

POWERING INVESTMENTS: CHALLENGES FOR THE LIBERALISED ELECTRICITY SECTOR

FINDINGS AND RECOMMENDATIONS



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

POWERING INVESTMENTS: CHALLENGES FOR THE LIBERALISED ELECTRICITY SECTOR

FINDINGS AND RECOMMENDATIONS

Energy Policy and Generation Committee, with the input of all other EURELECTRIC Committees

Chair : David Porter (GB);

Vice Chair: Michel Matheu (FR);

Members: Constantin Balasoiu (RO); Maris Balodis (LV); Ulrich Bang (BE); Gábor Briglovics (HU); Egle Ciuzaitė (LT); Gwyn Dolben (GB); Karl Heinz Gruber (AT); Sotirios Hadjimichael (GR); Sigrid Hjornegard (NO); Alois Hroch (SK); Esa Hyvärinen (FI); Lars Jacobsson (SE); André Jurjus (NL); David Manning (IE); Giuseppe Montesano (IT); Pedro Neves ferreira (PT); Marcel Ottenkamp (CH); Raine Pajo (EE); Antonis Patsali (CY); Véronique Renard (BE); Oli Gretar Blondal Sveinsson (IS); Stanislaw Tokarski (PL); Angel Luis Vivar (ES); Michael Wunnerlich (DE); Fernand Zanter (LU);

TF Investment Action Plan (which includes the members of the other committees/groups involved):

José Arrojo De Lamo (IT); Franz Bauer (VGB PowerTech e.V.); Vittorio D'eccelesi (IT); Hakon Egeland (NO); Zuzana Krejčířiková (CZ); Ignacio Martínez Del Barrio (ES); Tomas Mueller (AT); Simonetta Naletto (IT); Alan Svoboda (CZ); Oluf Ulseth (NO); Luc Van Nuffel (BE); Owen Wilson (IE); Sami Andoura (Notre Europe); Peter Atherton (Citigroup Global Markets); Allan Baker; Manuel Baritaud (International Energy Agency (IEA)); Markus Becker (GE Energy); Alain F. Berger (Alstom); David Buchan; Simon Chisholm; Stefano Da Empoli (I-Com - Istituto per la Competitività); Severin Fischer; Cheryl Fisher (European Investment Bank); Holger Gassner (RWE Innogy GmbH); Stefanie Haeger (Future Matters AG); Péter Kiss; Melle Kruisdijk (Wärtsilä Netherlands BV); Thomas Legge; Felix Christian Matthes (Oeko-Institut e.V.); Volkmar Pflug (Siemens AG); Fabien Roques (CERA - Cambridge Energy Research Associates); Guy Turner (Bloomberg News); Stefan Ulreich (E.ON AG); Herbert Urban (VGB PowerTech e.V.); Owen Wilson (Electricity Supply Board (ESB)); Georg Zachmann (Bruegel);

Contact:

Susanne Nies - snies@eurelectric.org

Pierre Schlosser - pschlosser@eurelectric.org

Giuseppe Lorubio - glorubio@eurelectric.org

TABLE OF CONTENTS

Executive Summary	3
Introduction	5
1 Keeping the lights on, or the quest for secure electricity supply	6
2 Investment needs: forget about the trillion, more realism will lead to results!	10
A focus on what is feasible and realistic by 2020	11
3 A troubled investment climate	14
Financing and regulation are two sides of the same coin	15
Volatile regulation pursuing conflicting objectives	16
Recommendations	23

EXECUTIVE SUMMARY

Investment decisions in the European electricity industry are more difficult than they should be. Today's business case for investments is influenced more by political and regulatory decisions than by customer demand. If political and regulatory risks are high, investment may be deferred or investors may look for a bigger return. This ultimately risks making electricity more expensive for customers.

The economic recession has reduced sales of energy and companies' ability to invest. Existing levels of debt, pressure on company credit ratings and government attacks on company finances make new investment challenging – even more so where projects are riskier than the conventional investments of the past.

Although there is sufficient generating capacity in certain parts of Europe, the incomplete development of the single market means it is not as easy as it should be for one region's surplus to meet another region's shortage.

There is inherent tension between the three main strands of energy policy (security of supply, competitive prices and reduction of carbon emissions). Moreover, the relative importance of these objectives seems to change over time, at both EU and national level. This increases risk for investors.

The single market remains incomplete and policymakers may sometimes disregard the reasons for pursuing it: from time to time, there is a tendency to 'prescribe' solutions and targets (e.g. within the Renewable Energy Directive) which, in a properly functioning market, would be determined competitively by investors' decisions.

As the EU proceeds slowly towards implementing the single market, member states are making policy decisions individually. These decisions are not necessarily in line with the development of the single market.

The forcing onto the system of technologies which cannot deliver power on demand, but which often displace 'dispatchable' technologies, is damaging the returns on existing investments.

Against this backdrop, EURELECTRIC proposes the following:

- The completion of a well-functioning and integrated energy market should be given more priority.
- There should be greater alignment between EU energy policy and the policies of member states – perhaps the Electricity Co-ordination Group, with guidelines from the European Commission, could become the organisation to encourage this.
- Piecemeal decisions are unhelpful – policy should be more holistic, recognising the integrated nature of electricity systems.
- Innovation in the power sector is vital. The mechanisms for delivering it should be reviewed – EURELECTRIC will present related proposals in 2013.
- The energy transition is made more difficult when policy forces the pace, leading to suboptimal outcomes. Realistic timing is critical.
- The ‘targets for everything’ approach to energy policy should be abandoned. It should be replaced by a broad framework that allows the market to work, thereby encouraging those investments that make the most economic sense and reducing the costs of the low-carbon energy transition.

INTRODUCTION

The **EURELECTRIC Investment Action Plan** assessed the main obstacles to investment in the liberalised power sector. Investments in regulated parts of the electricity value chain – distribution networks and transmission – were deliberately kept out of the report’s scope: they are not subject to the same constraints and face different challenges today.¹ Nevertheless reference is made to the full electricity value chain where needed – e.g. the impact of more transmission, smarter distribution grids, storage or energy efficiency on generation adequacy – since a fragmented view on the power system can lead to erroneous conclusions.

Two meetings of a high-level EURELECTRIC Task Force took place in April and July 2012, gathering representatives from the electricity industry, banking sector, consultancies, think tanks and academia. They addressed generation adequacy, investments or investment obstacles by technology, taxes and regional differences in investment trends, as well as the regulatory framework. A broader exchange of views took place at an internal workshop in September when participants from the industry at large were involved. **A survey** on the investment climate, commissioned by EURELECTRIC and discussed at the workshop, clearly stressed that the current regulatory uncertainty and policy contradictions were the most important obstacles to investments, as seen by the industry.²

Investors have other opportunities beyond the electricity sector, and as a banker highlighted during the workshop, would rather avoid Europe currently and go elsewhere. This perception applies as much to the so-called ‘new’ investors as to the existing ones. EURELECTRIC members believe that it is time to put Europe more sharply in focus: it is the European energy transition that they want to invest in. This report is targeted to the EU institutions, but also to national politicians and regulators: policymaking has to be optimised to support the transition to the low-carbon energy system – which can ultimately only be delivered ultimately by the private sector.

¹ Investment conditions for distribution grid companies have been addressed in other EURELECTRIC publications such as the *Regulation for Smart Grids report*.

² Energy leader statements gathered as part of this survey are placed throughout the document in the form of quotes.

KEEPING THE LIGHTS ON, OR THE QUEST FOR SECURE ELECTRICITY SUPPLY



Evaluating investment needs in power plants depends on the answers to a simple – yet decisive – set of questions: How much power generation capacity do we need to keep the lights on? How do we make sure that power plants with completely different operating characteristics continue to contribute to securing supply? Do we need new power plants? What kind of capabilities do we need from power plants?

It is true that both **existing and new power plants are subject to the same macro-trends**, inter alia the development of electricity demand and compliance with EU climate or energy policies. But in many EU countries there is a particular challenge: reduced running hours for conventional power plants that are being displaced by renewable energy, much of which delivers electricity when the sun shines or the wind blows, rather than in response to demand from customers.

Production from renewables (RES) based on subsidies, especially at peak production hours, has severely weakened the business case for such conventional plants, although they have a vital role to play in providing back-up and ensuring security of supply, in particular because alternative options like large-scale storage, demand response and interconnection can take long to come to fruition. EURELECTRIC strongly supports the development of RES technologies, but insists on the need to do this in a cost efficient, market oriented and European manner, taking benefit from RD&D support especially.

Europe's economic growth remains under serious strain. Electricity demand traditionally mirrors GDP and industrial output patterns, and after recovering in 2010 has shrunk again in 2011, as shown in Figures 1 and 2. Preliminary statistical information suggests a further demand decrease in 2012, deterring companies from investing until a positive business case emerges.

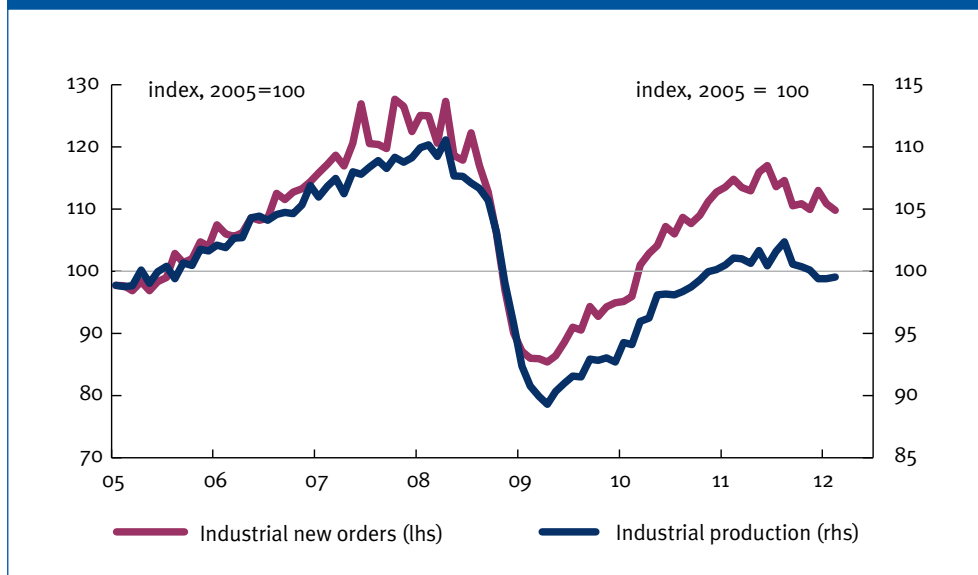
“

Globally, investments will be targeted to geographical areas where regulation is well-settled, predictable and reasonable from the economic point of view. Europe might be less of a priority than before for our international company.

”

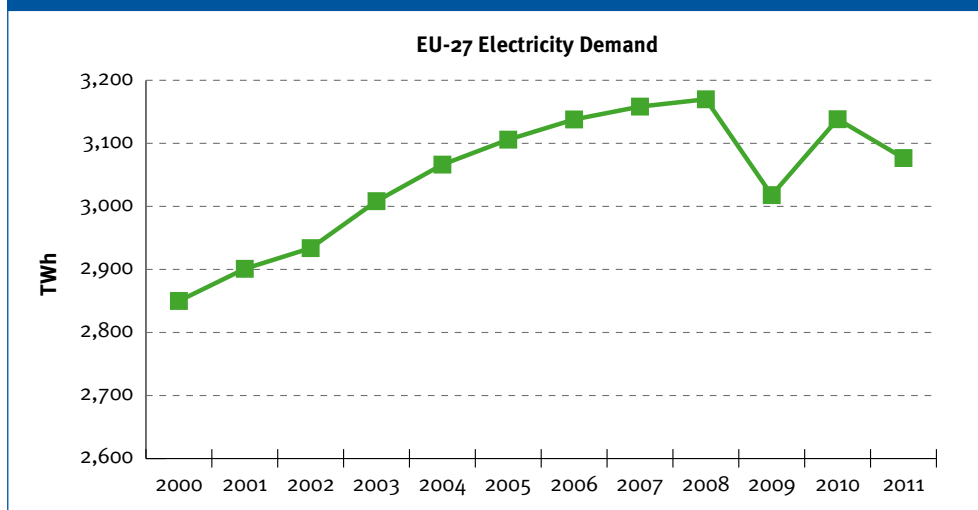
Yet despite today's troubling economic climate, **most scenarios**, including the European Commission's Energy Roadmap 2050, **suggest that electricity demand will grow in the medium to long term. This trend will be driven by the electrification of transport, but also of the heating and cooling sector.** Therefore, a secure electricity supply can only be maintained if new generation sources are developed to follow this expected increase in demand. In addition, the increasing build of variable RES is completely changing the load pattern of the electricity system, which is requiring even more reserve capacities and much more flexibility.

Figure 1: Industrial new orders and industrial production, EU (2005-Spring 2012)



Source: DG ECFIN's European Economic Forecast Spring 2012, European Commission

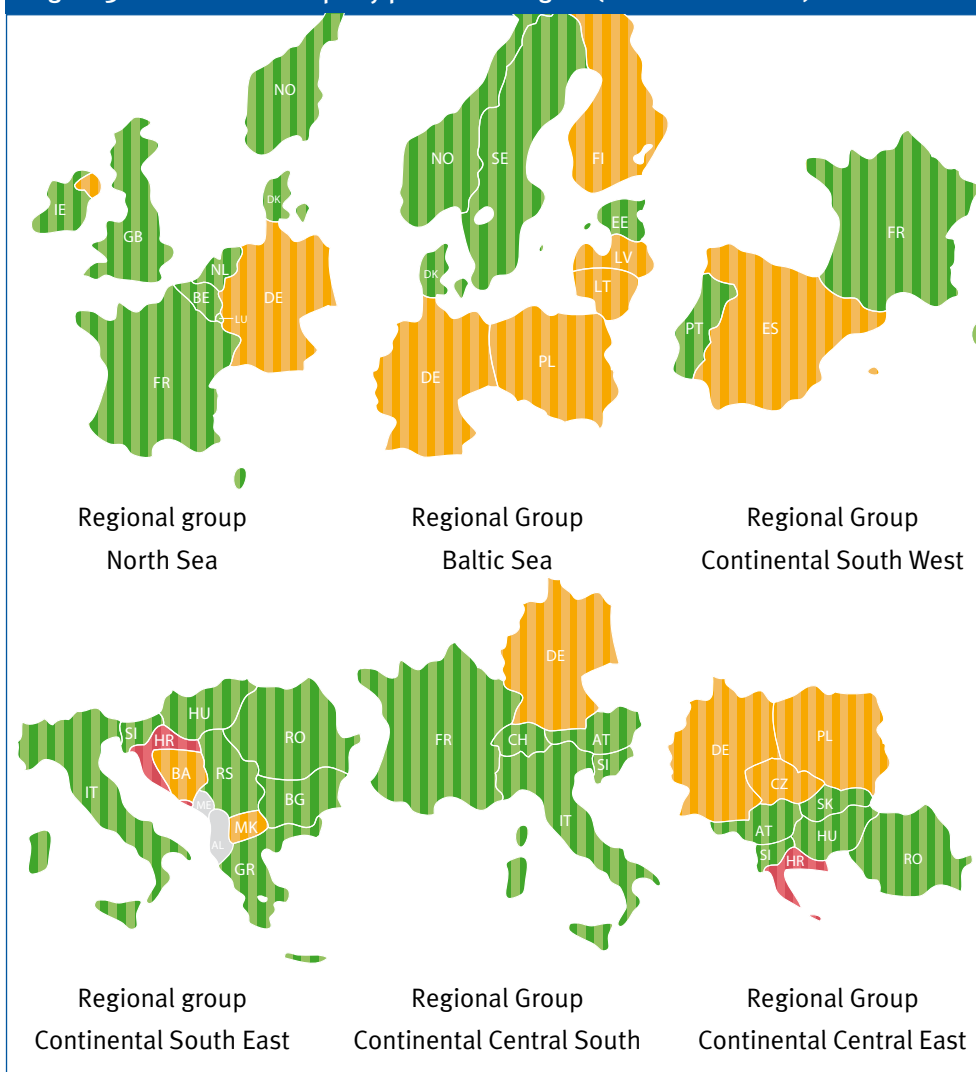
Figure 2: Evolution of electricity demand in the EU-27 from 2000 to 2011



Source: EURELECTRIC, Power Statistics (various editions) - electricity demand includes network losses

According to European generation adequacy forecasts (Figure 3), secure supply is generally ensured across the EU up to 2020. Power systems in green are expected to have enough resources to cope with unexpected demand or outage of a system component in both winter and summer. Those in orange have zero or negative margins either in winter or summer, yet the system can cope with demand because of interconnections. Systems in red are unable to cope with demand and unforeseen events in both winter and summer.

Figure 3: Generation adequacy per ERGEG region (Scenario EU 2020)



Source: ENTSO-E, Scenario Outlook and Adequacy Forecast 2012 - 2030

Yet the adequacy identified above is often purely theoretical and intrinsically static: under current conditions of short running hours and sometimes even negative prices, the business case for conventional back-up – especially gas-fired generation – is disappearing and means that many of these plants could be phased out. Therefore, and particularly under these changing circumstances, **the adequacy of the generation fleet to keep the system up and running is not a given. For this reason, assessments of adequacy should be judged not just by static mathematical formulae but also on the basis of economic reality.**

INVESTMENT NEEDS: FORGET ABOUT THE TRILLION, MORE REALISM WILL LEAD TO RESULTS!





Prevailing volatility in the financial markets and the unclear/unstable regulatory framework makes it quite speculative to determine how much will be invested in total even until 2020.

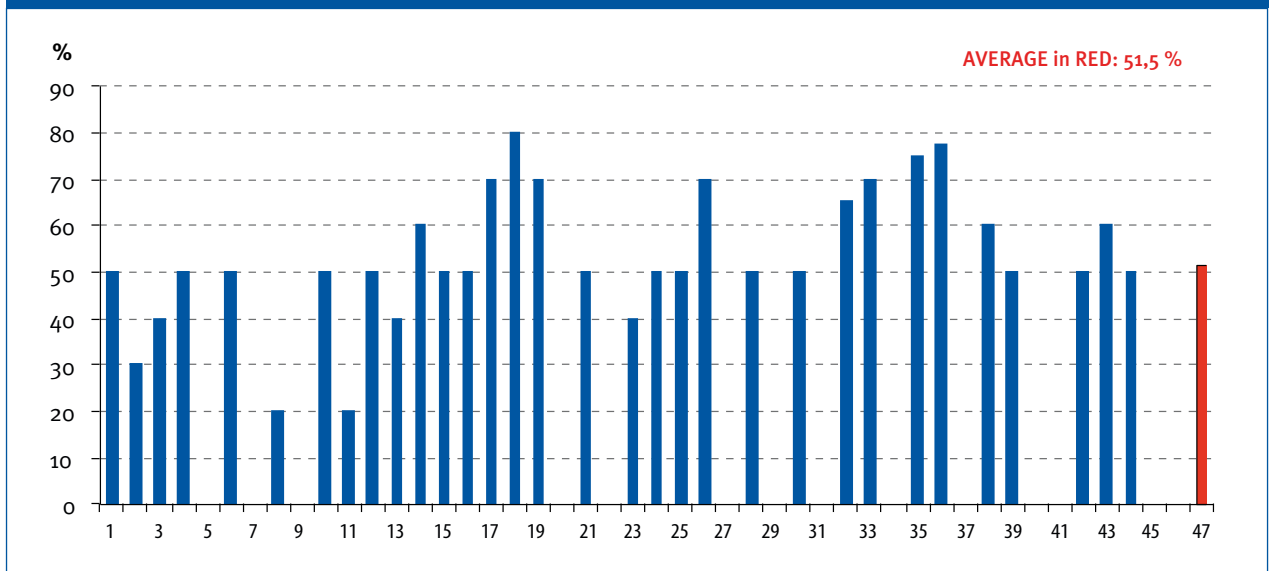


A focus on what is feasible and realistic by 2020

According to the IEA as well as the European Commission, unprecedented investments are needed to ensure Europe's energy transition. Major investments are needed across the entire European electricity value chain, for generation, transmission, distribution and storage: slightly less than €1 trillion up to 2020, and €3 trillion up to 2030.³

The electricity industry is committed to Europe's energy transition and to meeting the 20-20-20 targets. But asked whether the above investment figures would be feasible, 44 out of 45 energy leaders surveyed by EURELECTRIC said these investment volumes would not occur. Instead they expected only about half of these investments to take place, with responses varying from 20 to 80% (Figure 4).

Figure 4: Likelihood of forecast €1 trillion investment to become reality according to EURELECTRIC members



Source: Internal EURELECTRIC investment survey

³ IEA estimates in the WEO 2012 – data from other OECD publications

The assumptions which led to these massive figures were based on very different growth scenarios. Considering today's economic conditions, deteriorating investment climate and uncertain regulatory/political trends, investing one trillion euros across the value chain by 2020 is simply unrealistic. We expect policymakers to take this into consideration. Rather than focusing on questionable numbers, priority should be given to delivering on Europe's 20-20-20 objectives. Emphasis should also be put on the 'must have' investments that are needed to maintain security of supply at competitive end-user prices.

A look at the reality in various EU member states reveals that the situations across Europe are very different, though some general tendencies unite them. The following examples shed light on these trends.

Many countries in Europe are currently experiencing a phase-out of capacity, raising questions about its replacement. In this context both France and the UK envisage introducing capacity remuneration mechanisms (CRM) in order to maintain and stimulate new investments.

In **the UK** there have been recent warnings from regulator Ofgem of generation shortfall around 2015, which have been widely reported in the UK media⁴. About 12 GW of coal and oil capacity is to be closed by 2016, as a result of having opted out of the Large Combustion Plant Directive (LCPD). On top of the LCPD, one should also consider the effects of the Industrial Emission Directive (IED) that will become clearer in the years ahead. In addition to fossil-fuelled plant retirements, about 7 GW of existing nuclear plants are likely to be taken off the grid by the end of the decade – though several analysts believe that lifetime extension and long-term operation of some of those plants are possible. Beyond these retirements, there is also uncertainty about possible closure of further plant: the current low spark spread⁵ for gas plants puts the continued operation of these, otherwise needed, plants into question, and several thermal plants in construction risk being delayed for the same reasons. For example, in the Central West European (CWE)⁶ market (a market which is particularly exposed to gas price changes), the clean spark spread is currently negative, and energy consultancy CERA argues in a study from October 2012⁷ that “clean spark spreads are largely not expected to return to positive territory until about 2018.”⁸ On the other hand, the carbon price floor introduced by the UK Treasury will take effect as from January 2013, hence favouring gas generation over coal generation.

In **Germany**, 20 GW of nuclear capacity are to be phased out by 2022 and a phase-out of an additional 6.5-10 GW of conventional capacity is expected, principally for reasons of economic viability. The German association BDEW assumes a capacity gap of 4-8 GW under these conditions. The problem is primarily regional, affecting mainly southern Germany.⁹

⁴ The UK risks energy shortages by 2015-16 as its spare capacity would fall from 14% today to 4% due to earlier than expected closures of coal-fired power plants.

⁵ Spark spreads describe the theoretical net income of a gas-fired power plant from selling a unit of electricity, having bought the fuel required to produce this unit of electricity. All other costs (operation and maintenance, capital and other financial costs) must be covered from the spark spread. The clean spread indicators include the price of carbon dioxide emission allowances.

⁶ CWE is one of the seven ERGEG regions.

⁷ CERA European Policy Dialogue 2012, October 2012

⁸ Bloomberg New Energy Finance European Long term Generation Outlook 17.2.2012

⁹ BDEW, Strategische Reserve- Absicherung des Energy Only Markts (Strategic Reserve- securing the Energy only market), Berlin 25.9.2012

Similar to the UK, the LCPD will lead to the closure of 3.6 GW of coal and 4.8 GW of oil-based power capacity by the end of 2015 **in France**.¹⁰

On the contrary, other countries experience overcapacity and do not see any urgent need to invest (for technologies other than RES which need to grow pursuant to the RES Directive).

In **Italy**, gas-fired generation alone reached a total installed capacity of 54 GW at the end of 2011. In the same year, the registered peak load stood at 56.5 GW while the minimum load was 21.5 GW.¹¹

In **Spain**, combined cycle gas turbines (CCGTs) have boomed in the last decade, going from no CCGTs in 2000 to 28 GW of CCGTs in 2010, which is above the minimum load of about 21 GW. Along with the boom of gas-fired generation, the country has seen a massive increase in renewables – mainly wind, which reached 20 GW at the end of 2010 – and has a nuclear fleet of 7.5 GW and a coal fleet of 11 GW. In the same year, the peak load stood at 45 GW.

In **Austria**, at the end of 2011 4.3 GW of gas-fired plants and 5.4 GW of conventional (i.e. non pumped storage) hydro plants were in operation. The same year, the peak load was 9.7 GW, i.e. equivalent to the installed capacity of conventional hydro and gas-fired plants just mentioned. In addition, the country had 1.5 GW of renewables (mainly wind), 1 GW of coal-fired plants and 7.5 GW of pumped and mixed hydropower plants.

In **Sweden** there is at present an overinvestment in renewables compared to the targets. This has caused a price drop for green certificates. This is of course what should happen with an oversupply in a market-based system. In the long run up to 2020 the system is expected to deliver the right amount of renewables at a cost on the consumer's bill at around 0.6 to 0.9 c €/kWh. Profitable capacity increases and higher efficiency in the nuclear power plants is forecast to result in an increase of around 1,000 MW.

Overall, we conclude that there is an urgent need to fix the above mentioned generation adequacy issues in some regions. Connecting oversupplied to insufficiently supplied regions would be in tune with the single market, illustrating also the inter-linkages between transmission and generation investments. Considering the huge delays in setting up new interconnections, however, there is a more immediate need to maintain the system in balance. While EURELECTRIC believes that eliminating distortions in order to restore the market is the best solution, it acknowledges that there might be a pragmatic need for interim solutions like strategic reserves or CRM.¹²

¹⁰ Bloomberg New Energy Finance, 17.2.2012

¹¹ Data in Terna's statistical yearbook

¹² EURELECTRIC, *Renewables Integration and Market Design: are Capacity Remuneration Mechanisms needed to ensure generation adequacy?*, May 2011



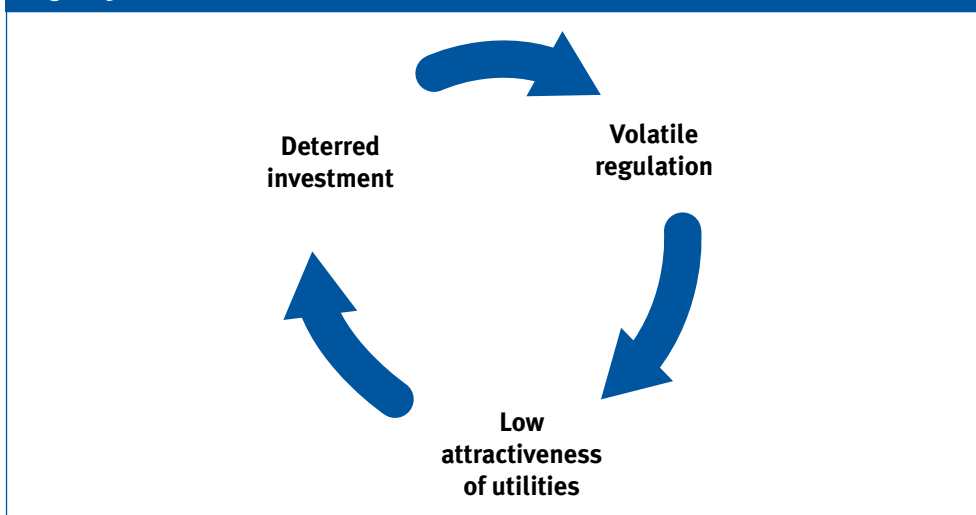
Financing and regulation are two sides of the same coin

Investing in Europe's long-term power future is a particular challenge today. The recession has not only hit utilities, but also their financing partners. A tightened financial framework, as with Basel III, as well as insufficient profit margins place financing partners under serious scrutiny with respect to their future investments. Although new investors such as pension funds and communal enterprises have emerged, they are affected by the same challenges as traditional investors.

EURELECTRIC members generally assess the investment climate as being very poor. EURELECTRIC's internal investment climate survey identifies volatile policies as the main reason.

A vicious circle of volatile regulation – decreased attractiveness of utilities – deterred investment is the result.

Figure 5: The vicious circle at work



Other elements fuelling the current poor investment climate include:

- The sovereign debt crisis and resulting higher capital costs/interest rates,
- Power prices which are not delivering meaningful signals,
- Deterioration in analysts' rating of the industry and reduced industry attractiveness,
- Increased debt burden financing for utilities,
- Various ad-hoc taxes on utilities.

However, regional or national trends are often more nuanced. Some regions, for instance the Nordic one, seem less exposed to investment difficulties than others, at least until 2020. A greater regional approach, the structure of the generation portfolio, and more consistent policies can largely explain the national/regional differences. The lending conditions also play a role: the sovereign debt crisis in some member states has translated into stricter and costlier lending conditions and has forced several companies to adopt divestment programmes to maintain their credit ratings.

Making Europe's global competitiveness a priority

Money can be spent only once. In times of economic downturn, capital rationing makes the prioritisation of allocation even more crucial. The European electricity industry stresses the need to keep Europe's competitiveness in mind by prioritising economic efficiency as a key principle of the low-carbon transition. In essence, this necessitates a less national, more European approach and a greater reliance on markets and market-based principles to avoid stranded subsidies and stranded investments.

Europe's competitiveness means focusing on the **European energy industry's strategic place in the emerging global low-carbon economy**. A well-developed innovation policy targeted at all the elements of the energy value chain is needed. Such a pragmatic refocusing has the potential to result in innovative, cutting-edge products that can also be exported to the rest of the world.

We cannot afford to forget about Europe's competitiveness at large. We are witnessing, among almost all European member states, a surge of interventionist and discretionary measures in the power sector which are strongly affecting its profitability. Examples of this troubled investment climate are listed in the following section.

Volatile regulation pursuing conflicting objectives



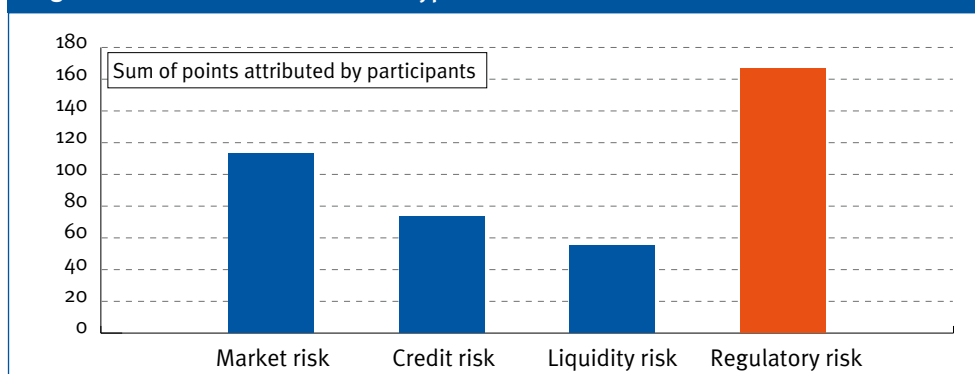
If the EU and EU member states fail to establish sustainable market frameworks for low-carbon electricity, then we are heading for a crash.



The European utility sector is used to the manifold risks that are inherent in the sector's long investment cycles. But the risks facing investors today often exceed acceptable limits. Uncoordinated EU legislation (e.g. no interrelation between the EU Emissions Trading Scheme (EU ETS) and the renewables targets) and volatile national policies (e.g. abrupt and sometimes retroactive changes) create uncertainty and undermine the viability of conventional generation. Risk averseness is on the rise. It is exacerbated by policies which subsidise cherry-picked technologies. These attract risk-averse investors and depress investments in projects exposed to the liberalised market environment.

Regulatory risk is on the rise

Figure 6: Assessment of different types of risk¹³



Source: Internal EURELECTRIC investment survey

After more than a decade in which energy market **liberalisation** was the cornerstone of the EU's energy policy, new – and indeed legitimate – priorities like emissions reduction now require that a new balance be struck between market forces and government intervention. But instead of properly addressing this issue in all its complexity, it seems that, in a black and white move, the pendulum is swinging back from competition to regulation. Evidence from the past shows that a fully regulated power sector has led to oversupplies and cost inefficiencies. Even before liberalisation and the internal energy market have been fully completed in Europe (e.g. 3rd Package implementation, “target model”) and conclusions have been reached as to their success, governments are showing a worrying tendency to re-regulate the energy systems.

The European power sector has made clear that it can deliver carbon-neutral electricity by 2050. After the successful decrease in SO₂ and NO_x in the 1990s, the reduction of CO₂ emissions is the next challenge. But EURELECTRIC has always made clear that policy for decarbonisation should be set in such a way that competition and the integration of European energy markets do not become collateral victims. In the electricity sector, which is so important to society as a whole, extreme approaches like a market without regulation or regulation without a market are both inappropriate: **the right balance must be struck between reasonable regulation setting transparent frameworks and the efficiency of the market.**



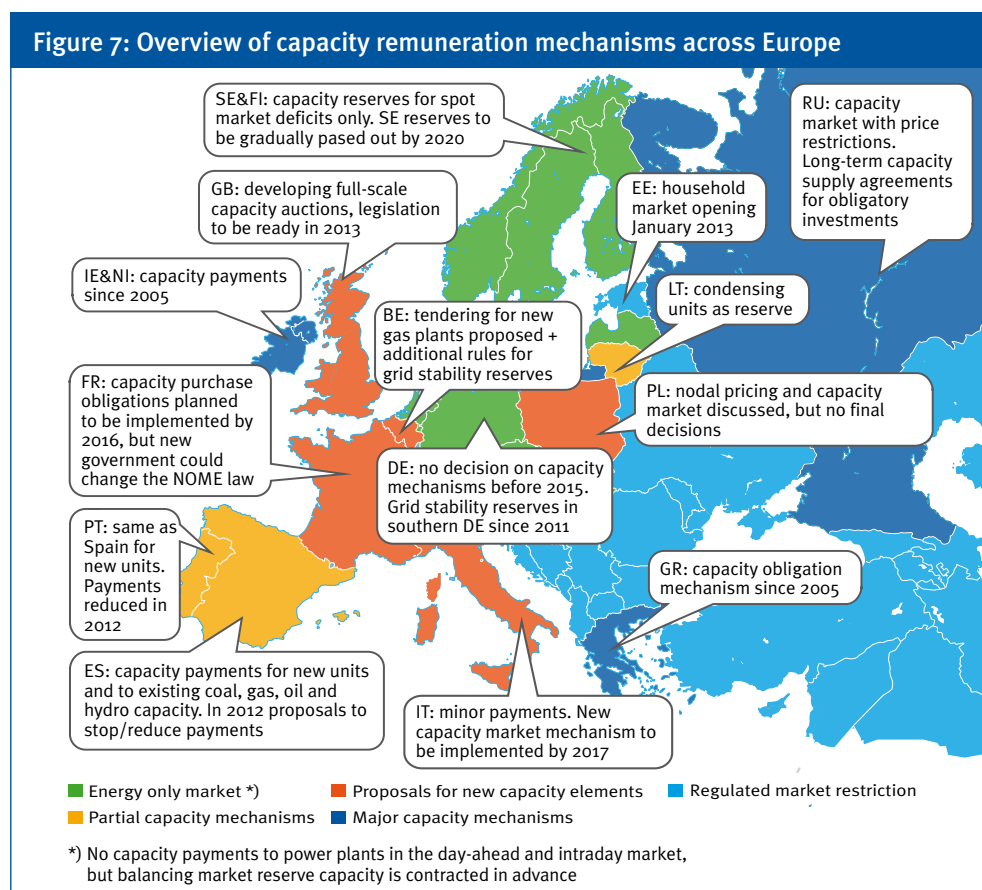
Markets tend to be less markets due to increased regulatory interventions.



Unfortunately the energy industry is currently witnessing a race for new regulation, even though previous regulation such as the second and third Electricity Directives has not yet been implemented in some countries. We observe growing inconsistency of legislation at EU level and also among member states. There is a serious concern that this will lead to loss of market efficiency, to re-regulation and to more command-and-control. These in turn will affect cost efficiency, increase the cost burden for European citizens and industrial end-users, and endanger meeting either of the envisaged objectives, be it liberalisation or decarbonisation.

¹³ Each survey participant was asked to rate each risk by attributing them points from 1 to 4, four being the highest risk.

Figure 7 exemplifies this problem. It shows the fragmented and diverging capacity remuneration mechanisms across Europe, highlighting the inconsistencies among member states.



Source: EURELECTRIC

Both European and national policymakers tend to intervene in a somewhat stop-and-go fashion, completely disregarding the long-term need for clear, effective, consistent and supportive frameworks that are conducive to investments. **Rather than focusing on creating a level playing field by removing market interventions that have outlived their usefulness, new distortions are added on top of existing ones.**

We are also witnessing a fairly black and white discussion on ‘centralised versus decentralised’ power generation. In fact, both types are needed, depending on location. The singling out of a decentralised generation only approach seems like a return to the past when electricity generation and supply were a local affair – until it was found that economies of scale would lower overall costs. Among European regions there appears to be a trend of setting “energy independence/autonomy” objectives, in the belief that regions can become energy autonomous, attaching little value to the level of inter-connection in Europe. To conclude: decentralised solutions will have their place in the smart and competitive low-carbon environment, but they will not be the one-size-fits-all solution.

Market intervention through taxes further interferes with the development of the internal energy market and hampers investments in existing and new power plants. Table 1 lists the latest specific taxes on the electricity sector in EU member states.

“

The investment capabilities in the energy industry have decreased, partly because of the economic recession but also due to numerous fees, charges and taxes that have been introduced.

”

3

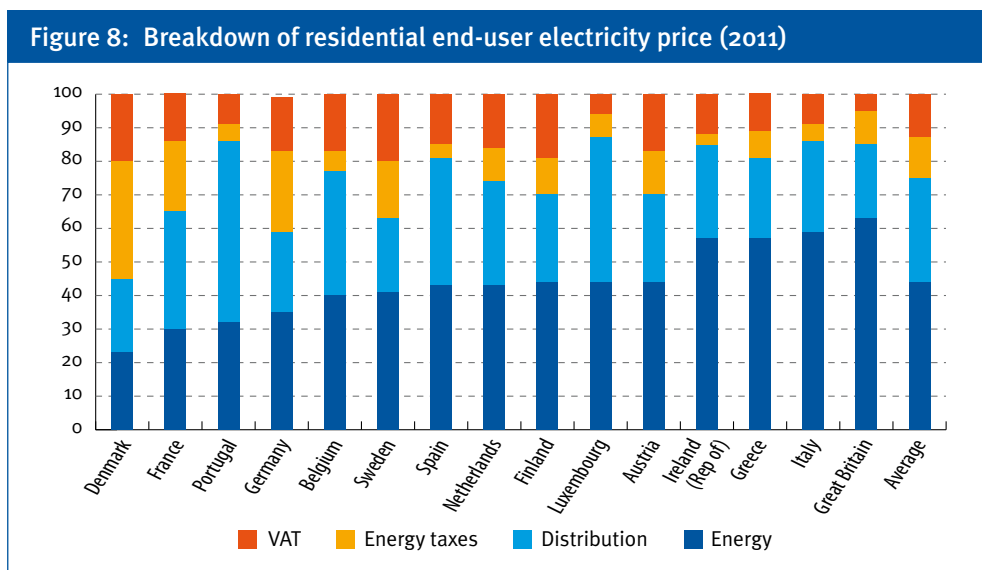
Table 1: Overview of some recent tax developments in Europe in the electricity sector

Belgium	<ul style="list-style-type: none"> Nuclear tax (2008-09) - €250 million – increased to €550 million as of 01.01.2012 (split among the nuclear producers on the basis of their respective production) Federal energy contribution (1.9088€/MWh). Federal levy to finance public service obligations and the federal regulators' budget (5.0854€/MWh in 2012) Tax on coal: 11.6526€/ton / Tax on natural gas used for power generation: 0.7399€/MWh Measures taken to reregulate retail prices
Czech Republic	<ul style="list-style-type: none"> Windfall profits arising from free CO₂ allocations have been taxed by means of a “gift tax” payable during 2011 and 2012
Finland	<ul style="list-style-type: none"> The real estate tax on power plants has been increased from 1.4% to 2.85% between 2006 and 2012. Furthermore, the government plans to introduce a tax for old nuclear and hydro generation to collect €170 million per annum from 2014 (i.e. approximately €5 MWh)
France	<ul style="list-style-type: none"> Inland waterways tax: taxation rate raised from 4.6€/dam³ to 5.7€/dam³ Annual outstanding tax (0.052% of companies 2011 turnover) to finance CO₂ allowances granted by the State to new industrial plants entering the EU ETS in 2011 (i.e. covering more than 60,000 tons of national CO₂ allocation plan for 2008-2012)
Germany	<ul style="list-style-type: none"> Doubt about constitutionality of nuclear fuel rod tax introduced in 2011 – To last until 2016
Hungary	<ul style="list-style-type: none"> New energy net sales tax (2010 and introduced for 3 years) – 1.05% “Robin Hood” tax introduced in 2008 – maintained until end 2012
Italy	<ul style="list-style-type: none"> Robin Hood surtax was increased from 6.5% to 10.5% for 2011-2013 + broadening of scope including T&D of power and natural gas
Norway	<ul style="list-style-type: none"> Municipal property tax for hydropower plants (e.g. rate of 0.7% based upon a calculated market value). Maximum value for calculated market value increased by 5% in 2012 and will increase by 11% as of 2013. Expected increase of the tax by 15 million € in 2012 and 40 million € in 2013
Portugal	<ul style="list-style-type: none"> On 1 October 2011, VAT rate applicable to consumption of gas and electricity increased from 6% to 23%

Spain	<ul style="list-style-type: none"> New taxes on energy generation to reduce the country's electricity tariff deficit – aim to raise 2.74 M€/y: <ul style="list-style-type: none"> – 6% tax on the sale of electricity from all generation types – Tax on disposal of radioactive waste + tax on hydropower – “Green cent” levy on fuels: 2.79€/ m³ of natural gas, 14.97€/ton of coal, 12€/ton of fuel oil, 29.15€/ 1000 liters of gasoil.
Sweden	<ul style="list-style-type: none"> Nuclear tax: tax based on the thermal production capacity of the nuclear reactor (1,200€/MWh) Real estate on hydropower plants increased from 0.5% to 2.8% between 2006 and 2011
United-Kingdom	<ul style="list-style-type: none"> Climate Change Levy (CCL) rates will increase from 01.04.2013 in line with inflation New Carbon Price Support to be introduced from 2013: supplies of fossil fuels used in most forms of electricity generation (which are currently exempt) will become liable to the CCL or fuel duty from that date.

Source: EURELECTRIC

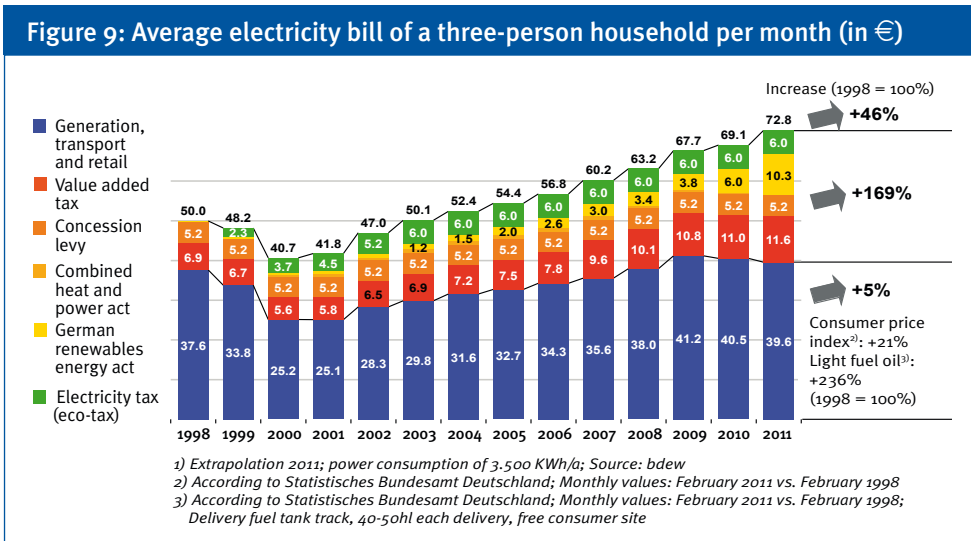
Supporters of these taxes often claim that they are more than justified since electricity prices are ‘high’. But **high prices for customers do not equal high profits for companies**. Consumers should be made aware that the energy component of their bill is usually below 50% of the total bill and on average 43% – as can be seen (in blue) in Figure 8 below. It needs to be recalled too that in several European countries the levies linked to the support of renewable energies are incorporated into the grid fees – labelled as ‘distribution’ in the figure.



Source: Energie Control Austria 2012

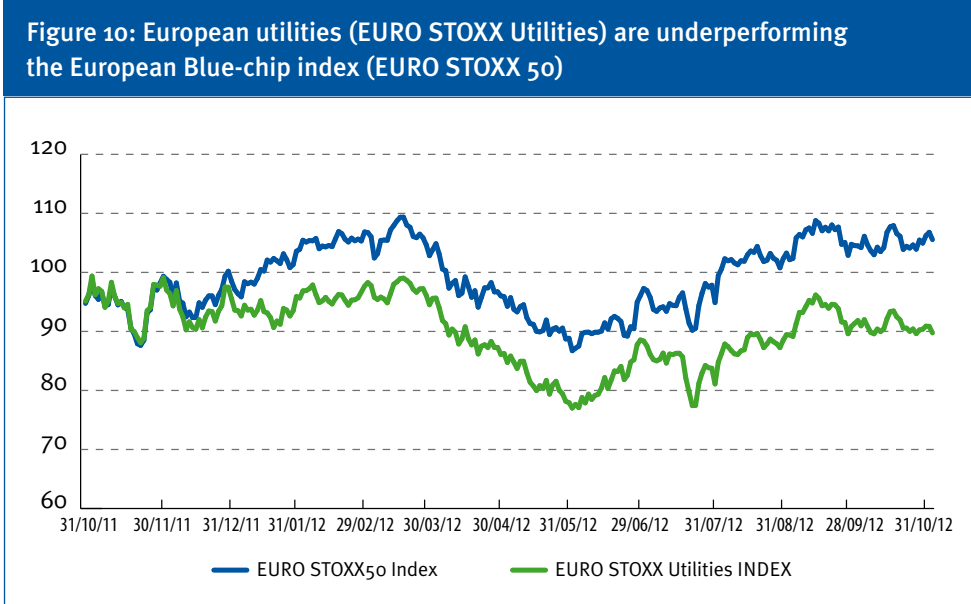
While the non-energy components of bills have been increasing constantly since the 1990s, the electricity (i.e. commodity) price itself has remained rather stable.

Figure 9 shows the development of German power prices since 1998, the beginning of liberalisation, and the huge increase of taxes and support mechanisms (+169%). Note that generation and distribution costs have only increased by 5%.



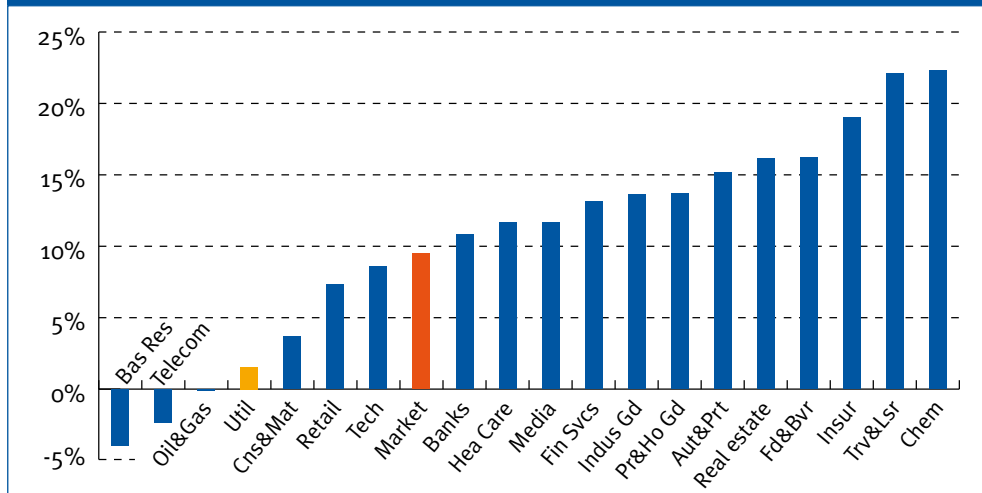
Source: BDEW

Today the European electricity sector is facing difficulties. It is increasingly being outperformed by other sectors on the stock market (Figures 10 and 11) and by the utilities on other continents (Figure 12).



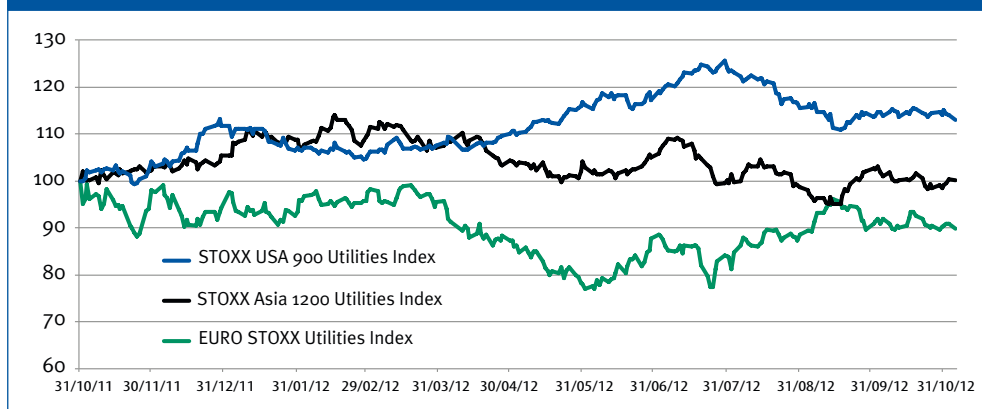
Source: STOXX Limited, retrieved 5 November 2012

Figure 11: Variation rate of sector indexes in 2012



Source: Own elaboration, data from STOXX Limited retrieved on 4 October 2012

Figure 12: European utilities (EURO STOXX Utilities) are underperforming the US (STOXX USA 900 Utilities) and Asian (STOXX Asia 1200 Utilities) utilities' indexes



Source: STOXX Limited, retrieved 5 November 2012

To conclude: European electricity utilities are fully exposed to policymakers' lack of consistent methodology in pursuing the three energy policy objectives of security of supply, sustainability and competitiveness. We agree with the 'what', i.e. the objectives, but strongly disagree with the 'how'. How coherently are security of supply, environmental objectives and cost efficiency articulated? How do those objectives – and the respective policy instruments – relate to one another? National and European policies on climate, energy and environment are insufficiently aligned and they have perverse effects on each other, with the risk of unintended consequences.

Public policy and regulation should be aligned with the time horizons of the electricity sector, which recovers its investments in terms of decades, not years. Visibility on long-term trends and regulation as well as policy consistency are therefore crucial. Unfortunately they are currently missing.

RECOMMENDATIONS

AN EMPOWERING INVESTMENT FRAMEWORK

... should aim at de-risking investments

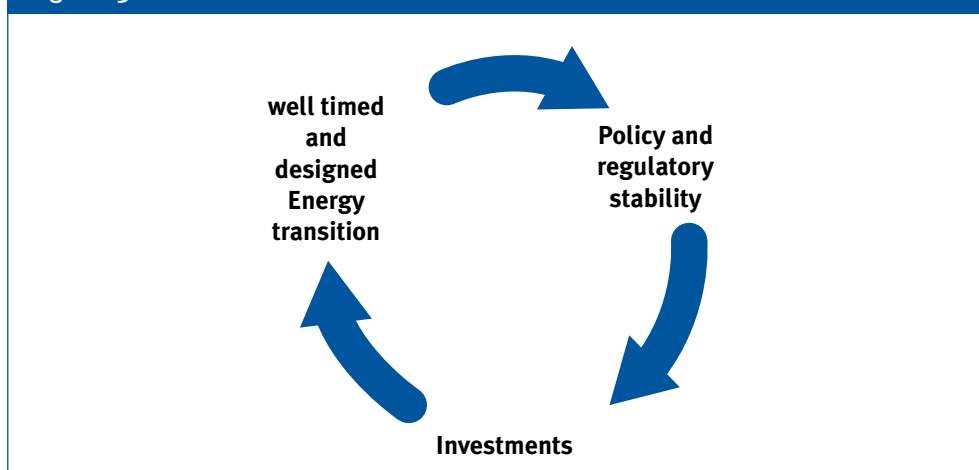
In a liberalised market environment, European energy companies are used to being exposed to risks and have developed strategies to hedge such risks. But regulatory risks cannot be hedged and risks must generally remain proportionate. In today's energy policymaking, short-term considerations often prevail over the long-term strategy. Attempts at enforcing ad-hoc taxes and/or intervening in price formation in the market (e.g. through price freezes, wholesale price caps, retail price regulation) reduce the attractiveness of the energy sector as an area of investment. Utilities and their investors are being challenged. Yet society expects them to pave the way and finance the transition to a low-carbon economy.

To make this happen, policymakers must turn the vicious circle currently at play into the virtuous circle shown in Figure 13 below: policy and regulatory stability will boost investments which will in turn make the energy transition a reality.

An enabling and predictable investment climate would attract financing from both utilities and new financial actors such as pension funds, private equity firms and insurance companies. Although energy companies have high gearing levels and are facing the challenge of maintaining their credit ratings, **there is a converging view that the sector would be able to raise the necessary funds – in conjunction with the new financial actors described above – if a sound framework was set.**

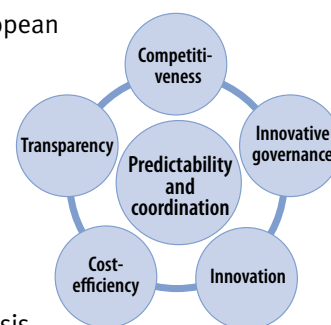
The experience in the Nordic region, with its long tradition of a common wholesale market (the NordPool), shows that a stable and predictable framework can spur investment and can attract innovative financing models. Other examples include a joint support scheme between Sweden and Norway to support renewables, the involvement of end customers and electricity retailers in financing generation investment, and the involvement of different venture capital funds in joint-ventures (whereby funds acquire minority stakes in projects being developed by utility companies).

Figure 13: The virtuous circle at work



... should be built on the following principles:

- **Competitiveness:** Maintain the competitiveness of the European energy sector, and thus of the EU at large.
- **Innovative governance:** governments should find innovative methods of adequately pursuing multiple objectives: the ‘targets for everything’ approach is outdated and unsuited, and should be replaced.
- **Predictability and coordination:** Develop a long-term European energy policy, not 27 diverging national, incompatible policies.
- **Cost-efficiency:** Rely on market dynamics and put more emphasis on cost-efficiency, even more so in times of recession.
- **Transparency:** Be transparent on societal costs, decision-making and scenarios/outlooks.
- **Innovation:** Elaborate an innovation strategy for energy.



... and on the following recommendations:

1. Stop discretionary measures

We call on the Commission to publish, as part of its annual Market Observatory for Energy, the list of discretionary measures taken by regional or government authorities (introduction of distortions in market mechanisms; discretionary taxation; retroactive changes to support schemes) which are heavily impacting the sector and which call into question the achievement of EU energy policy objectives. Only EU action on such random regulatory intervention will be able to maintain a decent investment climate in the sector and will avoid that risk premiums for energy projects skyrocket. Discretionary measures must be stopped. The Electricity Coordination Group – set up by the European Commission – should be transformed from a mere discussion platform to a truly EU coordination body which assists the European Commission in removing the inconsistencies of national policy measures and ensuring that European energy policy is applied on the ground.

2. Do not micro-manage the energy sector with multiple, conflicting policy instruments and targets

Despite market liberalisation being the cornerstone of its energy policy, the EU is in danger of embarking on a command-and-control approach to energy policy, of micro-managing instead of providing a broad framework based on effective price signals. This sends confusing signals to investors. Policymakers might be tempted to set targets for each and everything¹⁴, but EURELECTRIC believes that they should stick to their task: agree on a direction, and let the market deliver within this general policy framework.¹⁵ Ad-hoc regulation and over-regulation should be avoided.

The holistic approach we are calling for should reflect the needs of the electricity system as a whole instead of adding layers of regulation and accumulating distortions such as technology-specific incentives for e.g. RES, gas or storage. Partial solutions and single-issue instruments should be replaced by an integrated approach, where policymakers do not lose sight of the electricity system as a whole. Given the envisaged levels of penetration of variable RES generation, all sources of flexibility will be needed to shape the future power system (market integration, demand side participation, flexible back-up, storage, smarter grids). In particular, the development of generation must be accompanied by the appropriate development of the grid: increased transmission capacity and reinforced and smarter distribution grids will be needed to support the energy transition and complement the effort to balance the electricity system.

Moreover, all generators must contribute to system stability on a **level playing field**, by better forecasting their output, becoming responsible balancing parties and providing ancillary services where appropriate.¹⁶

3. Be serious about the completion of a well-functioning and integrated energy market

The 27 EU member states should fully and rapidly implement the Third Package and the corresponding common market rules. Functioning market mechanisms need to go hand in hand with European grid planning that will increase the interconnectivity of currently fragmented national markets. Market integration tools such as market coupling, cross-border intra-day markets and cross-border balancing (i.e. the so-called “target model”) are indispensable in ensuring and facilitating the contribution (on a competitive basis) of all available flexible sources.

We need a level playing field for all technologies, within the set market framework. A market-compatible and European approach to RES development should be designed for the sake of economies of scale and system stability. As part of this, consideration should be given to extending the current scope of the ERGEG Regional Initiatives to cover also regional cooperation in renewables development. Feed-in

¹⁴ The most visible recent example was the idea, voiced by Energy Commissioner Günther Oettinger on 21 June 2012, to set 7-day storage obligations for power producers, revealing a “central planning approach” to policymaking instead of an overall incentivising framework.

¹⁵ This view is not held by EURELECTRIC alone. As the Roadmap 2050’s Advisory Group put it in their report to the European Commission of December 2011: “a distinction should be made between setting the policy framework and detailed intervention in specific markets.”

¹⁶ Cf. EURELECTRIC 2010 *Integrating intermittent RES into the EU Electricity System by 2020. EURELECTRIC position paper*.

tariffs (FIT) are the least compatible with the market in that they prolong RES support irrespective of the market reality. Thus, the renewed subscription to static FIT after 2020 would not address the core issue of ensuring the cost-efficient, smooth and viable development of RES within the European energy markets.

EURELECTRIC prefers the least distortive form of support, i.e. R&D support for immature technologies, and believes that market-compatible mechanisms are always preferable. Support schemes must be dynamic and fulfil common criteria that are compatible across the EU, thereby ensuring that they do not disrupt the completion of the internal energy market. Irrespective of support type – R&D or direct – all technologies must meet the same requirements on balancing, nomination and scheduling, and grid connections.

Capacity remuneration mechanisms (CRMs) are increasingly common in Europe. Yet they do not, in themselves, constitute the silver bullet to fixing all weaknesses of the current market design. Instead, we should deal with the root cause of the current weak price signals and remove market distortions such as regulated prices, whole-sale price caps in the energy-only market or prohibitions on closing down non-viable plants.

EURELECTRIC acknowledges that specific initiatives to additionally remunerate conventional back-up and reserve capacity might be appropriate in some member states to ensure security of supply. Yet we are concerned that the current diverging national decisions and proposals will hinder market integration and lead to competitive distortions between electricity generators that are active in the same interconnected regional market. In order to avoid this negative impact, we urge the Commission to elaborate guidelines and determine criteria to be respected in order to better streamline and coordinate the different national policies.

4. Develop a European energy policy which reconciles national policies and cares about consistency: improve the Lisbon Treaty's Article 194



We need a European-wide coordinated energy policy.



European energy policy needs to be truly European. To operate in an integrated European environment, energy companies need the reassurance that the EU's energy policy is compatible with national policies. If the EU embarks on a Treaty revision in the next years, as European Commission President José Manuel Barroso announced,¹⁷ member states should seize this opportunity to clarify the legal basis that governs Europe's energy policy (Art. 194 of the Lisbon Treaty: with this article energy policy has become for the first time in history part of the legal framework of the EU). In particular, the coordination of European energy policy and the requirement that national energy policies must be compatible with the European internal energy market, which is due to be completed by 2014, should be made clearer.

¹⁷ Jose Manuel Barroso, State of the Union address, 12 September 2012 (European Parliament, Strasbourg)

5. The EU needs to integrate its different policies into one coherent structure

The EU Emissions Trading Scheme should be the key driver to bring the EU power sector towards carbon-neutrality, driving the development of energy efficiency and low-carbon investments. Looking beyond 2020, the EU should adopt as soon as possible economy-wide greenhouse gas reduction targets for 2030 and beyond, up to 2050.¹⁸ In the meantime, member states should cooperate more in order to meet the 20-20-20 targets cost-effectively – for example using the cooperation mechanisms of the Renewables Directive.

6. Use innovation as a catalyst

Innovation in the power sector is at the very heart of the transition that will lead us to a carbon-neutral electricity system, the backbone of a decarbonised economy. The world is approaching a tipping point in the development of energy technologies that could increase productivity on a scale not seen since the Industrial Revolution.

Europe needs to develop a compelling perspective on how it can successfully cope with innovation in the power sector, leverage best practice, and translate it into more European competitiveness. Governments have a crucial role in supporting the whole innovation chain through policies and legislation. But recent years have seen a massive proliferation of action, platforms, communities and R&D infrastructures that have not generated the expected level of success, probably because existing EU programmes appear largely fragmented, uncoordinated and bureaucratic, causing industry participation to decline, even beyond the effects of the economic crisis. Europe will again miss its goal of spending 3% of GDP on R&D, and the EU projections up to 2050 show that the EU-27 global share of patents will fall to 20%, although Europe is the world's largest market.

The transition to a low-carbon energy system requires the large-scale deployment of innovative technologies, be they new technologies or improvements to existing ones (e.g. more efficient and more flexible thermal plants, more efficient hydro and pumped storage plants, innovative storage options including power-to-gas and new batteries). Sustainable technology innovation is a fundamental driver of competitiveness, job creation and long-term economic growth. Investments must be streamlined between member states and at an EU level so that Europe can reap the benefits of an EU-wide innovation policy. The potential of spending on innovation remains untapped.

EURELECTRIC, whose members are engaged in an innovation action plan that addresses the question of how the EU innovation policy should deliver, invites the European Commission to join its efforts and to reflect on ensuring that energy innovation becomes a driver for competitiveness, jobs and long-term sustainable growth.

¹⁸ The Polish member of EURELECTRIC disagrees with this position

7. Timing matters! Choose the right speed

Policymakers should stick to the 20/20/20 objectives, use innovation as a catalyst, and develop a transition narrative to 2020 and beyond which outlines a realistic – and thus visionary – pathway to deliver the transition.

The real challenge of the energy transition lies in finding the equilibrium between the ability to pay (the cost), the maturity and limits of the technology development, and the optimal timing. Finding the right timing for this ambitious process (and refraining from jumping too quickly into disruptive changes) is key to success. For instance, it is impossible for offshore wind power to overcome all obstacles (including technology challenges) within a short timeframe: while the supply chain for wind offshore is being put in place and investments have started, grid connection is lagging behind. But likewise, it would have been impossible for manufacturers to move from the first mobile phones of the 1990s to today's advanced smart phones overnight. If however technological development takes place based on political decisions, one must accept suboptimal technology outcomes, higher costs, or even failure. Thus, the best interaction between cost, technology development and timing is not necessarily the one with the highest speed.

In addition, energy policy and investments in power generation are characterised by long lead times and long-time horizons. For example it took France more than twenty years to fundamentally replace its generating fleet following the oil shocks. There is an increasing concern today that we are being overly hasty and there is thus a need to discuss the appropriate timing. The energy transition will not happen overnight; for instance it is unrealistic to believe that one can exceed the 35% share of RES in electricity by 2020 at reasonable cost.

Getting the speed of the energy transition right is key to its success. Discussing speed and timing does not mean questioning the energy transition; it means taking responsibility for its successful and cost-efficient delivery.



There is a gap between the political vision of 2050 and the short-term regulatory and political decisions.



Union of the Electricity Industry - EURELECTRIC aisbl

Boulevard de l'Impératrice, 66 - bte 2
B - 1000 Brussels • Belgium

Tel: + 32 2 515 10 00 • Fax: + 32 2 515 10 10
twitter.com/EURELECTRIC • www.eurelectric.org