pdf/annual_reports/ar_2007.pdf)

<sup>15</sup> Companies included: EnBW Transportnetze AG and Energiedienst Holding AG.

<sup>16</sup> [http://www.eonenergie.com/pages/eea\\_en/E.ON\\_Energie/Facts\\_&\\_Figures/Annual\\_report/images/EON\\_GB07\\_EN.pdf](http://www.eonenergie.com/pages/eea_en/E.ON_Energie/Facts_&_Figures/Annual_report/images/EON_GB07_EN.pdf), E.ON Annual Report 2007

<sup>17</sup> e.g. regional or municipal utilities and large industrial customers

<sup>18</sup> <http://www.rwe.com/generator.aspx/rwe-energy/unternehmen/language=en/id=67150/unternehmen-home.html>

<sup>19</sup> <http://rwecom.geber.de/2007/ar/reviewofoperations/keyfiguresbydivision/rweenergy.html>, RWE Energy total revenue

<sup>20</sup> <http://www.rwetransportnetzstrom.com/generator.aspx/company/facts-26-figures/language=en/id=76042/facts-page.html>, RWE Transportnetz Strom GmbH (TSO)

4. Vattenfall Europe <sup>21</sup> (TSO activity only)	18 mill	109,000 (9.500 km length)	82 000 '04		3295.3 <sup>22</sup> mill	500	Yes	Yes
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### EnBW

Electricity revenue was **12 billion Eur**. Sale of electricity is **140 bill kWh**.

**EnBW Transportnetze AG (TNG)** operates the transmission network of EnBW (380 kV and 220 kV) and ensures transparent and non-discriminatory market access for all market participants. Moreover, as one of four German transmission systems operators, TNG is responsible for system security and system balance within the TNG balancing zone (Baden-Württemberg and Vorarlberg/ Austria).

### RWE

RWE Group is among Europe's five largest utilities. We are active in the generation and **transmission** as well as the sale and trading of electricity and gas. This integrated business model gives us a good position from which to take advantage of the rising demand for energy. Our **63,000 employees** supply **20 million customers with electricity** and 10 million clients with gas. In fiscal 2007, we recorded **€43 billion in revenue**.

**RWE Energy** is the RWE Group's sales and grid company for Continental Europe. In a total of 12 regions, including six abroad, RWE Energy offers electricity, gas, water and related services from a one-stop shop. Together with its subsidiaries and affiliates, RWE Energy **supplies 15.5 million customers with electricity** and 7.6 million customers with gas. In 2007, **sales totalled 168.3 billion kilowatt-hours of electricity** and 258.0 billion kilowatt-hours of gas. With its **28,323 employees**, RWE Energy generated total revenues of **€28.5 billion in 2007**, which makes it one of the leading utility companies in Europe.

**RWE Transportnetz Strom GmbH** pools all the extra-high voltage grid activities of the RWE Group. With some **11,300 kilometres and 280 employees**, the company owns Germany's longest extra-high voltage grid.

**Comment: all above figures are mostly expressed for TSO, electricity and gas activities.**

### Vattenfall

Vattenfall Europe Transmission GmbH is responsible for the operation, maintenance, planning, and expansion of the 380/220 kilovolt transmission grid throughout the German Federal States of Thuringia, Saxony, Saxony-Anhalt, Brandenburg, Berlin, Mecklenburg-Western Pomerania, and Hamburg.

<sup>21</sup> [http://www.vattenfall.de/www/trm\\_en/trm\\_en/940927/about/940945/about/index.jsp](http://www.vattenfall.de/www/trm_en/trm_en/940927/about/940945/about/index.jsp)

<sup>22</sup> [http://www.vattenfall.de/www/trm\\_en/trm\\_en/Gemeinsame\\_Inhalte/DOCUMENT/175641tran/176128kurz/902327date/P0264714.pdf](http://www.vattenfall.de/www/trm_en/trm_en/Gemeinsame_Inhalte/DOCUMENT/175641tran/176128kurz/902327date/P0264714.pdf)

## SWITZERLAND

2007	People/ Mkt	Sq km/ Mkt	GWh/ Year	Annual Budget	Annual Revenue €	Employees	ETSO/ member	UCTE/ member
Switzerland	7.6 mill	41.300						
<b>TSO:</b>								
1. ATEL							Yes	No
2. BKW							Yes	No
3. EGL							Yes	No
4. EOS							Yes	No
5. NOK							Yes	No
6. SWISSGRID <sup>23</sup>	7.4 mill <sup>24</sup>	41,285 (entire Swiss)			33,411.094 <sup>25</sup>	190	No	Yes

### Atel, BKW, CKW, EGL, EOS, wisselectric EWZ, NOK and Rätia Energie:

During the next five years high voltage grid of the above eight (8) companies will be transferred to **national grid company Swissgrid** under the terms of the new law. Part-owned by these eight companies, Swissgrid will thus become the owner and operator of the **entire high voltage grid in Switzerland**.

### SWISSGRID

As the transmission network operator is responsible for swissgrid the Swiss high-voltage network with a length of about **6'700 kilometers**. It monitors, leads and manages the entire system of the **380/220 kV** transmission network and guaranteed access to this network, according to objective, transparent and non-discriminatory criteria.

**Swissgrid** is the national grid company, and as the transmission grid operator it ensures secure, reliable and cost-efficient operation of the Swiss high-voltage grid. Swissgrid guarantees access to the grid in accordance with transparent, nondiscriminatory criteria. swissgrid monitors and controls electricity flows day and night with the help of around **170 employees** from 12 different nations.

<sup>23</sup> [http://www.swissgrid.ch/about-us/facts\\_and\\_figures/](http://www.swissgrid.ch/about-us/facts_and_figures/)

<sup>24</sup> [http://www.swissgrid.ch/activities/swiss\\_electricity\\_market/](http://www.swissgrid.ch/activities/swiss_electricity_market/)

<sup>25</sup> [http://www.swissgrid.ch/media/resources/annual\\_report/index.html/media/resources/annual\\_report/document/D080625\\_financial-report.pdf?set\\_language=en&cl=en](http://www.swissgrid.ch/media/resources/annual_report/index.html/media/resources/annual_report/document/D080625_financial-report.pdf?set_language=en&cl=en), Swiss grid Annual Financial Report 2007

**Swissgrid** is wholly owned by the **eight Swiss grid companies** Atel, BKW, CKW, EGL, EOS, wisselectric EWZ, NOK and Rätia Energie.<sup>26</sup>

**Latest News: 9/11/2008**

**Swissgrid ag and EnBW Transportnetze AG** are to form a coordinating company for the central European transmission grid with the aim of improving the security of supply and the operation of the grid<sup>27</sup>

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<sup>26</sup> Annual report 2007 [http://www.swissgrid.ch/media/resources/annual\\_report/document/D080625\\_annual-report.pdf?set\\_language=en&cl=en](http://www.swissgrid.ch/media/resources/annual_report/document/D080625_annual-report.pdf?set_language=en&cl=en)

<sup>27</sup> <http://www.swissgrid.ch/news>