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# **CEER Benchmarking Report 5.2 on the Continuity of Electricity Supply Data update**

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## INFORMATION PAGE

### Abstract

This document (C14-EQS-62-03) provides an update of key data related to continuity of electricity supply found in the more extensive 5<sup>th</sup> CEER Benchmarking Report published in 2011. CEER aims to provide such updates annually, in between the more detailed reports, in order to provide accurate and up-to-date data on a more regular basis. It is expected that the 6<sup>th</sup> Benchmarking Report will be published in 2015/2016.

### Target Audience

European Commission, energy suppliers, traders, gas/electricity customers, gas/electricity industry, consumer representative groups, network operators, Member States, academics and other interested parties.

### Keywords

Electricity, supply, continuity, voltage, benchmarking.

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## Related Documents

CEER Benchmarking Reports:

- [Benchmarking Report 5.1 on the Continuity of Electricity Supply](#) (February 2014)
- [5<sup>th</sup> Benchmarking Report on Quality of Electricity Supply](#) (December 2011)
- [4<sup>th</sup> Benchmarking Report on Quality of Electricity Supply](#) (December 2008)
- [3<sup>rd</sup> Benchmarking Report on Quality of Electricity Supply](#) (December 2005)
- [2<sup>nd</sup> Benchmarking Report on Quality of Electricity Supply](#) (September 2003)
- [Quality of Electricity supply: Initial Benchmarking on actual levels, standards and regulatory strategies – 1<sup>st</sup> Benchmarking Report](#) (April 2001)



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## 1 Introduction

This Benchmarking Report 5.2 (BR 5.2) aims to provide a partial update of the indicators related to Continuity of Supply (CoS) included in the 5<sup>th</sup> CEER Benchmarking Report, published in 2011. Where the full Benchmarking Report addresses three areas of the Quality of Supply of electricity networks (Continuity of Supply, Voltage Quality and Commercial Quality), this BR 5.2 does not include Voltage Quality and Commercial Quality. All three areas of the Quality of Supply will be addressed in detail in CEER's upcoming 6<sup>th</sup> Benchmarking Report, expected in 2015/2016.

Therefore, the CEER Electricity Quality of Supply Task Force focusses on recent CoS data only for this update. This report does not include an analysis of the data received, nor does it draw conclusions or give recommendations. This report therefore only serves to present the most recent data on CoS.

A questionnaire was sent to CEER Member and Observer countries; 24 countries responded. Participation in this exercise has significantly increased since CEER's 1st Benchmarking Report in 2001.

It is important to emphasise that indicators for CoS are currently not perfectly harmonised between different countries. Definitions of the indicators described in this report can be found in the 4<sup>th</sup> CEER Benchmarking Report. In particular, the following definitions might differ depending on the country:

- The voltage levels EHV, HV, MV and LV;
- Exceptional events;
- Indicators such as SAIDI, SAIFI, MAIFI, AIT, ENS can be calculated with slightly different methods depending on the country (for example due to national legislation);
- The distinction between rural, semi-urban and urban areas.

Previous Benchmarking Reports are available on the CEER website as listed on page 3 (Related Documents). In particular, the 4<sup>th</sup> CEER Benchmarking Report (2008) includes precise definitions of continuity indicators (from page 20) and detailed content about exceptional events (from page 42).

This report consists of several sections. Section 2 gives the main results in several figures to compare countries. Section 3 provides additional information per country regarding the recent changes in the regulation which can affect the quality of supply. Section 4 provides a list of the additional continuity indicators used by some countries. Finally, the appendices contain all the data received by the regulators.

Compared to previous Benchmarking Report 5.1, this BR 5.2 includes several additional data and figures, including disaggregated data depending on the voltage level or the territorial density.

**Note: Data is available in CSV or XLS format on demand.**



## 2 Main results

### 2.1 Annual average interruption time on distribution networks: SAIDI

SAIDI (System Average Interruption Duration Index) is representative of the average interruption time on LV (low-voltage) networks and is not weighted according to the consumption of connected customers. Figure 1 shows SAIDI for all unplanned interruptions (originating from all voltage levels) including exceptional events.

Countries marked with an asterisk (\*) use an alternative indicator instead of SAIDI, which is more representative of the average interruption time on MV (medium-voltage) networks: either because the average is weighted depending on the annual consumption (T-SAIDI, Finland), or because interruptions originating from LV networks are not taken into account (Malta, Norway, Slovenia).

It is likely that countries which provide such a “MV indicator” underestimate their interruption time by about 5-20%, compared to countries which use SAIDI. This assertion is based on (1) the typical percentage of SAIDI that is caused by incidents occurring on LV, and (2) Austrian data which includes both ASIDI and SAIDI.

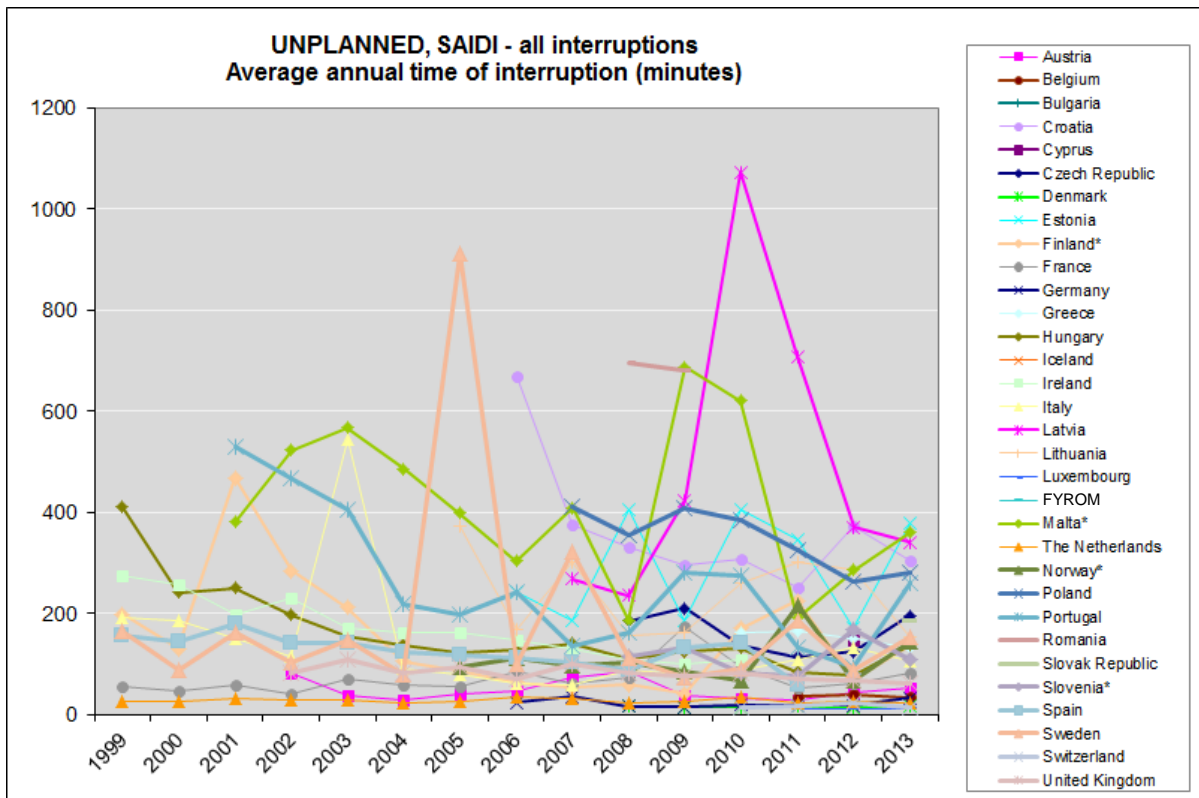


Figure 1: Unplanned SAIDI, including exceptional events

Figure 2 shows the SAIDI for unplanned interruptions (originating from all voltage levels) with the exception of interruptions caused by exceptional events. Please refer to the 4<sup>th</sup> Benchmarking Report for a discussion on exceptional events.



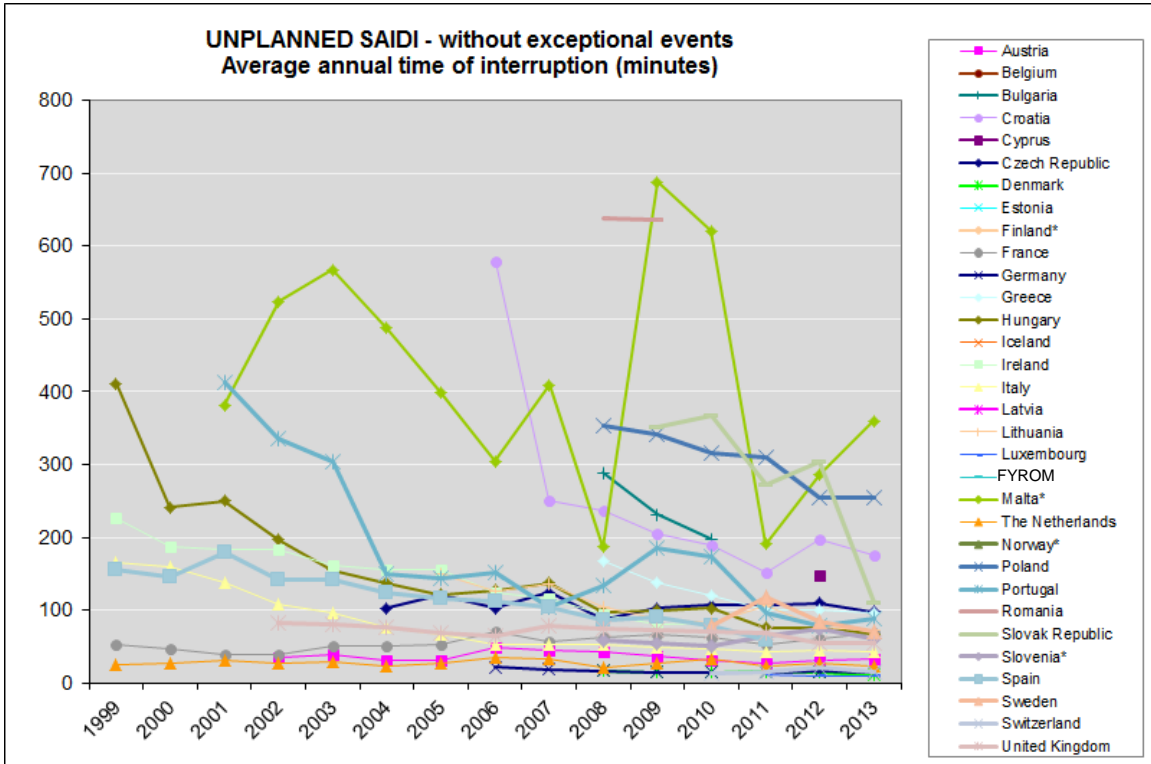


Figure 2: Unplanned SAIDI, excluding exceptional events

Figure 3 shows SAIDI for planned interruptions (originating from all voltage levels).

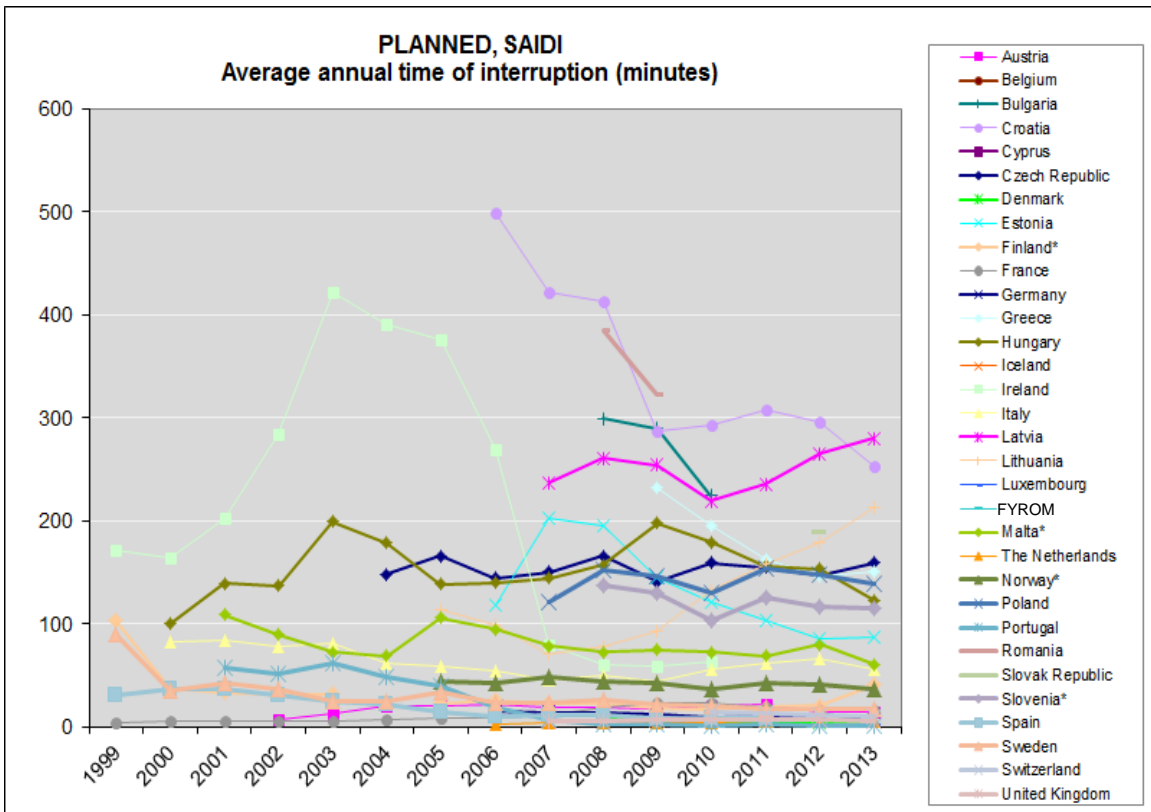


Figure 3: Planned SAIDI



Figure 4 shows the 5-year average SAIDI (from 2009 up until and including 2013) and the SAIDI for the last available year (often 2013) for all interruptions (originating from all voltage levels), including planned interruptions and unplanned interruptions with exceptional events. Countries are ranked according to the 5-year average annual interruption time since 2009.

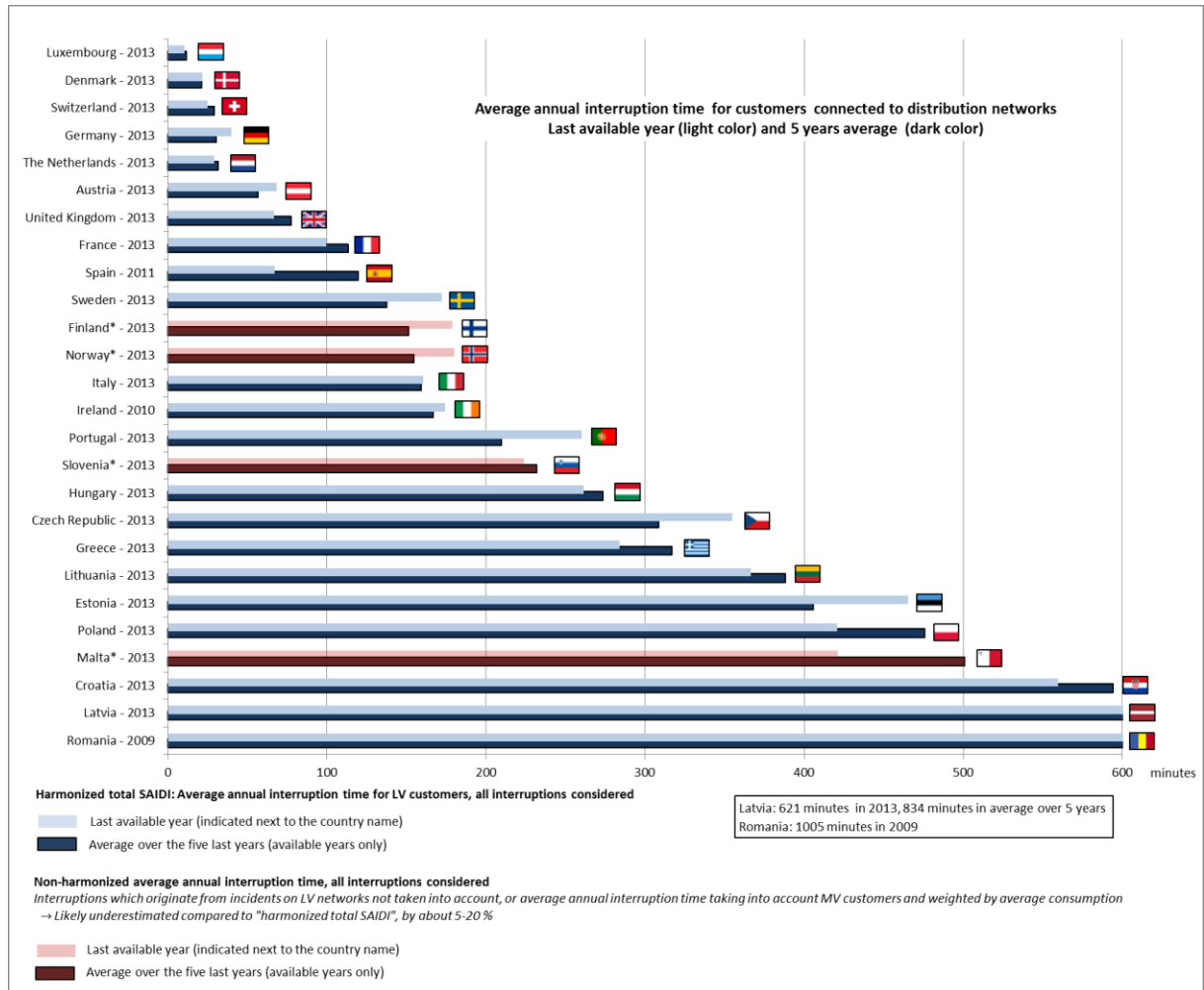


Figure 4: Total SAIDI (planned and unplanned, including exceptional events)

Figure 5 shows the total SAIDI for all interruptions (originating from all voltage levels), including planned interruptions and unplanned interruptions with exceptional events.

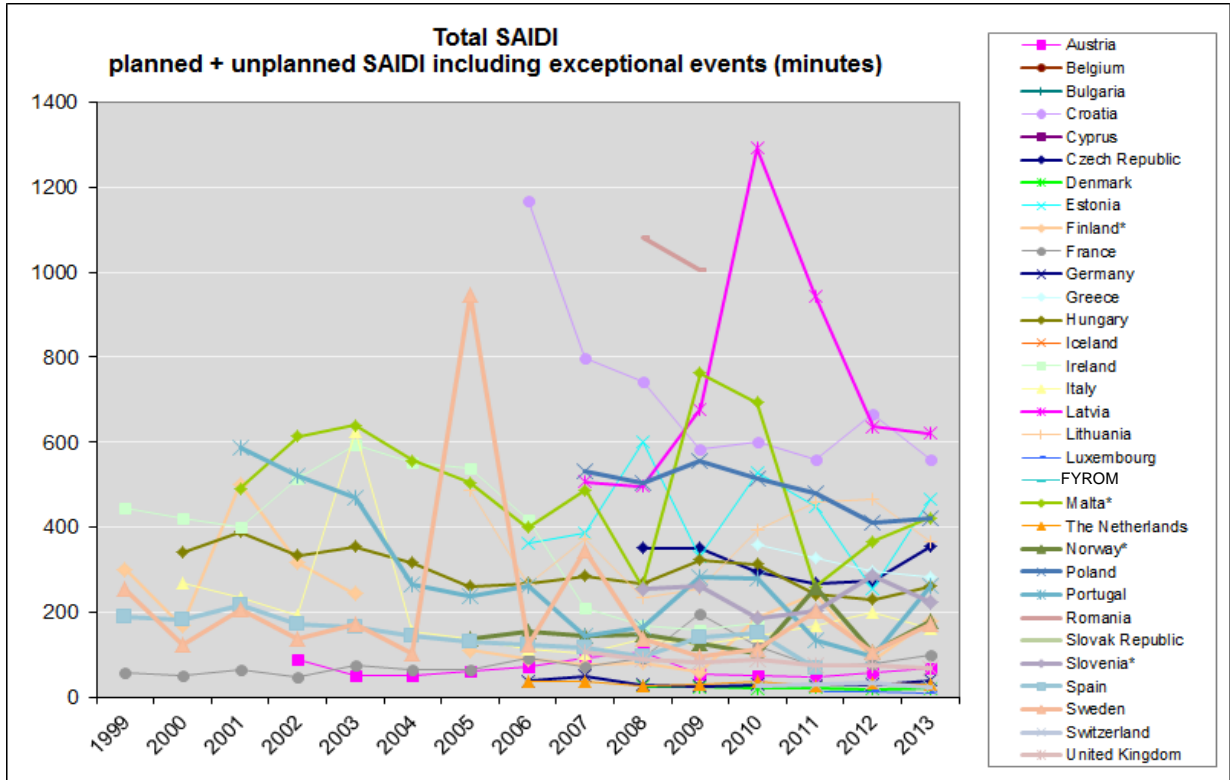


Figure 5: Total SAIDI (planned and unplanned, including exceptional events)

## 2.2 Annual average number of interruptions on distribution networks (SAIFI)

SAIFI (System Average Interruption Frequency Index) indicates the average number of interruptions. Like SAIDI, SAIFI is not weighted according to the consumption.

Figure 6 shows SAIFI for all unplanned interruptions (originating from all voltage levels) including exceptional events.

Countries marked with an asterisk (\*) use an alternative indicator instead of SAIFI, which is more representative of the average number of interruptions on MV networks; either because the average is weighted depending on the annual consumption (T-SAIFI, Finland), or because interruptions originating from LV networks are not taken into account (Malta, Norway, Slovenia).

It is likely that countries which provide such a “MV indicator” underestimate their interruption time by about 5-20%, compared to countries which use SAIDI. This assertion is based on (1) the typical percentage of SAIDI that is caused by incidents occurring on LV, and (2) Austrian data which includes both ASIDI and SAIDI.

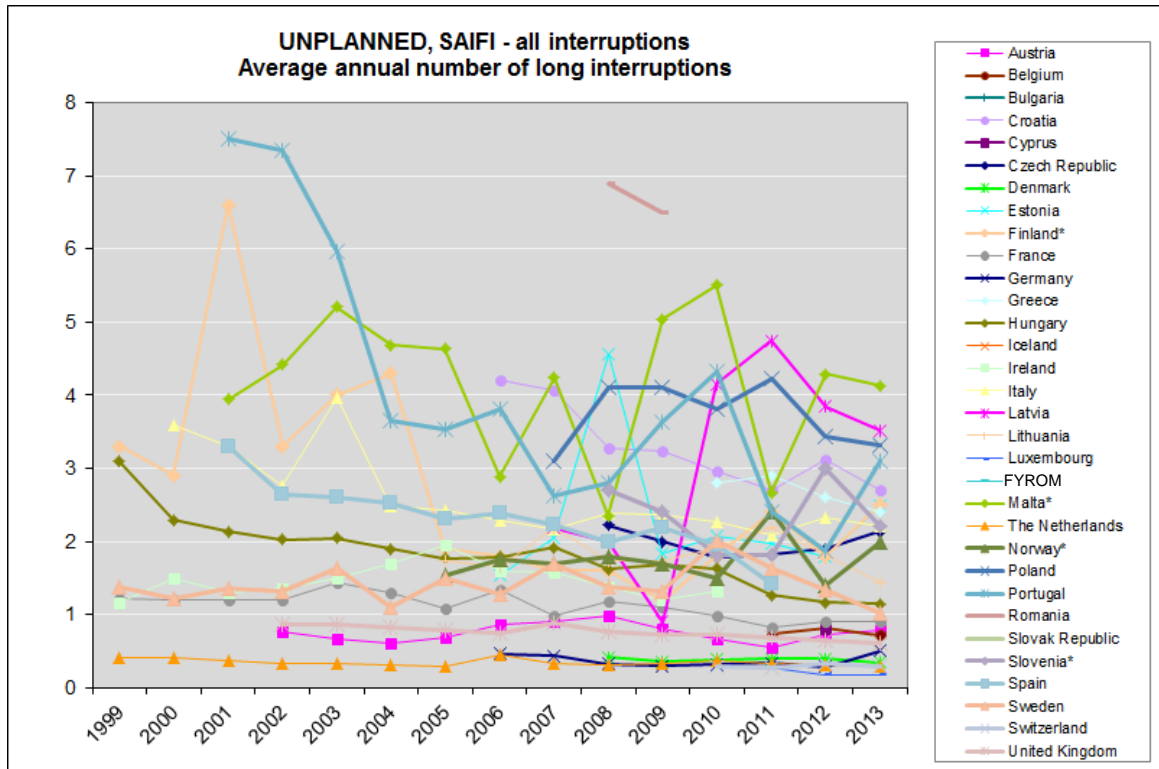


Figure 6: Unplanned SAIFI, including exceptional events

Figure 7 shows SAIFI for unplanned interruptions (originating from all voltage levels) with the exception of interruptions caused by exceptional events.

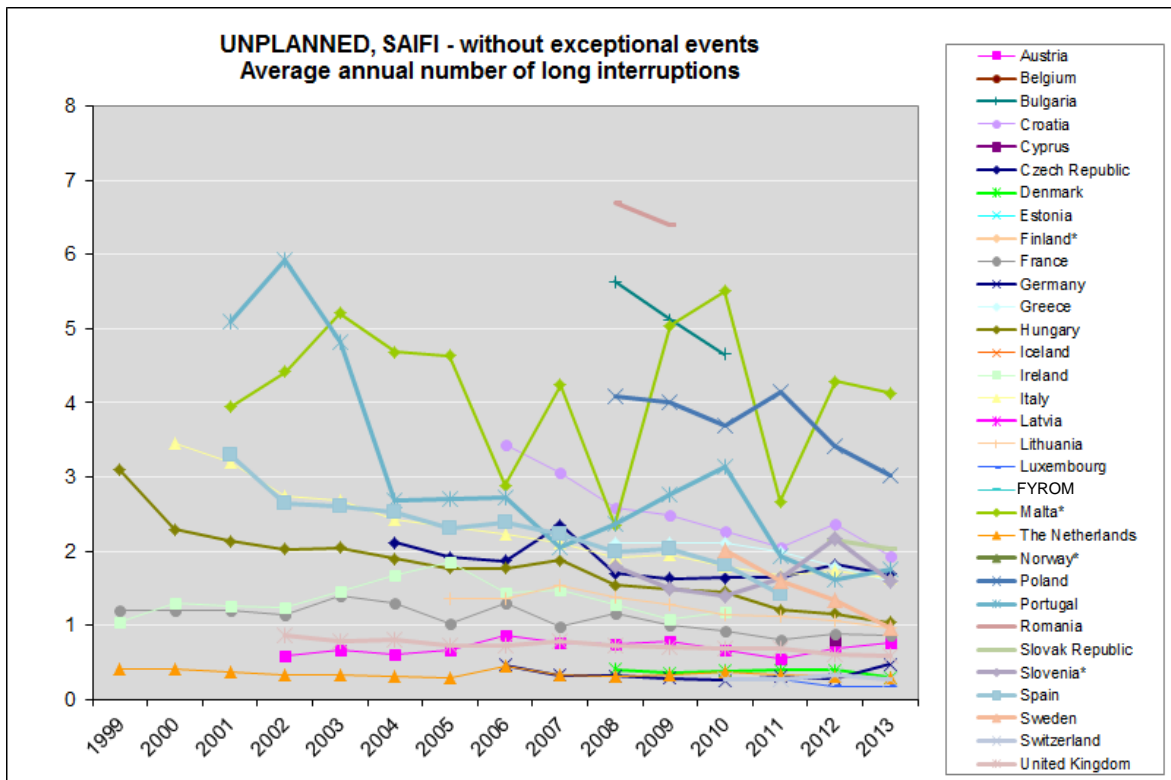


Figure 7: Unplanned SAIFI, excluding exceptional events



Figure 8 shows SAIFI for planned interruptions (originating from all voltage levels). Bulgaria does not appear in the figure in order to facilitate the view.

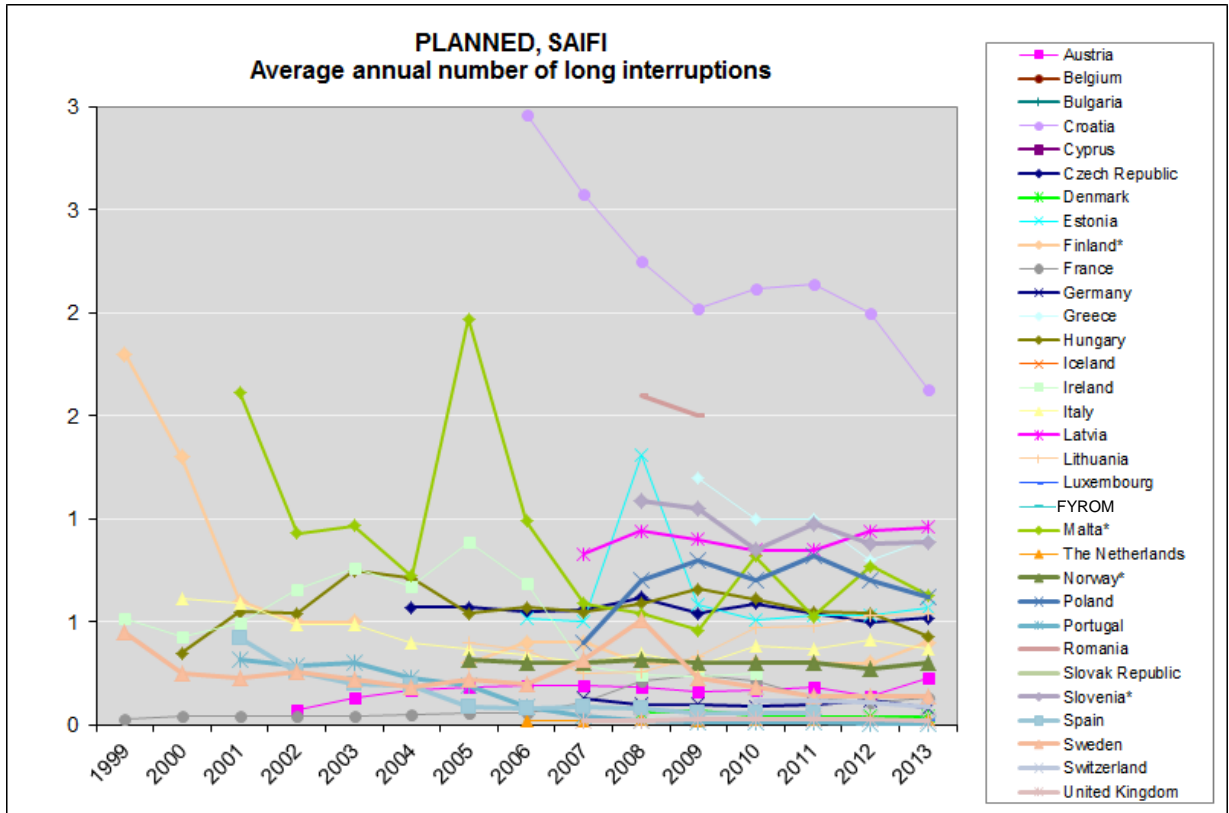


Figure 8: Planned SAIFI



## 2.3 Disaggregated data

### 2.3.1 SAIDI per voltage level

Figure 9 shows which percentage of the unplanned SAIDI is due to incidents at a particular voltage level in the networks, excluding exceptional events. A distinction is made for the following voltage levels: LV, MV and (E)HV.

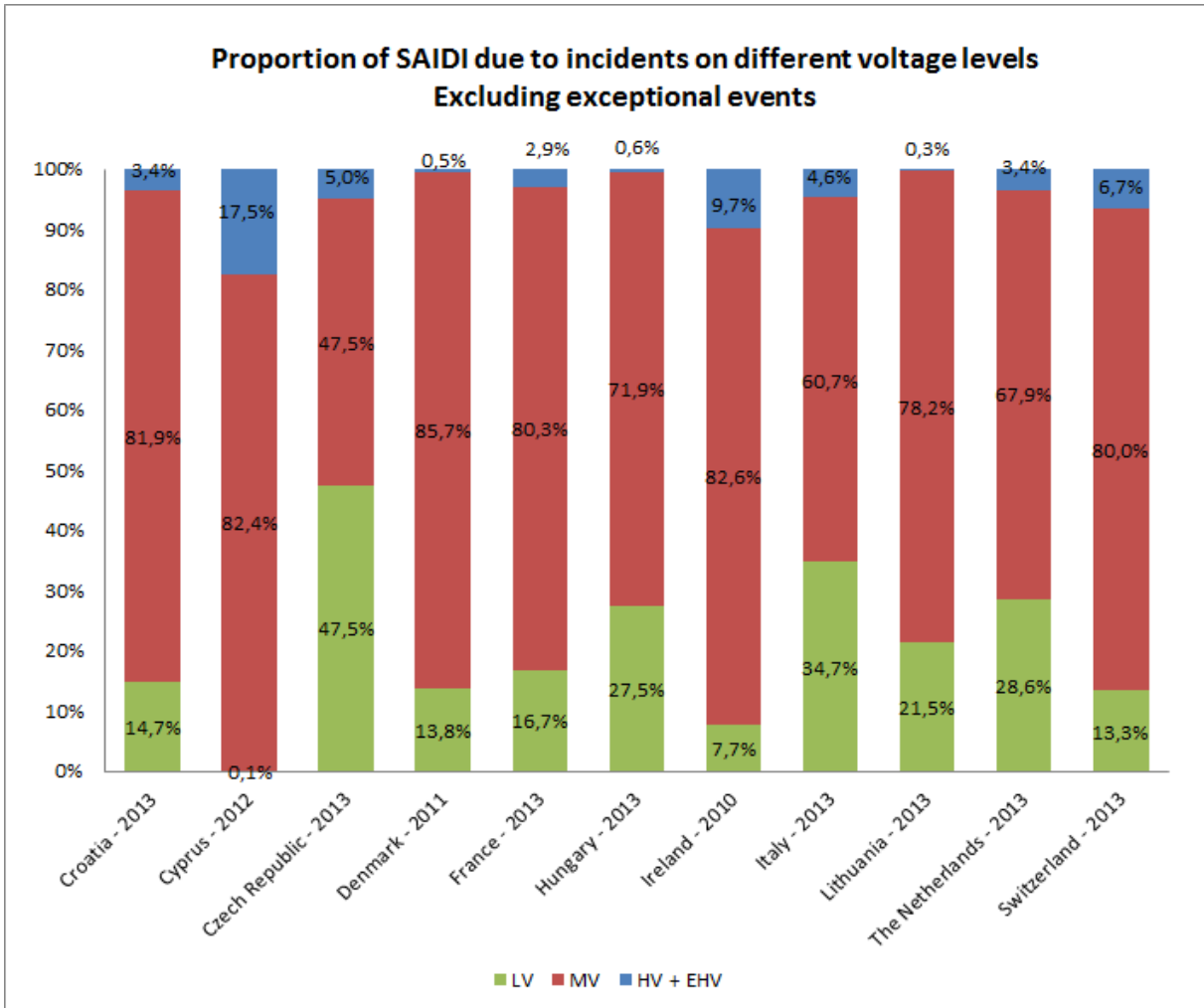


Figure 9: Proportion of unplanned SAIDI due to incidents on different voltage levels, excluding exceptional events

### 2.3.2 Per territorial density

Figures 10 and 11 show the SAIDI and SAIFI for unplanned interruptions excluding exceptional events by territorial density. The definitions of the categories “urban”, “suburban” and “rural” differ for different countries. Please refer to the 5<sup>th</sup> Benchmarking Report (p.33) for the different definitions for each country.

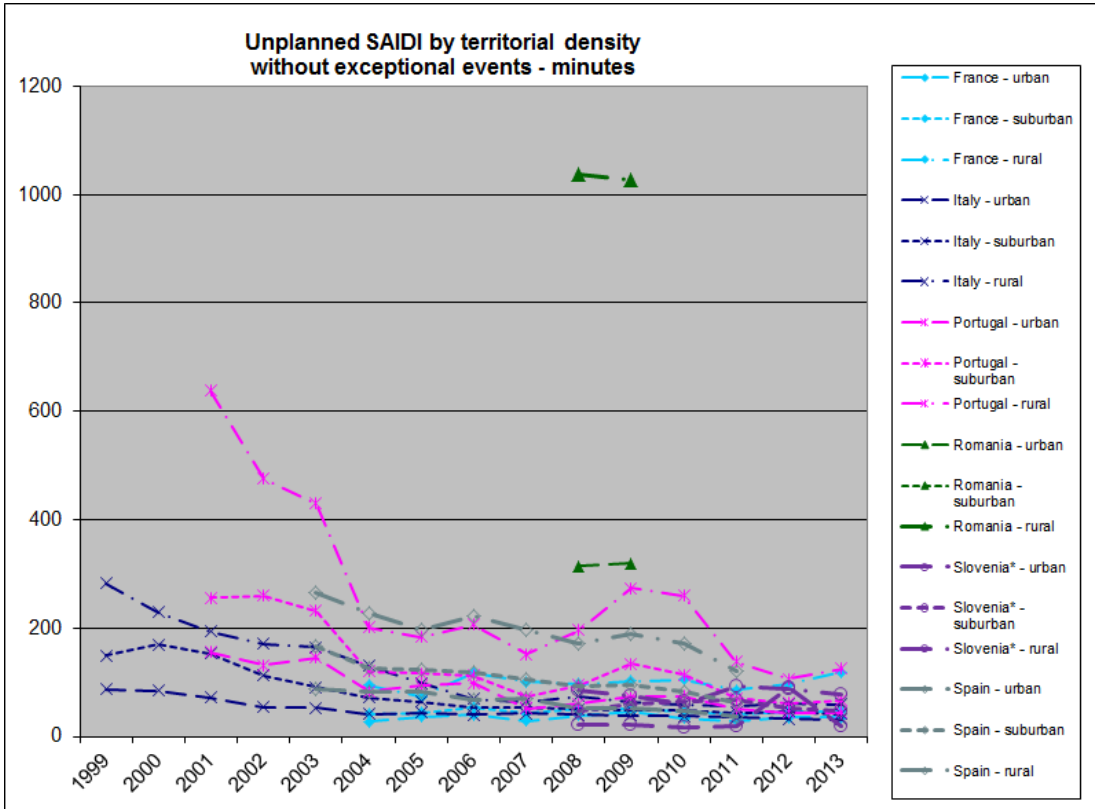


Figure 10: SAIDI for unplanned interruptions by territorial density, excluding exceptional events

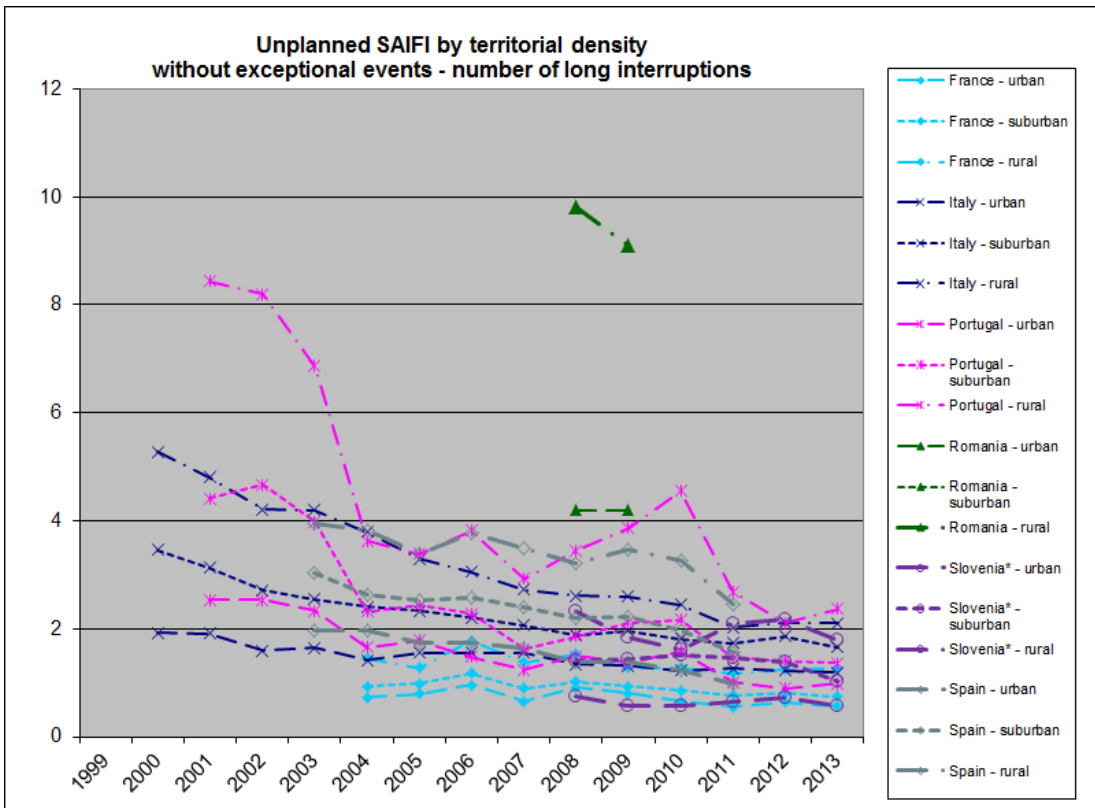


Figure 11: SAIFI for unplanned interruptions by territorial density, excluding exceptional events



## 2.4 Network lengths

Figure 12 shows the length of the circuits in the low voltage networks in different countries. Most of the data is shown for the year 2013 with some exceptions.

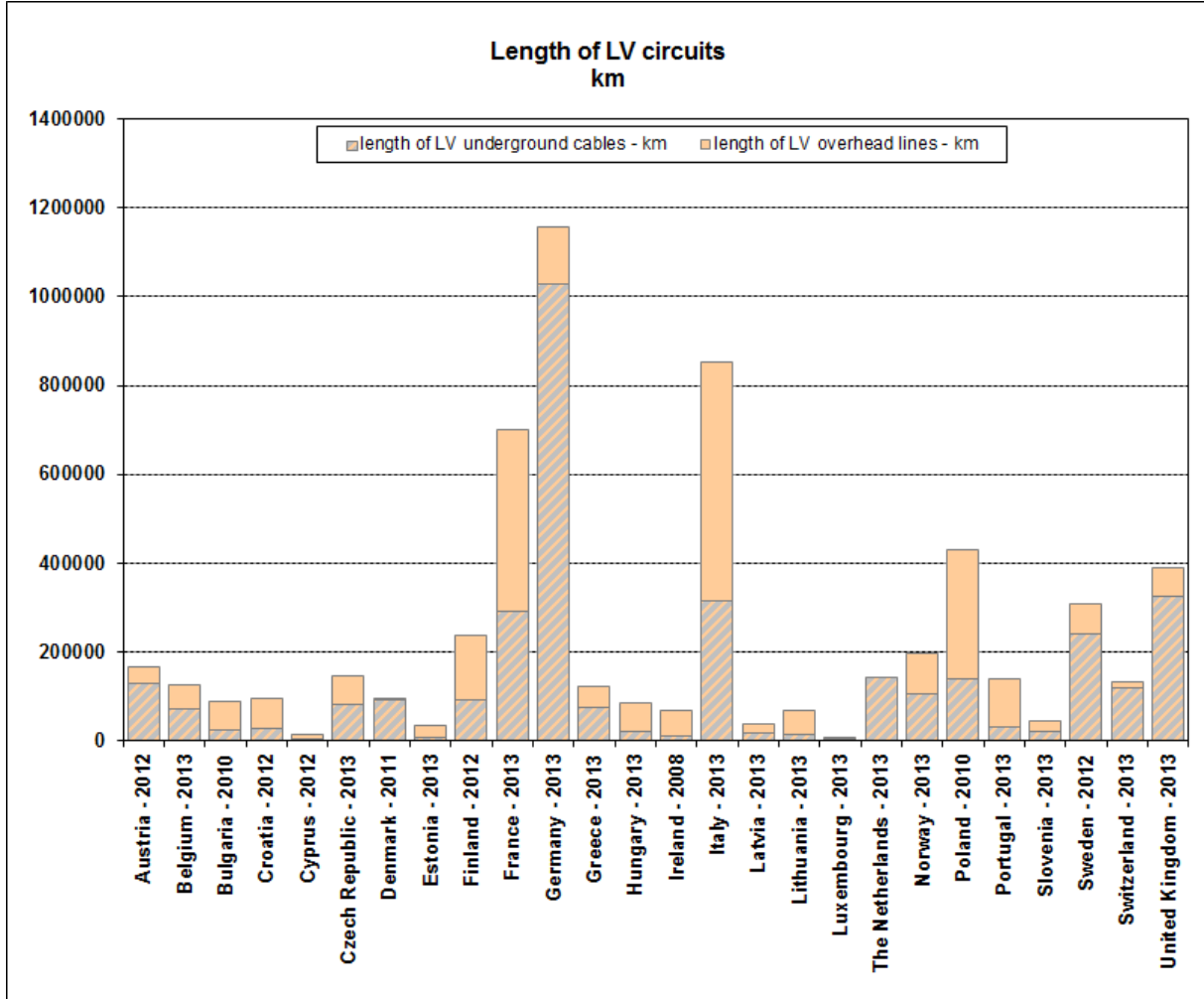


Figure 12: Length of low voltage (LV) circuits





Figure 13 shows the length of the circuits in the medium voltage networks in different countries. Most of the data is shown for the year 2013 with some exceptions.

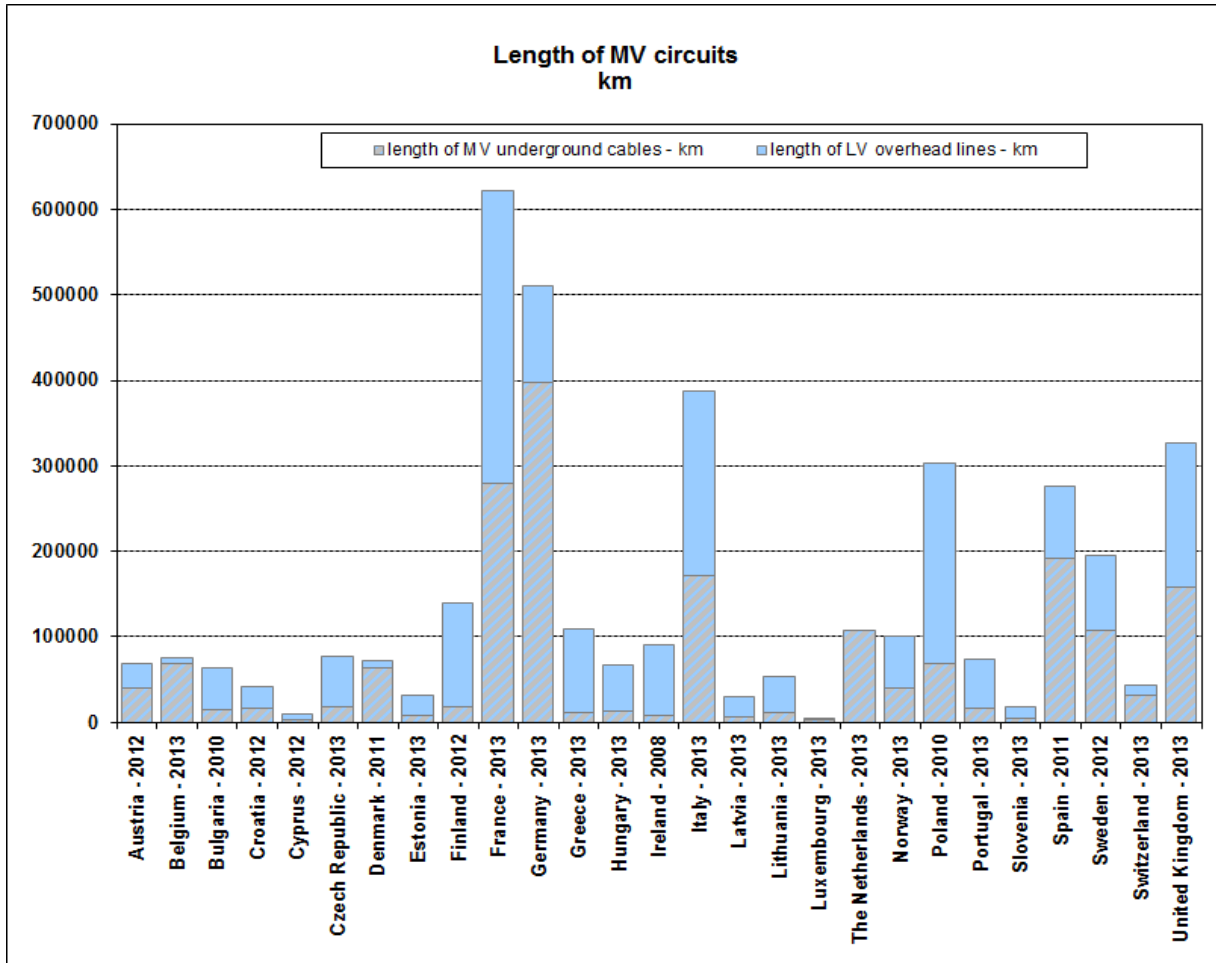


Figure 13: Length of medium voltage (MV) circuits



## 2.5 Technical network characteristics

Figure 14 shows a clustering of European countries according to the percentage of cables in the medium and low voltage networks that is underground.

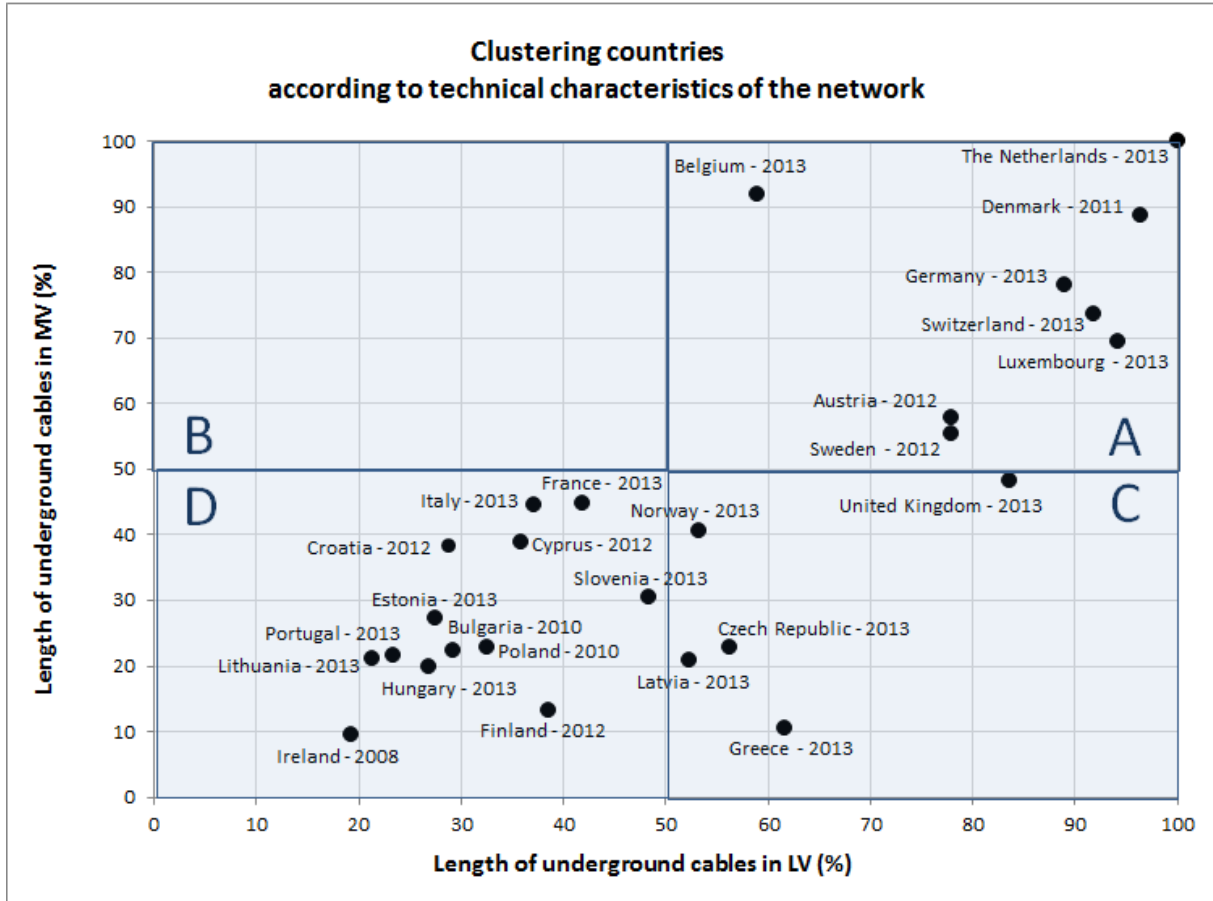


Figure 14: Clustering European countries according to the technical network characteristics



### 3 Additional information per country regarding Quality of Supply

Several countries provided information about recent changes in their regulation on the electricity quality of supply or the plans they have for the near future. This information is reproduced below.

**CZECH REPUBLIC:** New parameters for incentives regulation for the next regulatory period (2015-2019) are currently being set. In the on-going analysis, values for quality indicators are monitored and new values for the next period will be prepared. Technical and economic performance of individual measures will be examined. In addition, the Czech national regulatory authority (NRA) will focus on the correctness of reported data.

**FRANCE:** Financial incentives have been slightly improved with the new network tariff ("TURPE 4"), which entered into force in January 2014 on distribution networks and August 2013 on transmission networks. Also, direct compensation payments to customers affected by very long interruptions (> 6 hours) have been significantly improved on most LV and MV networks (some DSOs are not concerned yet, but they should be soon): the compensation payment is now equal to 20% of the fixed part of the network tariff (without limit, and exceptional events are also covered), compared to 2 % previously, meaning approximately 10 € for each period of 6 hours of interruption for average residential customers (against 1 € previously). Possible improvements of the electricity quality guarantees offered to HV customers (mostly related to CoS) are being discussed.

An audit was due for launch at the end of 2014, in order to evaluate the reliability of the quality indicators provided by the main DSO (ERDF), including SAIDI.

**GERMANY:** In *the 5.1 CEER Benchmarking Report – Update*, the German quality regulatory system was explained. In 2013, new rewards and penalties for the DSOs were determined. The rewards and penalties are valid for the first three years (2014, 2015 and 2016) of the second regulatory period (2014-2018) and calculated like described in the *5.1 CEER Benchmarking Report - Update*.

**UNITED KINGDOM:** The electricity distribution price control review (RIIO-ED1) is the first review in electricity distribution to use our new RIIO model (Revenue = Incentives + Innovation + Outputs). RIIO provides companies with strong incentives to meet the needs of consumers and the challenges of delivering a sustainable energy sector at a lower cost. It provides a transparent and predictable framework that rewards the delivery of agreed outputs. On the 30th of July 2014, we published our proposed settlements (draft determinations) for the 10 DNOs remaining in the review process. These settlements will apply for the eight-year price RIIO-ED1 control period from 1 April 2015 to 31 March 2023. We concluded the price control of one group (Western Power Distribution, WPD) early, based on the high quality of its business plan and the value it provided to consumers. The remaining DNOs have revised their plans. They have provided a strong package of outputs, with more justification at a lower cost (by more than £700m) than their previous plans. With regards to Reliability, we are continuing the Interruptions Incentive Scheme (IIS), the Worst Served Customer scheme, and the Guaranteed Standards. The IIS drives DNO performance on the number of customer minutes lost and the number of customer interruptions against DNO-specific targets. DNOs also have an allowance to address customers deemed to be worst served in terms of reliability, known as the Worst Served Customer Scheme. Statutory regulations set out the guaranteed standards of performance on reliability, under which a customer is entitled to a fixed payment from the DNO if their supply has been interrupted for a certain period.



**MALTA:** In 2013, the Network Code was amended such that the upper tolerance percentage at 11kV level was raised from 2% to 5%.

**THE NETHERLANDS:** In 2012, a survey was conducted to update our study from 2004 on how much customers financially value unplanned and planned interruptions. This study was conducted by an independent research institute which sent questionnaires to household and business energy customers in order to ask how they financially value the (un)availability of electricity under different circumstances. This study resulted in a new formula which will be used for our quality incentive regulation from 2017 onwards.

**NORWAY:** From 2014, some changes in the Norwegian regulation will be put into force. Regarding CoS, the DSOs are from 2014 obliged to register and report interruptions due to LV-events.

**PORTUGAL:** New legislation, published in September and October 2012, transferred authority to the Portuguese NRA for energy services (ERSE) to prepare and approve the national regulatory code on the quality of electricity supply. As a consequence, ERSE promoted a revision of the quality of supply code, which came in force in January 2014. The quality of electricity supply code revision created an opportunity to adjust the quality of supply requirements to the current networks performance, to promote a change on the continuity of supply performance analysis, from a network operator's perspective to a customers' perspective, and to increase the share of responsibilities between network operators and users.

As result of the code revision, the main changes identified in the continuity of supply subject are:

- Introduction of MAIFI indicator at HEV, HV and MV levels;
- Introduction of SAIDI and SAIFI indicators at HV level;
- Revision of the system standards and individual guaranteed standards;
- Revision of the limits for the individual monetary compensations; and
- Introduction of a new component into the incentive mechanism for the improvement of the continuity of supply - especially focused on the worst-served customers.

This code revision process was also an excel opportunity to involve most stakeholders in an enlarged compromise and to bring their different perspectives to a comprehensive and participated debate. This approach to the revision code process was prized by the stakeholders and the need to maintain this interactivity beyond the 2013 code revision was identified. In this sense, a working group to follow the application of a new quality of electricity supply code and to gather inputs for future code revision processes was created. Finally, it is worth to mention the valuable inputs gathered from the different technical reports produced by CEER, as well as some technical reports and international standards published by CENELEC and IEC that most enriched the final version of the quality of electricity supply code.

**SLOVENIA:** For the regulatory period 2013-2015, new incentives (based on revised continuity Overall Standards applied separately for urban (sub-urban incorporated) and rural network types) have been introduced for distribution, as well as new framework for individual compensations (based on revised continuity Guaranteed Standards). The penalty/reward scheme is capped at cca. +- 4 million EUR of eligible costs (influencing particular building blocks of CAPEX & OPEX). New methodology for determining the "Q" factor considering reliability impact factors has been introduced based on the results of internal impact analysis (please refer to the "Reliability impact factors analysis for distribution in Slovenia" - Mohar, Valenčič, Batič; 22nd International Conference on Electricity Distribution Stockholm, 10-13 June 2013 - Paper #1153).



SWEDEN: From 2013, the distribution of electricity to low voltage customer is defined of good quality regarding the number of unplanned long interruptions (3 min - 12 hours) if the number of unplanned interruptions per calendar year is  $\leq 3$  interruptions and it is not of good quality if the number of unplanned long interruptions per calendar year is  $> 11$  interruptions.



## 4 Extra continuity indicators

In addition to the aforementioned indicators, several countries use additional indicators for assessing CoS.

**Austria:** ASIDI, ASIFI (average interruption time weighted by the rated power).

**Cyprus:** interruption time at transmission level (different from AIT).

**Czech Republic:** Average duration of interruptions at transmission level (minutes per interruption), energy not served at transmission level whose definition differ from “usual” ENS.

**Estonia:** interruption time at transmission level (different from AIT).

**Finland:** T-SAIDI (average interruption time weighted by the average consumption: quite similar to ASIDI).

**Greece:** Number of incidents per 100 km of network on LV and MV networks.

**Hungary:** Energy not supplied/Energy produced, ‰ (MWh/GWh) on distribution and transmission networks (at transmission level, this is equivalent to AIT).

**Italy:** MAIFI-transient (number of transient interruptions (< 1s)), at national level and by territorial density.

**Norway:** Energy not supplied/Energy supplied, ‰ (MWh/GWh), interruption time at transmission level (different from AIT).

**Portugal:** TIEPI (average interruption time weighted by the rated power: similar to ASIDI).

**Slovak Republic:** Number of interruptions per transformer at transmission level.



## Annex 1: CEER

The Council of European Energy Regulators (CEER) is the voice of Europe's national regulators of electricity and gas at EU and international level. Through CEER, a not-for-profit association, the national regulators cooperate and exchange best practice within and beyond Europe's borders. CEER includes national regulatory authorities from 33 European countries (the EU-28, Iceland, Norway, Switzerland, FYROM, Montenegro and growing).

One of CEER's key objectives is to facilitate the creation of a single, competitive, efficient and sustainable EU internal energy market that works in the public interest. More specifically, CEER is committed to placing consumers at the core of EU energy policy. CEER believes that a competitive and secure EU single energy market is not a goal in itself, but should deliver benefits for energy consumers.

CEER works closely with (and supports) the Agency for the Cooperation of Energy Regulators (ACER). ACER, which has its seat in Ljubljana, is an EU Agency with its own staff and resources. CEER, based in Brussels, deals with many complementary (and not overlapping) issues to ACER's work such as international issues, smart grids, sustainability and customer issues. European energy regulators are committed to a complementary approach to energy regulation in Europe, with the Agency primarily focusing on its statutory tasks related to EU cross-border market development and oversight, with CEER pursuing several broader issues, including international and customer policies.

The work of CEER is structured according to a number of working groups and task forces, composed of staff members of the national energy regulatory authorities, and supported by the CEER Secretariat.

This report was prepared by the Electricity Quality of Supply Task Force of CEER's Distribution Working Group.

CEER wishes to thank in particular the following regulatory experts for their work in preparing this report: Romain Castel, Jérémy Vincent, Yvonne Beyer and Werner Friedl.



## Annex 2: Tables

The two tables below present all the indicators covered by the report, and indicate the latest updates per country and per indicator.

Country	Overall	UNPLANNED SAIDI - without exceptional events	UNPLANNED, SAIFI - without exceptional events	UNPLANNED, SAIDI - all interruptions	UNPLANNED, SAIFI - all interruptions	PLANNED, SAIDI	PLANNED, SAIFI	UNPLANNED, MAIFI - all interruptions	Unplanned AIT (Transmission) - all interruptions	Unplanned ENS (Transmission) - all interruptions	UNPLANNED, MAIFI - without exceptional events	Unplanned AIT (Transmission) - without exceptional events	Planned AIT (Transmission)	Unplanned ENS (Transmission) - without exceptional events	Planned ENS (Transmission)	UNPLANNED, SAIDI - EHV	UNPLANNED, SAIDI - HV	UNPLANNED, SAIDI - MV
Austria	2013	2013	2013	2013	2013	2013	2013											2013
Belgium	2013			2013	2013													
Bulgaria	2010	2010	2010			2010	2010											
Croatia	2013	2013	2013	2013	2013	2013	2013		2013	2012			2013		2013		2013	2013
Cyprus	2012	2012	2012	2012	2012					2012				2012			2012	2012
Czech Republic	2013	2013	2013	2013	2013	2013	2013						2013		2013		2013	2013
Denmark	2013	2013	2013	2013	2013	2013	2013										2011	2013
Estonia	2013			2013	2013	2013	2013			2012				2013	2013		2013	
Finland	2013			2013	2013	2013	2013	2013		2013								
France	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013		2013		2013			2013	2013
Germany	2013	2013	2013	2013	2013	2013	2013											2013
Greece	2013	2013	2013	2013	2013	2013	2013			2013				2011	2012			2013
Hungary	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013							2013	2013
Ireland	2010	2010	2010	2010	2010	2010	2010										2010	2010
Italy	2013	2013	2013	2013	2013	2013	2013	2013	2013	2012	2013	2013		2013			2013	2013
Latvia	2013			2013	2013	2013	2013	2013						2013	2012			2013
Lithuania	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013		2013			2013	2013
Luxembourg	2013	2013	2013	2013	2013	2013	2013		2012	2012		2012	2012	2012	2012	2013	2013	2013
Malta	2013	2013	2013	2013	2013	2013	2013											
The Netherlands	2013	2013	2013	2013	2013	2013	2013									2013	2013	2013
Norway	2013			2013	2013	2013	2013	2013		2012					2012			
Poland	2013	2013	2013	2013	2013	2013	2013	2013	2013	2012		2013	2013	2013	2013			
Portugal	2013	2013	2013	2013	2013	2013	2013			2013			2013	2013	2013			
Romania	2009	2009	2009	2009	2009	2009	2009					2009		2009				
Slovak Republic	2012	2012	2012			2012			2012									2012
Slovenia	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013		2013	2013	2013	2013		2013	2013
Spain	2011	2011	2011	2011	2011	2011	2011					2010		2011				
Sweden	2013	2013	2013	2013	2013	2013	2013		2013	2013								
Switzerland	2013	2013	2013	2013	2013	2013	2013									2013	2013	2013
United Kingdom	2013	2013	2013	2013	2013	2013	2013	2013		2013								

Table 1: Latest update per country and per indicator - Part 1





Country	UNPLANNED, SAIDI - LV	UNPLANNED, SAIFI - EHV	UNPLANNED, SAIFI - HV	UNPLANNED, SAIFI - MV	UNPLANNED, SAIFI - LV	UNPLANNED, MAIFI - EHV	UNPLANNED, MAIFI - HV	UNPLANNED, MAIFI - MV	UNPLANNED, MAIFI - LV	UNPLANNED, SAIDI - urban areas	UNPLANNED, SAIFI - urban areas	UNPLANNED, MAIFI - urban areas	UNPLANNED, SAIDI - suburban areas	UNPLANNED, SAIFI - suburban areas	UNPLANNED, MAIFI - suburban areas	UNPLANNED, SAIDI - rural areas	UNPLANNED, SAIFI - rural areas	UNPLANNED, MAIFI - rural areas
Austria				2013														
Belgium																		
Bulgaria																		
Croatia	2013		2013	2013	2013													
Cyprus	2012		2012	2012	2012													
Czech Republic	2013		2013	2013	2013													
Denmark	2013		2011	2013	2013													
Estonia			2013															
Finland																		
France	2013		2013	2013	2013		2013	2013		2013	2013	2013	2013	2013	2013	2013	2013	2013
Germany	2013			2013	2013													
Greece	2013			2013	2013													
Hungary	2013		2013	2013	2013													
Ireland	2010		2010	2010	2010													
Italy	2013		2013	2013	2013		2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013	2013
Latvia	2013			2013	2013													
Lithuania	2013		2013	2013	2013		2013	2013	2013	2013	2013					2013	2013	2013
Luxembourg		2012	2012	2013														
Malta																		
The Netherlands	2013	2013	2013	2013	2013													
Norway			2012	2012			2012	2012										
Poland																		
Portugal										2013	2013		2013	2013		2013	2013	
Romania										2009	2009					2009	2009	
Slovak Republic	2011																	
Slovenia			2013	2013			2013			2013	2013		2013	2013		2013	2013	
Spain										2011	2011		2011	2011		2011	2011	
Sweden																		
Switzerland	2013	2013	2013	2013	2013													
United Kingdom																		

Table 2: Latest update per country and per indicator - Part 2



In the tables below, countries marked with an asterisk (\*) use an alternative indicator instead of SAIDI (or SAIFI), which is more representative of the average number of interruptions on MV networks: either because the average is weighted depending on the annual consumption (T-SAIDI or T-SAIFI, Finland) or rated capacity (ASIDI or ASIFI, Austria), or because interruptions originating from LV networks are not taken into account (Malta, Norway, Slovenia).

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria				83,08	38,44	30,34	39,41	48,07	72,33	85,68	38,18	31,77	27,85	44,51	39,64
Belgium													36,18	39,45	34,75
Croatia								669,5	375,4	330,9	296,3	307	250,6	372,5	306
Cyprus														148	
Czech Republic										185,5	210,9	135,9	114,1	125,2	195,1
Denmark										16,48	15,29	15,18	17,04	14,75	15,86
Estonia								243,5	185,8	405,3	186,7	406	346	170,9	378,5
Finland*	198	130	468	284	212	105	87	64	53	59	41	170	225	68	138
France	55	46	59	42	69,3	57,1	55,9	86,3	61,6	74,1	173,8	95,1	53,9	62,9	83,6
Germany								23,25	35,67	16,96	15,29	20,01	17,25	17,37	32,75
Greece												163	166	150	133
Hungary	411	241,2	250,2	196,8	155,4	137,4	121,8	127,8	141	111	125	132,6	85,12	76,89	138,5
Ireland	273,6	257,9	199,3	230,2	171,9	162,8	163,6	148,3	129,7	108,9	100,4	110			
Italy	191,8	187,4	149,1	114,7	546,1	90,53	79,86	60,55	57,89	89,64	78,67	88,84	108	132,7	105,4
Latvia									269	236	424	1073	708	371	341
Lithuania							373,6	168,7	301,7	155,7	161,3	260	302,6	287,7	153,9
Luxembourg													12	10	10
Malta*			381,5	523,8	567	486,8	398,8	304,4	409	186,6	687,9	620,6	191	286,2	360
The Netherlands	25,3	27	31	28	30	24	27,4	35,6	33,1	22,1	26,5	33,7	23,4	27	23
Norway*							93	113	96	104	84	66	216	66	144
Poland									410	354,5	408,6	385,5	325,8	263,2	281,8
Portugal			530,7	468	406,2	217,8	198,7	243,2	136	162,7	280	276	131,4	94,15	258,8
Romania										696	682				
Slovak Republic															187,1
Slovenia*										116	133	81	76	169	109
Spain	156,4	145,4	179,7	142,6	141,9	123,6	117	112,8	103,9	86,82	133,9	140,9	58,2		
Sweden	165,8	89,2	162,9	101,8	148,1	78,1	912,6	100	321,9	110,8	73,3	92,3	186,5	89,01	154,3
Switzerland												14	16	22	15
United Kingdom				83,69	110,4	81,11	94,29	69,16	100,1	81,94	75,69	81,42	70,02	68,05	61,02

Table 3: Unplanned SAIDI, including exceptional events



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria				35,23	38,44	30,34	31,36	48,07	45,47	43,68	36,65	31,77	27,46	30,93	33,96
Bulgaria										288,5	231,2	197,2			
Croatia								577,8	251	237,2	204,6	188,9	152	196,8	176,1
Cyprus														148	
Czech Republic						102,5	120,5	102,5	124,2	86,7	102,7	106,2	107,1	109,9	98,01
Denmark										16,45	15,29	15,17	16,09	14,75	11,25
France	52	46	39	40	51	50,7	52,2	71,5	57,7	62,6	67,2	62,9	52,6	60,1	68,1
Germany								21,53	19,25	16,89	14,63	14,9	15,31	15,91	15,32
Greece										167	138	121	101	101	96
Hungary	411	241,2	250,2	196,8	155,4	137,4	121,8	127,8	137,4	97,7	99,32	102,4	75,73	76,25	67,21
Ireland	227,6	187	183	183	162	156,5	154,9	123,9	115,4	94,1	81,3	82			
Italy	164,5	159,2	138,6	108,9	96,83	76,52	65,74	53,84	52,47	53,1	49,45	47,77	43,59	45,45	42,27
Lithuania							149,9	125,8	135,6	103,4	87,71	83,38	106,1	76,58	72,67
Luxembourg													12	10	10
Malta*			381,5	523,8	567	486,8	398,8	304,4	409	186,6	687,9	620,6	191	286,2	360
The Netherlands	25,3	27	31	28	30	24	27,4	35,6	33,1	22,1	26,5	33,7	23,4	27	23
Poland										352,5	341,6	316,1	309,1	254	254,9
Portugal			412,9	334,5	303,8	148,8	142,8	152,1	104,3	133,1	185,6	173	97,25	78,48	88,7
Romania										638	635				
Slovak Republic											351,3	367,7	272,2	303,1	110,9
Slovenia*										59	54	51	64	75	60
Spain	156,4	145,4	179,7	142,6	141,9	123,6	117	112,8	103,8	86,82	90	79,2	58,2		
Sweden												79,3	118,3	84,02	70,77
Switzerland												13	16	21	15
United Kingdom				81,66	81,28	76,59	68,64	65,55	78,03	74,22	73,43	70,02	67,95	55,43	54,71

Table 4: Unplanned SAIDI, excluding exceptional events



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria				7,4	12,79	20,7	20,97	22,38	18,77	19,57	17,17	19,87	21,44	14,93	14,23
Bulgaria										299,5	289,7	224,2			
Croatia								499,6	421,7	412,7	287,8	293,4	308,5	295,5	253,5
Czech Republic						148,3	166,2	144,7	150,2	165,8	140,7	159,4	154,7	147,6	159,7
Denmark										8,76	8,37	5,37	4,94	4,76	4,70
Estonia								118,6	202,2	195,3	145	120,6	104,1	84,93	86,84
Finland*	103	38	33	32	32		23	26	23	23	18	17	19	21	41
France	4	6	6	6	5,3	6,6	8	7,9	10,8	19,4	23,2	24	18,9	15,6	15,9
Germany								15,1	13,85	13,17	11,53	9,66	10,12	11,83	7,23
Greece											232	195	163	147	151
Hungary		100,1	139,6	137	199,2	179	138,5	139,9	144,7	157	198,2	179,7	156,6	153,4	122,8
Ireland	172	164,7	202	284,1	422,3	390,7	375,4	268,7	79	60,5	59,3	64,1			
Italy		82,62	84,82	77,97	80,67	62,62	58,77	53,79	46,16	49,35	43,58	55,71	61,85	65,97	55,28
Latvia									237	261	254	219	236	265	280
Lithuania							113,6	98,27	71,23	78,07	93,29	132,7	157,9	179,2	212,8
Luxembourg													1,2	1,5	0,6
Malta*			109,1	89,38	72,84	69,28	105,6	94,74	78,88	72,73	75,1	72,6	69,08	80,32	61,04
The Netherlands								2,81	3,39	4,13	4,04	4,35	5,1	5,17	6,02
Norway*							44	42	48	44	42	36	42	41	36
Poland									121	152,2	145,8	129,8	153,1	147,4	139,1
Portugal			57,37	52,21	62,39	49,16	39,16	18,7	7,31	2,07	2	1,57	2,05	1,68	1,46
Romania										385	323				
Slovak Republic														188,9	
Slovenia*										138	130	104	126	117	115
Spain	31,36	37,05	36,57	30,66	24,79	21,6	13,8	9,6	11,4	10,8	8,34	8,82	9		
Sweden	90,07	34,5	42,3	37,1	25,4	24,8	33,5	23,8	23,2	26,4	21,3	20,1	16,7	16,94	17,98
Switzerland												14	13	12	10
United Kingdom									4,96	5,7	6,48	6,72	6,69	6,7	5,68

Table 5: Planned SAIDI



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria				0,77	0,67	0,61	0,69	0,87	0,9	0,99	0,8	0,66	0,54	0,72	0,85
Belgium													0,74	0,81	0,72
Croatia								4,2	4,06	3,28	3,24	2,96	2,7	3,12	2,7
Cyprus														0,8	
Czech Republic										2,22	2	1,78	1,82	1,9	2,13
Denmark										0,42	0,36	0,39	0,4	0,4	0,37
Estonia								1,54	2,05	4,56	1,84	2,07	1,97	1,79	2,49
Finland*	3,3	2,9	6,6	3,3	4	4,3	1,9	1,8	1,6	1,6	1,2	1,8	2,4	1,8	2,5
France	1,22	1,2	1,2	1,2	1,43	1,3	1,08	1,33	0,98	1,18	1,1	0,98	0,82	0,9	0,9
Germany								0,46	0,43	0,33	0,3	0,32	0,34	0,29	0,5
Greece												2,8	2,9	2,6	2,4
Hungary	3,09	2,29	2,13	2,03	2,05	1,9	1,77	1,79	1,92	1,62	1,69	1,63	1,26	1,17	1,15
Ireland	1,152	1,491	1,309	1,367	1,497	1,703	1,947	1,595	1,57	1,387	1,196	1,317			
Italy		3,59	3,29	2,76	3,96	2,48	2,42	2,29	2,16	2,38	2,36	2,27	2,08	2,33	2,2
Latvia									2,18	2,01	0,9	4,15	4,74	3,84	3,52
Lithuania							1,74	1,65	2,18	1,73	1,74	1,92	2,19	1,82	1,43
Luxembourg													0,27	0,18	0,17
Malta*			3,939	4,415	5,211	4,688	4,63	2,887	4,243	2,352	5,044	5,501	2,663	4,283	4,13
The Netherlands	0,41	0,41	0,38	0,34	0,34	0,32	0,3	0,45	0,33	0,31	0,33	0,38	0,34	0,32	0,3
Norway*							1,54	1,75	1,7	1,79	1,7	1,5	2,4	1,4	2
Poland									3,1	4,1	4,1	3,8	4,22	3,44	3,32
Portugal			7,51	7,35	5,96	3,66	3,54	3,81	2,62	2,8	3,63	4,32	2,41	1,88	3,09
Romania										6,9	6,5				
Slovenia*										2,71	2,4	1,81	1,81	2,99	2,2
Spain			3,3	2,65	2,6	2,52	2,31	2,38	2,23	1,99	2,19	1,96	1,42		
Sweden	1,38	1,22	1,35	1,32	1,64	1,1	1,49	1,28	1,7	1,38	1,32	2,02	1,63	1,33	1,02
Switzerland												0,29	0,28	0,34	0,29
United Kingdom				0,874	0,863	0,826	0,784	0,744	0,88	0,768	0,729	0,718	0,692	0,649	0,611

Table 6: Unplanned SAIFI, including exceptional events



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria				0,59	0,67	0,61	0,67	0,87	0,77	0,75	0,79	0,66	0,54	0,69	0,82
Bulgaria										5,63	5,12	4,65			
Croatia								3,43	3,06	2,58	2,48	2,27	2,06	2,36	1,94
Cyprus														0,8	
Czech Republic						2,11	1,92	1,87	2,35	1,7	1,63	1,64	1,65	1,82	1,69
Denmark										0,41	0,36	0,39	0,4	0,4	0,32
France	1,2	1,2	1,2	1,15	1,4	1,3	1,02	1,3	0,98	1,16	1	0,92	0,81	0,89	0,87
Germany								0,46	0,33	0,32	0,29	0,26	0,31	0,28	0,47
Greece										2,1	2,1	2,1	2	1,8	1,6
Hungary	3,09	2,29	2,13	2,03	2,05	1,9	1,77	1,77	1,88	1,54	1,49	1,45	1,21	1,16	1,04
Ireland	1,034	1,301	1,257	1,242	1,466	1,679	1,862	1,43	1,485	1,282	1,082	1,178			
Italy		3,46	3,19	2,74	2,68	2,42	2,33	2,23	2,1	1,92	1,95	1,8	1,67	1,74	1,63
Lithuania							1,36	1,36	1,54	1,38	1,28	1,15	1,13	1,06	0,97
Luxembourg													0,27	0,18	0,17
Malta*			3,939	4,415	5,211	4,688	4,63	2,887	4,243	2,352	5,044	5,501	2,663	4,283	4,13
The Netherlands	0,41	0,41	0,38	0,34	0,34	0,32	0,3	0,45	0,33	0,31	0,33	0,38	0,34	0,32	0,3
Poland										4,08	4	3,7	4,14	3,42	3,02
Portugal			5,09	5,93	4,81	2,69	2,71	2,73	2,06	2,36	2,77	3,14	1,94	1,62	1,75
Romania										6,7	6,4				
Slovak Republic														2,15	2,03
Slovenia*										1,8	1,49	1,39	1,63	2,16	1,59
Spain			3,3	2,65	2,6	2,52	2,31	2,38	2,23	1,99	2,03	1,82	1,42		
Sweden												2,02	1,59	1,33	0,97
Switzerland												0,28	0,28	0,34	0,28
United Kingdom				0,866	0,789	0,807	0,724	0,717	0,78	0,735	0,714	0,689	0,679	0,599	0,589

Table 7: Unplanned SAIFI, excluding exceptional events



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria				0,07	0,13	0,17	0,18	0,19	0,19	0,18	0,16	0,17	0,18	0,14	0,17
Bulgaria										5,25	5,29	3,61			
Croatia								2,96	2,58	2,25	2,02	2,12	2,14	2	1,63
Czech Republic						0,57	0,57	0,55	0,56	0,62	0,54	0,59	0,54	0,5	0,52
Denmark										0,06	0,07	0,05	0,04	0,04	0,04
Estonia								0,52	0,5	1,31	0,58	0,51	0,53	0,53	0,57
Finland*	1,8	1,3	0,6	0,5	0,5		0,3	0,4	0,4	0,3	0,3	0,3	0,3	0,3	0,4
France	0,03	0,04	0,04	0,04	0,04	0,05	0,06	0,06	0,11	0,21	0,24	0,21	0,13	0,11	0,13
Germany									0,13	0,1	0,1	0,09	0,1	0,12	0,08
Greece											1,2	1	1	0,8	0,9
Hungary		0,35	0,55	0,54	0,75	0,71	0,54	0,57	0,55	0,59	0,66	0,61	0,55	0,54	0,43
Ireland	0,514	0,428	0,492	0,659	0,764	0,674	0,89	0,684	0,284	0,241	0,237	0,251			
Italy		0,61	0,59	0,49	0,49	0,4	0,37	0,34	0,3	0,35	0,29	0,38	0,37	0,41	0,37
Latvia									0,83	0,94	0,9	0,85	0,85	0,94	0,96
Lithuania							0,4	0,36	0,25	0,26	0,33	0,47	0,48	0,53	0,54
Luxembourg													0,02	0,02	0,02
Malta*			1,617	0,93	0,969	0,721	1,97	0,989	0,591	0,54	0,461	0,82	0,528	0,771	0,63
The Netherlands								0,02	0,02	0,03	0,02	0,03	0,03	0,03	0,03
Norway*							0,32	0,3	0,3	0,32	0,3	0,3	0,3	0,27	0,3
Poland									0,4	0,7	0,8	0,7	0,82	0,7	0,62
Portugal			0,32	0,29	0,3	0,23	0,19	0,09	0,04	0,02	0,01	0,01	0,01	0,008	0,007
Romania										1,6	1,5				
Slovenia*										1,09	1,05	0,85	0,98	0,88	0,89
Spain			0,42	0,26	0,2	0,19	0,09	0,08	0,09	0,08	0,06	0,06	0,06		
Sweden	0,45	0,25	0,23	0,26	0,22	0,18	0,22	0,2	0,32	0,51	0,23	0,18	0,14	0,14	0,14
Switzerland												0,12	0,12	0,11	0,09
United Kingdom									0,02	0,023	0,025	0,026	0,026	0,026	0,023

Table 8: Planned SAIFI

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Finland	5,3	4,9	5,6	5,2	3,8		8,4	7,3	7,5	6,8	5	6,4	9,2	6,3	7,3
France	3,1	2,8	2,3	2	2,6	2,6	2,4	2,9	2,4	2,9	2,3	2,2	1,8	1,9	2
Hungary					10,38	10,26	8,76	9,09	10,45	10,19	8,81	9,62	8,7	6,76	6,76
Italy														6,4	6,66
Latvia															0,007
Lithuania							0,18	0,56	0,34	0,19	0,4	0,6	0,41	0,44	0,38
Norway								1,7	1,8	2,1	1,7	1,3	2,5	1,6	2
Poland									4,1	4,4	3,3	3,6	3,41	3,52	3,25
Slovenia													4,3	6,4	5,7
United Kingdom				0,754	1,013	1,025	1,033	1,098	1,292	0,859	0,784	0,709	0,67	0,848	0,79

Table 9: UNPLANNED, MAIFI - all interruptions



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Croatia								86,12	82,98	37,29	82,16	30,33	43,27	43,1	48,18
France												4,8	2,1	4,4	3,3
Hungary	1,15	0,23	0,05	0,16	0,13	0,79	0,54	0,1	0,21	0,04	0	0,13	0,09	0,06	0
Italy								5,28	12,8	3,68	3,82	3,46	4,92	7,21	4,96
Lithuania							3,63	5,43	4,76	1,85	0,82	5,55	3,29	2,3	0,08
Luxembourg														0	
Poland									17,4	572,4	3	4,57	273,5	161,9	10
Slovak Republic											1,8	9,1	1,16	0,26	
Slovenia					2,58	9,47	0,55	7,12	2,63	0,39	2,22	11,12	2,91	41,05	16,15
Sweden	0,45	0,42	0,1	0,22	47,52	0,093	0,016	0,357	0,049	0,012	0,021	0,019	0,1945	0,03	0,001

Table 10: Unplanned AIT (Transmission) - all interruptions

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Croatia								574,64	547,9	338,96	1247,9	689,61	342,64	445,85	
Cyprus														202,8	
Estonia									70,6	63,8	52,6	208	787	148,21	
Finland										90	190	140	340	60	160
France									2142	4064	14939	4044	1640	3618	2745
Greece														1275	1736
Hungary	18,7	13,4	3,2	1	16,5	52,73	39,39	6,41	17,92	2,75	0	10,42	7,4	4,53	0
Italy								3477	8465	2430	2372	2175	3131	4460	
Lithuania							127,87	167,47	160,2	55,07	27,78	132,11	72,4	49,99	1,78
Luxembourg														0	
Norway	449	416	446	2326	2295	2172	390	391	778	1691	216	286	12011	1650	
Poland									79,16	2352,42	10,47	18,98	122,29	755,13	
Portugal	212	2007,1	254,2	91,4	976	496	63,1	58,1	82,1	130	158,1	116	33,6	0	8,6
Slovenia					57,46	221,94	13,06	176,09	66,32	9,4	47,37	255,65	69,68	971,96	384,93
Sweden	96	91	23,1	49,2	10417	25,2	4,4	96,3	13	3,2	5,3	5	42	7	0,2
United Kingdom			1404	698	415	1329	1119	2015	528	1675	848	672	983	1417	767

Table 11: Unplanned ENS (Transmission) - all interruptions

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Italy														5,56	5,82
Lithuania							0,08	0,48	0,28	0,17	0,33	0,35	0,29	0,31	0,3

Table 12: Unplanned MAIFI - without exceptional events





Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France	2,9	3,6	2,5	2,4	4,2	2,4	2	1,8	2,3	4,4	6,4	2,9	1,7	2,3	3
Italy								5,28	12,8	2,31	3,82	3,46	4,65	3,97	4,29
Lithuania							1,62	5,11	3,98	0,64	0,78	2,22	2,31	0,87	0,04
Luxembourg														0	
Poland									17,4	103,97	3	0	21,14	0	10
Portugal	1,92	29,05	3,79	1,07	2,02	6,68	0,52	0,78	0,81	1,35	0,44	1,16	0,28	0	0,09
Romania						3	4,4	1,2	0,86	1,8	0,81				
Slovenia					0,1	4,03	0,11	6,33	1,35	0,06	0,36	2,95	0,4	0,37	1,08
Spain	1,93	2,11	17,87	2,01	1,1	2,8	1,18	1,94	1,52	1,15	0,91	3,17			

Table 13: Unplanned AIT (Transmission) - without exceptional events

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Croatia								101,33	138,8	0	154	81	123	106,73	123,33
Czech Republic		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luxembourg														0	
Poland									0	468,45	0	4,57	252,33	161,89	0
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Slovenia					0	0	0	0	0	0	0	0	0	0	0

Table 14: Planned AIT (Transmission)

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cyprus														202,8	
Estonia								123,7	56	58,2	71,94	207,62	320	148,21	58,41
France	2054	2693	1812	1753	3211	1891	1598	1416	1815	3563	5089	2429	1374	1864	2499
Greece												1245	2070,7		
Italy								3477	8465	1528	2372	2175	2962	2454	2580
Latvia														2533	1395
Lithuania							57,04	157,55	133,89	15,39	26,32	52,95	51,18	18,79	0,82
Luxembourg														0	
Poland									79,16	427,29	10,47	0	95,01	0	42,66
Portugal	272,7	1983,73	252,2	75,9	141,78	496	40,2	262,59	75,9	130,16	42,09	116,2	27	0	8,6
Romania						247	387	106	80	167	55				
Slovenia					2,33	94,54	2,54	156,76	34,02	1,34	7,69	67,94	9,71	8,85	25,69
Spain	675,63	779,31	6990,32	802,69	466,23	1249,65	548,79	935,8	757,16	573,54	437,5	1569,47	280		

Table 15: Unplanned ENS (Transmission) - without exceptional events



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Croatia								244,8	54	0	66,5	5,3	3	256,7	25,4
Czech Republic				0	0	0	0	0	0	0	0	0	0	0	0
Estonia										251	3077	417	1359	546,06	800,79
Greece														631	
Latvia														2083	
Luxembourg														0	
Norway			0	0	0	271,9	1380,86	0	432,89	0	0	0	0	0	
Poland									0	1925,14	0	18,98	1134,28	755,13	42,66
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Slovenia					0	0	0	0	0	0	0	0	0	0	0

Table 16: Planned ENS (Transmission)

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Luxembourg														0	0,003
The Netherlands							0	0,7	0	0	0	0	0	0	0
Switzerland												0	0	0	0

Table 17: Unplanned SAIDI - EHV

Note: Many countries do not separate SAIDI - EHV and SAIDI - HV and have provided SAIDI - EHV + HV in the next table

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Croatia								13,48	13,41	9,49	10,36	8,16	5,37	22,83	5,99
Cyprus														25	
Czech Republic												2,9	10,41	2,26	10,34
Denmark										0,15	0,25	0,16	0,08		
Estonia								4,75	7,47	4,96	4,31	11,89	25	8	12
France	2	1,9	2,9	1,9	2,2	1,5	6,7	7,5	2,1	6,1	5,6	1,5	1,1	2	2
Hungary					4,11	1,45	1,29	2,37	0,29	0,56	0,66	0,21	0,33	0,56	0,41
Ireland	5,9	6,8	6,8	5,3	11,8	16,2	17,4	10,9	19,6	10,4	9	8			
Italy	1,83	5,35	10,12	2,28	2,6	4,47	2,8	2,22	3,38	1,66	1,61	2,85	2,34	1,33	1,93
Lithuania							0	4,65	15,24	1,18	1,42	2,89	0,92	0,26	0,22
Luxembourg														0	0,003
The Netherlands	3,7	5,6	5,4	6,3	2,8	2,2	7,6	8,2	11,3	1,4	3,2	7,9	3	1	0,8
Slovenia*					0,13	0,87	0,16	4,96	2,44	0,05	0,37	2,32	0,13	0,52	2,4
Switzerland												4	2	6	1

Table 18: Unplanned SAIDI - HV (or EHV + HV)



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria				35,23	38,44	30,34	31,36	48,07	45,47	43,68	36,65	31,77	27,46	32,95	33,42
Croatia								539,83	197,42	210,2	178,42	162,83	121,92	145,27	144,25
Cyprus														118	
Czech Republic										88,54	119,92	124,58	114	105,8	97,88
Denmark										13,56	12,58	12,37	13,2	11,97	10,02
France	42	36	28	31	40	40,6	36,8	54,8	47,1	47,4	50,5	51	42,6	47,1	54,7
Germany								18,67	16,5	14,32	12	12,1	12,68	13,35	12,85
Greece										159	132	116	97	96	91
Hungary		163,51	174,36	139,24	104,96	99,72	83,77	86,45	98,49	70,31	66,46	74,13	52,94	48,98	48,34
Ireland	166,1	138	135,6	135,4	129,6	126,1	123,8	101,7	85,4	75	65,8	67,8			
Italy	136,25	124,31	102,63	80,59	73,85	56,29	46,7	36,01	33,32	32,4	31,15	28,46	26,12	27,31	25,36
Latvia														273	138
Lithuania							32	89,79	89,18	75,23	65,23	63,06	64,43	59,14	56,84
Luxembourg													12	10	10
The Netherlands	17,8	17,4	20,9	17,7	22,6	17,7	15,5	21,8	17,1	15,8	18	19	14,6	19	15,9
Slovak Republic											316,49	305,99	218,24	303,1	
Slovenia*										59	54	51	64	75	60
Switzerland												7	12	12	12

Table 19: Unplanned SAIDI - MV

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Croatia								24,53	40,12	17,55	15,83	17,95	24,66	28,73	25,89
Cyprus														0,16	
Czech Republic										82,8	102,58	106,17	107,06	109,95	98,02
Denmark										2,3	2,18	2,03	2,12	2,08	1,77
France	8	8	8	7	9	8,7	8,8	9,2	8,5	9,1	11,1	10,4	8,9	10,9	11,4
Germany								2,86	2,75	2,57	2,63	2,8	2,63	2,57	2,47
Greece										8	6	5	4	5	5
Hungary		77,69	75,84	57,56	46,33	40,43	36,75	38,93	38,63	26,82	32,2	28,03	22,47	21,83	18,47
Ireland	55,6	42,2	40,6	42,4	20,6	14,2	13,8	11,3	10,4	8,6	6,5	6,3			
Italy	26,44	29,56	25,82	26,01	20,38	15,76	16,24	15,61	15,76	19,04	16,69	16,15	14,86	16,26	14,51
Latvia														97	49
Lithuania							118,03	31,01	30,84	26,97	19,55	17,44	19,32	17,18	15,6
The Netherlands	3,8	3,8	4,6	4,3	4,9	4,3	4,3	4,6	4,8	4,9	5,3	6,3	5,8	7	6,7
Slovak Republic											34,84	61,68	53,91		
Switzerland												2	2	2	2

Table 20: Unplanned SAIDI – LV

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Luxembourg														0	
The Netherlands							0	0,007	0	0	0	0,004	0	0	0,00001
Switzerland												0	0	0	0,02

Table 21: Unplanned SAIFI - EHV



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Croatia								0,52	0,4	0,45	0,32	0,25	0,16	0,36	0,15
Cyprus														0,22	
Czech Republic												0,18	0,09	0,15	0,21
Denmark										0,04	0,03	0,02	0,01		
Estonia								0,15	0,18	0,16	0,12	0,17	0,26	0,15	0,22
France						0,06	0,11	0,22	0,05	0,11	0,12	0,06	0,05	0,07	0,07
Hungary					0,1	0,07	0,09	0,08	0,04	0,04	0,06	0,01	0,05	0,02	0,03
Ireland	0,035	0,082	0,082	0,062	0,334	0,569	0,29	0,264	0,361	0,184	0,148	0,161			
Italy		0,25	0,32	0,17	0,16	0,2	0,22	0,19	0,22	0,14	0,13	0,12	0,09	0,11	0,12
Lithuania							0	0,08	0,15	0,05	0,06	0,05	0,02	0,01	0,004
Luxembourg														0	
The Netherlands	0,17	0,19	0,12	0,13	0,1	0,08	0,1	0,15	0,09	0,08	0,09	0,13	0,11	0,06	0,05
Norway*							1,4E-05	4,7E-05	1,4E-05	1,3E-05	1,4E-05	1,2E-05	1,5E-05	2,2E-06	
Slovenia*					0,01	0,05	0,04	0,09	0,08	0,01	0,03	0,07	0,02	0,06	0,03
Switzerland												0,08	0,07	0,1	0,06

Table 22: Unplanned SAIFI – HV (or EHV + HV)

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria				0,59	0,67	0,61	0,67	0,87	0,77	0,75	0,79	0,66	0,54	0,67	0,74
Croatia								2,72	2,44	1,97	2,03	1,88	1,71	1,8	1,63
Cyprus														0,55	
Czech Republic										1,45	1,82	1,95	1,93	1,88	1,78
Denmark										0,34	0,31	0,34	0,36	0,36	0,33
France						0,94	0,86	1,04	0,88	1,01	0,82	0,81	0,72	0,77	0,75
Germany								0,43	0,31	0,3	0,27	0,24	0,29	0,25	0,46
Greece										2	2	2	1,9	1,7	1,5
Hungary		1,79	1,67	1,57	1,53	1,46	1,38	1,38	1,54	1,27	1,21	1,24	1	0,99	0,86
Ireland	0,819	0,991	0,956	0,939	1,003	1,033	1,486	1,103	1,061	1,048	0,898	0,983			
Italy		2,97	2,69	2,41	2,35	2,05	1,95	1,87	1,71	1,58	1,61	1,47	1,37	1,38	1,28
Latvia														3,3	2,54
Lithuania							0,99	1,02	1,11	1,02	0,95	0,88	0,85	0,83	0,79
Luxembourg													0,27	0,18	0,17
The Netherlands	0,23	0,2	0,23	0,18	0,21	0,21	0,18	0,23	0,2	0,19	0,2	0,21	0,19	0,21	0,2
Norway*							0,11	0,12	0,11	0,12	0,1	0,08	0,16	0,09	
Slovenia*										1,8	1,49	1,39	1,63	2,16	1,59
Switzerland												0,17	0,2	0,22	0,19

Table 23: Unplanned SAIFI - MV



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Croatia								0,19	0,21	0,16	0,13	0,14	0,19	0,2	0,16
Cyprus														0,03	
Czech Republic										1,6	1,63	1,64	1,65	1,82	1,69
Denmark										0,02	0,02	0,02	0,02	0,02	0,01
France						0,05	0,05	0,05	0,05	0,04	0,05	0,05	0,04	0,05	0,05
Germany								0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02
Greece										0,1	0,1	0,1	0,1	0,1	0,1
Hungary	0,59	0,49	0,46	0,46	0,42	0,37	0,31	0,31	0,31	0,22	0,22	0,2	0,16	0,16	0,15
Ireland	0,18	0,228	0,219	0,241	0,129	0,078	0,086	0,063	0,062	0,049	0,036	0,035			
Italy		0,24	0,18	0,16	0,17	0,17	0,16	0,16	0,17	0,21	0,21	0,21	0,19	0,23	0,21
Latvia														0,1	0,29
Lithuania							0,28	0,27	0,28	0,31	0,27	0,23	0,26	0,22	0,18
The Netherlands	0,02	0,02	0,02	0,02	0,03	0,03	0,03	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04
Switzerland												0,02	0,02	0,02	0,02

Table 24: Unplanned SAIFI – LV

There were no answers to this indicator.

Table 25: Unplanned MAIFI - EHV

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						0,24	0,2	0,24	0,2	0,18	0,19	0,16	0,16	0,09	0,15
Italy														0,32	0,36
Lithuania							0,008	0,02	0,05	0,005	0,05	0,09	0		0,007
Norway								1,2E-05	6,3E-06	3,6E-06	6,6E-06	9E-06	4E-06	1,1E-06	
Slovenia					0	0,02	0,01	0,02	0,06	0,02	0,03	0	0,03	0,07	0,02

Table 26: Unplanned MAIFI – HV

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						2,39	2,2	2,75	2,57	2,72	2,07	2	1,66	1,76	1,96
Italy														5,17	5,4
Lithuania							0,07		0,22	0,16	0,27	0,3	0,24	0,23	0,22
Norway								0,12	0,12	0,14	0,11	0,1	0,17	0,11	

Table 27: Unplanned MAIFI – MV

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Italy														0,01	0,01
Lithuania							0,006	0,05	0,009	0,002	0,007	0,04	0,05	0,07	0,07

Table 28: Unplanned MAIFI - LV



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						27,1	36,9	40,6	28,6	39,2	45,6	34	29,1	35,2	34,6
Italy	86,71	84,33	71,23	54,66	53,01	41,31	43,7	40	42,26	40,27	38,59	37,93	34,54	32,16	30,66
Portugal			154,98	130,86	145,23	82,73	92,99	98,08	51,9	60,45	73,06	73,81	49,9	43,9	43,94
Romania										314	319				
Slovenia*										22,8	20,5	17,3	20,4	89,4	18,8
Spain					88,26	83,16	81,9	67,86	68,94	51,18	51,36	46,56	35,76		

Table 29: Unplanned SAIDI - urban areas

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						0,73	0,8	0,96	0,65	0,91	0,81	0,65	0,55	0,64	0,57
Italy		1,92	1,91	1,59	1,65	1,42	1,55	1,55	1,56	1,34	1,32	1,23	1,26	1,23	1,19
Lithuania							0,65	0,57	0,67	0,61	0,53	0,5	0,47	0,43	0,39
Portugal			2,53	2,53	2,33	1,66	1,79	1,48	1,24	1,49	1,37	1,58	1,01	0,9	0,99
Romania										4,2	4,2				
Slovenia*										0,75	0,56	0,56	0,65	0,73	0,58
Spain					1,97	1,98	1,73	1,75	1,64	1,39	1,38	1,22	0,98		

Table 30: Unplanned SAIFI - urban areas

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						0,77	0,84	0,96	0,83	0,73	0,77	0,76	0,7	0,73	0,86
Italy														2,23	2,16

Table 31: Unplanned MAIFI - urban areas

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						40,8	43,4	54,3	42,1	50,8	52,1	46,6	40,8	46,2	46
Italy	149,09	170,19	152,58	112,32	90,67	72,21	63,71	54,4	52,52	50,33	48,71	47,9	43,46	46,21	40,94
Portugal			256,19	260,23	231,29	120,52	115,68	112,17	73,35	95,1	133,65	114,15	70,85	61,81	66,22
Slovenia*										48,1	59,3	65,7	67,2	52,2	47,2
Spain					166,38	126,6	123	119,4	105,18	92,94	94,68	82,14	61,56		

Table 32: Unplanned SAIDI - suburban areas



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						0,93	0,98	1,18	0,9	1,02	0,94	0,86	0,77	0,81	0,75
Italy		3,46	3,13	2,71	2,55	2,41	2,33	2,2	2,07	1,88	1,96	1,81	1,74	1,86	1,66
Portugal			4,41	4,67	3,98	2,32	2,43	2,28	1,62	1,86	2,11	2,16	1,47	1,4	1,36
Slovenia*										1,41	1,43	1,51	1,46	1,38	1,02
Spain					3,04	2,62	2,52	2,57	2,4	2,19	2,23	1,97	1,55		

Table 33: Unplanned SAIFI - suburban areas

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						1,76	1,91	2,12	2,03	2,25	1,55	1,56	1,38	1,31	1,53
Italy														5,75	5,99

Table 34: Unplanned MAIFI - suburban areas

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						94,2	73,3	116,9	100,4	96,9	102,2	105	86,1	96	118,4
Italy	282,47	229,18	193,7	170,97	165,11	129,82	98,57	69,7	64,84	74,54	64,22	59,42	54,77	59,95	59,01
Portugal			637,53	475,48	429,72	201,64	183,32	206,39	152,38	195,66	273,84	259,74	137,31	105,86	124,86
Romania										1038	1026				
Slovenia*										84,5	74,7	59	92	86,5	78,4
Spain					264,53	228,46	197,7	222,52	196,88	172,24	189,13	171,53	119,44		

Table 35: Unplanned SAIDI - rural areas

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						1,45	1,28	1,77	1,38	1,53	1,28	1,28	1,17	1,25	1,27
Italy		5,27	4,81	4,21	4,19	3,79	3,3	3,06	2,72	2,61	2,6	2,44	2,02	2,12	2,1
Portugal			8,43	8,19	6,86	3,63	3,39	3,81	2,93	3,45	3,87	4,55	2,69	2,1	2,37
Romania										9,8	9,1				
Slovenia*										2,32	1,84	1,61	2,1	2,18	1,79
Spain					3,96	3,81	3,4	3,76	3,5	3,22	3,46	3,26	2,44		

Table 36: Unplanned SAIFI - rural areas

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
France						5,32	4,51	5,94	5,49	5,82	4,41	4,13	3,36	3,44	3,86
Italy														9,15	9,83
Lithuania							0,07	0,35	0,19	0,13	0,22	0,25	0,18	0,19	0,17

Table 37: Unplanned MAIFI - rural areas



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria					6258	6258	6258	6268	6269	6329	6443	6421	6514	6504	
Belgium														3633	3634
Croatia								1159	1159	1159	1159	1247	1247	1247	1301
Czech Republic					4445	4446	4396	4394	4395	4406	4406	4395	4941	5501	5503
Estonia								1699	1699	1728	1728	1728	1728	1690	1690
Finland							6349	6349	6404	6567	6782	6968	7154	7202	
France	47006	47007	46985	47155	47222	47269	47327	47407	47415	47629	47820	47866	47911	48007	
Germany									35146	35391	35129	34749	34797	34780	34797
Greece										4020	4377,9	4407,2		4560,3	
Hungary					3808	3987	3987	4172	4172	4211	4366	4528	4525	4652	4656
Ireland										2351,2					
Italy	22515	21762	21785	21885	21596	21539	21915	21872	22031	21986	22044	21997	20581		
Latvia												1259	1250	1250	1265
Luxembourg								140	148	148	147	147	147	147	156
The Netherlands										2684	2686	2758	2800	2872	2973
Norway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Poland	12906	12890	12890	12886	13063	13073	13068	13173	13185	13185	13380	13506			
Portugal	5982	5990	6014	6195	6439	6490	6657	7018	7426	7513	7569	8049	8371	8534	8733
Romania									8915	8990	8930	8930	8844	8844	9028
Slovak Republic									1752	1752	1776	1776	1835	1870	1951
Slovenia										836	836	836	836	836	997
Spain		30921				33248	33379	33814	33985	34327	34751	36357	38083		
Sweden	15591	15591	15591	15591	15591	15591	15087	15087	15087	15087	14712	14684	15475,3	15695	
Switzerland												6750	6750	6750	6750
United Kingdom				70348	70631	70114	71764	71900	72778	72703	79588	73363	73248	73362	72538

Table 38: Total length of circuits - EHV network - in km





Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria					10768	10779	10802	10871	10962	11065	11114	11166	11120		
Belgium														4739	4730
Bulgaria										15210	15210	15213			
Croatia								5851	6229	5917,7	6303,9	6191,9	6080,9	6126,9	6148,9
Cyprus														1621	
Czech Republic										15385	13807	13945,1	13827	13856	14050
Denmark								3867	3554	2767	2509	2821	2992		
Estonia								3466	3464	3500	3500	3500	3500	3532	3544
Finland							15422	15392	15450	15471	15614	15730	15776	15749	
France	52316	52400	52590	52477	52472	52481	52507	52540	52490	52586	52586	56437	56497	56474	
Germany									76443	76901	76900	95154	95022	95425	96308
Greece										11317	11671,2	11711,5		11768,3	
Hungary					6271	6342	6327	6372	6387	6399	6421	6491	6512	6520	6503
Ireland										10625					
Italy	44070	44046	44539	44800	44840	44979	45214	45388	45378	45532	45589	45758	45649		
Latvia												3487	4006	4010	4010
Lithuania										6679	6679	6679	6687	6687	6704
Luxembourg								518	525	507	503	498	490	491	508
The Netherlands										9463	10039	10151	6430	8949	10454
Norway								28762	28915	38071	38259	38102	36432	36874	
Poland	32349	32332	32381	32387	32296	32327	32389	32437	32555	32509	32681	32768			
Portugal			7277	7454	7628	7812	8052	8310	8500	8840	8913	8981	9114	9140	9303
Slovenia										2486	2540	2592	2602	2691	2699
Spain						51268	52072	51230	51091	50694	52733	53293	53763		
Sweden	31140	30997,1	30624,8	30499	37989	31281	29913	29696	29563	29597	29671	30089	29990	30236	
Switzerland												7240	7060	6960	7030

Table 39: Total length of circuits - HV network - in km



Country	length of LV underground cables - km	length of LV overhead lines - km	LV total network length - km	Rate of underground cable in LV networks	length of MV underground cables - km	length of LV overhead lines - km	MV total network length - km	Rate of underground cable in MV networks
Austria - 2012	130325	37087	167412	77,8%	39319	28746	68065	57,8%
Belgium - 2013	74395	51704	126099	59,0%	69026	5979	75005	92,0%
Bulgaria - 2010	26044	62893	88937	29,3%	14354	49592	63946	22,4%
Croatia - 2012	27593,9	67677,4	95271,3	29,0%	15843,3	25623,9	41467,2	38,2%
Cyprus - 2012	5366	9558	14924	36,0%	3608	5696	9304	38,8%
Czech Republic - 2013	83376	64709	148085	56,3%	17513	58990	76503	22,9%
Denmark - 2011	92431	3366	95797	96,5%	64017	8220	72237	88,6%
Estonia - 2013	10156	26669	36825	27,6%	8399	22398	30797	27,3%
Finland - 2012	92340	146943	239283	38,6%	18376	120638	139014	13,2%
France - 2013	294422	407479	701901	41,9%	279286	342901	622187	44,9%
Germany - 2013	1029542	127243	1156785	89,0%	398232	111634	509866	78,1%
Greece - 2013	76085	47267	123352	61,7%	11614	98072	109686	10,6%
Hungary - 2013	23621	64330	87951	26,9%	13311	53968	67279	19,8%
Ireland - 2008	13192	55498	68690	19,2%	8571	81270	89841	9,5%
Italy - 2013	316993	535842	852835	37,2%	172277	215453	387730	44,4%
Latvia - 2013	20369	18511	38880	52,4%	6133	23188	29321	20,9%
Lithuania - 2013	14572	53612	68184	21,4%	11319	42195	53514	21,2%
Luxembourg - 2013	5679	350	6029	94,2%	2516	1103	3619	69,5%
The Netherlands - 2013	145214	0	145214	100,0%	107577	0	107577	100,0%
Norway - 2013	106022	93044	199066	53,3%	40866	59590	100456	40,7%
Poland - 2010	140316	289977	430293	32,6%	68995	234741	303736	22,7%
Portugal - 2013	33127	108197	141324	23,4%	16044	58195	74239	21,6%
Slovenia - 2013	22228	23735	45963	48,4%	5307	12105	17412	30,5%
					191395	85048	276443	69,2%
Sweden - 2012	241926	68481	310407	77,9%	108259	87453	195712	55,3%
Switzerland - 2013	121520	10830	132350	91,8%	32240	11580	43820	73,6%
United Kingdom - 2013	327593	63921	391514	83,7%	157576	168336	325912	48,3%

Table 40: MV and LV network lengths



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria					29073	30080	31087	32094	33101	34383	35342	36524	37798	39319	
Belgium													67141	67866	69026
Bulgaria										13777	13816	14354			
Croatia								12548	13310	13684	14427	14766	15400,7	15843,3	
Cyprus														3608	
Czech Republic										15378	15899	16687,6	17056	17265	17513
Denmark								55771	57358	58916	61925	63156	64017		
Estonia								4377	4757	5222	5754	6167	6689	7334	8399
Finland							12336	12850	13655	14192	15021	15925	17000	18376	
France	178438	184191	188727	198827	205392	211545	216982	223104	229158	235676	243584	251790	261456	270473	279286
Germany											372246	377660	382009	394538	398232
Greece											10101	10735	11187	11427	11614
Hungary	10295	10295	10486	10842	11126	11430	11576	11768	11967	12250	12438	12747	13106	13216	13311
Ireland										8571					
Italy									152935	154903	159647	161756	167415	170175	172277
Latvia													5529	5823	6133
Lithuania				8003	8291	8542	8714	9014	9309	9664	9896	10304	10654	11011	11319
Luxembourg								1653	1716	1892	2093	2125	2318	2430	2516
The Netherlands										94039	91279	97136	103204	104028	107577
Norway	29269	29646	29793	30902	32563	33604	34312	35258	35702	36304	37334	38181	38760	39889	40866
Poland	53153	54345	55081	56189	57048	61839	61988	62976	65384	66309	67565	68995			
Portugal			10542	10995	11513	12356	13045	13682	14245	14614	15113	15527	16009	16027	16044
Slovenia										4717	4866	4936	4391	5278	5307
Spain						198741	197515	202309	195555	195364	196674	197099	191395		
Sweden	57499	58163	62676	64127	72795	62930	68606	72466	79346	87322	93653	97544	102180	108259	
Switzerland												29730	30750	31360	32240
United Kingdom				142731	142365	143957	143605	146969	149162	150953	151202	154420	155754	156992	157576

Table 41: Length of cable circuits - MV network - in km



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria					63819	64276	64734	65191	65648	66152	66477	67105	67678	68065	
Belgium													73502	74027	75005
Bulgaria										62676	63390	63946			
Croatia								38218	38980	39354	40097	40436	41110,7	41467,2	40478
Cyprus														9304	
Czech Republic										75550	75644	76062,2	75934	76665	76503
Denmark								70236	70253	69983	71542	71987	72237	71733	70587
Estonia								26824	26890	26793	27192	27851	28181	28618	30797
Finland	128686	129188	134074	130320	130600	131236	132316	133123	136514	136145	137019	137697	138153	139014	
France	566573	569645	572290	579941	582489	585478	588385	592214	596100	599270	604186	608054	613123	617642	622187
Germany									492257	499335	497004	497044	498876	507953	509866
Greece										102555	104416	106203	107519	108745	109686
Hungary	64724	62669	63251	63507	64046	64488	64894	65296	65630	65941	66245	66466	67005	67176	67279
Ireland										89841					
Italy									368797	371011	375335	377365	383076	385662	387730
Latvia													34963	29411	29321
Lithuania					119212	119659	119510	120016	52898	53165	53333	53714	54049	54372	53514
Luxembourg								2850	2900	3186	3258	3268	3446	3550	3619
The Netherlands										100694	101398	102676	103204	104028	107577
Norway	92441	92363	92506	93493	94498	95209	95812	96643	96876	97119	98131	98861	98856	99641	100456
Poland	276765	278145	278902	279839	281290	295760	295843	297081	299654	300511	301969	303736			
Portugal			61254	62455	64255	66261	68285	69803	71210	72314	73374	73472	74142	74179	74239
Slovenia										17455	17540	17532	17521	17501	17412
Spain						255081	256520	265781	262196	267074	272722	271775	276443		
Sweden	186728	180764	197130	181555	214931	174539	180411	182152	183441	188218	190280	190787	192430	195712	
Switzerland												42410	43030	43260	43820
United Kingdom				317379	315696	316925	313485	316345	318629	320167	315225	323864	324946	326224	325912

Table 42: Total length of circuits - MV network - in km



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria					101263	105172	109080	112988	116897	119717	123399	125587	127518	130325	
Belgium													71728	72826	74395
Bulgaria										25262	25686	26044			
Croatia								22862	23204	24122	25623	26535	27009	27593,9	
Cyprus														5366	
Czech Republic										70932	71704	79376,4	81335	82692	83376
Denmark								84045	86504	88295	91324	91517	92431		
Estonia								7615	7805	7482	7890	8117	8252	8838	10156
Finland							68896	72471	75560	79240	82460	85823	89208	92340	
France	168873	176037	182524	193673	203606	212658	221437	230224	239296	248529	258109	266353	276870	286005	294422
Germany											979961	986475	1002116	1020193	1029542
Greece										57941	62323	66978	71116	73792	76085
Hungary					20408	20956	21401	21845	22288	22456	22744	23018	23419	23559	23621
Ireland										13192					
Italy									274351	290706	289992	296249	302386	309119	316993
Latvia													18159	19308	20369
Lithuania				7575	7369	7853	8444	9053	9800	10469	12477	12099	12884	13770	14572
Luxembourg								4796	5125	5229	5301	5319	5441	5662	5679
The Netherlands										110757	112124	113660	145043	145164	145214
Norway	72691	74961	76653	78438	82179	83851	87106	88668	91382	94285	97227	100652	101001	104122	106022
Poland	102066	105755	107237	110616	114170	122094	125776	128575	128788	134163	137725	140316			
Portugal			23044	23973	24627	27571	28610	29408	30133	30453	31714	32113	32627	32899	33127
Slovenia										18878	19547	20171	20963	21556	22228
Sweden	189028	189153	195358	195643	236105	199931	209186	212606	217498	222864	225949	230397	236151	241926	
Switzerland												118230	119550	119320	121520
United Kingdom				306036	320520	312742	317212	317193	318824	322151	325315	327609	329188	331402	327593

Table 43: Length of cable circuits - LV network - in km



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria					150552	153056	155560	158064	160568	161915	164345	165306	166066	167412	
Belgium													124127	124836	126099
Bulgaria										91239	88404	88937			
Croatia								90002	90344	91262	92763	93675	94358	95271,3	95419,9
Cyprus														14924	
Czech Republic										141089	140877	145219,4	146215	147084	148085
Denmark								93033	94288	94589	95614	95370	95797	93539	92580
Estonia								36753	36222	36931	36804	36659	36066	35798	36825
Finland	214506	213123	218964	217578	215776	217706	222666	225635	227097	231100	233393	235943	237966	239283	
France	627932	630983	634043	639510	647998	653650	658471	663776	669151	675317	680972	685413	691964	697206	701901
Germany									1075173	1110057	1122662	1123898	1134668	1149973	1156785
Greece										115446	117651	119916	121409	122470	123352
Hungary	83271	81257	79801	80737	81534	82691	83613	84457	85318	85833	86312	84379	87516	87749	87951
Ireland										68690					
Italy									795073	814161	812598	828737	830444	839832	852835
Latvia													58799	40157	38880
Lithuania				67294	66944	67144	67010	67264	66282	66519	67503	51837	69732	70258	68184
Luxembourg								5172	5542	5640	5697	5709	5801	6018	6029
The Netherlands										145153	145948	146437	144948	145251	145214
Norway	190443	187699	187691	188250	192032	191250	194642	194015	193821	195330	197063	199587	196707	198388	199066
Poland	385350	389871	391437	394168	399835	409509	412770	416636	417020	423886	428085	430293			
Portugal			118104	120238	122726	127018	128990	130945	132607	133702	135939	137864	139371	140415	141324
Slovenia										44961	45173	45499	45660	45778	45963
Sweden	294869	293004	340076	299239	324307	293851	295609	297723	299427	301961	302513	305042	306225	310407	
Switzerland												130720	131180	130460	132350
United Kingdom				373781	388454	380378	384714	383750	384577	387611	390460	392538	394064	395832	391514

Table 44: Total length of circuits - LV network - in km



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	44,85	46,6	47,39	48,75	50,99	52,26	53,01	54,41	54,66	55,28	53,29	55,01	55,06	55,69
Belgium													88,4	86,2
Bulgaria									27,53	27,55	30,26	33,14		
Cyprus														4,35
Czech Republic			53,78	53,58	54,78	56,39	57,66	59,42	59,75	60,48	57,11	59,26	58,63	58,79
Denmark								35,56	33,94	33,91	32,65	33,27	32,33	
Estonia								7,32	7,61	7,66	7,17	7,43	6,85	7,41
Finland*	77,8	79,2	81,2	84	85	86,8	84,7	90	90,4	87,2	80,8	87,7	84,2	85,2
France	389,7	398,8	407,6	408,7	425,4	437	439,3	435	436,1	449	441,7	464,8	443,3	
Germany									484	501	468	490,5	506,1	
Greece										55,68	52,44			
Hungary	33,14	30,51	31,57	32,4	30,82	32,34	33,75	34,75	35,67	35,49	33,71	34,48	34,21	33,88
Ireland			23	23,4	24,2	25,4	25,8	27	27,7	28,3	26,8	26,5		
Italy	294,7	307,6	314,3	321,4	331,2	335,7	339,8	346,2	347,6	347,1	326,1	330,5	334,6	325,3
Latvia												9,92	9,32	10,08
Lithuania	7,24	6,91	7,24	7,51	7,94	8,45	8,82	9,2	9,55	9,88	9,16	9,22	9,46	9,66
Luxembourg								6,7	6,8	6,7	6,2	6,7	6,6	6,4
The Netherlands										99,02	97,67	95,04	94,37	94,18
Norway*	107	104	108	108	106	109	111	106	110	109	107	111	107	111
Poland	99,4	100,5	100,5	99,2	102	105,4	106,5	112,1	116,2	117,8	112,8	119,5		
Portugal				40,67	43,06	45,5	47,95	49,18	50,05	50,6	49,87	52,2	50,5	49,06
Slovak Republic											41,35	41,25	46,4	47,44
Slovenia*										12,62	11,24	11,78	12,49	12,38
Spain						211	218	221	236	247	233	261	227	
Sweden	185	192	195	190	190	180	188	179	173	175	165	175	159,4	173,2
Switzerland												55,6	57,2	55,9
United Kingdom			313	318	321	326	330	347,04	338,16	338,66	333,76	325,77		

Table 45: Transmitted-distributed energy (all customers) - in TWh



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria									47,22	47,66	46,82	48,38	48,3	48,78
Belgium													54,2	54
Bulgaria										22,17	22,01	22,32		
Cyprus														3,4
Czech Republic			38,46	42,27	43,2	44,89	46,09	45,77	45,8	46,65	45,47	46,52	45,97	45,74
Denmark								35,56	33,94	33,91	32,65	33,27	32,33	
Estonia								6,43	6,75	6,46	6,19	6,56		
Finland*	40,2	40,6	43,6	45	46	46	46,3	47,8	48,2	48,2	48,5	50	47,7	48,9
France	299,8	305,1	314,8	315,6	331	340,7	346,5	351,5	350,4	364,2	364,2	384,4	358,7	
Greece										45,72	42,1	42,1	40,8	
Hungary		24,99	25,99	26,94	27,85	27,41	27,71	28,42	29,27	30,07	28,65	29,19	29,1	28,81
Ireland	16	17,1	18	18,6	19,2	19,9	20,8	22	22,5	23,1	22,1	22,3		
Italy	189	200	207	213	221	229	233	242	242	247	236	240	241	237
Latvia												6,53	6,33	6,59
Lithuania	3,94	3,64	4,39	4,55	4,92	5,37	5,57	6,06	6,42	6,79	6,51	6,15	7,85	8,11
The Netherlands										71,77	72,78		82,48	83,35
Norway*	71	72,1	73,5	73,2	68,7	67,5	70,2	70,1	71,9	73,9	76,1	77,6	76,9	79,8
Poland	72,8	74	75,1	75,5	77,6	80,1	82,4	86,7	89,5	91,7	90,4	94,5		
Portugal				32,48	34,05	35,71	37,19	38,57	38,21	38,44	38,8	39,83	38,27	36,27
Romania									44,8	45,8	41,6	43,4		
Slovenia*										10,44	10	10,41	10,47	10,28
Spain						173	184	188	198	199	194	220	189,6	
Sweden	100	99	103	102	104	98	97	98	96	94	94	100,3	93,4	
Switzerland												50,4	51,3	50,8
United Kingdom			284	290	295	299	304	307,27	299,08	299,22	295,45	286,93	306	298

Table 46: Distributed energy (only MV and LV customers) - in TWh





Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria									5506	5514	5562	5748	5707	5825	
Belgium													35,58	36,14	36743
Bulgaria										5559	5693	5897			
Croatia								1990	2015	1979	2062	2078	2096	2115	2126
Cyprus														609	
Czech Republic			21817	22001	22203	22007	22207	22613	22773	23037	23381	24281	24674	24523	25414
Estonia								1633	1732	1750	1772	1795	1848	1844	1845
Finland*	3175	3019	3123	3170	3100	3255	3401	3443	3466	3638	3733	3761	3815	3894	
France					116030	113094	115363	99322	98665	97400	96669	95703	99878	99203	98158
Germany											371343				
Greece										9422	9772	9961	10147	10422	11207
Hungary				5787	5937	5958	6231	6500	6493	6922	6364	6591	6256	6112	6155
Ireland	863	894	934	949	999	1056	1203	1271	1349	1413	1444	1468			
Italy		107402	107652	106797	101596	98656	98850	101677	97527	99467	98475	97071	93381	105607	110411
Lithuania						1423910	1441786	1460134	1477770	1504346	1514022	1539356	1641770	1665210	
Luxembourg								5005	5266	5466	4416	4422	4426	4890	3342
The Netherlands										56853	34386	35194	33037	34930	32935
Poland	25000	26000	26000	26000	27000	27000	27000	28000	29000	30000	31000	31000			
Portugal				20465	20956	21319	21724	21757	22224	22920	23029	23218	23400	23520	23538
Slovak Republic												12664	12887	12945	13343
Slovenia*										1399	1428	1461	1508	1535	
Spain						88918	90707	93361	96984	102586	103792	112703	116339		
Switzerland												8600	8300	8500	8300

Table 47: Number of MV connection points of final customers



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Austria									5733302	5755761	5787560	5834846	5870532	5921489		
Belgium													5577717	5630057	5683270	
Bulgaria										4776686	4835810	4907399				
Croatia								2191197	2258991	2255662	2281213	2312959	2325522	2350881	2349240	
Cyprus														547883		
Czech Republic			5405939	5431053	5460070	5495667	5584198	5617872	5660842	5702778	5719907	5762538	5747857	5785936	5847648	
Denmark								3161633	3178670	3216792	3224784	3243117	3259256	3267352	3287978	
Estonia								341252	341884	345667	349518	353314	349668	349900	350236	
Finland*	2878311	2910484	2973138	2970241	2998749	3044082	3078748	3123509	3164342	3238453	3269098	3305268	3344242	3379831		
France					31539087	31876353	32199093	32548878	32933382	33349033	33641783	33903690	33988994	34433342	34773810	
Germany											47138832	49025432	49236444	48769681	49935441	
Greece										7461461	7544517	7564777	7493118	7355122	7381515	
Hungary	6658425	6669218	6700833	6737916	6772519	6844900	6982867	7027041	7093516	7164535	7211944	7248792	7240009	7246589	7229714	
Ireland	1576235	1627902	1683122	1740847	1809303	1891428	1978671	2069041	2149866	2202230	2225966	2235681				
Italy	32046411	32445777	33080463	33280830	33614425	34263036	34617126	35087045	35721768	35758202	36074675	36313508	36526794	36691237	36834312	
Latvia														992500	1125187	1125202
Luxembourg								222834	230416	237153	257413	262301	264027	275986	161298	
The Netherlands										7943715	7995311	8044918	8069576	8136050	8119161	
Norway*							2692264	2606969	2697288	2744968	2745520	2772398	2781701	2787657	2872298	
Poland	15147000	15263000	15364000	15440000	15528000	15635000	15734000	15846000	16005000	16171000	16333000	16456000				
Portugal				5644463	5747183	5801846	5885450	5965624	6021528	6064972	6080662	6110889	6119634	6092584	6106168	
Slovak Republic											2244271	2379672	2391702	2403956	2432609	
Slovenia*										903946	912324	919440	923765	928699		
Spain						25425634	25765606	26218982	26990991	27472401	27824385	28262613	28414762			
Switzerland												5000900	5070800	5167300	5233800	
United Kingdom				27339320	27767874	28023529	28302694	28427166	28562844	28671904	28867001	28972762	29050657	29184812	29281411	

Table 48: Number of LV connection points of final customers

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria									1029	1035	1036	1033	1048	1060	
Bulgaria									4862	4870	4888	4919			
Cyprus														1211	
Czech Republic												4891			
Estonia								1609	1611	1611	1611	1613	2798	2798	2798
Finland*							952	981	1006	1109	1110				
France	24980	23551	23836	24050	25046	25012	25211	25383	25462	25238	25421	25809	26701	27033	27363
Italy														22264	22144
Latvia													28488	28966	28966
Lithuania					15754	16063	16285	16471	16559	16932	16976	16976			
Luxembourg										104	104	104	105	111	110
Portugal											3578	3536	3616	3581	3627
Slovenia*										1356	1395	1456	1469	1455	
Spain						14518	15909	16177	16903	17620	17772				

Table 49: Number of MV feeders starting from HV-MV or EHV-MV transformer stations



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Cyprus														1205	
Czech Republic												3596			
Estonia								1777	1780	1781	1783	1785	2995	2995	3011
Italy														22264	22144
Portugal											3578	3536	3616	3581	3627
Slovenia*										1288	1289	1290	1285	1248	
Spain						14518	15909	16177	17278	17620	17772				

Table 50: Number of MV feeders equipped with remote control (SCADA)

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria			144	139	139	136	135	134	131	130	130	130	129	126	
Belgium													29	26	23
Bulgaria								4	4	4	4	4			
Croatia								1	1	1	1	1	1	1	1
Cyprus														1	
Czech Republic			147	395	380	348	321	282	281	281	281	300	305	318	312
Denmark								100	98	84	81	77	75	72	71
Estonia								42	40	40	38	37	37	37	37
Finland*	106	106	102	100	94	91	91	92	89	89	88	87	85	85	
France										150	150	150	150	150	150
Germany									877	854	866	869	883	883	884
Greece										1	1	1	1	1	1
Hungary					6	6	6	6	6	6	6	6	6	6	6
Ireland	1	1	1	1	1	1	1	1	1	1	1	1			
Italy											143	138	140	139	139
Latvia	6	6	7	7	8	9	9	9	9	10	11	11	11	11	11
Lithuania	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1
Luxembourg								10	10	10	8	7	5	5	5
The Netherlands										8	8	8	8	8	8
Norway*					143	136	136	136	133	133	133	133	133	131	130
Poland								14	14	14	14	7			
Portugal	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Romania									8	8	8	8	8	8	8
Slovak Republic											153	165	157	162	138
Slovenia*	5	5	5	5	5	5	5	5	1	1	1	1	1	1	1
Spain												337			
Sweden	202	202	203	200	188	176	174	174	172	172	170	166	168	165	
Switzerland												724	702	690	680
United Kingdom	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14

Table 51: Number of Distribution System Operators



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium													1741816	1755226	1771593
Bulgaria										4810437	4846346	4918938			
Croatia								2193187	2261006	2257641	2283275	2315037	2327618	2352996	2351366
Cyprus					405109	419347	436279	455042	476500	500489	520030	535050	543910	548498	
Czech Republic			5427756	5453054	5482273	5517834	5606500	5640599	5683728	5725946	5743422	5786967	5772673	5810607	5873189
Denmark								539432	547000	549870	970494	973146	981177	981009	983688
Estonia								634843	636643	638644	640766	642666	499280	496012	496513
Finland*							410981	416122	422612	432477	437233	441491	445425	449630	
France					31655117	31989447	32314456	32648200	33032047	33446433	33738452	33999393	34088872	34532545	34871968
Greece										7470883	7554289	7574738	7503265	7365544	7392722
Hungary								1433636	1465515	1489620	1502101	1507018	1513347	1518988	1516784
Ireland	1577136	1628835	1684095	1741836	1810341	1892522	1979934	2070380	2151286	2203724	2227521	2237232			
Italy						29742067	30062735	30409613	30994669	30721900	30965023	31166364	31267225	31415774	31540918
Latvia													1098162	856441	854149
Lithuania				687500	695500	735233	745730	757314	766947	785428	797282	792518	1571798	1588735	1609065
Luxembourg								160935	167142	171492	178875	181673	240202	250112	250963
The Netherlands										2890785	2920793	2940200	2968446	2987772	2946331
Norway*							509762	521882	532695	523080	532232	539349	541486	551859	567761
Poland								2731400	2766600	2802400	2835000	5094698			
Portugal				5665045	5768272	5823322	5907344	5987875	6044262	6088126	6048140	6096933	6137676	6090000	6080000
Romania										1385584	1385967	1392932	1408705	1412529	1423480
Slovak Republic															1082601
Slovenia*							303588	306249	884446	903946	912324	919440	923765	928699	933033
Spain						10969642	11127552	11201852	11589931	11844104	11983380	12146206	12189368		
Sweden	883057	882772	875093	863367	917121	944425	987413	990319	1000590	1005295	1001501	1001806	1002009	1007432	
Switzerland													350000	360000	360000
United Kingdom				3381566	3386938	3415372	3464100	3437289	3466502	3469255	3496181	3507431	3516859	3537357	3556281

Table 52: Number of customers served by the largest Distribution System Operators



Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Belgium													3253840	3282663	3387307
Bulgaria										4810437	4846346	4918938			
Croatia								2193187	2261006	2257641	2283275	2315037	2327618	2352996	2351366
Czech Republic			5427756	5453054	5482273	5517834	5606500	5640599	5683728	5725946	5743422	5786967	5772673	5810607	5873189
Denmark								1272033	1254865	1261972	1606020	1608681	1627107	1628417	1632033
Estonia								692865	695144	697386	699828	701737	558280	554507	555100
Finland*							1108283	1124628	1139296	1161068	1175168	1186556	1198001	1207766	
France										34088464	34387783	34659920	34755897	35205971	35551238
Germany									8159512	8228411	8270803	8254673	8279248	8315114	9873436
Hungary								3168333	3217608	3253817	3276506	3281497	3285203	3299222	3296520
Ireland	1577136	1628835	1684095	1741836	1810341	1892522	1979934	2070380	2151286	2203724	2227521	2237232			
Italy						32145278	32471057	32834517	33437316	33411684	33673706	33887688	34002776	34158276	34282533
Latvia													1098717	861637	858996
Lithuania				1353400	1355500	1423910	1441786	1460134	1477770	1504346	1514022	1539356	1571798	1588735	1609065
Luxembourg									237849	244251	253027	257443	261519	273789	274096
The Netherlands										7552547	7577257	7624911	7643462	7709001	7686247
Norway*							823448	851290	869841	878548	886705	898062	894785	913007	937188
Poland								7335100	7416600	7501500	7583000	10358631			
Romania										4009609	3998522	4043096	4060670	4069264	4102556
Slovak Republic										2356441	2377197	2392418	2404672	2416396	2434257
Slovenia*							660567	665479	884446	903946	912324	919440	923765	928699	933033
Spain						24213270	24547833	24943891	25644184	26162909	26479079	26949020	27081485		
Sweden	2030459	2037729	2084446	2060606	2659140	2638333	2686410	2679889	2711115	2708227	2708963	2727805	2749029	2765090	
Switzerland													920000	940000	940000
United Kingdom				8509408	8557870	8647796	8751203	8769297	8860866	8922118	8993157	9024594	9065605	9113025	9143049

Table 53: Number of customers served by the three largest Distribution System Operators



### Annex 3: List of abbreviations

Term	Definition
AIT	Average Interruption Time
ASIDI	Average System Interruption Duration Index
ASIFI	Average System Interruption Frequency index
CEER	Council of European Energy Regulators
CENELEC	European Committee for Electrotechnical Standardisation
CoS	Continuity of Supply
DNO	Distribution Network Operator (UK)
EHV	Extremely High Voltage
ENS	Energy Not Supplied
HV	High Voltage
IEC	International Electrotechnical Commission
LV	Low Voltage
MAIFI	Momentary Average Interruption Frequency Index
MV	Medium Voltage
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
TIEPI	Equivalent interruption time related to the installed capacity (used in Spain and Portugal)
T-SAIDI	Transformer SAIDI (used in Finland)
T-SAIFI	Transformer SAIFI (used in Finland)