

POWER STATISTICS & TRENDS 2013

2013

2020

2012

2011

2010



The **Union of the Electricity Industry – EURELECTRIC** is the sector association representing the common interests of the electricity industry at pan-European level, plus its affiliates and associates on several other continents.

In line with its mission, EURELECTRIC seeks to contribute to the competitiveness of the electricity industry, to provide effective representation for the industry in public affairs, and to promote the role of electricity both in the advancement of society and in helping provide solutions to the challenges of sustainable development.

EURELECTRIC’s formal opinions, policy positions and reports are formulated in Working Groups, composed of experts from the electricity industry, supervised by five Committees. This “structure of expertise” ensures that EURELECTRIC’s published documents are based on high-quality input with up-to-date information.

For further information on EURELECTRIC activities, visit our website, which provides general information on the association and on policy issues relevant to the electricity industry; latest news of our activities; EURELECTRIC positions and statements; a publications catalogue listing EURELECTRIC reports; and information on our events and conferences.

EURELECTRIC pursues in all its activities the application of the following sustainable development values:

ECONOMIC DEVELOPMENT

▶ GROWTH, ADDED-VALUE, EFFICIENCY

ENVIRONMENTAL LEADERSHIP

▶ COMMITMENT, INNOVATION, PRO-ACTIVENESS

SOCIAL RESPONSIBILITY

▶ TRANSPARENCY, ETHICS, ACCOUNTABILITY

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The 2013 edition of Power Statistics and Trends presents a comprehensive and independent analysis of the European electricity sector, based on the latest available data from 33 EURELECTRIC member countries. It provides an overview of the most relevant factors shaping the present and future of the European electricity sector.

Power Statistics and Trends 2013 highlights the most significant developments in the period 2010-2012 and provides an outlook of major trends up to 2030. The full report also includes data from 1980, 1990 and 2000, enabling a view of the electricity sectors evolution over three decades.

Integrated thematic coverage includes policy, economic, technology and environmental areas, providing a comprehensive picture of current issues and expected trends.

Country data is provided by 27 EU Member States¹, as well as Norway, Turkey, Switzerland and an increasing number of Energy Community countries, currently including Bosnia-Herzegovina, Serbia and Ukraine. Power Statistics and Trends therefore offers a unique, extended European analysis.

Findings of Power Statistics and Trends are primarily based on EURELECTRICS's own data, submitted by a network of country experts. These statistics reflect country specific perceptions of the respective electricity industries. In particular, the forecasts are not necessarily official national forecasts, but are best engineering estimates. Annually updated forecasts mirror the changing policy and economic environments.

We would like to express our gratitude to all contributing country data experts.

¹ Croatian data was not available for the 2013 edition.

KEY MESSAGES 2013

1

ENERGY POLICY CONTEXT

MEMBER STATES OPT FOR DIVERGING POLICIES

The current period is characterised by regulatory uncertainty and increased national intervention, leading to a slowdown – if not setback – of energy market integration in Europe.

2

DEMAND TRENDS

STAGNATING TOGETHER

Demand in 2012 stagnated at the 2011 level, after a significant 2% decrease from 2010 to 2011. This overall picture of stabilisation conceals widely varying developments across the region, with some countries experiencing a growth in demand, others experiencing a decline, and yet others reporting stagnating electricity demand.

3

GENERATION TRENDS

EUROPE GOES BLACK AND GREEN

The picture for different electricity generation technologies is one of contrasts: the EU appears to have shifted from the recent trend of 'RES plus gas' to 'RES plus coal'. From 2011 to 2012 generation from renewable resources increased by 7% and coal-fired generation grew by 13%. This was accompanied by a significant 23% drop in gas-fired generation. Nuclear generation also declined by 2.8%.

Power Statistics and Trends 2013 reveals stagnating demand, stationary emissions and an increase in subsidy driven capacity additions – although this trend is slowing down. Replacing the preference for RES and gas, in evidence since 2009, technology choice seems to have shifted to a preference for black and green, i.e. coal and renewables. *Power Statistics and Trends 2013* also reveals significant divergences across countries, most notably in electricity demand. This trend is mirrored in diverging national policies, reinforcing the currently observed energy policy fragmentation within the EU.

4

INSTALLED CAPACITY TRENDS

RES STILL INCREASING, ALBEIT AT A SLOWER PACE

RES capacities continued to increase in 2012, albeit at a slower year-on-year rate of 11%, compared to 15% in 2011. A common characteristic of added RES capacities throughout the whole period is that they are subsidy driven. The overall slowdown of RES growth is expected to continue as national RES support policies continue to change.

5

POWER PRICES IN EUROPE

SURGING CHARGES

Electricity bills are on the rise, propelling affordability and industrial competitiveness concerns to the fore of the energy policy debate. Policy costs imposed through taxes and levies weigh considerably on retail prices, growing three times faster than other price components and now accounting for more than a quarter of the average household customer bill.

6

ENVIRONMENTAL TRENDS

STATIONARY CO₂ EMISSIONS

Although electricity consumption stagnated and low-carbon generation increased in 2012, the increase in coal-fired generation meant that CO₂ emissions did not fall. For 2013, sources² predict a black and green scenario, in which emissions are expected to rise, due to the policy choices of major EU economies. EURELECTRIC members do not believe this trend to be sustainable, anticipating a switch from coal to gas by 2020.

² Source: Platts data 2013 – quoted in Franke, Andreas, German Coal extends dominance in Power Mix, European Power Daily, October 10th 2013.



1

ENERGY POLICY CONTEXT

MEMBER STATES OPT FOR DIVERGING POLICIES

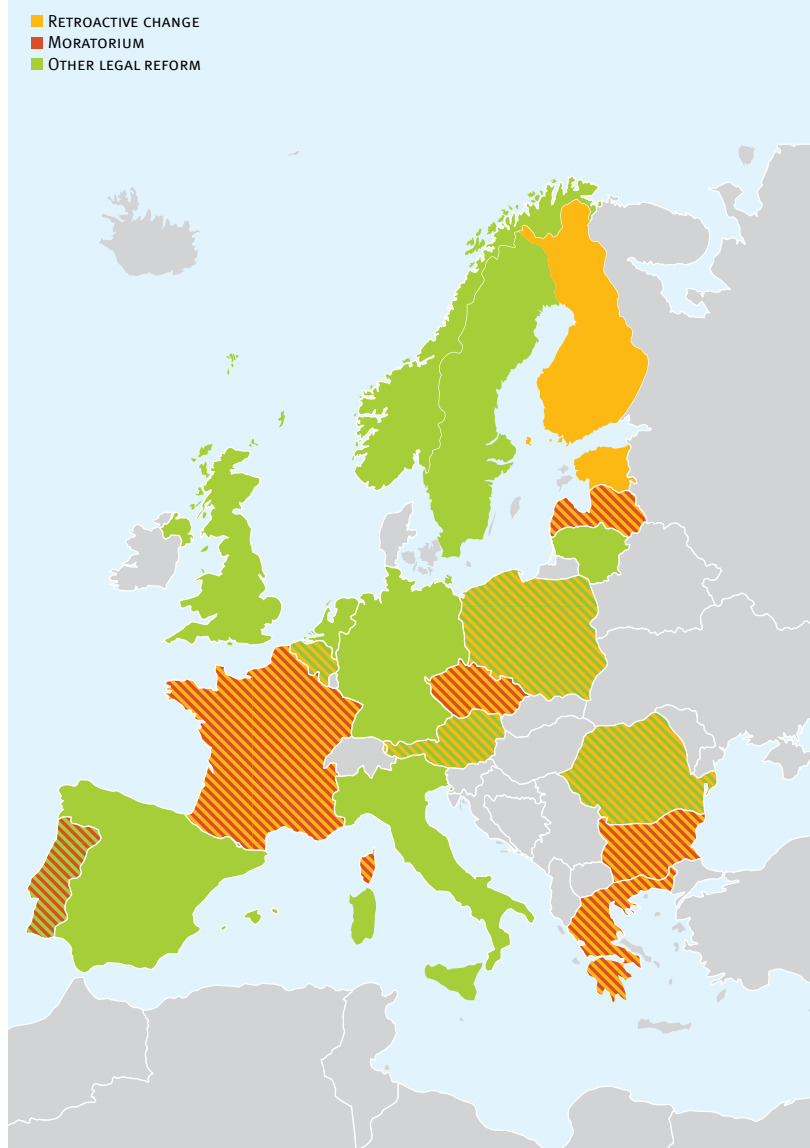
GREY CLOUDS OF REGULATORY UNCERTAINTY

The environment for European utilities has been difficult throughout the reporting period. Nevertheless, there have also been some positive signs, for instance a new concern in Brussels with costs and competitiveness, with markets and fragmentation. The innovation agenda for energy is being reconsidered; research and development policies are likely to be freed from their current isolation and better integrated into general energy policy.

On the downside, regulatory uncertainty – both on national and EU level – has severely impacted all generation technologies, including also RES. The recession has hit demand and is one of the reasons why utilities' current business model is increasingly questioned. Subsidised renewable power generation has led to a decreasing wholesale market price, averaging €40 per MWh for Central West in the reported period, putting off investors all across Europe. At the same time, retail prices have continued to rise, primarily driven by increasing taxation.³ Germany, for instance, can expect to see spectacular increases of up to 30-35%. Even in the face of high retail prices, however, customers remain largely unresponsive. This is unsurprising: the only part of the bill that would incentivise them to shift demand – the energy component – is becoming less relevant compared to skyrocketing taxes and levies. As a result, investment in demand response programmes is slow to get off the ground.

The following map reveals that as many as 13 EU member states have opted for retroactive changes or moratoria to their RES support schemes.

FIGURE 1: OVERVIEW OF RES SUPPORT CHANGES IN EUROPE⁴



³ Source: Boston Consulting Group, Towards a new balance of Power. Short Discussion, September 2013.

⁴ Source: EURELECTRIC 2013.



Utilities, which were previously considered safe havens for investment, have lost their attractiveness compared to other sectors, as the following figure displays.⁵

European utilities have called on European and national policymakers to provide guidance and orientation by sticking to a consistent and transparent long-term regulatory framework, instead of adopting boost and bust policies and intervening into markets by picking winning technologies.

Over the past year, utilities have engaged through EURELECTRIC's Innovation Action Plan in a both introspective and forward-looking exercise that put technologies, business models and processes, as well as innovation policies, under closer scrutiny.⁶ In cooperation with European policymakers EURELECTRIC promotes innovation as a key element for the energy transition. New opportunities have been identified, in particular in the 'new downstream' arena, an opportunity potentially worth annually 70bn by 2030, making up for losses in traditional business segments. The right regulatory environment is decisive for moving from promise to practice on this issue.

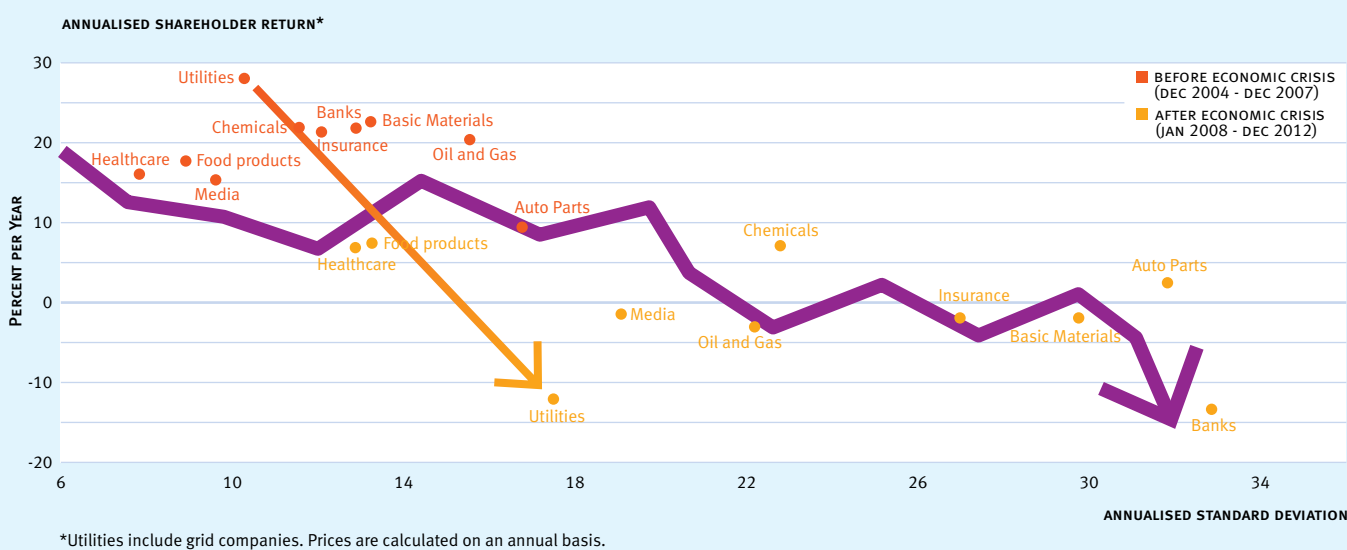
Commission agenda 2014-2018: Competitiveness, fragmentation, post 2020

The term of the current European Parliament and Commission ends in 2014. The European Parliament elections around 22 May 2014 might yield results that grant seats to several anti-EU nationalists, making a common European approach to energy policy increasingly difficult.

The energy policy agenda for the next Commission includes establishing the 2030 framework, encompassing a decision on a possible continuation of today's three-target approach (on renewables, CO₂ reduction and energy efficiency), as well as action to reinforce the EU Emissions Trading Scheme (ETS). It includes an overarching concern with EU competitiveness, energy prices and costs, especially compared to other geographies. This concern has increasingly moved centre-stage and could be termed a new priority, after liberalisation (starting in 1990), and environment and climate concerns (starting in 2007/9). The Competitiveness Summit in February 2014 and the current in-depth analysis by DG Energy on energy costs and prices,

FIGURE 2: UTILITIES STOCK MARKET PERFORMANCE⁷

European utilities' stock market performance has recently deteriorated...



⁵ For a detailed analysis of the investment situation in the EU, see EURELECTRIC's Investment Action Plan Brussels December 2012.

⁶ Source: EURELECTRIC, Utilities Powerhouses of Innovation. Brussels May 2013.

⁷ Source: Data Stream, Mc Kinsey Industry Vision.



underline this new trend. In line with this development are the more market-oriented wording of the DG Competition proposals on state aid reform and DG Energy in their guidance package on public intervention, released in October 2013.

At the same time, the new Commission will have to find an answer to the centrifugal tendencies within the EU, which is experiencing more and more national proposals and legislation on energy policy. The Commission could opt either for a minimalist approach by trying to coordinate such national approaches, for a medium one in trying to achieve compatibility among member states, or a maximum solution in setting the agenda and taking a proactive stance. The 2030 framework and the discussion around it will be seen as the crucial test in this respect.

Without an explicit European energy policy competence and strategy, the EU risks, over the period 2014-2018, losing control and reversing progress made on market integration in previous decades, opening the door even wider for the renationalisation of energy policy and in many cases return to regulation. This double failure on the liberalisation agenda, i.e. progressively losing sight of Europe and the market, will translate into high additional costs for European citizens as well as growing disparities between member states in terms of security of supply, climate ambitions and prices.⁸ At the same time, a one size fits all strategy also cannot be the name of the game: European energy policy 2.0 has to take greater account of regional specificities and regional integration as one step towards the internal energy market. The regions identified by the EU energy regulators, as well as the Pentalateral Forum, provide useful, but so far largely unexploited instruments in this regard.

THE AGENDA 2013-2014: STATE AID REFORM, GUIDANCES AND 2030

State aid modernisation – a renewed focus on markets and costs?

With RES now accounting for 22% of European power generation, and in light of national considerations to support specific generation technologies such as nuclear through changing market designs, DG Competition has opened up a draft of its new *Guidelines on Environmental and Energy Aid for 2014-2020* for consultation. The guidelines are thus not just an amendment of the existing ones, but represent a significant change. Their scope is much more extensive, covering for instance carbon capture and storage (CCS), energy infrastructure, and capacity mechanisms. The new guidelines enter into force in mid-2014.

When it comes to RES, the overhaul of the guidelines will implicitly lead beyond the case law of Preussen Elektra, in which the small share of RES in the system was used to justify RES support. The common concern of stakeholders and policymakers will now be to avoid retroactive change. This is not an easy task considering the existing inflexible support schemes as well as their long duration of often 15 to 20 years.

Long-term projections highly controversial: the 2030 agenda

The 2030 discussion is about the post 20/20/20 agenda: which new targets should be set for the next decade? What is the assessment of the 20/20/20 three targets experience – in particular the problem of interactions between the different instruments delivering each target. The ETS – a truly EU-wide harmonised approach – is being undermined by the national implementation of the Renewables Directive and the Energy Efficiency Directive. And not only are these national policies very loosely harmonised at best, but they also strongly influence price formation in the ETS allowances market. This raises a key question whether a strong ETS would be a better way to promote renewables and energy efficiency.

A consultation run by the European Commission on its Green Paper has revealed a largely shared “ETS plus” stance, hesitation towards a new energy efficiency target, and contrasted views on the RES target. From an industry perspective an ETS plus approach is the preferred choice: a strong ETS as the key driver plus strong RDD support for immature technologies. If ever a

⁸ See here for example the EC commissioned report Booz&Co 2013 Benefits of an integrated European Energy Market.



RES target would find consensus it is indeed crucial to set the instruments for reaching it in such a way that they are European, market based and include the lessons learnt from the very costly practice since 2009. Clarity for the next decade is vital for investment decisions by the sector and should come timely. De facto final decisions both on ETS and on 2030 are to be expected at earliest around 2016, when the new Commission is fully functional.

Fragmentation of energy policies: an internal energy market by 2014?

2013-14 has seen national energy policies increasingly diverge, with governments elaborating various proposals for national energy market design, struggling with national RES support schemes, or taking national measures to reduce carbon emissions. Lip service is paid to Europe and the EU internal energy market, sometimes as a footnote, but often little thought appears to be given as to how the national measure could be integrated into the wider EU energy market context. As a result, current developments in several member states are not in line with the objective of an integrated EU electricity market. Attempts to achieve energy self-sufficiency, state interventions impacting

wholesale and retail prices, discretionary taxation and divergent national approaches on carbon prices place obstacles to the development of the internal market.

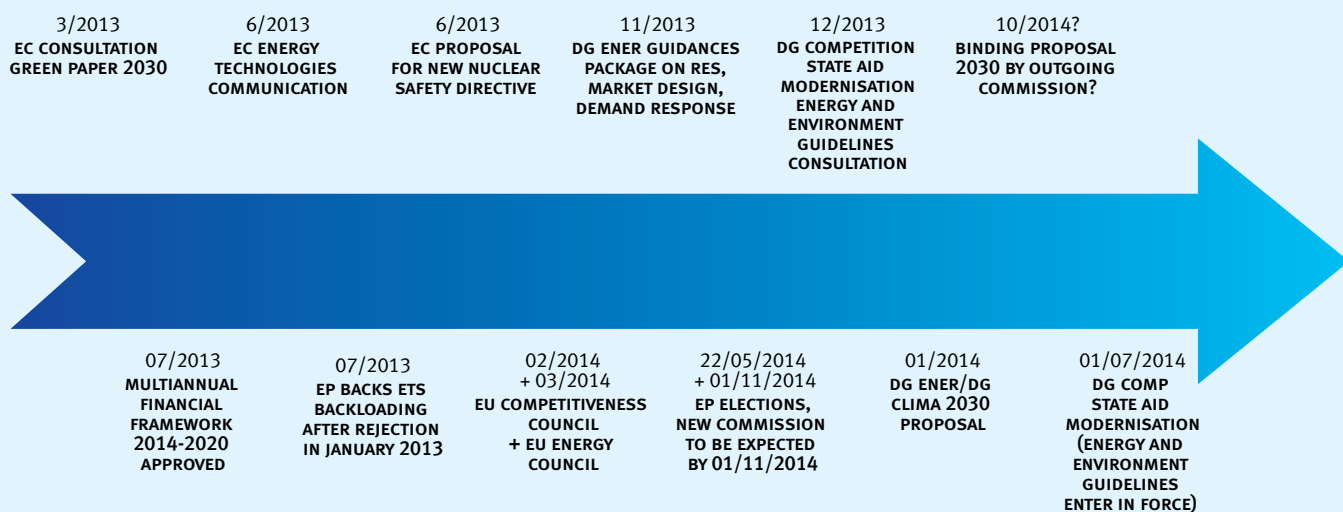
Greater attention should also be paid to alleviate the multiple overlapping energy priorities, uncoordinated national RES support schemes, national CO₂ taxes, regulated end user prices and other incentives and restrictions which are the root cause for the current energy policy failures.

EURELECTRIC believes that the EU internal energy market (IEM) is now genuinely at a turning point. Either the EU rapidly changes course and pushes member states to align their various national policies and targets, which overlap – or even contradict – EU policies. Or we will very soon witness a deterioration of the IEM, due to insufficient action to prompt a decisive move towards liquid, well-functioning electricity markets.

In light of these worrying trends DG Energy has published legally non-binding guidance on RES support, on RES cooperation mechanisms, and also on generation adequacy and demand response. Its goal is to support member states with reforms and to foster a European dimension and certain convergence.

FIGURE 3: ENERGY POLICY EVENTS 2013-2014⁹

ENERGY POLICY PROPOSALS



POLICY EVENTS

⁹ Source EURELECTRIC Power Statistics and Trends 2013.

2

DEMAND TRENDS STAGNATING TOGETHER

After years of highly volatile evolution, EU-27 demand in 2012 stabilized at the 2011 level. However, overall stagnation conceals diverging country development patterns. Some countries experienced an increase in electricity demand, most notably Bulgaria (9,8%), Latvia (6,9%) and Malta (4,5%) while countries such as Belgium (-8,5%), Cyprus (-8%) reported a large decrease. The EU's bigger economies also show diverging demand evolution. Germany, Italy, the Netherlands and the United Kingdom reported contractions exceeding 2%. Demand in Spain and Poland fell by more than 1%, meanwhile France and Sweden reported increases. Combined demand in Norway, Switzerland, Turkey and the EU-27 countries marginally increased, mostly due to the 5% and 10% increase in Norway and Turkey respectively.

Demand forecast 2020

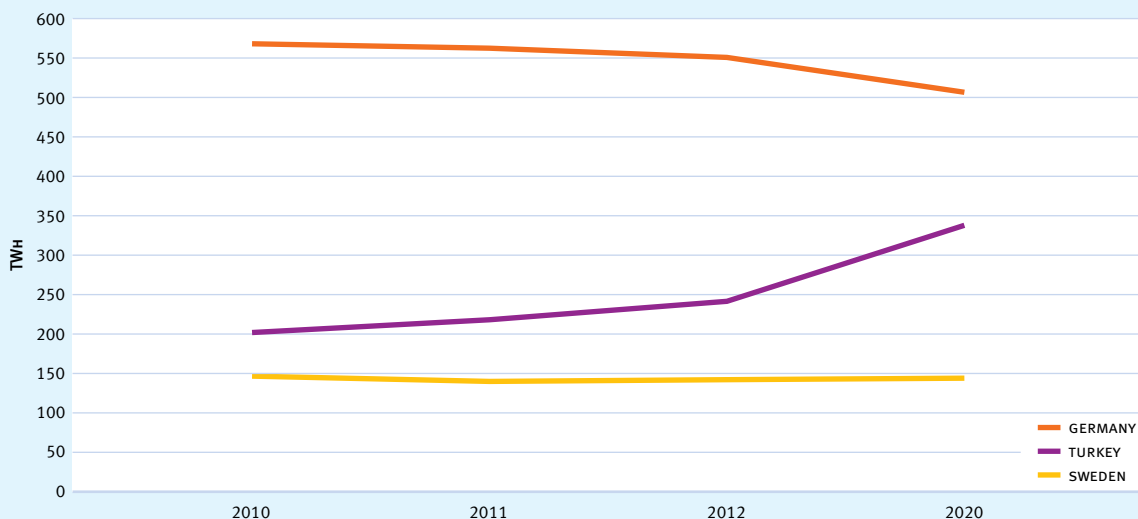
Demand for the EU-27 is estimated to grow from 3081 TWh in 2010 to 3250 TWh in 2020 at an annual growth rate of 0.5%.

In 2012 demand for 2020 was forecasted at 3,327 TWh, showcasing a pessimistic 5% decrease compared to the 2011 estimate. *Power Statistics and Trends 2013* reveals similar expectations. Demand in 2020 is estimated at a 2% lower level than in the previous edition. Forecasts reflect *inter alia* the effects of the economic crisis and the increasingly prominent role of energy efficiency policies implemented throughout Europe.

Demand is forecasted to decrease most notably in Germany from 568 TWh in 2010 to 507 TWh in 2020. The United Kingdom (-0.91% p.a.) is expected to consume slightly less electricity by 2020.

The graph displays typical demand development patterns in selected EURELECTRIC member countries. While demand is expected to fall by 1.8% p.a. in Germany, it is predicted to stagnate in Sweden, with a marginal increase of 0.13% p.a. in the observed decade. Turkey is forecasted to see an annual increase of almost 3%. Germany and Turkey have been reporting demand development trends in line with the 2020 predictions since 2010.

FIGURE 4: DEMAND DEVELOPMENT IN SELECTED COUNTRIES¹⁰



¹⁰ Source: EURELECTRIC Power Statistics and Trends Data Base.

Demand evolution patterns are expected to be highly divergent across countries in Europe. Countries showing an increase of more than 3% are geographically spread across Europe, however common characteristics are smaller economies and population.

These countries include Estonia (3.7% p.a.), Cyprus (3.33% p.a.), and Czech Republic (3%). Growth will be significantly slower in countries such as Belgium (0.47% p.a.) or Italy (0.02% p.a.).

FIGURE 5: DEMAND IN THE EU27¹¹

COUNTRY	TOTAL DEMAND IN TWH				YEAR-ON-YEAR		ANNUAL GROWTH RATE
	2010	2011	2012	2020	2011/2010	2012/2011	2020/2010
AUSTRIA (AT)	65	65	65.6	72.8	0.00%	0.92%	1.20%
BELGIUM (BE)	90.1	87.4	79.9	94.3	-3.00%	-8.58%	0.47%
BULGARIA (BG)	32.50	34.40	37.8	52.7	5.85%	9.88%	6.22%
CYPRUS (CY)	4.80	5.00	4.60	6.4	4.17%	-8.00%	3.33%
CZECH REPUBLIC (CZ)	59.30	58.60	58.80	77.5	-1.18%	0.34%	3.07%
GERMANY (DE)	568.50	562.90	551.20	507	-0.99%	-2.08%	-1.08%
DENMARK (DK)	36.00	33.80	33.30	38.2	-6.11%	-1.48%	0.61%
SPAIN (ES)	280.00	273.00	271.00	340	-2.50%	-0.73%	2.14%
FINLAND (FI)	87.70	84.20	85.20	99	-3.99%	1.19%	1.29%
FRANCE (FR)	513.20	479.20	489.50	507.9	-6.63%	2.15%	0.38%
UNITED KINGDOM (UK)	380.20	369.80	371.90	345.7	-2.74%	0.57%	-0.91%
GREECE (GR)	59.20	58.60	58.40	64.7	-1.01%	-0.34%	0.93%
HUNGARY (HU)	39.80	40.10	39.90	45.5	0.75%	-0.50%	1.43%
IRELAND (IE)	26.10	25.00	24.50	31.40	-4.21%	-2.00%	2.82%
ITALY (IT)	330.40	334.60	328.20	329	1.27%	-1.91%	0.02%
LITHUANIA (LT)	10.30	10.40	10.60	12.4	0.97%	1.92%	1.70%
LUXEMBOURG (LU)	6.70	6.60	6.80	7.2	-1.49%	3.03%	0.59%
LATVIA (LV)	7.30	7.20	7.70	8.9	-1.37%	6.94%	1.56%
MALTA (MT)	2.10	2.20	2.30	2.40 ¹²	4.76%	4.55%	0.43%
NETHERLANDS (NL)	117.10	118.20	115.10	124.7	0.94%	-2.62%	0.83%
POLAND (PL)	142.00	143.30	142.40	160.7	0.92%	-0.63%	1.29%
PORTUGAL (PT)	55.00	53.30	51.50	52.7	-3.09%	-3.38%	0.23%
ROMANIA (RO)	53.40	54.90	54.40	64.2	2.81%	-0.91%	1.80%
SWEDEN (SE)	147.00	140.30	142.50	144.4	-4.56%	1.57%	0.13%
SLOVENIA (SI)	11.70	12.40	12.63 ¹³	15.8	5.98%	1.85%	2.51%
ESTONIA (EE)	7.431	7.155	7.327	10.1	-3.71%	2.40%	3.78%
SLOVAKIA (SK)	26.436	28.006	28.663	35.2	5.94%	2.35%	2.28%
TOTAL EU27	3,159.27	3,095.56	3,081.72	3,250.80	-2.058%	-0.447%	0.55%

¹¹ Source: EURELECTRIC Power Statistics and Trends Data Base.

¹² Source: EURELECTRIC estimate.

¹³ Source: Global Data Power e Track Data Base (highlighted data).

3

TECHNOLOGY TRENDS EUROPE GOES BLACK AND GREEN

Total generation in the EU-27 marginally increased in 2012, after a remarkable decrease of 5% in 2011.

Renewable based generation accounted for 22,3% of the electricity fed into the grids of the European Union in 2012, a year-on-year increase of 7%. By the end of the decade renewables are predicted to be the second largest component of the EU energy mix, accounting for 34% of the total generation.

FIGURE 6: ELECTRICITY GENERATION SHARES IN THE EU27 COUNTRIES¹⁴



¹⁴ Source: EURELECTRIC Power Statistics and Trends Data Base.



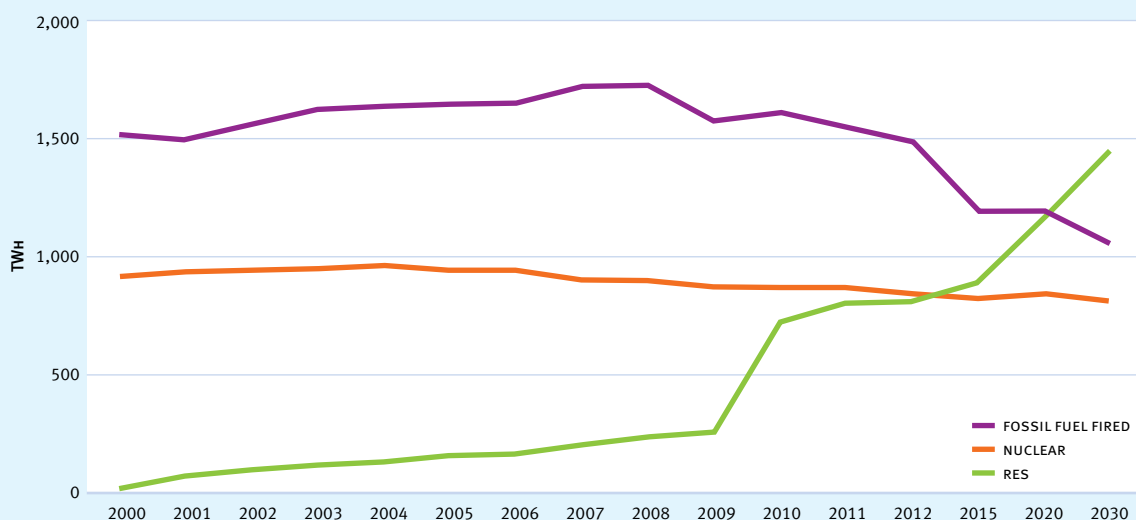
Even though nuclear generation decreased by 2.8% to 835 TWh, from 2011 to 2012, due to stagnating overall generation, its share remained almost constant at the 2010 level. The share of nuclear is predicted to fall slightly by the end of the decade, but it will nevertheless still account for a quarter of total generation.

Fossil fuel fired generation decreased by 4% in the same period and made up less than half of total generation for the first time in the history of the EU. Natural gas-fired power generation accounted for the lion share of the reduction, decreasing by 23% (or 165 TWh). In addition coal prices have dropped by more than a third over 2012-2013, and fell to a year low of €60.60 for a metric ton.¹⁵ Gas prices have remained stable since 2011. The significant drop in the use of gas for electricity generation occurred mostly to the benefit of coal market shares. While generation by all conventional technologies decreased,

coal-fired generation increased by 13% (or 70 TWh). In other words, European electricity generation shifted from gas-fired towards coal-fired generation. The latter generation proved it was a prominent player in major European markets, as it rose by 22% in Spain and 31% in the United Kingdom from 2011 to 2012.

Figure 7 displays historic development and forecasted evolution of electricity generation in the EU27 countries. Looking beyond EU borders, total electricity generation in Norway, Turkey and Switzerland grew significantly faster than in the EU-27. Aggregated generation grew by 15% in Norway, 10% in Turkey and 9% in Switzerland. Stagnating demand, slightly decreasing nuclear generation and several other trends in the Ukraine were similar to those in the EU. Nevertheless, total generation grew by double the EU figure due to increased exports.

FIGURE 7: GENERATION BY PRIMARY ENERGY 2030 OUTLOOK IN THE EU 27¹⁶



¹⁵ Platts data 2013 – quoted in Franke, Andreas, German Coal extends dominance in Power Mix, European Power Daily, October 10th 2013.

¹⁶ Source: EURELECTRIC Power Statistics and Trends Data Base.



Forecasts by EURELECTRIC members reveal low expectations for significantly higher carbon prices by 2020

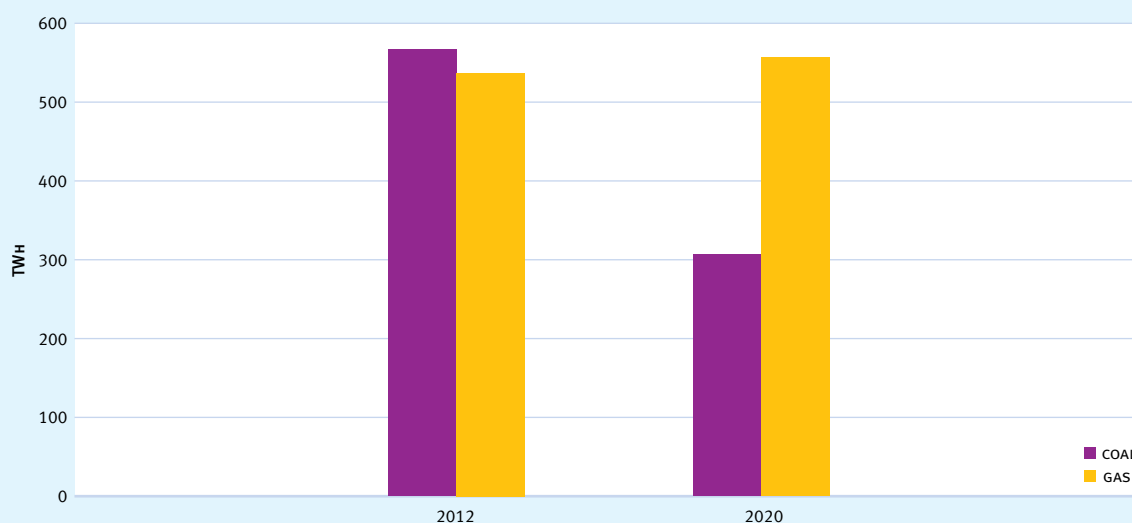
Assumptions by EURELECTRIC members regarding the role of coal and gas in the energy mix of 2020 are especially noteworthy in the light of the above analyzed recent developments. They expect the ratio between coal- and gas-fired generation to shift to 1:1.8, with 307 TWh of coal- and 560 TWh of gas-fired generation in the EU-27 in 2020.

This mosaic of insignificant carbon price signal, cheap coal, expensive gas and reduced demand, combined with low wholesale prices and subsidised RES has pushed gas out of the market. Since its qualities as back-up generation are as uncontested, as is its climate advantage compared to unabated coal, gas-fired power plants play a central role in discussions

on strategic reserve and capacity remuneration mechanisms. The most prominent example is the newly set up state-of-the-art Irsching gas plant in southern Germany, which became a reserve shortly after commissioning.

Despite the strong support of EURELECTRIC members for strengthening the ETS, confidence in this instrument without reform is low. According to Power Statistics and Trends 2013 members do not expect CO₂ emission prices to reach even as high as €30 by 2020. Price level of €30 was foreseen for trading period 3. This means that, CO₂ prices are currently predicted to play no major role in the increasing importance attributed to gas-fired generation. ETS reform could change this situation. The driver for more gas would hence not be the ETS, but rather various effects of the Industrial Emissions Directive (IED) and newly set up capacity markets supportive to gas.

FIGURE 8: ALTERED GAS – COAL RATIO IN ELECTRICITY GENERATION BY 2020¹⁷



¹⁷ Source: EURELECTRIC Power Statistics and Trends Data Base.

4

CAPACITY TRENDS

RES CAPACITIES AND SUPPORT COSTS STILL ON THE RISE

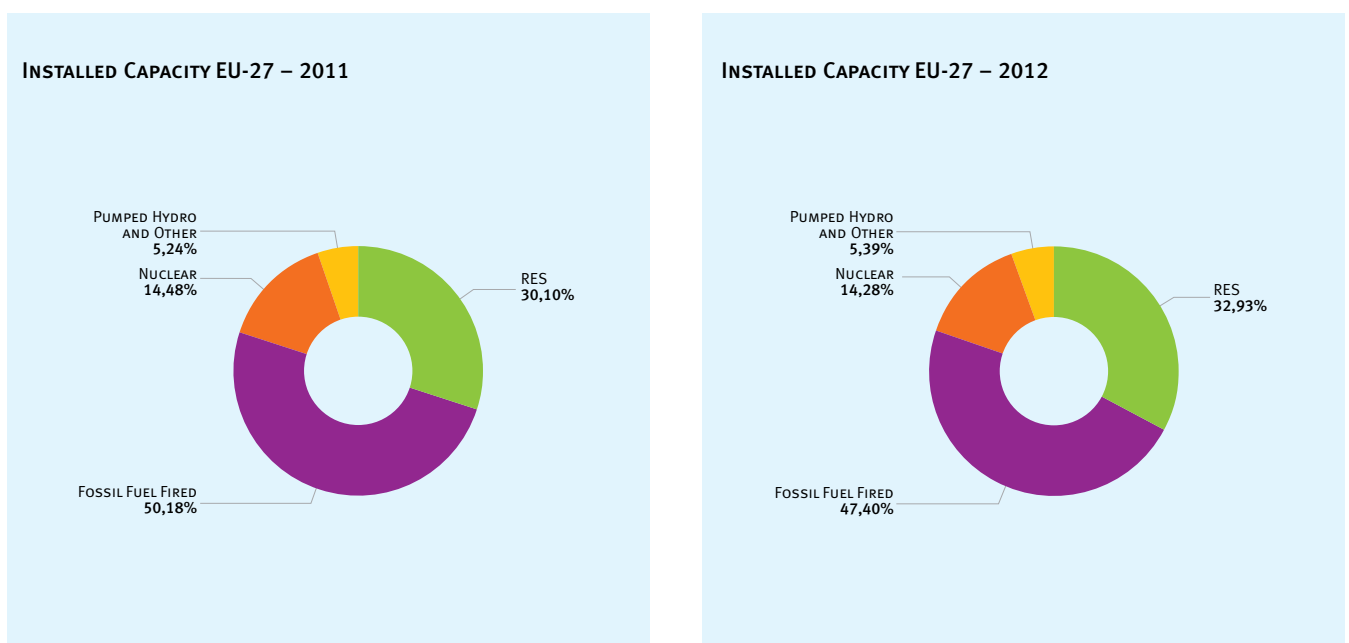
Between 2011 and 2012, installed capacity increased by 2% throughout the EU. Unsurprisingly, renewable technologies accounted for the full increase, as fossil fuel fired capacities fell by 3%, nuclear capacities marginally decreased and installed RES capacities grew by 10%.

Looking at the 15% increase in the previous period, it becomes clear that the subsidy-driven RES capacity increase was sustained, but continued at a slower pace. This slowdown can

hardly be attributed to the observed demand drop, as in most markets RES are not exposed to market signals. Instead, RES capacity development is mainly shaped by regulatory changes and increased uncertainty regarding future amendments of existing support schemes.

The share of renewable energy totaled 32.9%, an increase of 2.8 percentage points compared to 2011. Installed RES capacity grew most prominently in Italy (+15%) and Germany (+14%).

FIGURE 9: INSTALLED CAPACITY SHARES IN THE EU-27¹⁸



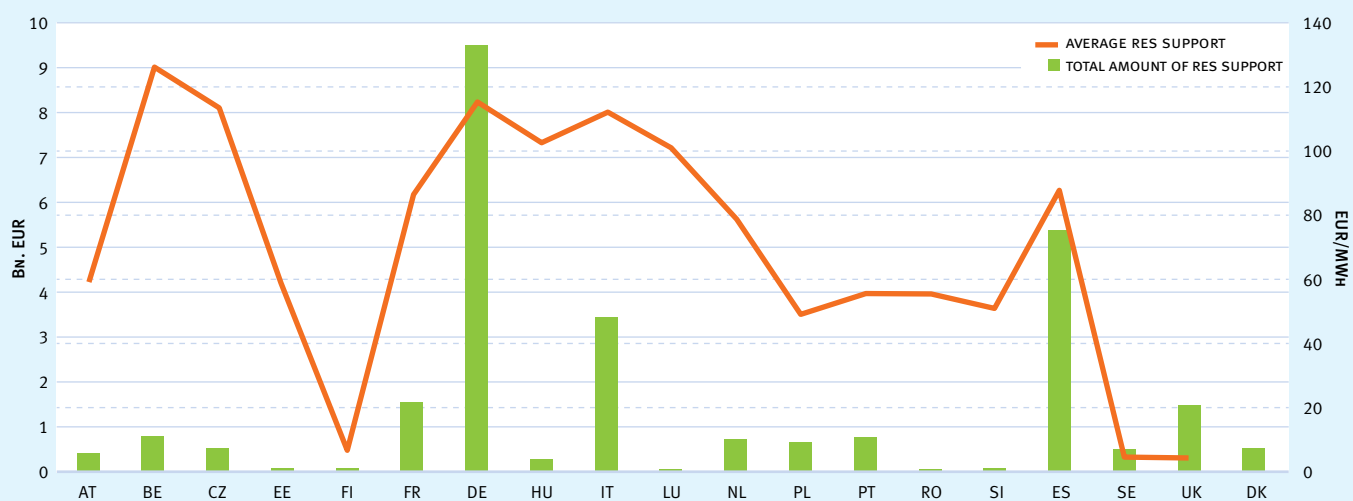
¹⁸ Source: EURELECTRIC Power Statistics and Trends Data Base.



Much like the support schemes themselves, the support amounts vary widely across the EU. The following graph displays the aggregated cost of RES support in 19 EU countries, totalling €26.3bn in 2010 and reaching €38bn in 2012.¹⁹ High costs for RES support raise increasing concerns in the light of budget constraints and EU-wide austerity measures.

EURELECTRIC sees the development of RES in the EU as an important diversification of the power mix as well as a contribution to the climate agenda, but disagrees with the chosen path, which has led to cost overrun and market distortions, ultimately threatening power systems and RES development itself.

FIGURE 10: AMOUNT OF RES SUPPORT IN EU COUNTRIES IN 2011²⁰



¹⁹ Source CERA 2013.

²⁰ Source: EURELECTRIC, CEER – Status Review of Renewable and Energy Efficiency Support Schemes in Europe. EURELECTRIC calculations for Poland, no data available for Danish average support amount.

5

POWER PRICES IN EUROPE SURGING CHARGES

Taxes and levies increasingly weigh on power bills, growing faster than any other price component. 2013 will be remembered as the year during which affordability and competitiveness were propelled to the fore of the energy policy debate. Surging bills, electricity price freezes or price brakes have become commonplace in the lexicon of policymakers, industry representatives and citizens alike.

The lasting recession and the gloomy short-term economic outlook are putting strains on Europe's ability to sustain its transition to a low-carbon energy system. Reflecting this, attention in policy circles has shifted from debating the virtues of a greener and smarter power sector to considering the impacts of Europe's energy and climate 'great leap forward' on household and business budgets.

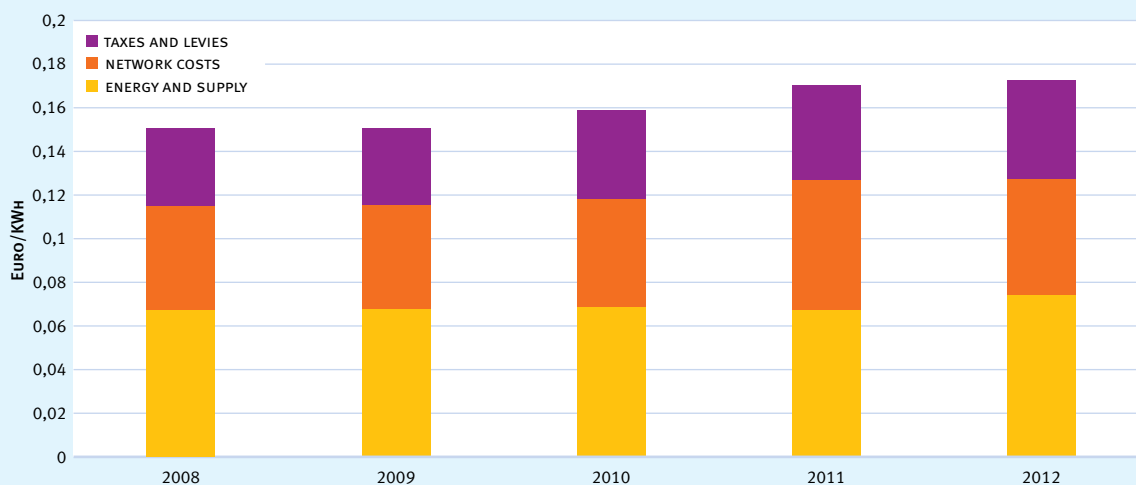
Indeed, household bills are on the rise. While public opinion often assumes that Europe's utility companies must be

overcharging their customers, data from the Commission's statistics office Eurostat²¹ show that electricity companies are not the prime culprits.²²

Eurostat's Data Base does not contain a detailed bill breakdown, but data on the three main components are nevertheless provided. These are: energy and supply, network costs, and taxes and levies. As shown in Figure 11, all different elements are actually contributing to the current price surge. However, the increase in the fiscal component is by far the strongest.

For customers consuming between 2,500 kWh and 5,000 kWh per year, energy/supply and networks costs went up by about 9.5% and 11.5% respectively between 2008 and 2012, in line with the evolution of general price indexes. However, the increase in taxes and levies is almost three times as big, standing at 29%. For customers consuming less or more electricity the tax surge was even bigger, increasing by 32% and 33% respectively.

FIGURE 11: AVERAGE ELECTRICITY BILL FOR EU-28 HOUSEHOLD CUSTOMERS CONSUMING BETWEEN 2,500 KWH AND 5,000 KWH PER YEAR²³



²¹ To comply with competition law, EURELECTRIC does not directly collect information on electricity prices. Instead, we rely on impartial data from third parties, e.g. Eurostat.

²² While Eurostat strives to provide harmonised data, this is not always possible as member states account for different expenditures under different headings. For instance, even though the majority of member states include renewable support within the taxes and levies component, Spain includes it in network charges and the UK in energy and supply. This limits the comparability of data.

²³ Source: Eurostat, Energy and Environment Data Base, retrieved 7 October 2013.

This should not come as a surprise: electricity bills are too often seen by governments as vehicles underpinning their fiscal policies, as the recent introduction of so-called ‘Robin Hood’ taxes in a number of EU countries has revealed. Furthermore, taxes and levies are used to fund public support for renewable energies, domestic fossil fuel mining and use, cogeneration, etc. Moreover, the true scale of the tax share is often even bigger than the official tax component would seem to suggest: taxes, other than consumption-based taxation, are often included under energy and supply costs.

Since 2008 none of the EU member states has reduced taxes and levies for customers consuming more than 2,500 kWh/year,

while Belgium (-2.6%), Ireland (-1.5%) and Luxembourg (-0.4%) all reduced charges for customers consuming less.

Even more striking: while the EU-28 average increase stood at 29%, some member states actually experienced significantly larger rises of the tax component. Among those, the biggest increase was recorded in Latvia (394%), followed by Portugal (108%), Greece and Estonia (both at 82%), Romania (80%), and Spain (74%).

As a result, the part of the bill set by market forces today accounts for only 43% of the total electricity bill invoiced to customers.

FIGURE 12: AVERAGE VARIATION OF BILL'S MAIN COMPONENTS FOR EU-28 HOUSEHOLD CUSTOMERS CONSUMING 2,500 kWh – 5,000 kWh PER YEAR (2008-2012)²⁴

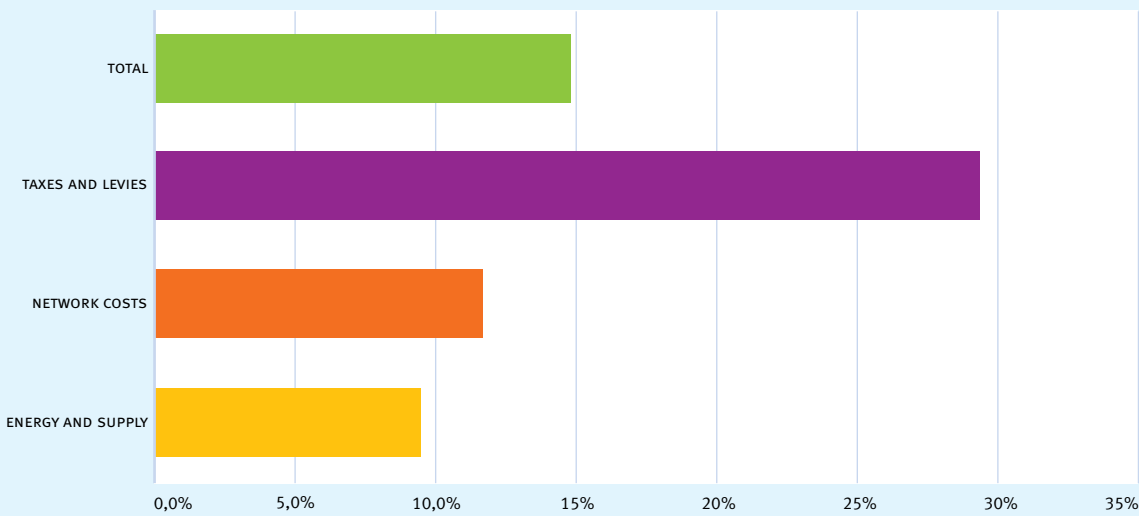
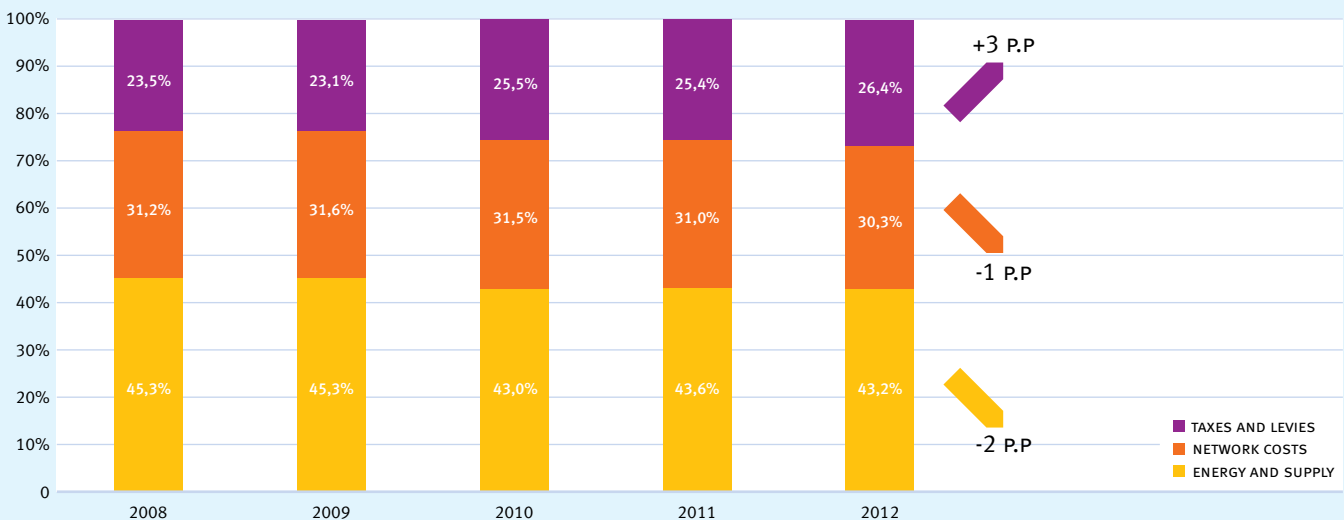


FIGURE 13 : WEIGHT OF COMPONENTS ON AVERAGE EU-28 ELECTRICITY BILL FOR HOUSEHOLD CUSTOMERS CONSUMING 2,500 kWh – 5,000 kWh PER YEAR AND PERCENTAGE POINT (P.P.) VARIATION 2012 ON 2008²⁵



²⁴ Source: Eurostat, Energy and Environment Data Base, retrieved 7 October 2013.

²⁵ Source: Eurostat, Energy and Environment Data Base, retrieved 7 October 2013.

The rest is made up of regulatory costs, covering the operation and expansion of transmission and distribution networks (30%), but also taxes and levies (26%).²⁶

Even though the observation period is limited, Figure 13 powerfully describes the trend at play in Europe: energy and supply as well as network costs are gradually reducing, whereas taxes and levies are piling up.

In parallel, the electricity price for industrial customers is rising too, though a significantly slower than for households – eight countries actually witnessed lower prices in 2012 compared to 2008 (Figure 14).²⁷

An analysis of the bill elements for industrial customers shows a similar trend to the one witnessed for households. While energy and supply costs are decreasing or only moderately increasing, taxes and levies are skyrocketing and have increased substantially in almost all member states in only four years.²⁸

Figure 15 below shows the weight of the fiscal component on the total bill for industrial consumers in the different member countries in 2012. Since taxation is a matter left to member states, it is not surprising to see that the weight varies quite a lot, from no taxes whatsoever in Latvia, Romania and Latvia to almost 35% in Germany.

FIGURE 14: CHANGE OF INDUSTRY BILLS IN EU-28 (EXCLUDING FRANCE)²⁹

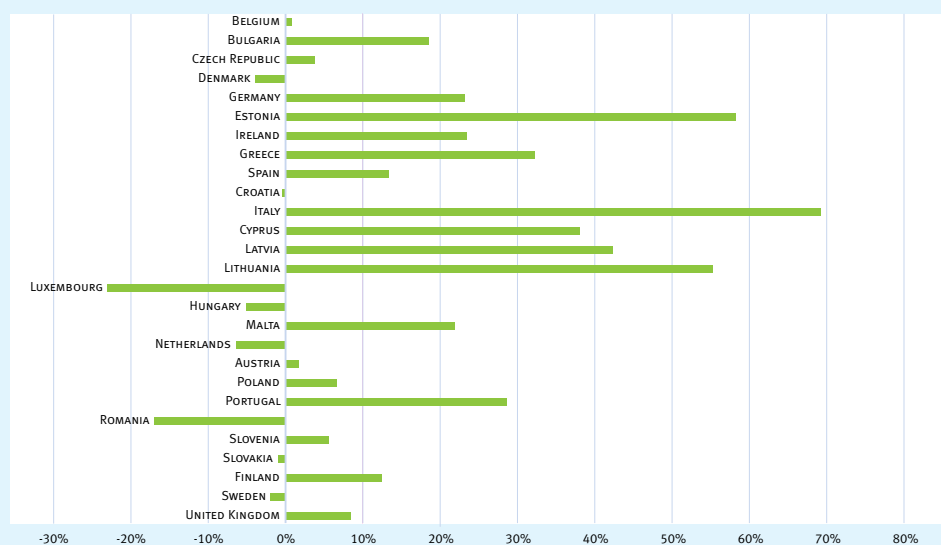
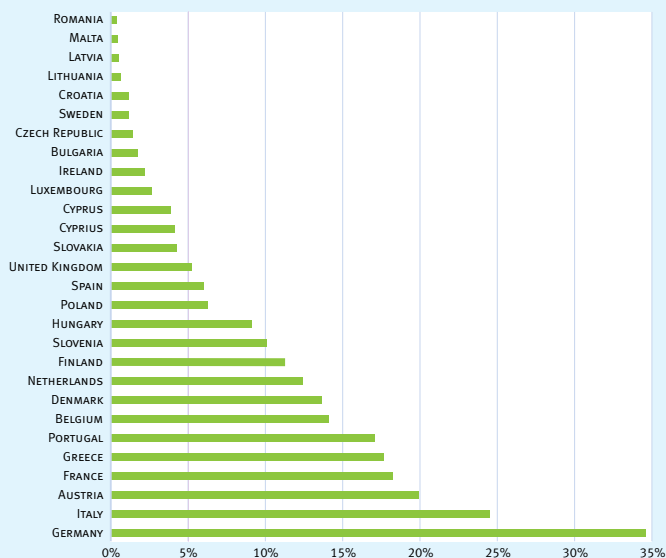


FIGURE 15: WEIGHT OF TAXES AND LEVIES ON INDUSTRY ENERGY BILL PER MEMBER STATE³⁰



²⁶ Difference is due to rounding; see data labels in the graph for more accurate figures.

²⁷ Eurostat collects data for seven different categories of industrial customers, from businesses using less than 20 MWh/year to those using more than 150 GWh/year. For simplicity, our analysis here focuses on a median consumption bandwidth, i.e. consumption between 2,000 MWh and 20,000 MWh.

²⁸ The bill for industrial customers decreased in Croatia, Denmark, Lithuania, Netherlands and Poland.

²⁹ Source: Eurostat, Energy and Environment Data Base, retrieved 7 October 2013.

³⁰ Source: Eurostat, Energy and Environment Data Base, retrieved 7 October 2013.

6

ENVIRONMENTAL TRENDS STATIONARY CO₂ EMISSIONS

Although total electricity consumption fell by 2% in 2011 and it remained constant in 2012, the increase in coal-fired generation meant that CO₂ emissions failed to fall correspondingly.

EURELECTRIC is concerned that RES support schemes, that were introduced to achieve the EU's 20% RES target, are undercutting the CO₂ price. Such an effect increases the costs of the transition to low-carbon electricity, while having no diminishing impact on emission values. Historic data shows that, increasing RES generation was closely accompanied by increase in unabated coal-fired generation.

Results of the Power Statistics and Trends 2013 generation technology analysis show that, coal is on a renaissance track in the EU, largely to the detriment of gas. This has an important impact on emissions. In Germany alone, coal plants have increased their production in the first three quarters of 2013 by 5%, up to 189.4 TWh. Gas-fired generation dropped by 18% in the same period to 29 TWh. The insignificant CO₂ price signal of around €5 per tonne needs to rise to at least €40 per tonne to revise this trend³¹.

Continuing the climate agenda and reinforcing the instruments needed to achieve it, should thus be among policymakers' main objectives for the years ahead.

FIGURE 16: DEMAND AND CO₂ EMISSIONS³²

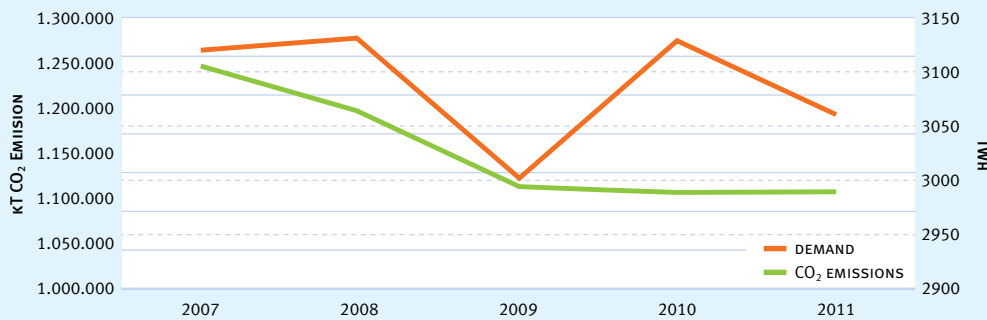
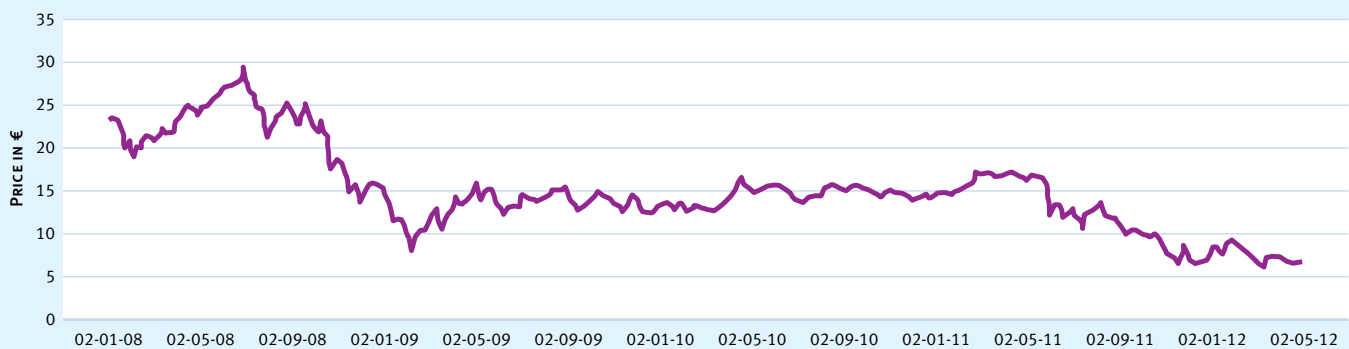


FIGURE 17: CARBON PRICES 2008-2012³³



³¹ Source ISE based on EEX transparency platform and German Statistical Office, quoted by European Power Daily, German coal extends dominance in power mix, 10.10.2013.

³² Source: EURELECTRIC.

³³ Source: DG CLIMA, Carbon Market Final Report 2012.

7

ENERGY COMMUNITY TRENDS 2010-2012 EUROPE'S EIGHTH REGION

Power Statistics and Trends extends its analysis to the EU neighbouring area, most notably to the Energy Community, by displaying significant trends in the region. EURELECTRIC's *Energy EU Neighbourhood* network of experts aims to further strengthen cooperation and provide comprehensive insights.³⁴

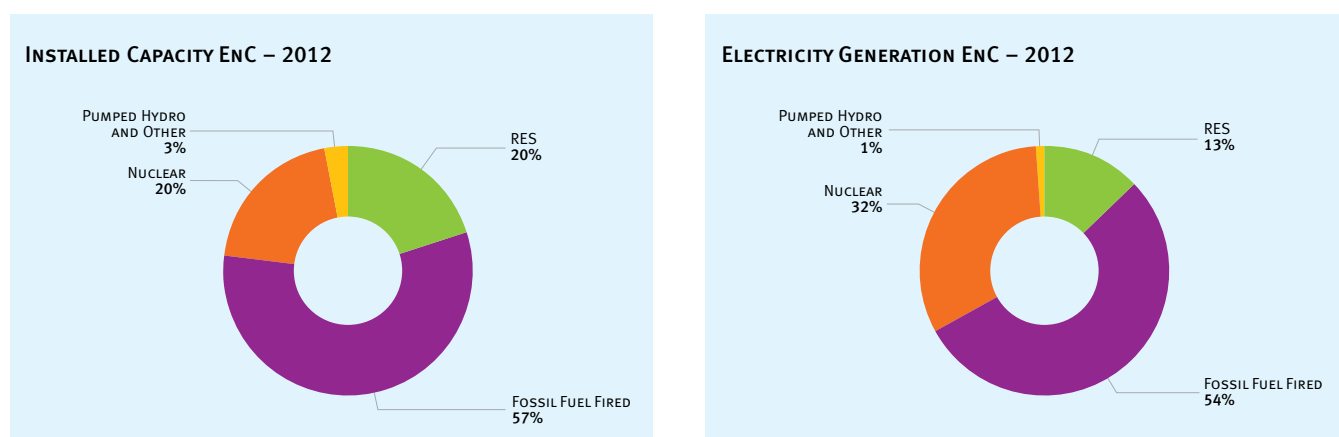
Energy Community (EnC) was established in 2005 and currently consists of the Contracting Parties (CP): Albania, Bosnia and Herzegovina, Former Yugoslav Republic of Macedonia, Moldova, Montenegro, Serbia, Ukraine, United Nations Interim Administration Mission in Kosovo³⁵ and the European Union. Aggregated population of these countries accounts for 150 Million people. Georgia will become a full member in 2014. Since its EU accession, Croatia has had Participant status. Armenia, Norway and Turkey are observer countries. In 2013, the Energy Community Treaty was extended until 2026.

Demand, Installed Capacity and Generation in the Energy Community

Electricity demand, much like in the European Union is characterised by stagnation in the period 2010-2012, indicating that effects of economic crisis are still present. The very modest increase in installed generating capacities can be primarily attributed to the rehabilitation of existing power plants and the commissioning of several small – scale renewable projects.

Indigenous generation of electricity was highly affected by weather conditions in 2011. Extremely unfavourable hydrology conditions were reported. Record low levels in hydro power reservoirs and low run-of-river hydro power plant inflows were recorded. In certain cases, low temperatures affected supply of coal to thermal power plants. The cold wave all over Europe in February 2012 triggered record high consumption of both gas and electricity in the EU as well as in the EnC. The duration of the cold wave was unexpected and prompted emergency measures in all Contracting Parties. EnC Governments applied a variety of safeguard measures to reduce electricity demand.

FIGURE 18: INSTALLED CAPACITY AND GENERATION IN THE ENERGY COMMUNITY IN 2012³⁶



³⁴ Power Statistics and Trends 2013 Full- Report provides data from Serbia, Ukraine and Bosnia and Herzegovina, however this chapter bases its analysis on data from all EnC countries.

³⁵ Designation in line with UNSCR 1244 and the ICJ ruling Kosovo's declaration of independence.

³⁶ Source: Energy Community Secretariat, Annual Implementation Report 2013.

Disturbances in February 2012 highlighted the level of inter-connectedness of electricity and gas supplies in the region. Stable gas supplies were critical to maintain the stability of power systems.

The 8th Region

The Regional Action Plan for the SEE Wholesale Market Opening defines the steps for regional market integration in the 8th Region, which includes the Contracting Parties as well as Italy, Slovenia, Croatia, Romania and Hungary. The foreseen transposition of the Third Energy Package by 1 January 2015 will form the framework for the regional electricity market development. Despite the progress being made by the Contracting Parties, implementation of the *acquis communautaire* and translation into binding commitments are significantly delayed and remain a huge challenge in the region.

All Contracting Parties TSOs, except the Moldavian, have introduced market-based mechanisms for explicit cross-border capacity auctions. The TSOs of Serbia, Romania and Hungary and the TSOs of Croatia, Slovenia and Hungary have introduced joint auctions. Implementation of price coupling in the 8th Region entails a step-wise approach, starting from bilateral/trilateral market coupling. Further integration requires the implementation of market reforms at an increased pace.

Ukraine-wholesale market liberalisation ahead

In October 2013 Ukraine has adopted the Law on liberalisation of wholesale electricity market which aims to contribute to the sector's reform and regional market integration. Ukraine is increasingly integrated also into the EU gas market through reversed gas flows, which started in 2013 from Hungary and Poland.

Gas corridors

The fact, that the Western Balkans' energy supply mix is heavily dependent on a single source of gas supply, prompts for further diversification. The SEE region lies on the path of the Southern Gas corridors essential for the future security of supply of the entire EU. Two regional major infrastructure projects in gas interconnection such as the Gazprom-backed South Stream gas pipeline (construction commenced in December 2012) and TAP project for the Caspian gas delivery to Europe, will have major impacts on the SE- European market.

RES

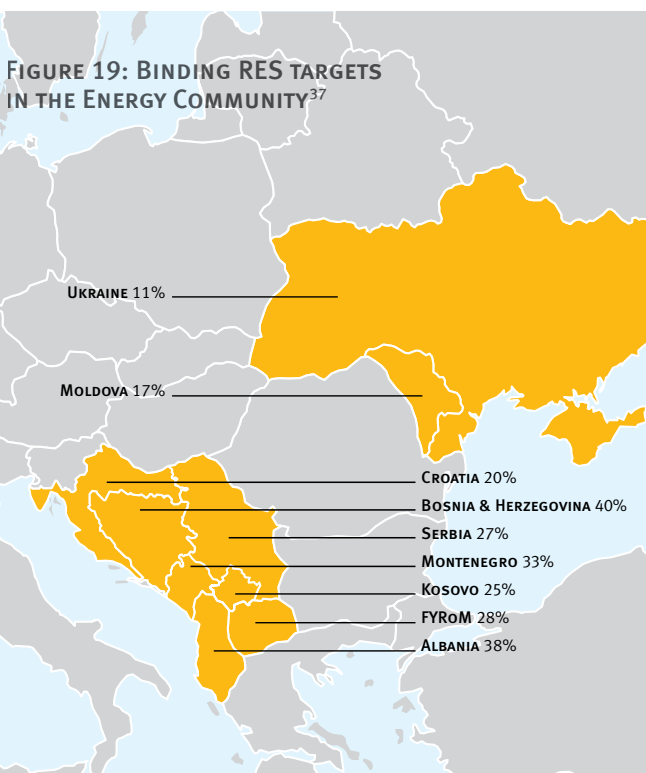
The RES Directive (2009/28/EC) was adopted within the Energy Community following the decision of the Ministerial Council. Contracting Parties accepted binding RES targets for 2020. National targets under the RES Directive are not directly based on physical potentials but on the existing RES generation and GDP. Consequently, the EnC countries will be eligible to make use of statistical transfers, joint support schemes and joint projects between EU Member States and EnC Parties.

Energy efficiency: Energy Community seven times more energy intensive than the EU average!

The Energy Community on average is approximately seven times more intensive in primary energy (0.83 toe/1000 USD) than average EU-27 (0.12 toe/1000 USD). This is mainly due to the ageing energy infrastructure, transmission and distribution energy losses, and low energy efficiency in the end-use sector. On the other hand, the Energy Community consumed less energy per capita (1.38 toe/capita) than the EU-27 (2.38 toe/capita). All Contracting Parties committed to energy savings targets of 9% of their final energy consumption by 2018 over a nine year period starting in 2010 through their respective National Energy Efficiency Action Plans.

CONCLUSIONS

The Energy Community has proven to be an effective framework for regional and continental cooperation. It might serve as a cooperation model for other regions, such as Middle- East and North- Africa. The importance of the transposition and implementation of the Third Energy Package in the context of fostering market liberalisation, providing security of supply and adequate conditions for investments remain in the center of the activities of the next period. The modernisation and construction of the new regional infrastructure will require significant resources. The Projects of Common Interests in the region partly respond to this concern. Many of the countries in the region have a credit rating below investment grade, which further limits the amount of credit available. In light of these circumstances, the region will likely require a combination of public sector funding, bilateral/multilateral assistance and project financing. The implementation of market liberalisation measures and the establishment of a regulatory environment, attractive to investments, further remain key challenges.



³⁷ Source: Energy Community Secretariat, Annual Implementation Report 2013.

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