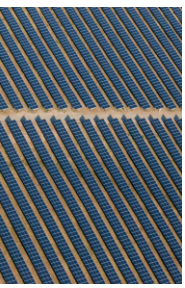
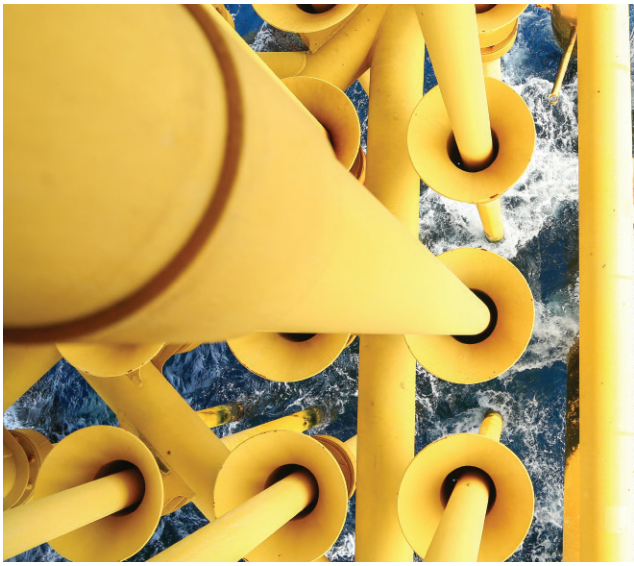
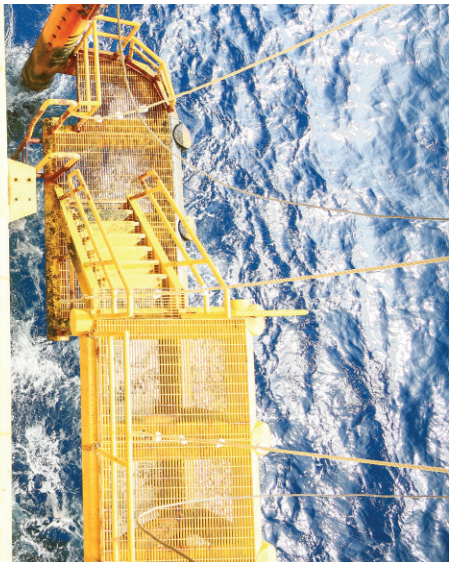
HERBERT SMITH FREEHILLS

EUROPEAN ENERGY HANDBOOK

A SURVEY OF THE LEGAL FRAMEWORK AND CURRENT ISSUES IN THE EUROPEAN ENERGY SECTOR

LEGAL GUIDE
TENTH EDITION

2017




9 780955 503788 >

Third Energy Package

Throughout this publication, we refer to the two Directives and three Regulations adopted by the European Council and the Parliament on 13 July 2009 as the "Third Energy Package". For ease of reference, the Directives and Regulations adopted as part of the Third Energy Package: EU Directives 2009/72/EC, 2009/73/EC and Regulations (EC) No 713/2009, No 714/2009 and No 715/2009 are referred to as the "Third Electricity Directive", the "Third Gas Directive", the "ACER Regulation", the "Electricity Regulation" and the "Gas Regulation", respectively. Where the context so requires, we refer collectively to the two Directives as the "Third Electricity and Gas Directives" and to the Regulations as the "Electricity and Gas Regulations", as appropriate.

Climate Change Package

We refer to the four Directives, one Regulation and one Decision adopted by the European Parliament on 17 December 2008 and the European Council on 6 April 2009 as the "Climate Change Package". For ease of reference, throughout this publication, we refer to EU Directives 2009/29/EC, 2009/28/EC, 2009/31/EC and 2009/30/EC as the "New EU ETS Directive", the "Renewable Energy Directive", the "CCS Directive" and the "Biofuel Directive" respectively. Further, we refer to EU Decision No 406/2009/EC and Regulation (EC) No 443/2009 as the "GHG Reduction Decision" and the "Emissions Standards Regulation", respectively.

Where required, we have referred to the previous internal energy market directives 1996/92/EC and 1998/30/EC as the "First Electricity Directive" and the "First Gas Directive", respectively and to Directives 2003/54/EC and 2003/55/EC as the "Second Electricity Directive" and the "Second Gas Directive", respectively.

Throughout the publication, we refer to Transmission System Operators as "TSO" and to Distribution System Operators as "DSO".

We use the following abbreviations for the various unbundling models:

FOU: Full Ownership Unbundling

ITO: Independent Transport Operator

ISO: Independent System Operator

Legal advice

Please note that the content of this publication does not constitute legal advice and should not be relied on as such. Specific advice should be sought about your specific circumstances. The deadline for the submission of chapters was 31 March 2017.

Contents

Foreword

Welcome to the 2017 edition of European Energy Handbook!

This year's edition provides a legal framework of the energy sector in each jurisdiction, covering the structure and design of the gas and electricity industries, the regulations governing them, as well as existing and planned projects such as cross-border interconnectors. Different types of generation and production such as renewable technology, nuclear energy, and upstream are examined, and legal and regulatory issues surrounding these are set out.

This edition also reports recent legal and commercial developments in each jurisdiction and covers issues as diverse as the design of electricity markets, the reform of the support schemes for renewable electricity, new cross-border interconnections, taxation issues for the upstream sector and significant commercial transactions and privatisations in the energy sector.

In addition to contributions for the European Union, Belgium, France, Germany, Spain, Russia and the United Kingdom from our own offices, this year we have contributions from Loloci & Associates (Albania) Schoenherr (Albania, Austria, Bulgaria, Croatia, the Czech Republic, Hungary, Montenegro, Romania, Serbia, the Slovak Republic and Slovenia), Peterka & Partners (Belarus), Dimitrijevic & Partners (Bosnia and Herzegovina), S.A. Evangelou & Co LLC (Cyprus), Kromann Reumert (Denmark), Ellex Raidla (Estonia), Roschier (Finland and Sweden), Kyriakides Georgopoulos Law Firm (Greece), BBA Legal (Iceland), Arthur Cox (Ireland), Meitar Liquornik Geva Leshem Tal Law Offices (Israel), Legance Avvocati Associati (Italy), COBALT (Latvia and Lithuania), Arendt & Medernach SA (Luxembourg), Karanović & Nikolić (the Former Yugoslav Republic of Macedonia), Refalo & Zammit Pace Advocates (Malta), Houthoff Buruma (the Netherlands), Arntzen de Besche Advokatfirma AS (Norway), WKB Wierciński, Kwieciński, Baehr (Poland), Campos Ferreira, Sá Carneiro & Associados (Portugal), Homburger (Switzerland), Kolcuoğlu Demirkan Koçaklı (Turkey), and Sayenko Kharenko (Ukraine).

Since the publication of our 2015 edition, a number of EU-wide changes have had a far-reaching impact on the European energy sectors and beyond. In the context of low oil and gas prices, the falling cost of renewable energy, and the emergence of new technologies such as electricity storage and blockchain, EU energy policy is being reimagined with an aim of achieving a functional Energy Union.

The Energy Union Package adopted by the European Commission in February 2015 placed a renewed focus on a low-carbon, secure and competitive Energy Union. More widely, the European energy market is moving towards full integration with co-ordinated capacity remuneration mechanisms, market coupling, and cross-border trade across Europe contributing to this aim.

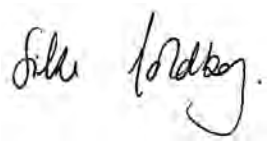
Decarbonisation and further integration are also at the centre of the Clean Energy Package (the "CEP") released by the European Commission in November 2016. The CEP sets out climate change measures, building on previous initiatives and introducing new targets and measures. The focus of the policy it contains hinges on energy efficiency, fair deals for consumers, and the establishment of the EU's leading role in the field of renewable energy.

So far, 2017 has seen the political agreement of a new gas supply security regulation and the introduction of new rules in relation to intergovernmental agreements concluded by Member States in the gas sector. No doubt, further changes are afoot with the anticipated implementation of the CEP over the next couple of years.

Finally, the impact of "Brexit" on both the UK and EU energy sector is also likely a key element of uncertainty, change and interest for policy makers and sector market participants as the UK prepares to leave the EU in 2019, and negotiations regarding Britain' future relationship with the EU are taking shape.

Silke Goldberg

Partner, Herbert Smith Freehills LLP
September 2017



Introduction

Rt Hon Sir Edward Davey MP
Former Secretary of State for Energy and Climate Change

I am delighted to introduce the 2017 version of "The European Energy Handbook" which provides an in-depth survey of current issues in the energy sector in 42 European jurisdictions.

The publication of this handbook comes at a time when the low and zero carbon agenda is disrupting every energy market far faster than policymakers, investors and incumbents expected – and this is one of the key themes that emerges in many of the reviews included in this year's review. And the scale of this disruption is likely to accelerate over the next decade.

This stark view comes from observing how the transition away from fossil fuels is already working in its early stages – how European power prices have been depressed by the increase in renewable electricity, how the economics of transmission and distribution networks are transforming and then considering the early evidence of how other energy markets for transport and heating fuels could be similarly disrupted.

Until recently, the energy industry has widely had the expectation that we will need fossil fuels as part of our energy mix for several decades more. Analysis has focused on the high probability of rising global demand for energy and rising incomes levels, coupled with the challenges of technical innovation and deployment of low and zero carbon alternatives. With a strong conclusion that the demand for coal, oil and gas will remain strong for some time yet.

However, many industry players are now beginning to question whether this conclusion is misplaced in relation to certain fossil fuels, not because they will prove wrong, but because of the economic impact of the transition itself. The impact on market dynamics. On prices. And on policymakers' responses.

So we need much more focus on the economics and politics of the transition – not when the end game and final switchover might be.

Take the power sector – which is ahead of transport and heating markets on the path to decarbonisation. The speed of innovation, industrialisation - and so cost reduction - has surpassed almost all commentators' expectations. Many new wind and solar power plants no longer need subsidy, and the policy framework of auctions is driving remaining levels of subsidy out of the system, just as intended. Even without effective, meaningful carbon prices, renewables are increasingly winning the economic race.

But they are helped in this because of their cost structure and its impact on the workings of electricity markets: the marginal cost of solar and wind is close to zero, thanks to Mother Nature, and so they always win the race to produce the power we need, whenever the sun shines and the wind blows. The so-called "merit order effect" is leaving fossil fuel power plants idle far longer than the original investors had expected. And given investors can see competition from low or zero cost clean power only getting fiercer in the future, why would they invest in new fossil plant?

This observation is hardly new. And it has led to policymakers responding with capacity markets and other interventions to stop existing fossil plants from closing, and even to incentivise new plant, to ensure the lights stay on during windless, winter nights.

What has not been well discussed, is the sustainability of such interventions and subsidies for gas and coal power. The justification of such subsidies today - that the sun doesn't always shine, and the wind doesn't always blow – is already being challenged faster than expected just 2 years ago. It is now a serious possibility that the justification will be overturned within the next decade. Not because Mother Nature changes, of course. But because of technology.

The astonishing innovation in the storage of electricity is the lead development. Coupled with the accelerating electrification of transport we will see in the 2020s, with charging vehicle batteries at night making low carbon power even more financially attractive and network management easier, economics will drive the disruption.

But then factor in smart technologies, demand-side technologies, energy efficiency, the development of lower cost cable technology to link up our grids across Europe, renewable power technologies that are more predictable, like tidal lagoons and tidal turbines, to name but a few. It is surely now possible to believe that Europe's power sector will have the ability to offer 24/7 security of electricity supply, 365 days a year, without fossil fuel plants – certainly in the 2030s.

Why would policymakers subsidise greenhouse gas emitting power plants, when the market is offering subsidy-free clean power?

And elsewhere in the power market – in transmission and distribution networks, the low carbon transition is increasingly disrupting cost structures and pricing. With distributed power stations producing electricity closer to the end user, the old centralised economics of power are being seriously challenged too.

Will such disruption flow into transport and heating energy markets in the next 10 years? Almost certainly. From the analysis of the Carbon Tracker Initiative, which suggests long term exploration for oil and gas only makes sense in ultra-low cost basins, to the advances in insulation technologies and non-methane heating gases, the future is upon us.

There are of course many unknowns on this low carbon transition. On electricity and heat, it is possible that the fossil fuel industry may embrace new technologies and invest in carbon, capture and storage technologies. On heat, we may get a cost breakthrough on hydrogen production that fundamentally changes the competitiveness of hydrogen versus methane gases. Solar and storage technologies may continue their revolutionary impacts across all energy forms even faster than expected today.

What we can say with certainty is this: this is an exciting time of change and challenge for the fossil fuel industry and the clean energy industry alike, and in a time of such significant change publications like this handbook have never been a more important tool for those looking to make long term investment decisions.

Energy law in the European Union

Recent developments in the European Union energy market

Silke Goldberg, partner, and Martin Bittner, senior associate, Herbert Smith Freehills, London

The past couple of years have seen a host of energy-related initiatives by the European Union focussing on delivering a low carbon future, energy security and the governance of the Energy Union.

This article will present the most important developments and initiatives over the 2016- 2017 period with an initial overview of stand-alone initiatives, before analysing the Clean Energy Package released by the European Commission in November 2016, which has since dominated the debate of the future direction of the Energy Union and in particular the design of the European electricity market.

Action against aviation emissions

In February 2017, the European Commission announced its plans to amend the EU Emissions Trading System (the "EU ETS") so as to include CO_2 emissions from aviation within its scope following an agreement by the International Civil Aviation Organisation ("ICAO") to stabilise international aviation emissions. Pursuant to the plans, airlines will be required to monitor and report their annual CO_2 emissions on international routes and offset those emissions which exceed 2020 levels. The European Commission is proposing to continue with the current geographic scope of the EU ETS for aviation, covering flights between airports in the European Economic Area. It is intended that the relevant proposals will go through the co-decision process by the end of 2017.

Support for sustainable transport and energy infrastructure

In April 2017, Member States approved a European Commission package of €22.1 million to assist with the development of sustainable and efficient transport and energy infrastructure in the framework of the Connecting Europe Facility ("CEF"). The proposed action points include 'multimodal transport modes' with emphasis on the gas sector and smart grids.

Clean Energy for EU Islands

In May 2017, the European Commission, together with 14 Member States (Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Malta, Portugal, Spain, and Sweden) signed a political declaration to launch the new 'Clean Energy for EU Islands' initiative.

The initiative was originally announced as part of the Commission's 'Clean Energy for All Europeans' package of proposals in November 2016 and is aimed at accelerating the clean energy transition on Europe's more than 2700 islands.

Agreement reached on new Security of Gas Supply Regulation

In April 2017, European Parliament and the Council reached a political agreement on the new security of gas supply regulation which aims at preventing gas supply crises. The provisions of the new regulation include:

- a solidarity principle between Member States pursuant to which neighbouring Member States will be under a duty to assist each other so that gas supply to households and essential social services are maintained.
- a duty for natural gas companies to notify long-term contracts that are relevant for supply (28% of the annual gas consumption in the relevant Member State).
- a regional solidarity mechanism pursuant to which regional groups facilitate the joint assessment of common security of supply risks and the development of an agreement on joint preventive and emergency measures.

Following formal approval by the European Parliament and the Council, the revised Security of Gas Supply Regulation will be published in the EU Official Journal and will enter into force 20 days after publication.

Intergovernmental Agreements

In March 2017, the European legislators agreed new rules in relation to intergovernmental agreements ("IGAs") in the field of energy that EU countries sign with non-EU countries.

The new rules require Member State to submit their intended IGAs with non-EU countries in the gas and oil sectors to the Commission prior to their signature in order to enable the Commission to verify that the relevant IGAs comply with EU law. IGAs in the electricity sector will also have to be submitted to the Commission, but only after signing, as is the case currently.

The Clean Energy Package

On 30 November 2016 the European Commission released a package of legislative initiatives aimed at the decarbonisation and further integration of European energy markets. Originally termed the "Winter Package", it is now generally referred to as the "Clean Energy for All Europeans" Package or the "Clean Energy Package" ("CEP").

Broadly, the policy focus of the CEP is on three key areas: (i) energy efficiency; (ii) creating a global leadership role for the EU in relation to the development and deployment of renewable technology; and (iii) creating a fair deal for consumers.

The legislative focus of the CEP is on five key areas:

- energy efficiency;
- recasting the renewable energy legislation;
- the design of the electricity markets;
- security of electricity supply; and
- new governance rules for the energy union for which the CEP is the main legislative vehicle.

These in turn have been cast into a suite of more than 40 planned measures which were first – at least conceptually - announced in February 2015.

Similarly to the 2009 Climate Change Package and the Third Energy Package, although on a larger scale, the CEP contains a veritable plethora of communications, impact assessments, fact sheets, and memos on various aspects of the issues covered in the legislative proposals, including:

- a proposal for a recast of the Internal Electricity Market Directive;
- a proposal for a recast of the Internal Electricity Market Regulation;
- a proposal for a recast of the ACER Regulation;
- a proposal for a Regulation on Risk-Preparedness in the Electricity Sector and Repealing the Security of Supply Directive;
- a proposal for a recast of the Renewable Energy Directive;
- a proposal for a revised Energy Efficiency Directive;
- a proposal for a revised Energy Performance of Buildings Directive; and
- Proposal for a Regulation on the Governance of the Energy Union.

Recasting of the RES Directive

The recasting of the Renewable Energy Directive is a key element of the CEP and seeks to strengthen six key areas for action that have been deemed strategic for the clean energy goals of the European Union:

- a framework furthering support to the deployment of renewable energy in the European Union;
- mainstreaming renewables in the Heating and Cooling Sector;
- decarbonisation of the Transport Sector and the development of renewable and low carbon fuels (including bio fuels and advanced biofuels);
- consumer empowerment;
- a reform of the sustainability criteria for biofuels; and
- ensuring that the EU meets its targets in a cost effective way .

The changes that are proposed allow for the developments in the renewable sector that have brought the technology cost down while also promoting investment and technology diversification in the energy mix. Furthermore, the changes seek to lessen the administrative burden faced by such projects and reinforce local acceptance of projects through the creation of a one-stop-shop and a time limit for granting Renewable Energy Sources permits and simplifying the notification procedure for repowering existing plants and small scale projects.

From an RES perspective, the CEP contains a number of changes:

- A Union-wide minimum target of 27% share of renewable energy in gross final consumption by 2030. Member States have to reach a minimum national share of renewable energy in gross final consumption of between 10% and 49%. If a Member State fails to reach its targets, payments must be made into a fund used to launch competitive bidding procedures for renewable projects. Member States will be allowed to statistically transfer amounts of renewable energy among themselves.
- General rules on support mechanisms: rather than giving detailed prerequisites for support mechanisms and a clear tendency towards tendering mechanisms, the Proposal requires quite generally that support will be designed as to integrate renewables in the electricity market and should be granted in an open, transparent, competitive, non-discriminatory and cost-effective manner.
- A new provision on the stability of financial support ensures that the level of and conditions attached to the support of renewable energy projects are not altered in a way that negatively impacts the rights conferred or the economics of supported projects.
- Member States must enhance predictability for investors by defining and publishing a long-term schedule in relation to the expected allocation of support, covering at least the next three years.
- Streamlined permitting process: by 1 January 2021, single administration contact points must be set up to co-ordinate the entire permit granting process and guide applicants through the application process.
- Permit granting procedures should not last longer than three years, or one year in the case of an application to repower an existing installation. Demonstration projects, installations smaller than 50kW and certain repowering projects will only be subject to a notification.
- Support schemes must be open to projects from other Member States for at least 10% of the newly-supported capacity between 2021 and 2025, and 15% between 2026 and 2030. Member States can either set up joint support schemes or open their respective support schemes through co-operation agreements. Energy produced will in principle count towards the funding of Member State's renewable targets. Interesting given LEC issues in the UK.

Mainstreaming renewables in the Heating and Cooling Sector

The proposals of the CEP in this heating and cooling sector aim to accelerate the slow uptake of renewables in an area that accounts for 50% of the total energy demand for Europe. The dependence on fossil generation for the heating and cooling sector not only adversely affects the clean energy objectives, but it is also seen as compromising energy security by creating dependence on imported energy sources.

To address this, the revision of the Renewable Energy Directive seeks to give more uptake options to Member States and open

access to local district heating and cooling systems to renewable generators. The stated goal is that Member States achieve a 1% annual increase in the share of renewable energy in the heating and cooling sector.

Consumers that are connected to a district heating or cooling system not meeting the efficiency criteria of Directive 2012/27/EU will be allowed to produce heating or cooling from renewable energy sources themselves.

Decarbonisation of the Transport Sector

This element of the proposed recast of the RES Directive seeks to address the fossil fuel dependence of the Transport Sector. It seeks to do this by imposing an obligation on European transport fuel suppliers to increase the provision of renewable and low carbon fuels (including bio fuels and advanced biofuels). To address the issues that are inherent with land use for biofuels as opposed to food production, the Directive also imposes a cap on the contribution of food based biofuels to the energy objective. The cap starts at 7% of fuels by 2021 and reduces to 3.8% by 2030. In conjunction with this the directive introduces national databases so that the origins of the fuels can be traced and fraud prevented.

Consumer empowerment

The revision of the RES Directive in relation to this seeks both to encourage microgeneration (by householders and local communities) as well as encouraging consumers to alter their behaviours in a way that supports energy efficiency (for example by engaging with smart grids). The revisions seek to achieve this objective by: (i) allowing consumers to consume their own generation and, where they have excess capacity, sell into the grid; (ii) recognises community energy projects and their participation in the market; (iii) ensure the provision of information on the performance and energy sources of district heating and cooling systems; and (iv) improving the Guarantees of Origin System which will continue to be issued for RES generation. To the extent that the relevant RES output enjoys the support of a RES support scheme, the relevant guarantees of origin will be directly transferred to the market by auctioning, in order to offset the cost of the renewables support.

Overall these amendments show that the role of the consumer is seen as reinforcing the energy objectives by providing them with the information and financial incentive to participate in the clean energy market.

Reform of the sustainability criteria for biofuels

These proposed amendments to the Directive to address biofuels used for electricity generation, namely in the form of biomass and biogas. These reforms mirror those set out in relation to the use of biofuels as part of the decarbonisation of the Transport sector (see above). The Directive now expressly recognises the low carbon benefits of biomass in comparison to fossil fuels, and reinforces the applicable fuel sustainability criteria as well as introducing new requirements designed to maximise the energy efficiency of this form of consumptive generation. The four key reforms in the CEP are: (i) introduction of the requirement that new advanced biofuels emit 70% fewer GHG than like fossil generation; (ii) protection to ensure the sustainability of wood fuel used for electricity generation; (iii) expansion of the sustainability criteria are extended to cover solid biomass and biogas used in large heat and power plants (above 20/MW fuel capacity); and (iv) large-scale biomass electricity plants (above 20/MW) that are not already operating and participating in a support mechanism will need to use high efficient combined heat and power technology (reaching efficiencies above 80%).

Energy efficiency

Improved energy efficiency in the EU is another fundamental pillar of the EU's Europe 2020 Strategy for smart, sustainable and inclusive growth and the transition to a resource efficient economy. The European Council's original target of at least 27% energy efficiency has been increased to 30% energy efficiency by 2030 through the amendments to Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (the "Energy Efficiency Directive") included in the CEP.

To reclaim the target, the Commission seeks to increase finance instruments to facilitate increased investment in energy efficiency in relation to building renovation across Europe, including retrofitting existing buildings making them more energy efficient, and making full use of sustainable space heating and cooling which will reduce the EU's energy costs. Significantly, in April 2016 the Vice-President for Energy Union Maroš Šefčovič indicated that the European Commission would present a new Smart Financing for Smart Building initiative in the autumn, alongside revisions to the Energy Efficiency Directive and began pushing for new public financing instruments to generate a wave of building renovation in Europe during his Energy Union tour in 2015. The EU budget for 2014-2020 significantly increased the contribution to building and renovation. Furthermore, in February 2016 the Commission released a proposal of a Heating and Cooling strategy to move towards a smarter, more efficient and sustainable heating and cooling sector.

The Energy Efficiency Directive establishes a common framework of measures for the promotion of energy efficiency within the Union in order to ensure the achievement of the Union's 2020 20% headline target on energy efficiency and to pave the way for further energy efficiency improvements beyond that date. It lays down rules designed to remove barriers in the energy market and overcome market failures that impede efficiency in the supply and use of energy, and provides for the establishment of indicative national energy efficiency targets for 2020.

The Energy Efficiency Directive requires Member States to set indicative energy efficiency targets that take into account the EU's 2020 energy consumption targets. Articles 24(1) and 24(2) of the Energy Efficiency Directive require Member States to issue reports on progress made towards achieving national energy efficiency targets and National Energy Efficiency Action Plans. As required in Article 24(11), the Commission then makes the reports publicly available.

The CEP also looks to promote energy efficiency reforms in addition to those that are directly applicable to the Energy Efficiency Directive. Such reforms include amending the Energy Performance in Buildings Directive, developing the

Eco-design and Energy Labelling project and using the European Fund for Strategic Investments in addition to the Regional Development Fund and Cohesion Fund to finance targeted energy efficiency projects.

New electricity market design

As part of the CEP, the Commission is seeking to adapt the electricity market rule to encourage greater consumer participation and allow for the effects of new technology. The Commission notes that from a technical perspective, increased amounts of renewable intermittent generation in the energy mix poses new challenges and requires rules that are flexible and ensure energy security.

These challenges are faced by both the wholesale and the retail markets. The belief is that though the wholesale markets are showing more cross-border trade, Member States are resorting to purely national assessments and strategies to minimise risks to security of supply without taking account of the impact on neighbouring countries. As a result of this, the electricity wholesale market is underperforming. In relation to the retail market, the Commission believes that there are issues with low levels of consumer participation in relation to managing their energy usage despite the introduction of new technologies, such as smart homes and smart grids that are designed to facilitate this. As a result the Commission is seeking to encourage change by incentivising consumer behaviours.

Capacity markets

On the same day as the release of the CEP, the European Commission published the final report of its capacity mechanism sector inquiry. A central conclusion was that Member States need to better assess the need for such mechanisms and gives guidance on how to make their design deliver on security of supply while minimising the competition distortions. The report finds that Member States have often failed to adequately assess the need for a capacity mechanism before introducing one and that many Member States have yet to implement market reforms that are indispensable to deliver on security of supply issues. Further, where a capacity mechanism is necessary, the report gives practical guidance to Member States on which types of capacity mechanisms may be most suitable to solve the problem identified.

As an immediate consequence of the Commission's sector inquiry into national capacity markets, the CEP proposes new rules for capacity mechanisms: Pursuant to the draft proposal, Member States wishing to adopt a capacity mechanism in their jurisdiction must consult on its proposed mechanism "at least with its electrically connected neighbouring member states".

Perhaps most importantly, the proposed rules impose an emissions limit on what can receive payments under capacity mechanisms. New capacity is only eligible if it emits less than 550 grams of CO_2 per kilowatt hour (CO_2/kWh), although existing plants are initially exempt from this rule. This all but rules out new coal plants from getting paid through capacity mechanisms. Five years after the regulation has entered into force, this limit applies to all plants participating in a capacity mechanism.

Maroš Šefčovič, vice-president of the Commission and in charge of the Energy Union, emphasised the "high environmental standards" of the new capacity mechanism arrangements. However, NGOs pointed out that it left loopholes for subsidising existing coal plants, as according the proposal ca 95% of coal power plants would be eligible to receive capacity payments until 2026.

New rules for the wholesale market

The main objectives for the new wholesale market rules as proposed by the CEP can be summarised as follows:

- Increasing the flexibility and responsiveness of the short term markets to accommodate the challenges posed by intermittent renewable generation.
- Incentivising investment in flexible assets by the removal of wholesale price caps to ensure that prices reflect the real electricity value in relation to time and location and therefore incentivising investment to make the most of these distortions. Note that this approach may contain an inherent contradiction in that by encouraging investors to create generation capacity to take advantage of these inefficient islands they simultaneously get rid of the very inefficiencies that they are seeking to take advantage of.
- The biggest change from an RES perspective is the removal of the rules on priority grid access for renewables. The CEP states that dispatch rules will be adapted to the new market reality to create a level-playing field for larger generation capacities. Rules on priority dispatch will, however, be maintained for small-scale renewable installations and emerging technologies to ensure their development. Producers of electricity from RES or high-efficiency cogeneration will only be subject to downward non-market based re-dispatching or curtailment if no other alternative exists and subject to financial compensation by the system operator requesting the curtailment or re-dispatching.
- Enabling the reinvestment of congestion revenues to minimise grid bottlenecks on the borders.
- Greater co-ordination of TSOs at a regional level to ensure better management of the grid.
- Optimising demand participation by ensuring that the remuneration for demand side response will be more in line with the flexibility of those services.

New rules for the retail market

The focus to the amendments to the retail markets are designed to engender greater consumer participation in the energy markets, the main elements of which can be described as follows:

- Giving the consumer greater information about their consumption and the associated costs including report energy costs, network charges and taxes.
- Giving all consumers access to one minimum standard comparison tool so that they can keep abreast of different offers.
- Introduction of caps on both termination fees and the duration of retail plans to allow consumers to switch suppliers more easily.

- Entitling all consumers to use smart meters as well as requiring Member States not planning to roll-out smart meters to assess the cost-effectiveness of a large-scale smart metering deployment on a regular basis.
- Encouraging consumers and communities to participate in the electricity market through self-generation and allowing the sale of excess capacity onto the grid.
- Enabling every consumer to offer demand-side response through aggregators.
- Creation of dynamic electricity price contracts to allow consumers to take advantage of price fluctuations in addition to the introduction of transitional provisions to protect vulnerable consumers from these changes.
- Creation of a framework to allow Member States to incentivise DSOs to improve efficiency.
- Creation of a new EU DSO responsible for putting in place rules on grid management and use and EU-level cooperation with TSOs.

New Energy Union governance

To catalyse and monitor the progress of the sectors in achieving the clean energy goals as set out in the CEP, the Commission has introduced new regulations focused on Energy Union governance.

This is considered necessary as part of the creation of a fully integrated European Energy Market as, in addition to monitoring the Member States' progress towards the 30% targets, it, along with measures such as a new European Distribution System Operator ("DSO"), provides a legislative platform to act as a step away from energy islands towards a single European Energy Market by increasing coordination between the Member States.

The immediate effect of the proposed regulation will be to lessen the administrative burden on the Member States by streamlining the planning and reporting obligations. In the medium-term the monitoring function that the rules have will be used by the Commission not only to assess Member States' progress towards the 2030 goals, but also to deploy strategic assistance where it looks like a given Member State is not going to meet its contributions.

Outlook

It has been estimated that the CEP proposals will not be adopted before 2018/2019.

The CEP has to be seen in the context of the successes and failures of the 2009 Climate Change Package, which was the EU's first attempt to create a comprehensive European legal regime covering the carbon and renewable energy sectors. The Package influenced investment decisions by securing a future for carbon trading and laying the foundations for future investment in renewable technologies, biofuel and the development of carbon capture and storage. Critically, the 2009 RES Directive did not consider the impact of support regimes for intermittent RES on the overall electricity market and the technical demands RES would place on grids.

The CEP is the first attempt of considering the impact of RES on the electricity market "on the whole". Whilst Maroš Šefčovič, the Commissioner for Energy Union, has hailed the CEP as the "the biggest transformation of Europe's energy system since the building of its centralised energy system", the CEP is rather a further stepping stone towards the overarching goal of a truly integrated European energy market. By way of example, the CEP contains little in the way of cross border support schemes and the proposed reforms of the electricity market design seem to merely address previous oversights rather than expressing a grand vision for the energy market of the future.

Further concern regarding the CEP relates to the proposal to revoke priority grid access for RES. Were this to be adopted, renewable power would come to be treated in the same way as conventionally generated electricity in terms of dispatching rules and order. The concern is that this might have an impact on merit order and be an incentive for system operators to disconnect RES facilities as 'easy targets' should load shedding be required. This is on the basis that if the grid is too congested at a given moment, then the flexibility of RES makes them vulnerable to be the first to be curtailed.

All in all, it is unlikely that the CEP will be the last of the European energy packages, but it represents a significant milestone.

Overview of the legal and regulatory framework in the European Union

Introduction and scope

The European Union legislative landscape in the energy sector (and beyond) has continued to undergo considerable changes in the past few years.

In February 2015, the European Commission adopted the Energy Union Package consisting of "A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy". The publication of this strategy has created new momentum to bring about the transition to a low-carbon, secure and competitive Energy Union. In doing so, the Commission's Framework Strategy promises to accelerate the integration of European energy markets creating more competition, leading to greater market efficiency through the better use of energy generation facilities across the EU to produce more affordable prices for consumers. Accordingly, Member States will increasingly pool their power and infrastructure resources, working in solidarity to deliver secure energy to their citizens.

The current climate of low oil and gas prices together with the falling cost of renewable energy, the emergence of new technologies and stronger EU climate policy, has created an opportune moment to reset the EU's energy policy in the direction of a functional Energy Union and to move away from a fragmented system characterised by uncoordinated national policies, market barriers and energy-isolated areas. The Energy Union Package sets out the principle goals of the Energy Union in five interrelated strategic policy dimensions, as well as the steps to achieve them:

Energy security

In recognition of the need to diversify Europe's supply of gas, the Commission pledged to work with Member States to develop access to alternative suppliers, including from the Southern Corridor route, the Mediterranean EU Member States and North African countries. This strategy will decrease dependence on individual suppliers, and includes a focus on exploring the full potential of LNG (including as a backup in cases of insufficient gas supplies from Europe). Accordingly, in February 2016 the Commission launched the Sustainable Energy Security Package, including a comprehensive strategy for LNG and its storage.

The Energy Security Package also contains a proposal for a revision of the decision on intergovernmental agreements, incorporating obligatory ex ante assessments of IGAs by the Commission. The Commission's oversight will enable Member States to avoid difficult renegotiation processes ex post, and facilitate the development of standard contract clauses covering EU rules, allowing for more adequate compliance with EU law.

A fully-integrated internal energy market

In order to facilitate the integration of Europe's electricity and gas transmission systems, the EU Commission has pledged to propose a new European electricity market design followed by legislative proposals and reinforcement of the European regulatory framework to harmonise the flow of electricity and gas across different transmission systems. This has materialised in the adoption of Commission Regulation (EU) 2015/1222 of July 2015 (the "Regulation on Market Coupling") which made market coupling for electricity trading legally binding across the EU.

This regulation works in tandem with the European network codes designed to integrate electricity and gas systems across the EU. More specifically, the Network Code on Capacity Allocation and Congestion Management (NC CACM) effectively puts in place the legislative framework to allow for the market coupling process across the EU (allowing bids and offers from national power exchanges for cross-border trading to be brought together and matched in an optimal manner across borders). It is estimated to save customers about €2.5 to €4 billion a year.

The framework strategy recognises the importance of interconnectors allowing energy to flow freely across the EU, with the minimum interconnection for electricity set at ten percent of installed electricity production capacity of Member States by 2020. This is being addressed through the PCI scheme (as defined below) which provides access to finance for the development of infrastructure projects essential to better connect energy markets. Access to finance is also provided by the European Investment Bank, the Connecting Europe Facility, the European Structural and Investment Funds and the European Fund for Strategic. The transition towards a more secure, sustainable and integrated Energy Union is estimated to require investment of approximately €200 billion annually for the next year. The Commission will explore proposals for further energy investment regimes that pool resources to finance economically viable investments.

Energy efficiency

The European Council has set a target of at least 27% energy efficiency savings in 2030, which will be reviewed in 2020 with the aim of adjusting it upwards to an EU level of 30%. In pursuit of this goal, the Commission seeks to increase finance instruments to facilitate increased investment in energy efficiency in relation to building renovation across Europe, including retrofitting existing buildings making them more energy efficient, and making full use of sustainable space heating and cooling will reduce the EU's energy costs. Significantly, in April 2016 the Vice-President for Energy Union Maroš Šefčovič indicated that the European Commission would

present a new Smart Financing for Smart Building initiative in the autumn, alongside revisions to the Energy Efficiency Directive and began pushing for new public financing instruments to generate a wave of building renovation in Europe during his Energy Union tour in 2015. The EU budget for 2014-2020 significantly increased the contribution to building and renovation. Furthermore, in February 2016 the Commissions released a proposal of a Heating and Cooling strategy to move towards a smarter, more efficient and sustainable heating and cooling sector.

Climate Action – emission reduction

The EU aims to decrease domestic greenhouse gas emissions (GHG) by at least 40% compared to 1990 levels by 2030 (as reiterated under the EU INDC pursuant to the Paris Agreement), with the EU European Trade System playing a significant role as an EU-wide driver for low-carbon investments. Additionally, the Commission will propose a new Renewable Energy package in 2016-2017, including a new policy for sustainable biomass and biofuels as well as legislation to ensure that the 2030 target is met cost-effectively.

The Strategy Framework also focuses on the decarbonisation of the EU's transport sector, the significance of which is emphasised by recent data indicating that 94% of the EU transport sector relies on oil products of which 90% is imported. Although there was a Directive on Alternative Fuels (transport decarbonisation) 2014/94/EU adopted in 2014, under the more recent Energy Union Package the Commission has pledged to take action to facilitate an increase in the deployment of alternative fuels and procurement of clean vehicles. The Commission also stated that it would propose a comprehensive road transport package promoting more efficient pricing of infrastructure and the roll-out of intelligent transport solutions. Since this time

Research and innovation

In order to maintain European technological leadership and expand export opportunities the EU will develop a forward-looking energy and climate related R&I strategy. Accordingly, the Commission pledged to propose a European energy R&I approach comprising an upgraded Strategic Energy Technology Plan and strategic transport R&I agenda. The Commission is also set to develop an initiative on global technology and innovation leadership on energy and climate to boost jobs and growth.

This article analyses these changes, the relevant European directives and regulations and their effects at European level. For a detailed analysis of how the European Legislation impacts on EU Member States and beyond, please turn to the national chapters in this edition of EEH – the European Handbook 2017.

A. The Third Energy Package:

A.1 The policy context: from sector inquiry to Third Energy Package

In 2005, the European Commission undertook an inquiry into competition in gas and electricity markets (the "Sector Inquiry") as provided under Article 17 of Regulation 1/2003[1] on the implementation of the EC Treaty rules on competition, aimed at assessing the prevailing competitive conditions and establishing the causes of the perceived market malfunctioning.

Following the Sector Inquiry, the European Commission published a proposal for the TEP which was finally adopted on 13 July 2009 and entered into force on 4 September 2009. Member States had until March 2011 to transpose the majority of the provisions in the Third Electricity and Gas Directives into national law, the exception being the "third country clause" which needed to be transposed by March 2013.

The Third Gas and Electricity Regulations and ACER Regulation entered into force as of September 2009. However, in order to avoid a discrepancy between the exemption regime for new infrastructure in the gas sector, which is contained in the Third Gas Directive and the corresponding regime in the electricity sector which is contained in the New Electricity Regulation, the latter was applied as of 3 March 2011. Likewise, Articles 5 to 11 of the ACER Regulation, which deal with detailed tasks of ACER, were only applied from that date.

The TEP contains three Regulations and two Directives.

- Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC (the "Third Electricity Directive");[2]
- Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/ECA Gas Directive amending and completing the existing Gas Directive 2003/55 (the "Third Gas Directive");[3]
- Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators (the "ACER Regulation");[4]
- Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003 (the "New Electricity Regulation");[5] and
- Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005 1775/05 (the "New Gas Regulation").[6]

For an analysis as to how individual aspects of the TEP impact the regulatory regime of a specific jurisdiction, please refer to the relevant national chapter in this edition of EEH – the European Handbook 2017.

A.2 The unbundling regime[7]

For the purposes of the Third Electricity and Third Gas Directives the "unbundling" regime is of central importance. In the context of the TEP, unbundling means the separation of the operation of gas pipelines and electricity networks at transmission level from the business of producing or supplying either gas or electricity.[8]

Under the TEP there are three main unbundling options which, under certain circumstances, the Member States may select. The options are:

- the full ownership unbundling model;

- the independent system operator ("ISO") model; or
- the independent transmission operator ("ITO") model.

Additionally Article 9(9) of the Third Gas and Third Electricity Directives, respectively, contain details of an unbundling model that is not entirely congruent with the above unbundling modes but is deemed to be as efficient. This is the case in Scotland where the transmission networks are owned by Scottish Power Transmission Limited ("SPTL") for southern Scotland and Scottish Hydro-Electric Transmission Limited ("SHETL") for northern Scotland, the two Scottish transmission companies, but are operated by the National Grid. The current model in place in Scotland does not comply with the full requirements of the ISO model but is considered to be sufficient to ensure the independence of the transmission system operator[9].

The full ownership unbundling model requires the full separation of the operation of gas and electricity transportation/transmission networks and those activities related to production, generation and supply. The ownership unbundling model also puts in place new restrictions in respect of ownership. The operators of gas and electricity transmission networks are no longer permitted to be part of (or affiliated to) a corporate group which is also active in supply, generation or production. The operator of the network will also be obliged to own and control the entire network.

The ownership unbundling model does not however prevent, in certain circumstances, a person or a company from holding shares in both a network operator and an entity involved in production/supply activities provided that the shares constitute a non-controlling minority interest. Such interest must not have any voting rights or other rights of veto in the entities concerned and must not have rights to appoint members of either of the entities' boards of directors. In particular no person may be a member of the board of directors of the network operator and of a supply/production undertaking which may be particularly relevant to non-sector investors (eg, pension funds).

On 8 May 2013 the Commission released a working document setting out the Commission's practice in assessing the presence of a conflict of interest for ownership unbundling including in the case of financial investors in the context of the certification procedure for TSOs.[10] This working document is not legally binding but makes clear that in the context of TSO certification, a complete file will need to be provided and a case-by-case assessment made. Relevant elements will include the following:

- geographic location of the transmission activities and the generation, production and supply activities concerned;
- the value and nature of the participations in these activities;
- the size and market share of the generation, production and/or supply activities;
- whether the wholesale price evolution of the commodity would have consequences for the emergence of a conflict of interest; and
- access to confidential information.

Under the ISO model[11] the network must be managed by an identified ISO (which must perform all the functions of a network operator) although it is permitted for vertically integrated companies to maintain ownership of their network assets[12]. The ISO model requires the ISO to comply with the same unbundling requirements as other network operators and for it to be a completely separate undertaking from the vertically integrated company.[13] On this basis, the ISO cannot have a shareholding in any supply or production entities.

There are also several additional regulatory provisions to reinforce the ISO model which are set out in the TEP. A network owner active in supply or supply and production is required to legally and functionally unbundle[14] the part of the company with ownership of the network and will be required to finance[15] any investment decisions made by the ISO. The Commission (with assistance from the Agency for the Co-operation of Energy Regulators ("ACER")) will approve[16] the identity of the ISO and, once the ISO has been appointed, it has to commit to a ten year network investment plan[17] arranged by the regulatory authority.

A third option was introduced as a compromise after eight Member States noted that the full ownership unbundling model and the ISO model were incompatible with their national regulatory regimes. This is known as the ITO model. The ITO model can be best described as a "*status-quo-plus*" model because it permits some Member States such as France, Austria and Germany to keep in place their current structures where the TSOs belong to a vertically integrated undertaking. The model requires such undertakings to comply with additional regulations to ensure the independence of each such activity. These rules include:

- preventing the TSOs' management from having particular positions of responsibility,[18] interests or business relationships, directly or indirectly, with the relevant vertically integrated undertaking. This rule should be applicable for three years prior to their appointment to the majority of the TSO management;
- placing a minimum period of six months[19] prior to the appointment of a person to the remainder of the management team of the TSO during which that person may not hold any management position or exercise any other relevant activity in the vertically integrated undertaking. The rules are intended to encourage the relevant national regulator to vet the executive management;
- examining network development and investment decisions[20] taken by an ITO to ensure they are consistent with relevant Community-wide plans;
- working against discriminatory behaviour[21] by the ITO (and on the influence exerted by the relevant vertically integrated undertaking), and restricting the ITO's access to the capital market, to be overseen by a supervisory body; and
- enforcing compliance with the ITO provisions.[22] Penalties, depending on the breach, are defined in respect of the turnover of the ITO or of its relevant parent company. The ultimate penalty for a persistently non-compliant ITO model would be the mandatory introduction and designation of an ISO.

Pursuant to the Third Electricity and Gas Directives, the Commission was to conduct a specific review of provisions in place using, as a benchmark, effective and efficient unbundling. In October 2014, this report was published.[23] Its main findings are that there were 26 certified ITOs in 10 EU Member States (Austria, Czech Republic, France, Germany, Greece, Hungary,

Ireland, Italy, Slovakia and Slovenia) the majority of which are operating in the gas sector (21), while only five ITOs are active in the electricity sector. In addition, a certification of one TSO under the ITO model was rejected in 2013, while another TSO decided to withdraw its application for the ITO certification. Moreover, there is a limited number of remaining TSOs which are likely to be certified as ITOs but for which a certification process at European level has not started yet. The findings of the Commission's report are of a preliminary nature given that the implementation of the ITO-model is in its early days as ITOs, like other TSOs, have been certified only since 2012 and have been operating under the new rules for a very short period of time. The Commission believes that it is therefore too early to draw definite conclusions on the functioning of the model and the actual independence of the ITOs in practice.

Whilst the ITO model so far appears to function well in practice, the Commission has suggested that it may be further improved, for instance, by strengthening the independence of the Supervisory Board, specifying the scope of the Compliance Programmes and developing common guidance and a network of cooperation for Compliance Officers, as well as harmonising the timeframe for network development plans at national and European level. Therefore, the Commission will continue to monitor the implementation and effectiveness of the unbundling requirements under the Third Energy Package and continue to ensure that ITOs and VIUs comply with the EU competition rules.

The ITO model only applies[24] in the Member States where TSOs continue to be part of a vertically integrated undertaking. Any Member States that have already implemented the ISO or full ownership unbundling model will not be able to revert to an ITO model. As a result the ITO model continues to be the minimum level that will be required to constitute effective network unbundling across the EU.

A.3 The third country clause

The TEP provides that national regulatory authorities ("NRAs") need to certify any TSO as compliant with the unbundling regime before the relevant TSO is allowed to take up their function as TSOs.[25]

In addition, under the so called third country clause,[26] national regulators are required to refuse certification of a TSO if the relevant company does not comply with the unbundling requirements, and its market entry would jeopardise the Member State's or the EU's security of supply. In addition, national regulators must notify the European Commission if:

- a transmission system owner or operator that is controlled by a party from a non-EU country applies for certification; or
- any circumstances arise which would result in a party from a non-EU country obtaining control of a transmission system owner or operator.[27]

Transmission system operators (rather than the transmission system owners) must notify the relevant NRA if any circumstances[28] arise that would result in an entity from a non-EU country acquiring control of the transmission system or its operator. The relevant NRA must also seek the view of the European Commission[29] as to whether the foreign entity passes the unbundling and energy security tests and take "utmost account" of the Commission's view.

A.4 Regulatory oversight

Under the Second Electricity and Gas Directives[30] Member States were required to establish NRAs. However, the NRAs that were established across the EU had different powers and levels of independence in the different Member States. In some Member States, NRAs had substantial powers and resources and developed into well-established bodies. In other Member States, NRAs had only recently been established or had limited powers spread between different governmental divisions which were subject to certain ministerial or governmental control.

Under the Third Electricity and Gas Directives,[31] the NRAs are required to be legally distinct and functionally independent from any other public or private entity. The staff of the NRA and any member of its decision-making body are not permitted to seek or take instructions from any government or other public or private entity and must act independently of any market interest. For that purpose, NRAs will have to have an independent legal personality, autonomy over their budget, sufficient human resources and independent management.

The Third Electricity and Gas Directives strengthen the NRAs' powers of market regulation and set out additional tasks for the NRAs, in particular, in the following respects:[32]

- ensuring the compliance of transmission and distribution system operators with any third party access regime, unbundling obligations, balancing mechanisms, congestion and interconnection management;
- reviewing the TSOs' investment plans, and providing in its annual report an assessment of how far the TSOs' investment plans are consistent with the European-wide ten year network development plan;
- monitoring network security and reliability and reviewing network security and reliability rules;
- monitoring transparency obligations;
- monitoring the level of market opening and competition and promoting effective competition in cooperation with competition authorities; and
- ensuring effective consumer protection measures.

The TEP, for the first time in European energy legislation, sets objectives for the NRAs with a notable European dimension. The Third Gas and Third Electricity Directives state that the NRAs' objective is to "promot[e], in close cooperation with the Agency, regulatory authorities of other Member States and the Commission, a competitive, secure and environmentally sustainable internal market in natural gas within the Community, and effective market opening for all customers and suppliers in the Community, and ensuring appropriate conditions for the effective and reliable operation of gas networks, taking into account long term objectives".[33]

As the Sector Inquiry has demonstrated, the European energy market still requires much improvement before it can function fully as an effective competitive market. A market that would be capable of better allocating sometimes scarce resources (on time), and improving any investment decisions that are made on infrastructure assets in particular in relation to the generation of electricity.

The effect of the NRAs' extended powers is not yet clear and it will be necessary to see how the changes play out in practice before any full evaluation is possible. It is likely that it will be sometime after the adoption and transposition of the TEP before any such evaluation will be possible.

A.5 Agency for the Co-operation of Energy Regulators

In order to reinforce the position of regulators at European level and ensure continued co-operation, the ACER Regulation created the Agency for Co-operation of Energy Regulators ("ACER").

ACER is governed by the standard rules and practices which apply to Community regulatory agencies. Uniquely, ACER also has a separate board of regulators in order to safeguard the necessary independence of the regulators at the European level (the "Regulatory Board"). Within ACER, this special board is solely responsible for all regulatory matters and decisions. It functions alongside an administrative board responsible for administrative and budgetary matters (the "Administrative Board"). The Commission provides a shortlist from which the director of ACER is chosen. The director, who is responsible for representing ACER and managing ACER on a day to day basis, is then be appointed by the Administrative Board in consultation with the Regulatory Board. Additionally, the structure of ACER includes a Board of Appeal competent to handle appeals against any decisions adopted by ACER.[34]

ACER is competent to:[35]

- issue opinions addressed to TSOs;
- issue opinions addressed to regulatory authorities;
- issue opinions and recommendations addressed to the Commission; and
- take individual decisions on technical issues.

ACER is competent, upon a request from the Commission or on its own initiative, to provide to the Commission an opinion on all issues which are relevant and relate to the reason why ACER was established.[36]

ACER is also required to provide the Commission with its opinion on the following:[37]

- draft statutes, lists of board members and draft rules of procedure; and
- the technical or market codes on the draft annual work programme and the draft ten year investment plan of the European Networks of TSOs for Electricity and Gas, respectively (*see below*).

ACER is permitted to provide recommendations designed to assist regulatory authorities and players in the market and to promote the sharing of information relating to good practice as well as fostering cooperation between national regulatory authorities and between regulatory authorities at regional level. Such guidelines can be part of ACER's own work programme or at the request of the Commission.[38]

Decisions taken by a regulatory authority must comply with any guidelines contained in the Third Gas and Electricity Directives and Third Gas and Electricity Regulations. Upon the Commission's or any regulatory body's request, ACER will issue an opinion on whether or not a regulatory body's decision complies with the required guidelines. A national regulatory authority may also ask ACER to issue an opinion where the application of the guidelines referred to in the Third Gas and Electricity Directives and Third Gas and Electricity Regulations is unclear.[39]

It is also possible for ACER to stand as the competent authority to select the relevant regulatory regime for infrastructure that links at least two Member States. ACER also has the power to grant exemptions from the third party access regime in cases where the infrastructure concerned is located in more than one Member State.[40]

Since the original version of the ACER Regulation proposed by the European Commission, ACER has been given a range of additional tasks, which have widened ACER's scope considerably. ACER's tasks now include:

- participation in the development of European network codes;[41]
- monitoring the development of the energy markets, in particular in relation to retail gas and electricity prices;[42]
- monitoring the implementation of the TSO's ten year infrastructure investment plans;[43] and
- establishing non-binding "framework guidelines" on conditions for access to the network for cross-border electricity and gas exchanges (*see below*).[44]

For the most part ACER's competencies are considered to be advisory in their nature but the ACER Regulation does grant decision making powers in specific areas particularly with respect to cross-border projects and co-operation.[45] ACER also fulfills the position of a "Regulator of last resort" where the national regulator of a Member State using an ISO model has failed to appoint an ISO in the required timeframe.[46]

ACER operates under a framework which appears to be designed to leave ACER some freedom to fully define and exercise its role; in some cases responding to requests from the Commission and in others producing opinions on its own initiative. Depending on how ACER's role develops and its current director's involvement and initiatives ACER may be considered the first step towards a pan-European regulator.

The ACER Regulation entered into force in September 2009 but ACER was only launched officially in March 2011. The first Director of ACER, Alberto Pototschnig, was appointed in May 2010 for a term of five years, and in July 2015, the European Commission and the ACER Board of Regulators agreed to extend his mandate for another three years, commencing in September 2015. ACER is based in Ljubljana (Slovenia).

On 19 September 2014 ACER released a paper titled *Energy Regulation: A Bridge to 2025 Conclusions Paper* that sets out the Agency's approach to the future issues in the Energy Market. The paper sets out the five primary goals for ACER over the next ten years, none which mark a departure from its existing direction:

- enhancing Europe's energy security of supply;

- establishing and maintaining a liquid, competitive and integrated wholesale energy market;
- developing the low carbon society through renewable, flexible and smart energy supply;
- developing the retail market; and
- introducing new governance arrangements and developing stakeholder dialogue.

A.6 ACER Framework Guidelines and European Network Codes

One task of the ENTSOs (as defined below) is the preparation of European network codes pursuant to Article 8 of both (a) Regulation (EC) № 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) № 1775/2005 (the "TEP Electricity Regulation"); and (b) Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003 and as amended by Regulation No 347/2013 of 1 June 2013 the "TEP Gas Regulation").

Article 6 of both the TEP Electricity Regulation and the TEP Gas Regulation tasks ACER with the elaboration of Framework Guidelines for these European network codes which will, in turn, serve as the reference document for ENTSO's work on the codes.

Since its inauguration, ACER has commenced 33 consultations[47]; and issued Framework Guidelines (described briefly in the paragraphs below) regarding the following network code framework guidelines:

- Electricity grid connections
- Capacity allocation and Congestion Management for Electricity
- Capacity allocation mechanisms for the European gas transmission network
- Gas balancing in transmission systems
- Electricity system operation
- Harmonisation tariff structures (draft at time of writing)
- Interoperability and data exchange rules for Gas Transmission Networks
- Electricity balancing

The main conclusion that can be drawn from these consultations and the subsequent publication of Framework Guidelines is that whilst the changes proposed in each set of Framework Guidelines may be relatively small, the full impact of the proposals will only become clear when they are implemented into the market and the cumulative effects can be observed and evaluated.

A.7 What will be the effect of the Framework Guidelines and Network Codes?

It is not possible to give a detailed description of each of the Framework Guidelines and Network Codes in this chapter, as these are very technical and detailed. The benefits of such coherent European codes are generally to be found in the intended elimination of inconsistencies at national level regarding, eg, tariff structures, capacity allocation rules, balancing arrangements and trading timetables and security of supply measures.

At present, such differences in market design lead to market segmentation, with some national markets remaining split into different local tariff or balancing areas. However, at the same time, the development of the European network codes will necessarily cause some friction to the existing, national approaches and is likely to be a long term project the results of which will be cumulative and not be available for some time.

A.8 Co-operation between Transmission System Operators

The increasing energy demand and simultaneous import dependency of the EU will require improved transmission networks which are able to cope with the "energy traffic" created by the export and import of electricity and gas in peak demand conditions.

Cooperation in grid operation is therefore indispensable, especially in the electricity sector, where cooperation between TSOs will make an important contribution to network reliability particularly in heavily interconnected areas. The greater transparency and visibility of network development issues created will allow investments to be made where they are most effective and improve network reliability through coordinated investments.

The Third Electricity and Gas Regulations[48] formalise the cooperation between transmission network operators, which at present is channelled through platforms such as GTE and ETSO, through the establishment of a European Network for Transmission System Operators for the electricity and gas sector ("ENTSO-E" and "ENTSO-G", respectively). The ENTSOs' responsibilities include the following core areas that are set out below:[49]

- the development of coherent market and technical codes needed for the integration of the electricity and gas markets, which the ENTSOs are tasked to develop in co-operation with ACER and the Commission on the basis of the framework guidelines developed by ACER (see below for further details);
- the development of common network operation tools to ensure coordination of network operation in normal and emergency conditions, including a common incident classification scale, and research plans;
- the finance and management of cooperative research and innovation activities focused on the technical development of European electricity and gas networks in relation to energy security, efficiency and low carbon technologies;
- the coordination of grid operation, ie, to exchange network operational information and the coordinated publication of information on network access; and
- the coordination of the planning of network investments and the monitoring the development of the transmission network capacities. The two ENTSOs must publish a European-wide and ten year forward-looking investment plan every two years.

The overall effect of the increased co-operation of TSOs in the framework of the strengthened ENTSOs will undoubtedly be a greater degree of market harmonisation which in turn might result in better network and operational reliability and as such in better security of supply. Therefore, and given the range of issues with which the new ENTSOs will be charged, the question arises whether the ENTSOs are only a stepping stone on this journey towards greater network harmonisation and interoperability, the next stop being a single European TSO under ACER as the single European regulatory authority.

An Internal Energy Market – European Network Codes

The EU is taking strides towards a functional Internal Energy Market ("IEM") through the creation of binding network codes that provide harmonised rules for the operation of the gas and electricity sector in Europe. Pursuant to the Third Energy Package, these rules effectively govern cross-border electricity and gas market transactions, allowing for better management of energy flows given the increase in interconnections and trade between countries in the IEM.[50] In effect, network codes have been drafted so as to align wholesale market and network access arrangements in EU states, facilitating the emergence of a competitive European market in electricity and gas.

The European Commission is responsible for defining the annual priority list for the development of network codes through a consultation process under Article 6(1) of both a) Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005 (the "TEP Electricity Regulation"); and (b) Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges In electricity and repealing Regulation (EC) No 1228/2003.

and as amended by Regulation No 347/2013 of1 June 2013 the ("TEP Gas Regulation"). Once the priority list has been defined, the Agency for the Cooperation of Energy Regulators (ACER) develops framework guidelines which set principles for developing specific network codes under Article 6 of both the TEP Electricity Regulation and TEP Gas Regulation.[51]

The EU ENTSOs (ENTSO-E and ENTSOG) draft these codes pursuant to Article 8 of the TEP Electricity Regulation and TEP Gas Regulation based on the Framework Guidelines produced by ACER. If ACER finds that the code produced meets the Framework Guidelines and the EU's internal market objectives, it is recommended to the Commission to undergo the process of comitology. Once a Cross-Border Committee (consisting of specialists from national energy ministries of Member States) accepts the draft network code, it is adopted with the approval of the Council of the European Union and the European Parliament.

Legal Status and National Implementation

These network codes have been enacted in the form of regulations, making them directly applicable and binding in their entirety on Member States. Accordingly, they take precedence over national provisions. However, if national legislation, standards and regulations are compatible with the provisions of the European Network Codes (ENCs), they will retain their applicability provided that they consist of more stringent requirements and standards than the European network codes.

In the electricity sector there are currently 8 network codes, of which 5 are in force and 3 are awaiting validation by the European Parliament and the Council having already been validated by Member States. These network codes fall into 3 key interrelated areas:

Market Codes

Capacity Allocation and Congestion Management (NC CACM)

The NC CACM sets out methods for cross-zonal capacity allocation and congestion management in the Pan-European day-ahead and intra-day markets. It was the second network code to be developed by ENTSO-E and entered into force in August 2015. One of the principle objectives of this code is to translate the vision of the intraday 'Target Model' for electricity markets in the EU into a set of binding rules. The harmonisation of capacity allocation mechanisms and congestion management regimes is important in order to avoid creating distortions in the electricity markets which would undermine further integration of European power markets. The NC CACM was established under Commission Regulation (EU) 2015/1222 of July 2015 (The "Regulation on Market Coupling") which made market coupling legally binding across the EU. The NC CACM effectively puts in place the legislative framework necessary for the market coupling process across the EU, and establishes the process by which bids and offers from national power exchanges for cross-border trading are brought together and matched in an optimal manner across borders.

Following the entry into force of the NC CACM, market participants including Member States, ENTSO-E, TSOs, regulators and power exchanges have been working together to develop the methodologies and tools set out the NC CACM.

Key features of the NC CACM include:

- Establishment of new entities such as nominated electricity market operators (NEMOs) designated to perform tasks related to single day-ahead or intraday coupling. They act as electricity exchanges and, subject to certain exceptions, a NEMO designated in one Member State has the right to offer day-ahead and intraday trading services with delivery in another Member State.
- It specifies the way in which Bidding Zones will be defined and how the volumes of capacity simultaneously available across bidding zones will be calculated
- It introduces the flow-based capacity calculation method for the first time which must be applied by TSOs except where the electricity networks are not meshed and such method would not add value compared to a coordinated NTC capacity calculation method
- It requires TSOs and NEMOs to develop and propose common methodologies, terms and conditions for approval by National Regulatory Authorities (NRAs) within fixed legal timelines

ENTSO-E's 2nd Report on the progress and potential problems with the implementation of Single Day- Ahead and Intraday Coupling[52], published in February 2017 notes that the creation of a core capacity calculation region represents a major challenge to all parties, including the TSOs, NEMOs and NRAs.

In January 2017, the NRAs agreed to a proposal by all TSOs to amend the Common Grid Model Methodology and the Generation and Load Data Provision Methodology which set out the information and processes necessary to create a Common Grid Model representing the European interconnected system for the purposes of single day ahead and intraday coupling methodologies under the NC CACM. In June 2017, all TSOs submitted a proposal to amend the NC CACM to include a new bidding zone to one of the existing Capacity Calculation Regions under the code. A response to this proposal is pending (at the time of writing).

Forward Capacity Allocation (NC FCA)

The NC FCA was adopted and published in September 2016 and entered into force on 17 October 2016[53]. It establishes common rules for forward capacity allocation over a long-term time frame, including the establishment of a common methodology for determining the volumes of capacity simultaneously available between bidding zones. The principle objective of the NC FCA is to facilitate the development of liquid and competitive forward markets in a coordinated manner across Europe. Putting in place harmonised cross-border forward markets will enable parties to secure capacity and hedge positions ahead of the day-ahead timeframe more efficiently in IEM.

Key features of the NC FCA are:

- It details rules regarding the type of long-term transmission rights that can be allocated via explicit auction and the methods of compensation available to holders of transmission rights should their rights be curtailed.
- It does not stipulate harmonised long-term allocation rules (HAR) in itself but requires all TSOs to develop a proposal for such rules no later than 12 months after the NC FCA enters into force.
- Early implementation of the FCA means that the first EU HAR was submitted and applied to the auctions of 2016. Relevant TSOs and regulators have amended the EU HAR to further align it with the FCA (now that it has been adopted) with the aim that final HRA will be approved by relevant NRAs in 2017, becoming applicable to forward capacity allocation and allocated long-term transmission rights with a delivery date on or after 1 January 2018.

Electricity Balancing (NC EB)

The NC EB is intended to harmonise balancing markets, ensuring a clear time separation between intraday trading and balancing by TSOs, and the standardisation of balancing products across Europe. This includes rules for balancing energy pricing and imbalance pricing. Together, these rules aim to increase opportunities for cross-border trading, facilitating the efficiency of balancing markets. On 22 July 2015, ACER published its recommended draft of the NC EB for adoption, and the code was validated by Member States on 16 March 2017. NC EB is the last of the eight electricity network codes to be validated by Member States and is currently pending approval by the European Parliament and the European Council.

Key Features of the NC EB are:

- It defines the roles and responsibilities of transmission system operators (TSOs), Distribution System Operators (DSOs), Balance Responsible Parties (BRPs) and Balancing Service Providers (BSPs) to procure and exchange balancing products that will balance the European markets from day ahead to real time in the most efficient way.
- It requires TSOs to develop a proposal for Standard Products for Balancing Capacity and Standard Products for Balancing Energy no later than one year after the entry into force of this network code. TSOs must harmonise pricing methods for at least each Standard Product for Balancing Energy after the NC EB enters into force.
- In some cases it permits TSOs to reserve cross-zonal capacity for the exchange of balancing capacity or sharing of reserves when socio-economic efficiency is proved[54].

Grid Connection Codes

Code on Grid Connection Applicable to all Generators (NC RfG)

The NC RfG seeks to set common requirements for generators across the EU, detailing rules for grid connection of power-generating facilities, principally on new power generating installations to national electricity networks. With more power being generated from embedded renewable technologies there is a need for network operators at transmission and distribution system levels to introduce this network code to ensure security of a stable supply. In addition to general requirements, the NC RfG details specific requirements for Synchronous Power-Generating Modules, Power Park Modules and AC connected Offshore Power Park Modules to the interconnected system. The NC RfG was adopted on 14 April 2016 and entered into force on 17 May 2016.

Key Features of the NC RfG are:

- It applies to new power generating modules and shall apply to existing generating modules if this has been proposed by the relevant TSO and this proposal has been approved by the relevant NRA.
- It contains specific requirements for Synchronous Power-Generating Modules, Power Park Modules and AC connected Offshore Generation with each of these categories being divided into four categories (A-D), with thresholds in terms of installed capacity of the Power Generating Module and voltage level.
- It is not pragmatic or cost effective to have complete harmonisation of all requirements for Power Generating Modules (due to geographic dispersion of generation and variance), and therefore, although upper limits for capacity thresholds are set at EU level, the final threshold is determined at national level by the relevant TSO.

Demand Connection Code (NC DCC)

The NC DCC establishes requirements for new demand users and distribution connections to the network. In doing so, it sets out rules for grid connection for four categories of entities including transmission-connected demand facilities, transmission connected distribution facilities, distribution systems (including closed distribution systems) and demand units that provide demand response services to relevant operators and TSOs. It aims to facilitate increased competition

in the internal electricity market, security and the integration of renewable electricity. The key objective is to ensure system operators use demand facilities and distribution systems capabilities in a transparent, non-discriminatory manner so as to provide a level playing field throughout the Energy Union. The DCC mainly focuses on the connection of industrial loads and distribution networks. It was published on 18 August 2016 and entered into force on 7 September 2016.

Key features of the NC DCC are:

- It sets up a common framework for network connection agreements between network operators and demand facility owners or distribution network operators
- It applies to new power generating modules and to existing generating modules if this has been proposed by the relevant TSO and this proposal has been approved by the relevant NRA.
- It sets out requirements for demand side response, including reactive power control (RPC), Active Power Control (APC), Transmission Constraint management (TCM), System Frequency Control (SFC) and Very Fast Active Power Control (VFAPC).

Code on High-Voltage-Direct-Current Connections (NC HVDC)

The NC HVDC specifies requirements for long distance direct current connections and links between different synchronous areas and DC-connected Power Park Modules, such as offshore wind farms, which are becoming increasingly prominent in the European electricity system. This code entered into force on 28 September 2016.

Key features of the NC HDVC are:

- It does not apply to existing HVDC systems and existing DC-connected power park modules unless they have been modified to the extent that their connection agreement must be substantially revised in accordance with specified procedures.
- It details common requirements for active power control and frequency support, reactive power control and voltage support, fault ride through, protection devices and settings, DC-connected power park modules and remote-end HVDV converter stations.

Operational Codes

Code on System Operation (NC SO)

The three codes for operation in normal conditions, (Operational Security, Operational Planning & Scheduling and Load-Frequency Control & Reserves) designed by the ENTSO-E have been merged into one code – the System Operation.

This network code sets out common requirements for the maintenance of the secure operation of the interconnected transmission system in real time. In doing so, it establishes harmonised rules for ensuring the operational security of the IEM and sets requirements, ranging from the year-ahead timeframe to real time, for assessing the adequacy of the interconnected power system. The NC SO details rules for planning outages required by TSOs when they have cross-border impacts on power flows. This code received a positive vote in comitology on 4 May 2016 but it has yet to be published.

Key features of the NC SO are:

- It details common methodologies and principles pertaining to operational security requirements, interconnected system operational planning, common load frequency control processes and control structures.
- It sets out requirements pertaining to the planning phase ahead of real time operations, defining the roles of TSOs, DSOs and significant grid users towards the operational scheduling procedures and details the way in which these parties exchange data.
- It determines the way in which availability plans should be conducted.
- It establishes common security standards by harmonising quality of system operation and promoting coordination of operation activities
- It details common rules as to system frequency quality, providing a framework for the use, sharing and exchange of reserves.

Code on Emergency and Restoration (NC ER)

This code provides a set of common minimum requirements including remedial procedures and principles to coordinate system operation across Europe in Emergency, Blackout and Restoration states. The principle objective of the code is to avoid widespread disturbances and prevent the deterioration of an incident, ensuring efficient restoration from states of emergency and blackouts. Thus, it involves advanced plans for system restoration, re-synchronisation, and information exchange, as well as the ad-hoc analysis of the incidents. On 24 June 2015, ACER delivered a positive opinion and recommended the code for adoption along with a number of proposals for changes. The NC ER has been approved by Member States and is currently awaiting validation by the European Parliament and Council. It is expected to enter into force in late 2017.

Key features of NC ER are:

- It sets out common rules in the design, implementation and activation of the required System Defence Plan and Restoration Plan, including specific procedures which must be incorporated into these plans such as the Resynchronisation procedure, the Frequency Management Procedure, the Procedure for suspension of market activities and the Procedure for the restoration of market activities.
- It requires TSOs to define a test plan in coordination with DSOs and in consultation with significant grid users, Defence Service Providers and Restoration Service Providers[55].

Recent network codes governing the gas sector include the following:

Capacity Allocation Mechanisms in Gas Transmission Systems network code (NC CAM)

The NC CAM came into force on 3 November 2013 and applied from 1 November 2015. The NC CAM is the first European network code to be developed, and is aimed at ensuring a more efficient allocation of capacity on the interconnection points between two or more Member States or within the same Member State and to support the creation of efficient wholesale gas markets in the EU. The code requires gas grid operators to use harmonised auctions when selling access to pipelines.

These auctions sell the same product at the same time and according to the same rules across the EU.[56]

ACER's implementation monitoring report, published in October 2015, notes that implementation of the core requirements of NC CAM, such as the auctioning of standard capacity products via booking platforms, is high but that full implementation has only been achieved in Belgium and the UK.[57]

In April 2017, a revised network code which set up capacity allocation mechanisms in gas transmission systems for existing and incremental capacity came into force. The updated code sets out how adjacent TSOs should cooperate in order to facilitate capacity sales, having regard to the general commercial and technical rules related to capacity allocation mechanisms. The revised NC CAM has a wider scope in relation to the rules for the offer of incremental capacity.

Code on Interoperability and Data Exchange Rules

This network code aims to facilitate EU-wide cross-border gas transports by introducing common rules and harmonised principles pertaining to the establishment and amendment of interconnection agreements in respect of interconnection points. In this way it aims to remove perceived barriers to cross-border gas flows, facilitating EU-wide market integration. It outlines a common set of units which must be used by TSOs for any data exchange and publication, and aims to regulate the monitoring and management of gas quality which may give rise to trade restrictions. Other key areas covered by this network code include odorisation, common data exchange solutions and rules pertaining to dispute settlement mechanisms in interconnection agreements. This code was published in the Official Journal of the European Union on 30 April 2015 and entered into force on 1 May 2016.

Key features of the code on interoperability and data exchange rules:

- It details common rules for gas flow control in respect of adjacent TSOs including standard measurement principles for gas quantity and quality, rules for the matching process and the use of a balancing account in the allocation of gas quantities with limits that take into account specific characteristics of each interconnection point.
- Requires that TSOs identify the information contained in interconnection agreements that directly affect network users and inform them of that information[58].
- Requires that TSOs use a common set of defined units in for any data exchange and data publication related to the Regulation.
- It details requirements in relation to short and long-term monitoring and information provision of gas quality and gas quality variation.
- Requires that where a restriction to cross-border trade arises due to difference in odorisation practices (which cannot be avoided by the relevant TSOs and is recognised by NRAs) the NRAs may require the TSOs to reach an agreement within six months.
- Provides that where no agreement can be reached after six months the TSOs or NRAs believe that agreement between TSOs not sufficiently effective to remove the restriction, the TSOs and NRAs shall define a detailed plan setting out the most cost effective method to remove a recognised restriction at the specific cross-border interconnection point within 12 weeks.

ENTSOG consulted on proposals to amend this code to incorporate the CEN standard on H-Gas quality in 2016 with a view to submitting a proposal to ACER in 2017. However, following an announcement by the European Commission that it would not be pursuing a legally binding application of this standard in October 2016, ENTSOG has confirmed that it will no longer recommend that the code be amended to include the CEN standard.[59]

ENTSOG's monitoring report, published in September 2016, found that the majority of interconnection points are covered by interconnection agreements between adjacent TSOs, and that the code has not created unavoidable cross-border trade restrictions due to differences in gas quality or odourisation practices.[60]

Code on Gas Balancing of Transmission Networks

This network code introduces a market-based and harmonised daily balancing regime for Europe's transmission networks, facilitating gas trade across balancing zones. It contributes towards the development of market liquidity, supporting the development of Europe's competitive short term wholesale gas market with gas flexibility that would enable network users to efficiently balance their balance portfolios. This network code entered into force on 1 October 2015.

Key features of the code on Gas Balancing in Transmission Networks are:

- Introduces balancing rules including network related rules on nominations procedures at interconnection points
- Defines and sets out the shared balancing responsibilities between TSOs and network users with a view to move towards residual TSO balancing where market liquidity allows
- Sets out the TSO neutrality principle
- Details the harmonisation of (re-) nominations procedures (e.g. timing and communication procedures)
- Introduces new rules on imbalance charges, within day obligations and operation balancing between transmission systems

A report published by ACER in November 2016 highlighted issues with the implementation of this code, particularly in relation to inconsistent implementation and non-compliance in some Member States. ACER also found that some legal interpretations of the code did not take into account its intent and main objectives, and that greater effort was required in order to ensure full implementation of the code. ACER recommends that the Commission consider bringing infringement proceedings in instances where there has been no significant improvement by the time of ACER's 2017 report[61].

Code on harmonised transmission tariff structures for gas (NC TAR)

In March 2017, the European Commission adopted a regulation establishing a network code on harmonised transmission structures for gas. NC TAR entered into for on 6 April 2017 and

will apply in stages from 6 April 2017, 1 October 2017 (in relation to clearing prices and payable prices, and publication requirements) and 31 May 2019 (in relation to reserve prices and the reconciliation of revenue). The code applies at all entry and exit points of gas transmission networks, and establishes rules on the application of a reference price methodology, the associated consultation and publication requirements as well as the calculation of reserve prices for standard capacity products,

ENTSOG published a guidance document on the implementation of NC TAR in March 2017[62], which notes that NC TAR supplements and forms an integral part of the Gas Regulation.

Congestion Management Procedures

The European Commission's rules on congestion management procedures aim to reduce congestion in gas pipelines by requiring TSOs to make use of their reserved capacity or risk losing it. As such, NRAs require TSOs to partially or fully withdraw systematically underutilised contracted capacity on an interconnection point where the network user has not sold or offered under reasonable conditions its unused capacity and where other network users request firm capacity. The Congestion Management Procedures were adopted on 24 August 2012 and came into force on 1 October 2013.

Key features of the Congestion Management Procedures include:

- The introduction of the firm day-ahead use-it-or-lose it and the long-term use-it-or-use-it mechanisms.
- A requirement that TSOs must implement an incentive-based over subscription buy-back scheme in order to offer additional capacity on a firm basis, subject to NRAS approval. NRAs are required to determine the distribution of the resulting sales revenue and costs of the buy-back scheme between the TSOs and network users.

In June 2017, ENTSOG published an updated monitoring report on these procedures, noting that most TSOs will be compliant with the Congestion Management Procedures by the end of the first quarter 2017, with the remaining two expected to be compliant by the end of 2017.

ACER's annual monitoring report on congestion at interconnection points contains recommendations to ENTSOG, NRAs and TSOs that data reliability and transparency be improved, and a request that the European Commission clarify certain elements of the Congestion Management Procedures, such as the definition of contractual congestion.[63]

A call of evidence on congestion indicators by ACER in August 2016 raised several areas in which amendments to the Congestion Management Procedures may be necessary. ACER intends to present an opinion/recommendation on any potential Congestion Management Procedure Guidelines amendments before the end of 2017[64].

Consultation on annual priorities list for 2017 network code guidelines

On July 2016, the Commission issued a consultation with ACER, the ENTSOs and other relevant stakeholders seeking views on the establishment of annual priority lists for the development of network codes and guidelines for 2017. On 18 January 2017, the European Commission published its decision, proposing to prioritise on-going work and ensuring the full implementation of network codes and guidelines rather than to introduce new priorities. Rules relating to system operation, emergency and restoration requirements and procedures, and balancing rules were identified as priorities in relation to electricity network rules. The annual priority list for gas network rules includes harmonised transmission tariff structures for gas and rules regarding an EU-wide market-based approach on the allocation of "new build" gas transmission capacity[65].

A.9 Transparency and record keeping obligations

The Third Electricity and Third Gas Directives also set out a number of record keeping obligations on electricity generators, gas network operators, and supply undertakings that are required to keep a record of all data relating to operational decisions and trades.[66]

The Commission hopes that these obligations enable regulators to effectively assess allegations of market abuse and study past behaviour of market participants. In particular, the Commission believes that a review of the relevant records enables regulators to investigate whether operational decisions were based on sound economic reasoning rather than attempts to manipulate the market. The Commission has stated that these record keeping obligations are, in the case of some types of traders (eg, banks), not in addition to relevant record keeping obligations of such traders under the Financial Services Legislation (MiFID, REMIT and EMIR) set out in more detail below.

Access to storage and LNG facilities

The Guidelines for Good Third Party Access Practice for Storage System Operators ("GGPSSO") of the Madrid Forum are voluntary guidelines which were found not to have been widely implemented. The New Gas Regulation seeks to make the GGPSSO binding on relevant market participants.

The Third Gas Directive also establishes legal and functional unbundling rules for storage system operators that are part of supply undertakings[67] and enhances the NRAs' powers to manage any access to gas storage.[68]

The Third Gas Directive and the New Electricity Regulation have been put in place to change and update the current legislation which deals with exemptions from regulated third party access for major new infrastructure.[69] The European legislators aimed to set out a streamlined procedure with respect to exemptions for the overall benefit of the market. Article 36 of the Third Gas Directive sets out a list of applicable conditions and detailed procedural provisions and is therefore much more comprehensive than the previous Article 22 of the Second Gas Directive. However, the procedural requirements have become more complex with advent of ACER as part of the decision making process in cases where the infrastructure crosses the borders of two or more Member States.

A.10 Development of energy infrastructure

Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009[70] ("The New TEN-E Regulation")

The New TEN-E Regulation was adopted on 17 April 2013 and entered into force on 15 May 2013. It sets out guidelines for the development and interoperability of priority corridors and energy infrastructure at European level.[71] It establishes 12 strategic regional groups, based on a priority corridor and a geographic area, for energy infrastructure with a trans-European/cross-border dimension.[72] The New TEN-E Regulation sets out a process to establish on a two-yearly basis Union-wide lists of 'Projects of Common Interest' ("PCIs"), which will contribute to the development of energy infrastructure networks in each of the 12 corridors.[73] The PCIs are adopted by the decision-making body of each regional group consisting of the Commission and Member States.[74] Article 4 of the New TEN-E Regulation provides detailed criteria that PCIs must meet.

Under this regulation, PCIs are subject to different, improved, regulatory treatment as well as faster and more efficient permitting procedures. They may receive funding under the Connecting Europe Facility[75] and the EU financial assistance.[76]

The New TEN-E Regulation puts in place process requirements for granting PCI permits. These requirements include:

- giving priority status to PCIs;[77]
- time limits for the permit process;[78]
- a "one-stop-shop" permit;[79]
- a single co-ordinating authority; [80] and
- a requirement that Member States assess the potential for streamlining permitting procedures.[81]

The Commission published guidelines on streamlining environmental assessment procedures for energy infrastructure PCIs as required by Article 7(4) of the New TEN-E Regulation.[82] The purpose of this guidance is to support Member States in defining adequate legislative and non-legislative measures to streamline the environmental assessment procedure and to ensure coherent application of the environmental procedure for PCIs.

On 18 November 2015, the Commission published the second PCI list, updating the list adopted in October 2013[83]. This updated list includes 195 energy infrastructure projects that are essential for the completion of the IEM and for reaching EU's energy policy objectives of secure, sustainable and affordable energy. These PCIs are intended to help to deliver the EU's climate objectives, furthering EU-wide integration by diversifying energy sources and transport routes.

Since the adoption of the first PCI list in 2013 which contained 108 projects, sixty two projects are expected to be completed by the end of 2017. The PCI list is updated every two years in order to integrate newly needed projects and remove obsolete ones. The current list is expected to be updated again in 2017.

B. Emissions Trading – Financial Services Legislation:

B.1 MiFID

The European Commission published its legislative proposals to revise the Markets in Financial Instruments Directive ("MiFID") on 20 October 2011, four years after the MiFID implementation date of 1 November 2007.[84] The changes to MiFID, known informally as MiFID II, have resulted in a significant overhaul of the way in which financial markets operate in Europe. In its press release of 20 October 2011 the European Union stated that MiFID II aims "to make financial markets more efficient, resilient and transparent, and to strengthen the protection of investors."

On 15 April 2014, the European Parliament endorsed MiFID II and MiFIR. They were adopted on 13 May 2014 by the Council of the European Union and published in the Official Journal on 12 June 2014, coming into force on 2 July 2014. Member States must implement the provisions by 3 January 2018 (with the exception of certain provisions). On 22 May 2014 ESMA published a Discussion Paper and Consultation Paper on MiFID implementation[85].

MiFID II and MiFIR set out the legal framework governing the requirements applicable to investment firms, trading venues, data reporting service providers and third country firms providing investment services/activities in the EU.

The legislation is divided in two; a new directive and a new regulation:

MiFID Level 1 Directive (2004/39/EC) has been recast, with a new directive amending the following provisions:

- specific requirements regarding the provision of investment services;
- the scope of exemptions from the current directive will be stricter (this may be relevant for the energy sector);
- requirements relating to the organisational and conduct of business for investment firms;
- organisational requirements for trading venues;
- authorisation and on-going obligations applicable to providers of data services;
- powers available to competent authorities;
- sanctions; and
- rules applicable to third-country firms operating via a branch.

The Markets in Financial Instruments ("MiFIR") establishes uniform and directly applicable requirements in relation to:

- disclosure of trade transparency data to the public and transaction data to competent authorities;
- removing barriers to non-discriminatory access to clearing facilities;
- mandatory trading of derivatives on organised venues;
- specific supervisory actions regarding financial instruments and positions in derivatives; and
- provision of services by third-country firms without a branch.

The Commission's legislative changes contained within MiFID II and MiFIR, follow the preparatory work of the Committee of European Securities Regulators (replaced by the European Securities and Markets Authority ("ESMA") in January 2011) and the Commission in 2010, including the Commission's consultation paper on the review of MiFID in December 2010.

Importantly for the energy sector, emission allowances may now fall within the scope of MiFID and will be classified as financial instruments, so that both derivatives and secondary spot markets in emission allowances will be subject to financial market regulation.

Spot contracts (which currently include transfers of EUAs) do not currently constitute "financial instruments" under MiFID and have therefore been largely unregulated. Under Article 38(2) of the MiFID Level 2 Implementing Regulation,[86] a "spot contract" is defined as a contract for the sale of a commodity, asset or right, under the terms of which delivery is scheduled to be made within the longer of two trading days and the period generally accepted in the market for that commodity, asset or right as the standard delivery period. The proposed changes to MiFID would be set out in the following way:

- futures and other derivatives in relation to emission allowances (previously under Annex I C (10) instruments) will now be in C(4); and
- there will be a new category of "financial instrument (Annex I Section C (11)) to cover emission allowances, including units recognised for compliance with the requirements of the Emissions Trading Scheme. Spot trading in emissions allowances will therefore be regulated under MiFID.

The EU-wide implementation date for MiFID II is 3 January 2018.

B.2 REMIT

The European Parliament has adopted the text of a regulation on wholesale Energy Market Integrity and Transparency ("REMIT")[87] which is applicable to energy companies in Europe and contains rules that prohibit the use of inside information, require the public disclosure of that inside information and prohibit certain behaviour constituting market manipulation. It was announced in December 2011 and has been phased in over 2012. Member States had until 29 June 2013 to implement all necessary procedures to give effect to REMIT.

Prior to REMIT the monitoring of energy markets was sector-specific and conducted by each Member State. As the structure of the energy markets becomes increasingly pan-European it is more difficult for national regulators to function effectively as they do not have access to Europe-wide information.

ACER's position as quasi centralised European regulator collecting and screening wholesale transaction market data, performing initial assessments of anomalous events and then reporting to the national regulators for enforcement if necessary.[88] As noted above the precise role of ACER has not been defined but with its Europe-wide perspective ACER is able conduct a more comprehensive review as a centralised body and then hand down to the national regulators the roles relating to punishment, prosecution and enforcement. In this respect, on 17 June 2016, ACER published an updated 4th Edition of the Guidance Paper[89] on its website in relation to REMIT and its implementation. Additional Q&A documents are published regularly on ACER's website.[90]

REMIT was set up as part of a dedicated market integrity and transparency framework for the gas and electricity wholesale markets with a central reporting point at EU level and an EU-wide monitoring scheme.

The key features of REMIT are outlined below:

- the regulation prohibits insider trading[91] and market manipulation[92] in relation to wholesale energy products ("WEP"); this now includes supply contracts to certain large consumers;
- the regulation requires timely public disclosure of inside information; this now extends to information regarding the business or facilities which a market participant, or its parent or a related undertaking, owns, controls or operates, in whole or in part;[93]
- additional reporting obligations regarding transactions and the status of operational assets will apply;[94]
- national regulatory authorities had to be given enhanced investigatory and enforcement powers[95] by 29 June 2013 and penalty rules must be devised and implemented.

All market participants need to ensure that appropriate measures are in place regarding the disclosure and use of information between group entities (and related undertakings) to minimise the impact of these measures.

Under REMIT, market participants have specific registration and reporting obligations. defines a "market participant" as any person, including transmission system operators, who enters into transactions, including the placing of orders to trade, in one or more wholesale energy markets. This definition does not distinguish between upstream or downstream market participants.

ACER currently considers at least the following persons to be market participants under REMIT if entering into transactions, including orders to trade, in one or more wholesale energy markets (ie any market within the EU on which WEPs are traded):

- energy trading companies within the meaning of an "electricity undertaking" pursuant to Article 2(35) of Directive 2009/72/EC carrying out at least one of the following functions: transportation, supply, or purchase of electricity, or within the meaning of a "natural gas undertaking" pursuant to Article 2(1) of Directive 2009/73/EC carrying out at least one of the following functions: transportation, supply or purchase of natural gas, including LNG;
- producers of electricity or natural gas within the meaning of Article 2(2) of Directive 2009/72/EC and Article 2(1) of Directive 2009/73/EC, including producers supplying their production to their in-house trading unit or energy trading company;
- shippers of natural gas;
- balance responsible entities;
- wholesale customers within the meaning of Article 2(8) of Directive 2009/72/EC and Article 2(29) of Directive 2009/73/EC;
- final customers within the meaning of Article 2(9) of Directive 2009/72/EC and Article 2(27) of Directive 2009/73/EC, acting as a single economic entity that have a consumption capacity of 600GWh or more per year for gas or electricity. If the consumption of a final customer takes place in markets with interrelated prices, his total consumption capacity is the sum of his consumption capacity in all those markets;

- TSOs within the meaning of Article 2(4) of Directive 2009/72/EC and Directive 2009/73/EC;
- SSOs within the meaning of Article 2(10) of Directive 2009/73/EC;
- LSOs within the meaning of Article 2(12) of Directive 2009/73/EC; and
- investment firms within the meaning of Article 4(1), No 1, of Directive 2004/39/EC.

REMIT applies to trading in WEPs in any market within the European Union but REMIT does not contain a geographical limitation as to the location or origin of inside information in relation to WEPs.

REMIT defines WEPs as the following contracts and derivatives, irrespective of where and how they are traded:

- contracts for the supply of electricity or natural gas where delivery is in the European Union;
- derivatives relating to electricity or natural gas produced, traded or delivered in the European Union;
- contracts relating to the transportation of electricity or natural gas in the European Union;
- derivatives relating to the transportation of electricity or natural gas in the European Union.

Contracts for the supply and distribution of electricity or natural gas for the use of final customers are not WEPs, unless a specific consumption capacity is met (ie 600GW per year).

In addition, the Implementing Regulation provides further, more detailed, lists of contracts which are reportable to ACER pursuant to Article 8 of REMIT; and individual transactions need to be checked against this list to ascertain more specific reporting obligations.

Where LNG is produced in the EU, traded in the EU or delivered in the EU, it will fall into the definition of WEP set out above and will be subject to REMIT. If this is not the case the transaction will not be a WEP and will not be subject to REMIT.

Market participants will be required to register with the relevant NRA. If the market participant has multiple sites in Europe, it does not register with multiple NRAs, unless each site is a separate legal person and each site enters into transactions which are required to be reported.

The only exception from the registration requirement is for market participants who engage only in transactions relating to:

- contracts for the physical delivery of electricity produced by a single production unit with a capacity equal to or less than 10MW or by production units with a combined capacity equal to or less than 10MW; or
- contracts for the physical delivery of natural gas produced by a single natural gas production facility with a production capacity equal to or less than 20MW.

The CEREMP is an online platform that has been set up to gather basic information about all market participants trading European WEPs. Various NRAs such as Ofgem in the UK will collect information from market participants in their respective Member States and feed it into CEREMP.

Pursuant to REMIT, market participants must report the following:

- transaction data;
- fundamental data; and
- inside information.

REMIT's reporting obligations require market participants, or a person or a specified authority on their behalf, to provide ACER with a record of wholesale energy market transactions, including orders to trade.

Article 8 of REMIT obliges ACER to draw up and maintain a public list of standard contracts that is updated in a timely manner. The current list of standard contracts comprises several hundred different contract types and can be found here: https://www.acer-remit.eu/portal/standardised-contract

The sole purpose of the public list of standard contracts is to display the characteristics of each contract type for which the standard reporting form is applicable. The creation of the list of standard contracts has no intention to assign unique identifiers to the contracts listed, nor will the information collected be used for matching against the transaction reports.

The Implementation Regulation specifies that the following contracts are to be reported to ACER:

As regards WEPs that are contracts for the supply of electricity or natural gas with delivery in the European Union (irrespective of where and how they are traded, in particular regardless of whether they are auctioned or continuously traded):

- intraday or within-day contracts;
- day-ahead contracts;
- two-days-ahead contracts;
- week-end contracts;
- after-day contracts;
- other contracts for the supply of electricity or natural gas with a delivery period longer than two days;
- contracts for the supply of electricity or natural gas to a single consumption unit with a technical capability to consume 600GWh/year or more; and
- options, futures, swaps and any other derivatives of contracts relating to electricity or natural gas produced, traded or delivered in the European Union.

As regards WEPs in relation to the transportation of electricity or natural gas in the European Union:

- contracts relating to the transportation of electricity or natural gas in the European Union between two or more locations or bidding zones concluded as a result of a primary explicit capacity allocation by or on behalf of the TSO, specifying physical or financial capacity rights or obligations;

- contracts relating to the transportation of electricity or natural gas in the European Union between two or more locations or bidding zones concluded between market participants on secondary markets, specifying physical or financial capacity rights or obligations, including resale and transfer of such contracts; and
- options, futures, swaps and any other derivatives of contracts relating to the transportation of electricity or natural gas in the European Union.

ACER has stated that the upstream transport capacity contracts for gas are not covered by the reporting obligation in Article 3(1)(b) of the Implementing Regulation[96].

Unless concluded on Organised Market Places, the following contracts and details of transactions in relation to these contracts are reportable only upon a reasoned request of ACER and on an ad-hoc basis:

- intragroup contracts;
- contracts for the physical delivery of electricity produced by a single production unit with a capacity equal to or less than 10MW or by production units with a combined capacity equal to or less than 10MW;
- contracts for the physical delivery of natural gas produced by a single natural gas production facility with a production capacity equal to or less than 20MW; and
- contracts for balancing services in electricity and natural gas.

B.3 EMIR

The final text of the Regulation of the European Parliament and of the Council on OTC Derivatives, Central Counterparties and Trade Repositories was published on 27 July 2012 in the Official Journal of the European Union.[97] The regulation is also known as the European Market Infrastructure Regulation ("EMIR").

EMIR entered into force on 16 August 2012. However, implementation has been gradual. The technical standards on various topics regarding the clearing obligation, CCP requirements and trade repositories entered into force on 15 March 2013 by Commission delegated regulation[98].

EMIR introduced significant changes to the over-the-counter ("OTC") derivatives market by mandating central clearing for standardised contracts and imposing risk mitigation standards for non-centrally cleared contracts.

Whilst EMIR provides a framework for these new obligations, the precise details, which are necessary for market participants to comply with the regulation, are set out in subordinate legislation. Since 15 March 2013, a number of pieces of subordinate legislation have come into force in the form of regulatory technical standards ("RTS"), as set out in more detail below.

A list of the most recent delegated regulations and regulatory technical standards adopted by the European Commission is set out below:

- On 29 June 2017, the European Commission adopted a delegated regulation amending a previous regulatory standards specifying the data to be published and made available by trade repositories and operational standards for aggregating, comparing and accessing data under EMIR to reflect recent developments in the area of trade reporting and access to data.[99]
- On 16 March 2017, the European Commission adopted a delegated regulation to prolong the phase-in period of the EMIR clearing obligation for financial counterparties with a limited volume of OTC derivatives activity. The start date for this obligation for such parties is now 21 June 2019.[100]
- On 2 March 2017, the European Commission adopted a delegated regulation on the list of exempted entities under EMIR which exempts central banks and public bodies charged with or intervening in the management of the public debt from Australia, Canada, Hong Kong, Mexico, Singapore and Switzerland from the clearing and reporting requirements set out in EMIR.[101]
- On 19 October 2016, the European Commission adopted a delegated regulation amending the minimum details of data that must be reported to trade repositories.[102]
- On 4 October 2016 the European Commission adopted a delegated regulation that specifies how margin should be exchanged for OTC derivatives contracts that are not cleared by a CCP. The Commission adopted the draft regulatory standards submitted by the European Supervisory Authorities with amendments.[103]
- On 10 June 2016, the European Commission adopted a delegated regulation that makes it mandatory for certain over-the-counter (OTC) interest rate derivative contracts to be cleared through central counterparties.[104]
- On 21 April 2016, the European Commission adopted a delegated regulation amending the technical standards for requirements for CCPs related to the Margin Period of Risk ("MPOR") for client accounts.[105]
- On 1 March 2016, the European Commission adopted a delegated regulation that makes it mandatory for certain over-the-counter (OTC) credit default derivative contracts to be cleared through central counterparties.[106]
- On 6 August 2015, the European Commission adopted a delegated regulation that makes it mandatory for certain over-the-counter (OTC) interest rate derivative contracts to be cleared through central counterparties.[107]

The following paragraphs set out the main elements of the regulation: Mandatory Central Clearing[108]. Financial entities will be required to clear all standardised eligible OTC derivative contracts through central counterparties ("CCPs"). The first CCP was given authorisation on 18 March 2014.

Non-financial firms are only subject to the clearing rules if their OTC derivative positions reach specified clearing thresholds, with a carve out for hedging transactions. Intragroup transactions are excluded. A third country firm that would be subject to the clearing obligation if it were established in the EU will also have to abide by the central clearing obligations for any transaction with an obligated EU entity, or for any transaction where the contract has a direct, substantial and foreseeable effect within the EU. The Regulatory Technical Standards for

third country transactions have been reported in the Official Journal and the main provisions have been applicable from 10 October 2014.

- Collateral: Parties to cleared OTC derivative contracts will need to post initial and variation margin.
- CCPs:[109] National competent authorities will be responsible for authorising and supervising CCPs in their jurisdiction. CCPs will be required to have established default procedures in the event of a clearing member's non-compliance with the rules, and a mutualised default fund to which members of the CCP must contribute.
- Non-Centrally Cleared OTC Derivatives:[110] Non-centrally cleared OTC derivative contracts will be subject to strict procedures to reduce counterparty credit risk and operational risk including the requirement for timely confirmation of terms (where possible by electronic means), robust and auditable processes for portfolio reconciliation, marking to market procedures, dispute resolution, and procedures for the accurate and appropriate exchange of collateral. Again, intragroup transactions are largely sheltered from these requirements.
- Reporting:[111] All counterparties and CCPs must ensure that the details of all derivative contracts, regardless of how they are cleared, are reported without duplication to trade repositories no later than the working day following the conclusion, modification or termination of a contract. The obligation is not subject to any thresholds. The obligation will extend to contracts entered into before the Regulation that are still outstanding on the date of the Regulation's entry into force. Reporting obligations may be delegated (eg, to prime brokers or asset managers). Trade repositories will publish aggregate positions by class of derivatives. Reporting failures will be met by penalties.
- ESMA: ESMA will have significant responsibility, including (a) identification or approval of contracts subject to clearing and recommendation of clearing thresholds,[112] (b) surveillance of trade repositories, including the grant and withdrawal of their registration,[113] and (c) authorisation and supervision of CCPs from third countries[114].

The pieces of legislation proposed by the European Union in the form of EMIR, REMIT and MiFID II cannot be viewed in isolation, especially from the perspective of energy companies.

The legislation is designed to regulate the financial sector by increasing reporting requirements, increasing transparency and increasing the control of the regulator. This is with the aim of helping to prevent another financial crisis. Emissions trading, parts of which were previously unregulated, will now be subject to these pieces of legislation and reporting and systems requirements will increase. As a result energy companies will have to spend both time and money to ensure that they are in line with the rules as they come into force. This will include ensuring that effective systems are in place to deal with the reporting requirements and completing impact assessments to establish whether they fall above the thresholds set by the legislation.

As the directives and regulations are inter-linked energy companies will want to ensure that any systems updates cover the reporting requirements across all three pieces of legislation without any undue replication of reporting under different regimes.

C. The EU Climate Change Package:

The Climate Change Package contains the following legislative measures:

- Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community (the "New EU ETS Directive");[115]
- Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduced their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020 as amended by Protocol [12012JN03/08] (the "GHG Reduction Decision");[116]
- Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directive 2001/77/EC and 2003/30/EC as amended by Directive 2013/18 (the "Renewable Energy Directive");[117]
- Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006 as amended by Directive 2011/92 (the "CCS Directive");[118]
- Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel, and gasoil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC (the "Biofuel Directive");[119] and
- Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO_2 emissions from light-duty vehicles as amended by Regulation No 397/2013, Relation Regulation No 63/2011 (the "Emissions Standards Regulation").[120]

In this overview article, the key elements of the Climate Change Package are described and analysed. For a detailed analysis as to the impact the Climate Change Package is having in Member States, please refer to the relevant national chapters in this edition of EEH – the European Handbook 2015.

C.1 New EU ETS Directive

The New EU ETS Directive amends the pre-existing version of the EU Emissions Trading Scheme, introduces a number of important changes to the EU ETS that take effect from Phase III (2013-2020) of the scheme, and provides a clearer sense of the future of the scheme. It introduces a declining emissions cap, increased auctioning of allowances and longer trading phases. In addition, the New EU ETS Directive expands the EU ETS to cover new activities and gases, including:

- CO_2 emissions from the petrochemicals, ammonia and aluminium sectors;
- nitrous oxide emissions from the production of nitric, adipic and glyocalic acid; and
- perfluorocarbon emissions from the aluminium sector.

Although much of the attention on Phase III has surrounded its expansion, the New EU ETS Directive confirmed that the EU ETS will continue to be focused on large energy intensive sectors. Further details regarding Phase IV of the EU ETS are set out below.

The increased harmonisation and centralisation of the operation of the EU ETS is a central element of the New EU ETS Directive.[121] As part of this change towards a more centralised approach, the allocation of allowances has, since 2013, been made on the basis of centrally approved allocation plans rather than by Member States alone.[122] This represents a change from the previous practice which EU ETS participants claimed led to competitive distortions within sectors due to different allocation rules being adopted by Member States. Likewise, the administration of the New Entrant Reserve (equivalent to 5% of total annual allowances) is now centralised;[123] and records relating to trading in allowances are to be held in a central register. The proceeds from auctioning 300 million allowances reserved for new entrants to the EU ETS are to be used to support renewable energy projects and up to 12 CCS demonstration projects.[124]

Overall, the New EU ETS Directive decreases the previous EU-wide allowance cap. From 2013, the cap will decrease year on year by 1.74% of the Phase II cap from the total amount of 1.974 billion allowances in 2013 to 1.720 billion in 2020 (equivalent to an overall reduction of 21% in allowances available by 2020 compared to 2005). After 2020, the cap will have to be lowered by 2.2% to meet the 2030 targets. Allowances issued from 2013 onwards can be banked for use in any subsequent phase of the scheme.[125]

One major change is a shift away from allocating allowances to operators free of charge, to a process involving the compulsory auctioning of allowances. Free allocations of allowances will be phased out progressively. Article 1(11) of the New EU ETS Directive provides that, from this year, all allowances not allocated free of charge in accordance with provisions in Article 1(12) of the New EU ETS Directive are to be auctioned.[126]

For the electricity sector, stricter rules now apply in that no allowances are to be allocated free of charge to electricity generators as of this year (please see below for details on certain exceptions). 88% of the allowances[127] to be auctioned will be being given to Member States in proportion to their verified emissions for 2005 or the average of the period from 2005 to 2007, whichever is higher. A further 10% of allowances[128] are to be distributed amongst certain Member States for the purpose of solidarity and growth, thereby taking account of lower GDP per head and higher prospects for growth and emissions. Another 2% of auctioned allowances are to be distributed to the nine Member States which, in 2005, had achieved greenhouse gas emissions reductions of at least 20% compared to 1990 levels.[129] The option available to Member States to exempt small installations has been extended to cover all small installations regardless of sector or the nature of the activity undertaken. The emissions threshold below which an installation is classified as "small" has been raised from 10,000 to 25,000 tonnes of CO_2 emitted per year. In addition, in the case of combustion installations, the capacity threshold has been raised from 25MW to 35MW. Member States have also been given the option of excluding hospitals from the exemptions.[130]

Member States may compensate certain installations for EU ETS costs passed on to them through higher electricity prices if these costs might otherwise expose them to the risk of carbon leakage.

In order to assist Member States with less developed generating infrastructure and economies, certain Member States may opt to derogate from the rule preventing the allocation of allowances to electricity generators free of charge. This option is only available where certain conditions relating to the interconnectivity of the electricity grid, the share of fossil fuels in electricity generation and GDP per capita are fulfilled. Even if the option is exercised, 30% of the allowances available for electricity generators must be auctioned in 2013, rising progressively to 100% by 2020, and the Member State must invest in energy infrastructure, clean technologies and energy diversification an amount equal to the market value of the free allocation. In addition, free allocations can only be made for emissions from installations that were operational or under construction no later than the end of 2008.[131]

The New EU ETS Directive contains detailed provisions as to the criteria to be used to determine sectors exposed to a significant risk of "carbon leakage" (such as the relocation of manufacturing or other activities covered by the scheme outside the EU where similar emission reduction constraints have not been imposed). The Commission was tasked with identifying those sectors facing significantly increased production costs, ie, costs comprising more than 5% of its gross value added, and international competition (more than 10% non-EU imports and exports).[132] The Commission has undertaken a review of carbon leakage, and has produced a list of sectors determined to be at risk.[133] The Commission has also determined transitional Union-wide rules for the harmonised free allocation of emission allowances.[134]

With regard to credits generated by Clean Development Mechanism (CDM) and Joint Implementation (JI) projects, the New EU ETS Directive envisages two scenarios.[135]

Generally, the New EU ETS Directive extends the ability to use credits generated by CDM and JI projects issued in respect of emission reductions occurring before 2013 or generated by projects established before 2013 into Phase III of the EU ETS.

Prior to or without a global successor agreement to the Kyoto Protocol, operators of relevant installations are able to use credits allocated to them for the period 2008 to 2012 that they have not already used.

However, in this scenario, only credits from project types which were accepted by all Member States during the 2008 to 2012 period are eligible for use, in order to guarantee that JI/CDM credits are treated equally throughout the EU ETS. Provided that the new credits do not increase the overall number of credits available, JI/CDM credits from new energy efficiency or renewable energy projects that promote sustainable development can be used in accordance with agreements concluded with third countries; and JI/CDM credits derived from new projects that start from 2013 onwards are allowed from Least Developed Countries without the need to conclude an agreement with these countries.[136]

Following the Paris Agreement the limit on the use of JI/CDM credits should be automatically increased by up to half of the additional reduction effort, and operators of participating installations may, in addition to the credits provided for in the New EU ETS Directive, use CERs, ERUs or other approved credits from third countries which have ratified the Paris Agreement.[137]

In another change from previous practice, the EU ETS has, from 2013, been extended to cover the capture, transport and storage of CO_2. However, in order to support the development of CCS, operators do not need to surrender any allowances for CO_2 that is permanently stored in a licensed CCS facility (see section below on the CCS Directive).[138]

Member States were obliged to transpose the New EU ETS Directive into national law by 31 December 2012. In order to avoid any legal uncertainty, the New EU ETS Directive specifies that the relevant directives amended by the New EU ETS continued to apply until 31 December 2012.[139]

On 23 October 2014 the European Council published its Conclusions on 2030 Climate and Energy Policy Framework which may be seen as the commencement of Phase IV EU ETS.

On 6 October 2015 the European Parliament and the Council issued a decision, endorsing a prior EU Commission proposal, concerning the establishment and operation of a market stability reserve in order to address the issues faced by the EU ETS.[140] In order to make the EU ETS more resilient in relation to supply-demand imbalances a market stability reserve will be established in 2018 to be operational as of 2019. The aim is for the reserve to function by triggering adjustments to the annual auction volumes. From 2019, an amount of allowances corresponding to 12% of the number of allowances in circulation would be deducted each year from the auction volumes and placed in the reserve.

C.2 The GHG Reduction Decision

The GHG Reduction Decision provides for binding greenhouse gas emissions targets for individual Member States for sectors of the economy not covered by the EU ETS and provides an indication of the extent to which Member States will be required to address and reduce emissions from non-EU ETS sectors (such as surface transport, construction, and agriculture) over the next decade.

The targets for individual Member States amount to an average reduction of 10%.[141] This reduction, combined with the agreed 21% reduction for EU ETS sector emissions, is designed to ensure that the EU meets its current overall target of a 20% reduction in emissions by 2020.

Those Member States with lower per capita income and strong prospects for future economic growth may increase their greenhouse gas emissions by up to 20% by 2020 compared to 2005 levels, whereas Member States with higher income per capita must reduce their emissions by up to 20% by 2020. A reduction target of 16% has been set for the UK, and a reduction target of 14% has been set for Germany and France. The individual targets are the same as those proposed by the Commission when it announced the climate and energy package in January 2008, but will be revised in light of the Paris Climate Change Agreement.

In order to set a trajectory to meet the target of a 20% reduction in emissions by 2020, the GHG Reduction Decision also sets annual binding emissions limits for each Member State. Several flexibility measures are provided, allowing Member States to bank and borrow up to 5% of limits between years; transfer "overachieved" emissions reductions between Member States; and use, without limit, credits generated by emissions reduction projects within the EU.[142]

Pursuant to the GHG Reduction Decision, Member States which are required to reduce their emissions, or are allowed to increase them by up to 5%, may use an additional amount of CERs equal to 1% of 2005 emissions, subject to the relevant CERs stemming from CDM projects in less developed countries.[143] *De facto*, the only Member States likely to benefit from this measure are Austria, Finland, Denmark, Italy, Spain, Belgium, Luxembourg, Portugal, Ireland, Slovenia, Cyprus and Sweden.[144]

Member States already monitor and report greenhouse gas emissions annually. The GHG Reduction Decision now provides that, if a report indicates non-compliance with a limit for a given year (taking into account any use of the flexible measures or CDM/JI credits), the Member State will have to submit a corrective action plan to the Commission detailing the measures they intend to take to rectify the situation.[145] Further measures to deter Member States from exceeding their limits include a deduction from a Member State's emission allocation for the following year and the temporary suspension of the eligibility to transfer part of the Member State's emission allocation and JI/CDM rights to another Member State until corrective action has been taken.[146] The GHG Reduction Decision does not, however, include the enforcement mechanism requested by the European Parliament which would have required a Member State that fails to meet its target to pay an "excess emissions penalty" equivalent to the fines payable under the EU ETS ie, €100 per tonne of CO_2 emitted.

The GHG Reduction Decision is in force.

On 23 October 2014, the European Council endorsed a further target of 40% reduction on GHG from 1990 levels by 2030.[147] This is a collective target for the Member States which was

subsequently pledged by the European Union under the Paris Climate Change Agreement.

The Paris Climate Change Agreement

In December 2015, 174 countries and the European Union adopted the Paris Agreement which represents a global action plan to reduce greenhouse gas (GHG) emissions and avoid the effects of climate change.

The Paris Agreement legally came into force on 4 November 2016; 30 days after the EU's ratification pushed it past the threshold to take effect. This is the first multilateral agreement on climate change covering almost all of the world's emissions and its entry into force less than a year after its adoption indicates a willingness to take action against the effects of climate change. It sets out a long term goal to put the world on track to limit global warming to below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C.

Parties to the Paris Agreement have a legally binding obligation to pursue domestic mitigation measures, with the aim of achieving the objectives of their contributions, which sends a clear signal to all stakeholders, investors, businesses, civil society and policy-makers that the global transition to clean energy is here to stay and that resources have to shift away from fossil fuels. It also sets up an enhanced transparency and accountability framework, including the biennial submission by all Parties of greenhouse gas inventories and the information necessary to track their progress, a technical expert review, a facilitative, multilateral consideration of Parties' progress and mechanism to facilitate implementation of and promote compliance.

C.3 Changes in EU ETS

As a result of security issues relating to fraud and theft in the EU ETS market, in early 2011 the Commission took immediate steps to temporarily suspend all national registries until they fulfilled certain minimum security requirements. The Commission Regulation (EU) No 1193/2011 of 18 November 2011[148] (the "2011 Regulation")[149] introduced further and more long-term, security measures, such as the introduction of the single EU registry for the EU ETS which is to replace the national registries from 2013. The 2011 Regulation was repealed and has now been replaced by the Commission Regulation No 389/2013 of 2 May 2013 (the "2013 Regulation").[150] The 2011 Registries Regulation was updated so as to put in place a formal exchange mechanism to use international credits under the directly in EU ETS, see Section 6 of the 2013 Registries Regulation for these provisions.[151] The 2013 Regulation sets out operational and maintenance requirements (amongst others) for the Union registry for the trading period commencing 1 January 2013 and subsequent periods, as well as for the independent transaction log provided for in Article 20(1) of Directive 2003/87/EC. It also provides for the creation of a communication system between the Union registry and the independent transaction log.[152]

The 2013 Regulation applies to (a) EUAs created for the trading period of the EU ETS commencing on 1 January 2013 and subsequent periods, and (b) aviation allowances to be auctioned that were created for the trading period running from 1 January 2012 to 31 December 2012.[153]

The new measures, which were first adopted in the 2011 Regulation, are said to align the new Union registry (implemented August 2012) with security measures generally used in the financial sector. Most provisions apply from the date that the single EU registry became fully operational. A few measures have been effective since the entry into force of the 2011 Regulation (ie, 30 November 2011), and with others having been implemented during software updates in February 2015 and September 2016. The main security measures and their applicability are summarised below.

- A 26-hour delay on EUA transfers between registry accounts, so that fraudulent trades can be spotted before the completion of the transfer (except for transfers to an account on the trusted account list of the transferor).[154] This delay could prove to be problematic, particularly in chain transactions (which are common in the carbon and commodity markets) as it increases the complexity of such transactions. Under the 2013 Regulation, account representatives may cancel transactions during the delay period should they suspect that the relevant transfer was initiated fraudulently, giving rise to further transaction uncertainty.[155]
- A new authorisation system requiring at least two people to sign off before a transfer can be made (except for transfers to an account on the trusted account list of the transferor, and transactions initiated by exempted external platforms).[156]
- Confidentiality in respect of the unique serial number of the EUAs or the Kyoto Protocol unit held or affected by a transaction (except as otherwise required by EU law, or proportionate national laws pursuing a legitimate objective).[157]
- An obligation on each Member State to designate a national administrator to access and manage its accounts.[158]
- The discretion of the national administrators to ban from holding an EU ETS registry account anyone who is under investigation for, is reasonably suspected of or has in fact been convicted of fraud involving EUAs, money laundering or terrorist activities in the last five years.[159] This is likely to mean that more extensive requirements for vetting of account holders will need to be introduced at a national level, and that contractual arrangements between traders will need to be amended to reflect these forthcoming changes.
- Access to confidential information held in the EU registry will be granted to relevant national authorities. In addition, Europol will be granted permanent read-only access to the database.[160]

The new security measures in the 2011 and 2013 Regulations are also be important alongside other changes in the EU ETS regime. From January 2013 the system of auctioning carbon allowances have played a more prominent role. The New EU ETS Directive marks the end of free allowances for electricity production except in limited circumstances[161] and it is expected that these allowances will have be procured at market price using the more transparent auction process. Free allowances are available for those industry sectors with significant risks of carbon leakage but will no longer be available for those without.[162]

The EU has also recently moved to address surplus of carbon allowances. Since 2009, as a result of the financial crisis, there has been a growing surplus of allowances and international credits compared to emissions. This has significantly weakened the carbon price signal.[163] The Commission has proposed introducing an amendment to the Directive 2003/87/EC that will allow for "backloading" of allowances.[164] According to the Commission, this would mean postponing the auctioning of

900 million carbon allowances from the years 2013-2015 until 2019-2020.[165] On 3 July 2013, the European Parliament voted to accept the Commission's proposal for backloading.[166]

The EU ETS is the main instrument to achieve the EU's collective GHG reduction target of 40% below 1990 levels by 2030 target. In 2015, the European Commission proposed a revision of the EU ETS directive aiming to increase the cap reduction in order to meet the 2030 GHG reduction target. This revision is currently under debate at the European Parliament (see below for further details).

C.4 Revision for Phase IV of EU ETS

In July 2015 the Commission presented a legislative proposal for structural reform of the EU emissions trading system for 2021 to 2030 (Phase IV) as a preliminary step in delivering the EU's target to reduce GHG emissions in the EU by at least 40% by 2030 in line with its INDC under the Paris Agreement and its 2030 climate and energy policy framework. The Commission submits that in order to meet this target the sectors covered by the ETS must reduce their emissions by 43% as compared to 2005 levels.

The key features of the Commission's proposal include:

- **The Reduction of Free Allocations**
  The Commission proposed that Phase IV should be split into two five-year phases to allow for allocation and benchmarking figures to be re-evaluated after the first five years. It is intended that this will enable the free allocation process to adjust to technological advances and changing production levels more flexibly. The proposed revisions should result in a 2.2% decline in the overall quantity of allowances every year starting from 2021.
- **More Robust Rules to Guard Against the Risk of Carbon Leakage**
  The Commission proposed that the system of free allocation should be revised to focus on sectors at highest risk of relocating their production outside the EU (at highest risk of carbon leakage) – around 50 sectors in total. Under current carbon leakage rules, 180 sectors get 100% of their European Union allowances (EUAs) for free, the remaining sectors deemed to be below the highest risk receive only 30% of their benchmark values for free. This indicates that many sectors are likely to face increased costs in Phase 4. The Commission also proposes that a considerable number of free allowances set aside for new and growing installations, and rules should be more flexible rules to better align the amount of free allowances with production figures.
- **Benchmarking values should be reset**
  Free allocation is based on benchmark values of the most efficient installations within the industry sector and they are currently calculated on data from 2007-2008. The Commission proposes that benchmarks should be updated to reflect technological advances since 2008. In doing so, the benchmarking values should be reset in 2021 and re-evaluated in 2025 with the second set of rules to apply from 2026.
- **Phase III unallocated allowances will go to the Market Stability Reserve**
  All unallocated Phase III allowances will be transferred to the market Stability reserve except 50 million tonnes used to seed the Innovation Fund. This is a deviation from what was thought to be the original plan to auction unallocated allowances at the end of Phase III.
- **Funding for low-carbon Innovation and Energy Sector Modernisation**
  An Innovation fund will be set up to help industry and power sectors to tackle the innovation and investment challenges of transition to a low-carbon economy. The Innovation fund will extend existing support for the demonstration of innovative technologies to breakthrough innovation industry in renewable energy, carbon capture and storage and low-carbon innovation. 400 million allowances which would amount to approximately €10 billion when sold will be reserved for this purpose from 2021 onwards. Additionally, 50 million of unallocated allowances from 2013-2020 will be used to enable the Innovation Fund to start before 2021. This proposed fund builds on the NER 300 – the existing fund programme created to support low-carbon innovation using the proceeds from 300 allowances during 2013-2020. The Commission also proposed the creation of the Modernisation Fund to support 10 lower-income Member States by facilitating investments to modernise the power sector and wider energy systems resulting in energy efficiency gains. Accordingly, between 2021 and 2030, 2% of allowances (approximately 310 allowances in total) will be set aside to establish the fund with all Member States contributing to the fund. The countries eligible to receive funding have a GDP per capita of less than 60% of the EU average (in 2013) including Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia. The Commission recommends that the ETS directive should set up a governance structure for the Modernisation Fund involving Member States, the European Investment Bank and the Commission.
- **Creation of a reserve for new and growing installations**
  This proposal follows the adoption of the Market Stability Reserve for the EU ETS in September 2015. In 2013 there was a significant surplus in allowances which was expected to increase in following years, resulting in an imbalance in the supply and demand of allowances. This surplus in allowances causes a decline in prices for allowances effectively reducing incentives for low-carbon investment. In order to address this issue, unallocated allowances will be transferred to the MSR in 2020. Following this decision, the Commissions recent proposal of for Phase 4 EU ETS includes a recommendation that 250 million unallocated allowances from 2013 – 2020 be transferred to establish a reserve for new and growing installations.

C.5 The Renewable Energy Directive

The Renewable Energy Directive promotes the use of renewable sources for electricity generation and sets a target for energy from renewables of 20% of total energy consumption across the EU by 2020, including a further target of 10% for energy from renewable sources for each Member State's transport energy consumption.

In order to achieve the overall targets, the Renewable Energy Directive sets a mandatory national target for each Member State stating the overall share of gross energy consumption that must come from renewable energy sources, taking the differing levels of progress achieved by Member States to date into account.[167] The mandatory national targets provide certainty for investors and should encourage technological development. To ensure that the mandatory national targets are achieved, Member States are required to follow an indicative trajectory towards the achievement of their target and each is required to produce a National Action Plan. The plan sets national targets

for the share of energy from renewable sources to be used to meet demands for transport, electricity, heating and cooling in 2020. Member States are free to decide their preferred mix of renewable sources, but were required to present National Action Plans, based on an "indicative trajectory", to the Commission by 30 June 2010.[168] Progress reports are required be submitted every two years. The plans need to be split so that three sectors are identified separately, namely: electricity, heating and cooling, and transport.[169] The findings from the latest EU-wide report in 2015 included the following highlights[170]:

- 25 EU countries were expected to meet their 2013/2014 interim renewable energy targets
- In 2014, the projected share of renewable energy in the gross final energy consumption was 15.3%
- The EU's 2020 renewables target has resulted in around 326 Mt of avoided CO_2 emissions in 2012, rising to 388 Mt in 2013
- The EU's demand for fossil fuels has been reduced by 116 Mtoe (2013 figure)
- The 2014 projected share of renewable energy in transport was 5.7%

Member States can apply financial support schemes in relation to the mandatory targets, although it will not be mandatory to link these with schemes in other Member States. The Renewable Energy Directive also lays down rules relating to statistical transfers[171] between Member States, joint projects between Member States and with non-EU countries[172], Guarantees of Origin,[173] administrative procedures,[174] information and training,[175] and access to the electricity grid for energy from renewable sources[176].

The Renewable Energy Directive contains interim targets for all Member States, in order to ensure steady and measurable progress towards the 2020 targets:[177]

- 30% of the overall 2020 target to be achieved between 2013 and 2014;
- 45% of the overall 2020 target to be achieved between 2015 and 2016; and
- 65% of the overall 2020 target to be achieved between 2017 and 2018.

Whilst there are no financial penalties imposed in relation to any failure in achieving the above targets, the Commission may issue infringement proceedings if Member States do not take "appropriate measures" to try and meet their targets.

Member States can:

- cooperate on joint projects renewable energy projects;[178]
- work with non-EU countries on renewable electricity generation projects;[179]
- link their national support schemes[180] to those of other Member States; and,
- under certain circumstances, count the import of "physical"[181] renewable energy from third-country sources towards their targets.

It may, under certain circumstances, be possible to count "virtual" imports, based on investments in non-EU countries towards a Member State national target.[182]

A system requiring open trading in renewable energy certificates between participants across Member States was rejected in favour of a system only permitting Member States themselves to transfer excess renewable energy credits. These "statistical transfers" can only take place if the Member State has reached its interim renewable energy targets.

The Renewable Energy Directive states that Guarantees of Origin in relation to renewable energy are only to be used to prove the quantity of energy from renewable sources in a supplier's energy mix to final consumers. Member States must ensure that a Guarantee of Origin is issued in response to a request from a generator of renewable electricity and that guarantees are given in relation to each 1MWh generated.[183]

In addition, the Renewable Energy Directive establishes binding criteria to ensure that biofuel and bioliquid production are environmentally sustainable. For the purposes of meeting national targets, energy from these sources must fulfil the requisite criteria. The criteria relate to biodiversity, the protection of rare, threatened or endangered species and ecosystems, and greenhouse gas emissions savings.[184]

After 2017, any greenhouse gas emissions savings resulting from the use of biofuel produced in existing biofuel production plants must at least amount to 50% compared with the emissions from using fossil fuels[185], whereas greenhouse gas emissions from the use of biofuel produced in new installations (ie, those installations which commence production after 1 January 2017) must be at least 60% lower than those from fossil fuels. Unlike traditional, "first-generation" biofuel, it is thought that second-generation biofuels do not present the same risks to the security of food supplies as these biofuels are, for example, produced from wastes, residues, or biomass such as algae, wood residues, or paper waste.

In the past, many smaller producers of renewable electricity have argued that a lack of transparency and restricted access to electricity grids has prevented them from competing in the market. The directive requires Member States to ensure that transmission and distribution system operators provide either priority access or guaranteed access to the grid for electricity produced from renewable energy sources.[186] System operators are required to provide any new generator wishing to be connected to their network with a timetable and a comprehensive estimate of costs associated with the connection[187]. Member States are also obligated to develop transmission and distribution grid infrastructure, intelligent networks, storage facilities and systems that can be operated safely while accommodating renewable generation.[188]

In their National Action Plans, Member States are required to assess whether there is a need to build new district infrastructure for heating and cooling using energy produced from renewable sources (including large biomass, solar and geothermal facilities) in order to achieve their mandatory 2020 national target.[189] Local and regional administrative bodies should be advised to "ensure equipment and systems are installed for the use of heating, cooling and electricity from renewable sources, and for district heating and cooling when

planning, designing, building and refurbishing industrial or residential areas". In particular, they should be encouraged to include heating and cooling systems when planning city infrastructures.[190]

Member States were required to have transposed the Renewable Energy Directive by 5 December 2010.[191]

On 17 October 2012, the Commission published a proposal to amend the Renewable Energy Directive so as to limit global land conversion for biofuel production, and raise the climate benefits of biofuels used in the EU. This proposal has been in force as a directive since 9 September 2015.[192] This directive limits the way Member States can meet the target of 10% for renewables in transport fuels by 2020, introducing a cap of 7% on the contribution of biofuels produced from 'food' crops. Member States must implement the directive into national law by mid-2017, and show how they are going to meet sub-targets for advanced biofuels. The remaining 3% target for renewables in transport fuels may come from a range of alternatives:

- Biofuels from Used Cooking Oil and Animal Fats (counted double)
- Renewable electricity in rail (counted 2.5 times)
- Renewable electricity in electric vehicles (counted 5 times)
- Advanced biofuels (counted double)
- Benchmark for the share of advanced biofuels in the transport sector of 0.5%

C.6 The CCS Directive

The climate change and renewable energy package includes a directive which provides a framework for carbon capture and storage in the EU (the CCS Directive) supporting CCS as an emissions reduction option.

The key provisions of the CCS Directive are:

- the creation of a permit-based CCS storage regime to be administered by Member States and the amendment of existing EU legislation which prohibits or inhibits CCS;[193]
- the establishment of a regime for operators holding permits to pass long-term liability for leakage from storage sites to the licensing Member State, provided certain hand-over criteria are met;[194] and
- requirements for all new combustion plants in the EU built without CCS to have space for CCS equipment and to have carried out studies into the availability of storage sites and the feasibility of "retro-fitting" capture equipment.[195]

By joining up the funding mechanism under the New EU ETS Directive and the provisions of the CCS Directive, the Climate Change Package provides that CCS is financially incentivised through the EU ETS from Phase III (2013 – 2020) and Member States can opt-in for the inclusion of CCS in Phase II (2008 – 2012) (see section on the New EU ETS Directive above). The inclusion of CCS in the EU ETS combined with the allocation of up to 300 million EU ETS allowances from the new entrant reserve have allowed the EU to fund up to 12 CCS demonstration projects.[196] Practically, support for such projects is to be provided via Member States and the mechanics of how and when such support will be made available are currently unclear.

As a result of the CCS Directive, CO_2 stored in geological formations is not to be classed as "emitted" for the purposes of the EU ETS so that credit is given to power stations with CCS technology which are not to be required to surrender allowances for CO_2 which is stored.

Under the CCS Directive there are two types of permit. Firstly an exploration permit which permits certain specified exploration works to be carried out and entitles the permit holder, on an exclusive basis, to explore within the area covers by the permit for appropriate geological formations.[197] Secondly a storage permit which relates to the development and utilisation of geological formations contained in the permit area as storage sites for CO_2, and permits the injection of CO_2 to such formations.[198]

The criteria for the grant of a storage permit are rigorous and involve substantial site characterisation in order to assess its suitability for permanent storage. Applicants must also satisfy technical and financial requirements. As well as delineating the storage complex, storage permits are to contain a number of important provisions including the requirements for operating the storage facility, the total quantity of CO_2 to be stored, the requirements with regard to the composition of the CO_2 stream and an approved monitoring plan.[199]

Permits are to be issued by the competent authority in each Member State. However, the Commission proposes to review and comment on each individual storage permit application before it is awarded and Member States are obliged to take the Commission's comments into consideration.[200]

The CCS Directive also deals with issues relating to liability for damage from CO_2 leaks from storage sites. The Directive contains specific provisions both in respect of damage to the local environment and the climate. With regard to the former, the CCS Directive applies the Environmental Liability Directive (2004/35/EC) to the storage of CO_2 which aims to ensure that any operator of a storage facility prevents and remedies any damage caused by CO_2 leakage.[201] Liability for climate damage resulting from leakage is covered by the inclusion of CCS in the revised EU ETS Directive so that EU ETS allowances need to be surrendered for leaked emissions.[202]

The CCS Directive requires the storage operator to take corrective measures to remedy any leakage, and the storage operator remains responsible for the storage site for as long as it represents a risk (even after closure), until the site is handed over to the competent authority of the relevant Member State.[203] The relevant Member State is required to assume responsibility for storage sites in its territory from the point of handover.[204] Once a handover has occurred, subject to an important caveat, there should be no further liability for the operator.

The CCS Directive contains a provision stating that where there is fault on the part of the operator, including deficiencies in data, concealment of relevant information, negligence, wilful deceit or a failure to exercise due diligence, the competent authority may recover the costs incurred from the operator, even after the transfer of responsibility has taken place.[205] This is a broad derogation from the principle of liability handover. How this is translated into national legislation will be of great interest to operators of storage facilities.

As part of the permitting regime, Member States may require operators to lodge financial security for their prospective liabilities before the injection of CO_2 into a storage facility commences.[206] The scope of these liabilities and the form that the security will take is a matter for individual Member States to decide and will no doubt come under scrutiny when the CCS Directive is implemented at national level. In addition, Member States are entitled to require a contribution from the operator to cover future liabilities as a condition of the handover of responsibility. Member States are permitted to set the level of this contribution subject to a minimum of not less than the cost of monitoring the site for 30 years post-closure.[207]

Whilst stopping short of compulsory CCS for new power plants, there are requirements on the operators of all new combustion plants in the EU with a capacity in excess of 300MW which are built without CCS capabilities to have assessed whether suitable storage sites are available, whether transport facilities are technically and economically feasible and whether it is technically and economically feasible to retrofit the plant for CO_2 capture. The relevant competent authority in the Member State should also ensure that the operator has secured suitable space on the site for the installation of equipment necessary to capture and compress CO_2.[208]

By amending directives relating to the waste and ground water to permit to permit the injection of CO_2 into storage sites, the Climate Change Package removes a significant part of the current prohibitions on CCS under EU legislation.

In addition to the financing support mechanisms in the CCS Directive, financial support for carbon capture and storage is also forthcoming under the European recovery plan.[209] On 20 March 2009, EU leaders agreed proposals for €5 billion of investment in energy and broadband infrastructure projects as part of the European Energy Programme for Recovery (EEPR)[210] EU recovery plan. The €5 billion came entirely from unspent money in the EU budget. Under the plan Germany, the UK, Poland, the Netherlands and Spain were to receive €180 million each, Italy was to receive €100 million and France €50 million.

In June 2008 the European Council, asked the Commission to propose as soon as possible an incentive mechanism for Member States and the private sector to ensure the construction and operation of up to 12 CCS demonstration plants by 2015 to contribute to mitigation of climate change. This target was not been reached and there are only two large scale CCS plants operating in Europe (both in Norway). Originally, 13 projects were shortlisted as funding candidates, among them Hatfield, Kingsnorth, Longannet and Tilbury in the UK, Eemshaven and Rotterdam in the Netherlands and Hürth and Jänschwalde in Germany.

Member States were required to transpose the CCS Directive into national law by 25 June 2011. There were as many as 26 Member States in breach of the transposition requirements when the deadline fell but as of 24 July 2014 only three Member States are yet to have completed transposition.[211]

Little has changed since the EU CCS Network Situation Report 2013/14 was released. The projects have experienced delays. The UK Peterhead CCS project was added to the list above but subsequently terminated due to the cancellation of the UK CCS Commercialisation Competition. Currently only two projects – the ROAD project in the Netherlands and Don Valley in the United Kingdom are ongoing with a total of four projects at the planning stage in the EU, which could be operational around 2020. Once operational, these projects would complement the current two Norwegian commercial projects.

A report dated 18 November 2015 from the EU Commission to the EU Parliament concludes that despite the limited information and practical application, the CCS Directive seems fit for purpose, however the rate of progress with large-scale CCS in Europe is much slower than expected.[212]

C.7 The Biofuel Directive

The measures introduced by the Biofuel Directive have provided a significant boost to the European biofuel market.

The Biofuel Directive introduces amendments to two previous European directives relating to the quality of petrol and diesel (Directive 98/70/EC of the European Parliament and Council relating to the quality of petrol and diesel fuels as amended by Directive 2003/17/EC). The changes provide for a mechanism for the reporting[213] of and reduction in the life cycle of greenhouse gas emissions from fuel; enable the more widespread use of ethanol in petrol; and tighten environmental quality standards for specified fuel parameters.[214]

The Biofuel Directive obliges fossil fuel suppliers to reduce greenhouse gas emissions from their fuels throughout their life-cycle by 6%, a reduction from the Commission's initial proposal for a binding 10% reduction. Member States may also require suppliers to comply with intermediate targets (a 2% reduction by the end of 2014 and a 4% reduction by the end of 2017).[215] The use of Certified Emissions Reductions obtained from projects related to flaring reductions is expected to produce a further 2% reduction which will not be linked to EU oil consumption.

Perhaps the most significant change brought about by the Biofuel Directive is the increase in the permissible content of biological components of petrol to up to 10% by the phasing in of 10% Ethanol (E10) petrol. Petrol meeting the pre-existing requirements (containing up to 5% by volume of ethanol) was permitted to be marketed until 2013. This transitional period was introduced to mitigate the potential damage that would be caused to vehicles which were not calibrated or covered by a warranty allowing the use of petrol with an ethanol content of over 5% by volume.[216] In addition, Article 3(3) gives flexibility to Member States to place such petrol on the market for a longer time if deemed necessary: "Member States shall require suppliers to ensure the placing on the market of petrol with a maximum oxygen content of 2.7% and a maximum ethanol content of 5% until 2013 and may require the placing on the market of such petrol for a longer period if they consider it necessary. They shall ensure the provision of appropriate information to consumers concerning the biofuel content of petrol and, in particular, on the appropriate use of different blends of petrol."

There are also changes to current diesel specifications. Under the Biofuel Directive the content of fatty acid methyl ester (FAME) in diesel is permitted up to 7% by volume and for other advanced biodiesel blends there is no restriction at all in the

conventional diesel specification. Although allowances are made for Member States that want to make biodiesel blends with a FAME content of 10% by volume available, as a result of the new specification, diesel constituting up to 7% by volume of FAME (B7) is likely to be the grade of diesel predominately available on the European market.[217]

European legislators intend the Biofuel Directive to incorporate sustainability criteria for biofuel used to meet greenhouse gas reduction requirements. Despite criteria being set out in the Renewable Energy Directive, these criteria had not been agreed by the time that the package was adopted. The European Commission has been tasked with developing a methodology to assess the environmental impact of biofuel across their life-cycle, and produced a report to this effect in January 2011.[218] A second report was issued in February 2013 which focuses in particular on the impact in developing countries.[219]

Member States had until 31 December 2010 to transpose the Biofuel Directive into national law.[220] The Biofuel Directive has had a significant impact on fuel suppliers throughout the distribution chain as well as fuel producers, who more so than other affected parties, have had to adapt to meet the new quality criteria.

As discussed above, the 2015 directive on the quality of petrol and diesel fuels introduces a cap of 7% on the contribution of biofuels produced from 'food' crops. Member States must implement the directive into national law by mid-2017, and show how they are going to meet sub-targets for advanced biofuels.

C.8 The Emissions Standards Regulation

Despite improvements in fuel efficiency, CO_2 emissions from road transport across the EU increased by 26% between 1990 and 2004, and now account for almost a third of the EU's total emissions. When it became apparent that voluntary car industry reduction targets would not be met, the European Commission proposed new legislation to impose enhanced emissions performance requirements.

The Emissions Standards Regulation sets the first legally binding standards for CO_2 emissions from passenger cars. This Regulation promotes the adoption of improvements in technology in the sector in order to meet requirements to reduce, from current levels, to 130g of CO_2 per km travelled (as an EU average for new cars). Additional measures are also promulgated to achieve a further 10g per km which include the increased use of sustainable biofuel and increase efficiencies from technology such as improved air-conditioning systems and tyres. The Emissions Standards Regulation was amended by Regulation 397/2013[221] which replaced Annex II in the Emissions Standards Regulation on monitoring and reporting of emissions.

The Emissions Standards Regulation is much less demanding than the European Commission's original proposal, which had sought to impose significant financial penalties for missing targets that would have applied in full from 2012. The car industry argued strongly that lead-in times for new car development would have made complying with the proposed targets within this timeframe impossible.

Additional credit[222] will be given for very low emission vehicles, and in certain circumstances for biofuel-capable cars, until 2016. The target for each manufacturer will be set by reference to a limit value curve, with manufacturers of heavier cars being allowed higher emissions than those of smaller cars, but also being required to make steeper cuts from current fleet average emission levels.[223]

Manufacturers (including companies within the same manufacturing group) may agree to pool together to meet the emissions targets.[224] In that case, a nominated pool manager is responsible for paying any penalties, and evidence must be provided that it is sufficiently financially robust to do so. In order to discourage cartel behaviour amongst pool members that are not part of the same group of companies, pools must allow open, transparent and non-discriminatory participation on commercially reasonable terms, and the usual anti-competition rules apply. Pool members are not allowed to share information (eg, on pricing or research developments) other than that which directly relates to compliance with their targets. This does not preclude collaboration agreements which are unconnected with the pooling agreement and do not otherwise violate applicable laws or regulations.[225]

Small-scale manufacturers (registering fewer than 10,000 cars per year) and niche manufacturers (registering fewer than 300,000 cars per year) may benefit from lower targets. Small-scale manufacturers may put forward a reduction target consistent with their reduction potential in light of economic, technological and market considerations, but such reduced targets are only available for a maximum of five years, whereas niche manufacturers, instead of having a target set by reference to the limit curve, are able to apply for a lower target of a reduction of 25% from 2007 emission performance levels. These lower targets were required to be achieved by 2012.[226]

Manufacturers may seek to gain credit of up to 7g of CO_2/km travelled for eco-innovations shown to improve CO_2 emissions performance, provided the improvements go beyond what is otherwise required by the regulation. However, over time, eco-innovations (and in particular reductions in car weight) will be subsumed into required standards and no extra credit will be given.[227]

The Emissions Standards Regulation's penalty scheme was also amended from the original proposal to ensure that manufacturers who only miss the target by a small margin are less severely penalised. The fines will now be:

- €5/g per new car registered for the first g/km over target;
- €15 for the second g/km over target;
- €25 for the third g/km; and
- €95 for each gram above three grams until 2019.

From 2019 the full penalty of €95 for each g/km over the target will apply.[228]

From 2011 onwards manufacturers have been notified by the Commission of any shortfall in meeting their targets for the previous year. Inaccuracies can be challenged and the notice will be confirmed by 31 October of the relevant year. Details of each manufacturer's performance are also published.[229]

A longer-term target of 95 grams of CO_2 per kilometre travelled by 2020 is also specified in the Emissions Standards Regulation. Mechanisms for meeting this goal and penalties for missing it will be set following a review of the regulation which will be completed by 1 January 2013. That review must encompass a review of all targets applying from 2012 and the small-scale manufacturer and niche market derogations. It must also include an overall assessment of the impact of the regulation on the car industry and dependent industries such as parts providers.[230] The Commission proposed a regulation amending the Emissions Standards Regulation on 11 July 2012 that would, from 2020 onwards, have set a target of 95g CO_2/km as average emissions.[231] In June 2013, however, this proposal was blocked.[232] At time of writing, no new date has been set for the policy to be approved.

The Emissions Standards Regulation has already entered into force and is directly applicable in all EU Member States, although its measures will be introduced gradually until 2016.

Following from the Emissions Standards Regulation and Volkswagen's admission of using software to cause its car engines to behave differently during emissions tests compared to real world driving, the new Real-Driving Emissions Regulation has been proposed by the Commission.[233]

On 28 October 2015 the Technical Committee for Motor Vehicles (TCMV) voted in favour of the adoption of the second package of rules to introduce a new real driving emission (RDE) test conducted using on-board portable emissions measurement systems (PEMS). The RDE test procedure will start from January 2017 and is intended to measure more accurately pollutant emissions from cars and other light vehicles. On 12 February 2016 the EU Council voted in favour of the Commission's proposal for the Real-Driving Emissions regulation introducing a second package of RDE tests.[234]

C.9 The way ahead for Europe's climate change regime

Taken as a whole, the Climate Change Package is the EU's first attempt to create a comprehensive European legal regime covering the carbon and renewable energy sectors, helping to inform investment decisions in these sectors, by securing a future for carbon trading and laying the foundations for future investment in renewable technologies, biofuel and the development of carbon capture and storage.

At policy level, the Climate Change Package aims to achieve a reduction of at least 20% in the levels of greenhouse gas emissions by 2020; rising to 30% under the EU's commitments under the Paris Agreement and committing other developed countries to comparable emission reductions and economically more advanced developing countries to contributing adequately according to their responsibilities and respective capabilities; and a 20% share of EU energy consumption to be generated from renewable sources by 2020.

The original Climate Change Package has significantly accelerated the transition of the EU Member States economies to reduce their carbon footprint. With the EU's sights on 2030 and further cuts in greenhouse gas emissions the EU is well placed to drive forward ambitious cuts in global emissions and to reap the rewards through stimulating technological developments and new technologies.

D. Energy efficiency

The improvement of energy efficiency in the EU is another element of the EU's Europe 2020 Strategy for smart, sustainable and inclusive growth and the transition to a resource efficient economy. The European Council's target of at least 27% energy efficiency savings in 2030 will be reviewed in 2020 with the aim of adjusting it upwards to an EU level of 30%.

In pursuit of this goal, the Commission seeks to increase finance instruments to facilitate increased investment in energy efficiency in relation to building renovation across Europe, including retrofitting existing buildings making them more energy efficient, and making full use of sustainable space heating and cooling will reduce the EU's energy costs. Significantly, in April 2016 the Vice-President for Energy Union Maroš Šefčovič indicated that the European Commission would present a new Smart Financing for Smart Building initiative in the autumn, alongside revisions to the Energy Efficiency Directive and began pushing for new public financing instruments to generate a wave of building renovation in Europe during his Energy Union tour in 2015. The EU budget for 2014-2020 significantly increased the contribution to building and renovation. Furthermore, in February 2016 the Commissions released a proposal of a Heating and Cooling strategy to move towards a smarter, more efficient and sustainable heating and cooling sector.

Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (the "Energy Efficiency Directive")[235] establishes a common framework of measures for the promotion of energy efficiency within the Union in order to ensure the achievement of the Union's 2020 20% headline target on energy efficiency and to pave the way for further energy efficiency improvements beyond that date. It lays down rules designed to remove barriers in the energy market and overcome market failures that impede efficiency in the supply and use of energy, and provides for the establishment of indicative national energy efficiency targets for 2020.[236]

The Energy Efficiency Directive requires Member States to set energy efficiency targets that take into account the EU's 2020 energy consumption targets.[237] Articles 24(1) and 24(2) of the Energy Efficiency Directive require Member States to issue reports on progress made towards achieving national energy efficiency targets and National Energy Efficiency Action Plans. As required in Article 24(11), the Commission then makes the reports publicly available.[238]

E. Upstream

Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 on the conditions for granting and using authorizations for the prospection, exploration and production of hydrocarbons (the "Hydrocarbons Licensing Directive")[239] concerns conditions imposed on the grant and use of authorisations for the prospection, exploration and production of hydrocarbons.

Generally Member States have sovereign rights over hydrocarbon resources located within their territories. It is up to each Member State to determine the precise geographical areas where the rights to prospect, explore and produce hydrocarbons may be

exercised. It is also the Member States' responsibility to authorise particular entities to exercise such rights.[240]

The introduction of the Hydrocarbons Licensing Directive was aimed at reinforcing the integration of the internal energy market, encouraging greater competition within the market and improving the security of supply. The Hydrocarbons Licensing Directive has achieved its aims by establishing a set of common rules which guarantee fair, non-discriminatory access to rights of prospection, exploration and production of hydrocarbons.

The Hydrocarbons Licensing Directive provides that there must be limits to the geographical area and duration of an authorisation. These limits must be proportionate and should be determined based on what is justified to ensure the best possible exercise of the rights granted, taking into account both economic and technical factors.[241] The aim of this is to prevent any single entity from having exclusive rights to an area where the prospection, exploration and production could be more effectively carried out by several entities. The provisions which reserve the right to obtain authorisations for single entity for a specific geographical area within the territory of a Member State were abolished in 1997 by Member States concerned.

According to the Hydrocarbons Licensing Directive, the procedures for granting authorisations must be transparent and based on objective and non-discriminatory criteria.[242] The application process must be open to any interested entities.[243] Selection from among the various entities must be based on criteria relating to their technical and financial capabilities, the way in which they propose to prospect, explore and/or bring into production the hydrocarbons from the geographical area in question and, if the authorisation is put up for sale, the price which the entity is prepared to pay in order to obtain the authorisation.

All the information relating to the authorisation (type of authorisation, geographical area which may be applied for in whole or in part, deadline envisaged for granting the authorisation, selection criteria, etc.) should be published in the Official Journal of the European Union at least 90 days before the deadline for the submission of applications.[244]

The Hydrocarbons Licensing Directive provides the Member States with the right to make access available to these hydrocarbon resources by granting rights but Member States may impose requirements further to considerations of national security, public safety, public health, security of transport, protection of the environment, protection of biological resources, the planned management of hydrocarbon resources or to the payment of a financial contribution or a contribution in hydrocarbons.[245]

The Hydrocarbons Licensing Directive also introduces principles of reciprocity with countries outside the EU. The entities of a particular Member State must receive treatment in third countries which is comparable to that which the entities of third countries receive in the Community.[246]

The Member States are required to provide an annual report containing information[247] on the geographical areas which have been opened, the authorisations granted, the entities holding those authorisations and the available reserves in their territory.

Directive 2004/17/EC[248] runs concurrently with the Hydrocarbons Licensing Directive and regulates the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors.[249]

Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/EC ("The Offshore Safety Directive"[250])

In March 2013, following lengthy negotiation, the European Commission, Council and European Parliament reached political agreement on a new directive seeking to address the risk of major accidents from offshore oil and gas operations in EU waters. The directive entered into force on 19 July 2013.

The Offshore Safety Directive will apply to existing and future installations and operations. There are provisions limiting its applicability to landlocked Member States and Member States with no offshore activities. The main features of the Offshore Safety Directive include: [251]

- provisions establishing minimum conditions for safe offshore oil and gas operations[252] including the submission by operators of a major hazards report prior to commencement of offshore operations; [253]
- provisions improving the response mechanism for accidents and requiring operators to include emergency plans[254] as well as an assessment of "oil spill response effectiveness;[255]
- the requirement that oil and gas operations only be conducted by operators appointed by licensees or licensing authorities;[256]
- provisions imposing financial liability for environmental damage on licence holders (not operators)[257] and extending area of liability for all damage from territorial waters of the Member State to the entire continental shelf area;[258]
- provisions ensuring the independence and objectivity of the competent authority - Member States must ensure a clear separation between regulatory/environmental functions on the one hand and economic functions on the other so to avoid conflicts of interest;[259]
- the requirement that licensing authorities consider whether potential licensees have adequate provision for liabilities potentially deriving from operations;[260]
- rules on transparency and sharing of information;[261] and
- cooperation between Member States with regard to emergency response plans and trans-boundary emergency preparedness and response.[262]

No later than 19 July 2019, the Commission will submit a report to the European Parliament and Council assessing implementation of the directive.[263]

Member states with offshore waters will have two years to transpose the directive into national legislation, while a landlocked country will only have to transpose it once a company registers in such a country and conducts operations outside of the Union.[264]

The Offshore Safety Directive does not require mandatory financial security to be provided (as was strongly requested by the European Parliament). However, it obliges the Commission to report by 31 December 2014 on the availability of such instruments as well as on the handling of claims for third party compensation for damage caused by oil and gas operations.[265]

In 2015, the European Commission published a report on liability and compensation in the case of offshore accidents in Europe. It finds that the effects of the Offshore Safety Directive will, by the time of its first implementation report, demonstrate whether it is appropriate to bring certain conduct leading to major offshore accidents within the scope of criminal law. However, European Commission report states that at this point broadening liability provisions through EU legislation does not appear appropriate.[266]

Endnotes

1. Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (OJ L 1 of 4.1.2003, p.1), as amended by Council Regulation (EC) No 411/2004 (OJ L 68 of 6.3.2004, p. 1), Council Regulation (EC) No 1419/2006 (OJ L 269of 25.09.2006, p.1), Council Regulation (EC) No 169/2009 (OJ L 61 of 05.03.2009, p.1), Council Regulation (EC) No 246/2009 (OJ L 79of 26.02.2009, p.1) and Council Regulation (EC) No 487/2009 (OJ L 14825.02.2009, p.1)
2. OJ L 211of 14.08.2009, p. 55
3. OJ L 211of 14.08.2009, p. 94
4. OJ L 211 of 14.08.2009, p. 1
5. OJ L 211 of 14.08.2009, p. 15
6. OJ L 211of 14.08.2009, p. 36
7. The unbundling provisions are contained in Articles 9 to 11 and 13 to 14 Third Electricity Directive and Articles 9 to 11 and 14 Third Gas Directive.
8. Articles 9 in the Third Electricity Directive and Third Gas Directive, respectively.
9. See Commission Decision in relation to Scotland, last accessed on 25 July 2013 at http://ec.europa.eu/energy/gas_electricity/interpretative_notes/doc/certification/2012_019_020_uk_en.pdf
10. Commission Staff Working Document on Ownership Unbundling: "The Commission's Practice in Assessing the Presence of a Conflict of Interest Including in Case of Financial Investors" last accessed on 25 June 2013 at http://ec.europa.eu/energy/gas_electricity/interpretative_notes/doc/implementation_notes/swd_2013_0177_en.pdf
11. Articles 13 Third Electricity Directive and Article 14 Third Gas Directive.
12. Article 14(1) Third Electricity Directive and 15 (1) Third Gas Directive.
13. Article 13(2)(a) Third Electricity Directive and Article 14(2)(a) Third Gas Directive
14. Article 14(1) Third Electricity Directive and 15(1) Third Gas Directive
15. Article 13(5)(b) Third Electricity Directive and Article 14(5)(b) Third Gas Directive
16. Article 13(1) Third Electricity Directive and 14(1) Third Gas Directive (approval by Commissioner). Articles 3(1) of the New Electricity and Gas Regulations provide for opinions given by ACER.
17. Article 13(2)(c) Third Electricity Directive and 14(2)(c) Third Gas Directive
18. Article 19(3) Third Electricity Directive and Article 19(3) Third Gas Directive
19. Article 19(8) Third Electricity Directive and Article 19(8) Third Gas Directive
20. Article 22 Third Electricity Directive and 22 Third Gas Directive
21. Article 21 Third Electricity Directive and 21 Third Gas Directive
22. Article 37(5) Third Electricity Directive and Article 41(5) Third Gas Directive
23. http://ec.europa.eu/energy/gas_electricity/doc/2014_iem_communication_annex3.pdf
24. Article 9(8) of both the Third Electricity Directive and the Third Gas Directive
25. Article 10 of both the Third Electricity Directive and the Third Gas Directive

26. Article 11(3) of both the Third Electricity Directive and the Third Gas Directive
27. Article 11(1) of both the Third Electricity Directive and the Third Gas Directive
28. Article 11(2) of both the Third Electricity Directive and the Third Gas Directive
29. Article 11(5) of both the Third Electricity Directive and the Third Gas Directive
30. Directives 2003/54/EC and 2003/55/EC, respectively
31. Article 35 Third Electricity Directive, Article 39 Third Gas Directive
32. Article 37 Third Electricity Directive, Article 41 Third Gas Directive
33. Article36 (a) Third Electricity Directive, Article 40(a) Third Gas Directive
34. On the structure of ACER, see Article 3 ACER Regulation
35. Article 4 ACER Regulation
36. Article 5 ACER Regulation
37. Article 6(1) ACER Regulation.
38. Articles 7(2) and 7(3) ACER Regulation
39. Article 7(4) and 7(6) ACER Regulation
40. Article 9(1) ACER Regulation
41. Article 6(4) ACER Regulation
42. Article 11(1) ACER Regulation
43. Article 6(8) ACER Regulation
44. Article 4(e) ACER Regulation
45. Articles 7(7) ACER Regulation
46. Article 8(1) ACER Regulation
47. http://www.acer.europa.eu/official_documents/public_consultations/closed%20public%20consultations/pages/default.aspx
48. Articles 5 of the New Electricity and New Gas Regulations, respectively
49. Articles 8 of the New Electricity and New Gas Regulations, respectively
50. Third Energy Package Regulation (EC) No714/2009
51. ACER which was established by rule 713/2009, is the European organization of energy regulators
52. https://www.entsoe.eu/Documents/MC%20documents/2nd%20report%20on%20DA%20and%20ID%20coupling%20progress%20V0.6%20-%20170206%20-%20MC_voting.pdf
53. https://ec.europa.eu/energy/en/topics/wholesale-market/electricity-network-codes
54. Article 43(1s) of ENTSO-E Network Code on Electricity Balancing s
55. Chapter 6, Article 41(2)
56. http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32013R0984
57. http://www.acer.europa.eu/media/news/pages/implementation-of-network-code-on-capacity-allocation-mechanisms-well-on-track,-but-not-yet-completed.aspx
58. Article 4(1)
59. https://www.entsog.eu/public/uploads/files/publications/INT%20Network%20Code/2016/INT1031_161122_EN16726_2015_impact_analysis_final_report.rev%202.pdf
60. http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Implementation%20Monitoring%20Report%20on%20Congestion%20Management%20Procedures%20-%20Update%202016.pdf
61. http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Report%20on%20the%20implementation%20of%20the%20Balancing%20Network%20Code.pdf
62. https://www.entsog.eu/public/uploads/files/publications/Tariffs/2017/170322_ENTSOG_TAR%20NC%20IDoc_Flipbook.pdf
63. http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Implementation%20Monitoring%20Report%20on%20Congestion%20Management%20Procedures%20-%20Update%202016.pdf
64. http://www.acer.europa.eu/Official_documents/Public_consultations/PC_2016_G_03/20161215_EoR_Call_for_evidence_congestion_indicators.pdf
65. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.014.01.0014.01.ENG&toc=OJ:L:2017:014:TOC
66. Articles 44 Third Electricity Directive and article 40 Third Gas Directive
67. Article 15 Third Gas Directive
68. Articles 33 and 41 (n) Third Gas Directive
69. Article 36 Third Gas Directive and Article 17 New Electricity Regulation
70. OJ L 115 of 25.04.2013, p. 39 - 75
71. Article 1(1) New TEN-E Regulation
72. Article 3(1) New TEN-E Regulation
73. Article 3(4) New TEN-E Regulation
74. Article 3(1) New TEN-E Regulation
75. Article 15 New TEN-E Regulation
76. Article 14 New TEN-E Regulation
77. Article 7(3) New TEN-E Regulation
78. Article 10(2) New TEN-E Regulation
79. Article 8(3) New TEN-E Regulation
80. Article 8(1) New TEN-E Regulation
81. Article 7(5) New TEN-E Regulation
82. http://ec.europa.eu/energy/infrastructure/pci/doc/20130724_pci_guidance.pdf last accessed on 31 July 2013.
83. https://ec.europa.eu/energy/sites/ener/files/documents/5_2%20PCI%20annex.pdf
84. Proposal for a Directive of the European Parliament and the Council on Markets in Financial Instruments repealing Directive 2004/39/EC of the European Parliament and of the Council (COM (2011) 656/4)

85. http://www.esma.europa.eu/news/ESMA-consults-MiFID-reforms?t=326&o=home

86. Commission Regulation (EC) No 1287/2006 of 10 August 2006; OJ L 241 of 02.09.2006, p. 1 - 25

87. Regulation 2011/1227; OJ L 326 of 08.12.2011, p. 1

88. ACER internet publication: "*Questions and Answers on REMIT*" which can be found at http://acernet.acer.europa.eu/portal/page/portal/ACER_HOME/Activities/REMIT/ACER%20Guidance%20and%20Questions%20%20Answers%20on%20REMIT last accessed on 2 August 2013

89. http://www.acer.europa.eu/Official_documents/Other%20documents/4th%20Edition%20ACER%20Guidance%20REMIT.pdf

90. https://www.acer-remit.eu/portal/custom-category/remit_questions

91. Article 3 REMIT

92. Article 5 REMIT

93. Article 4 REMIT

94. Article 8 REMIT

95. Article 18 REMIT

96. No 1348/2014

97. Regulation 2012/648; OJ L 201 of 27.7.2012, p.1

98. Commission Delegated Regulation 148/2013: OJ L 052 of 23.02.2013, p. 1 - 10; Commission Delegated Regulation No 149/2013: OJ L 052 of 23.02.2013, p. 11 - 24; Commission Delegated Regulation 150/2013: OJ L 052 of 23.02.2013, p. 25 - 32; Commission Delegated Regulation 151/2013: OJ L 052 of 23.02.2013, p. 33 - 36; Commission Delegated Regulation 152/2013: OJ L 052 of 23.02.2013, p. 37 - 40; Commission Delegated Regulation 153/2013: OJ L 052, 23.02.2013, p. 41 - 74

99. http://ec.europa.eu/transparency/regdoc/rep/3/2017/EN/C-2017-4408-F1-EN-MAIN-PART-1.PDF

100. http://ec.europa.eu/transparency/regdoc/rep/3/2017/EN/C-2017-1658-F1-EN-MAIN-PART-1.PDF

101. http://ec.europa.eu/transparency/regdoc/rep/3/2017/EN/C-2017-1324-F1-EN-MAIN-PART-1.PDF

102. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2017.017.01.0001.01.ENG

103. http://ec.europa.eu/finance/financial-markets/docs/derivatives/161004-delegated-act_en.pdf

104. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016R1178

105. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2016:137:TOC

106. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:JOL_2016_103_R_0003

107. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32015R2205

108. Article 4(1) EMIR

109. Articles 14 and 16 EMIR

110. Article 11 EMIR

111. Article 9 EMIR

112. Article 5(2) EMIR

113. Article 55 EMIR

114. Article 25(2) EMIR

115. OJ L 140 of 05.06.2009, p. 63 - 87

116. OJ L 140 of 05.06.2009, p. 136 - 148

117. OJ L 140 of 05.06.2009, p. 16 - 62

118. OJ L 140 of 05.06.2009, p. 114 - 135

119. OJ L 140 of 05.06.2009, p. 88 - 113

120. OJ L 140 of 05.06.2009, p. 1 - 15

121. Art 1 (12) of the New EU ETS Directive

122. Articles 1(9) and 1(10) of the New EU ETS Directive

123. Article 1(12) (7) of the New EU ETS Directive

124. Art 1(12) (*Article 10a (8) of amended Directive 2003/87/EC*) of the New EU ETS Directive

125. Art 1(9) of the New EU ETS Directive

126. These provisions are Articles 10a and 10c of amended Directive 2003/87/EC

127. Article 1(11) (2)a of the New EU ETS Directive

128. Article 1(11) (2)b of the New EU ETS Directive

129. Art 1(11) and Annex II of the New EU ETS Directive (Article 10 and Annex IIb respectively of amended Directive 2003/87/EC)

130. Art 1 (28) of the New EU ETS Directive (*Article 27(1) of amended Directive 2003/87/EC; OJ L 275 of 25.10.2003, p. 32 - 46*)

131. Art 1(12) of the New EU ETS Directive (*Article 10c(1) of amended Directive 2003/87/EC; OJ L 275 of 25.10.2003, p. 32 - 46*)

132. Art 1(12) of the New EU ETS Directive (*Article 10b of amended Directive 2003/87/EC; OJ L 275 of 25.10.2003, p. 32 - 46*)

133. Commission Decision 498/2012/EU of 17 August 2012 amending Decisions 2010/2/EU and 2011/278/EU as regards the sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage (notified under document C(2012) 5715); OJ L 241 of 07.09.2012, p. 52 - 54
A collection of the Commission's materials relating to carbon leakage is available at: http://ec.europa.eu/clima/policies/ets/cap/leakage/documentation_en.htm.

134. Commission Decision 2011/278/EU; OJ L 130 of 17.05.201, p. 1 - 45

135. Article 1(13) of the New EU ETS Directive (*Articles 11a and 28 of amended Directive 2003/87/EC; OJ L 275 of 25.10.2003, p. 32 - 46*)

136. Ibid.

137. Ibid.

138. Article 1(15) of the New EU ETS Directive

139. Article 2 of the New EU ETS Directive

140. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2015.264.01.0001.01.ENG

141. Annex II of the GHG Reduction Decision

142. Articles 3(3), 3 (4) and 5 of the GHG Reduction Decision

143. Article 5(5) of the GHG Reduction Decision

144. Article 5 of the GHG Reduction Decision
145. Article7 (1)(b) of the GHG Reduction Decision
146. Article 7 (1)(a) and (c) of the GHG Reduction Decision
147. http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145356.pdf
148. OJ L 315of 29.11.2011, p. 1
149. This Regulation is pursuant to Directive 2003/87/EC of the European Parliament and of the Council and Decision No 280/2004/EC of the European Parliament and of the Council and amending Commission Regulations (EC) No 2216/2004 and (EU) No 920/2010
150. OJ L 122 of03/05/2013, p. 1 - 59
151. http://ec.europa.eu/clima/policies/ets/registry/faq_en.htm last accessed on 29 July 2013
152. Article 1 of the 2013 Regulation
153. Article 2 of the 2013 Regulation
154. Article 39(3) of the 2013 Regulation
155. Article 39(4) of the 2013 Regulation
156. Article 23(3) of the 2013 Regulation
157. Article 110(1) of the 2013 Regulation
158. Article 8(1) of the 2013 Regulation
159. Article 22(2) of the 2013 Regulation
160. Article 110 of the 2013 Regulation
161. Article 1(12) of the New EU ETS Directive
162. Article 1(12) of the New EU ETS Directive
163. http://ec.europa.eu/clima/policies/ets/reform/index_en.htm last accessed on 31 July 2013
164. http://ec.europa.eu/clima/policies/ets/cap/auctioning/docs/com_2012_416_en.pdf
165. http://ec.europa.eu/clima/policies/ets/reform/index_en.htm last accessed on 31 July 2013
166. http://ec.europa.eu/clima/news/articles/news_2013070302_en.htm last accessed on 31 July 2013
167. See Annex I of the Renewable Energy Directive
168. Article 4 of the Renewable Energy Directive
169. Article 22 of the Renewable Energy Directive
170. http://eur-lex.europa.eu/resource.html?uri=cellar:4f8722ce-1347-11e5-8817-01aa75ed71a1.0001.02/DOC_1&format=PDF
171. Article 6 of the Renewable Energy Directive
172. Articles 7, 8 and 9 of the Renewable Energy Directive
173. Article 15 of the Renewable Energy Directive
174. Article 13 of the Renewable Energy Directive
175. Article 14 of the Renewable Energy Directive
176. Article 6 of the Renewable Energy Directive
177. Article 3(2) and Annex I (B) of the Renewable Energy Directive
178. Article 7 and 8 of the Renewable Energy Directive
179. Article 9 of the Renewable Energy Directive
180. Article 11 of the Renewable Energy Directive
181. Article 16 of the Renewable Energy Directive
182. Article 9 in conjunction with Article 10 of the Renewable Energy Directive
183. Article 15 of the Renewable Energy Directive
184. See Article 1 and Article 17 of the Renewable Energy Directive
185. Article 17 (2) of the Renewable Energy Directive
186. Article 16(2) of the Renewable Energy Directive
187. Article 16(5) of the Renewable Energy Directive
188. Article 16 (1) of the Renewable Energy Directive
189. Ibid.
190. Article 13(3) of the Renewable Energy Directive
191. Article 27 (1) of the Renewable Energy Directive
192. https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive
193. Articles 5 to 11 of the CCS Directive
194. Articles 12 to 20 of the CCS Directive
195. Article 33 of the CCS Directive, amending Directive 2001/80/EC (OJ L 309 of 27.11.2001, p. 1 – 21)
196. Article 1(12) of the New EU ETS Directive (*Article 10a (8) of the amended Directive 2003/87/EC; OJ L 275 of 25.10.2003, p. 32 - 46*)
197. Article 5 of the CCS Directive
198. Article 6 of the CCS Directive
199. Articles 7 and 8 of the CCS Directive
200. Article 8(2) and Article 10 of the CCS Directive
201. Article 17(2) of the CCS Directive
202. Article 17(2) of the CCS Directive
203. Ibid.
204. Article 18 of the CCS Directive
205. Article 18(7) of the CCS Directive

206. Article 20 of the CCS Directive
207. Article 20 of the CCS Directive
208. Article 33 of the CCS Directive (*Article 9a of the amended Directive 2001/80/EC; OJ L 309 of 27.11.2001, p. 1 - 21*)
209. Regulation 663/2009/EC of 13 July 2009; OJ L 200 of 31.07.2009, p. 31 - 45
210. http://ec.europa.eu/energy/eepr/doc/2014_cswd_council_final.pdf
211. http://ec.europa.eu/clima/news/articles/news_2014072401_en.htm and http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52014DC0099
212. http://ec.europa.eu/clima/policies/strategies/progress/docs/com_2015_576_annex_2_en.pdf
213. Article 1(9) of the Biofuel Directive
214. Article 1(4) of the Biofuel Directive
215. Article 1(4) of the Biofuel Directive
216. Article 1(3) of the Biofuel Directive (*Article 3(3) of amended Directive 98/70/EC; OJ L 350 of 28.12.1998, p. 58 - 68*)
217. Article 1(4) of the Biofuel Directive (*Article 4 of amended Directive 98/70/EC; OJ L 350 of 28.12.1998, p. 58 - 68*)
218. Report on the operation of the mass balance verification method for the biofuels and bioliquids sustainability scheme in accordance with Article 18(2) of Directive 2009/28/EC
219. http://ec.europa.eu/europeaid/sites/devco/files/study-impact-assesment-biofuels-production-on-development-pcd-201302_en_2.pdf
220. Article 4 of the Biofuel Directive
221. OJ L 120of 01.05.2013, p.4 - 8
222. Article 6 of the Emissions Standards Regulation
223. Article 5 of the Emissions Standards Regulation
224. Article 7 of the Emissions Standards Regulation
225. Article 7(5)of the Emissions Standards Regulation
226. Article 11 of the Emissions Standards Regulation
227. Article 12 of the Emissions Standards Regulation
228. Article 9 of the Emissions Standards Regulation
229. Article 10 of the Emissions Standards Regulation
230. Article 13(5) of the Emissions Standards Regulation
231. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0393:FIN:en:PDF last accessed on 30 July 2013
232. http://www.theguardian.com/environment/2013/jun/28/angela-merkel-eu-car-emissions
233. http://europa.eu/rapid/press-release_IP-15-5945_en.htm
234. http://www.consilium.europa.eu/en/press/press-releases/2016/02/12-vehicle-emissions-in-real-driving-conditions-2nd-package/ http://ec.europa.eu/environment/air/transport/road.htm
235. OJ L 315, 14/11/2012, p. 1 -56
236. Article 1(1) Energy Efficiency Directive
237. Article 3(1) Energy Efficiency Directive
238. http://ec.europa.eu/energy/efficiency/eed/reporting_en.htm
239. OJ L 164 of 30.6.1994, p. 3–8
240. Article 2 of the Hydrocarbons Licensing Directive
241. Article 3(2) and Article 4 of the Hydrocarbons Licensing Directive
242. Article 5(1) and 5(4) of the Hydrocarbons Licensing Directive
243. Article 5(2) and 5(3) of the Hydrocarbons Licensing Directive
244. Article 3(2)a of the Hydrocarbons Licensing Directive
245. Article 6(2) of the Hydrocarbons Licensing Directive
246. Article 8(3) of the Hydrocarbons Licensing Directive
247. Article 9 of the Hydrocarbons Licensing Directive
248. Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors; OJ L 134of 30.4.2004, p. 1–113
249. Initially it was Directive 90/531/EEC, which was repealed and replaced by Directive 93/38/EEC, which was itself then repealed and replaced by Directive 2004/17/EC.
250. OJ L 178of 28/06/2013, p. 66 – s106
251. http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/trans/137424.pdf last accessed on 30 July 2013
252. Article 1(1) Offshore Safety Directive
253. Articles 6(5), 6(6), 11(1)(e), 12 and 13 Offshore Safety Directive
254. Articles 11(1)(g), 14 and 28 Offshore Safety Directive
255. Article 14 Offshore Safety Directive
256. Article 4(4) Offshore Safety Directive
257. Article 7 Offshore Safety Directive
258. Article 2(2) Offshore Safety Directive
259. Article 8 Offshore Safety Directive
260. Article 4(2)(c) and 4(3) Offshore Safety Directive
261. Chapter V Offshore Safety Directive
262. Article 27 Offshore Safety Directive
263. Article 40 Offshore Safety Directive
264. Article 41 Offshore Safety Directive
265. Article 39 Offshore Safety Directive
266. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0422

Energy law in Portugal

Recent developments in the Portuguese energy market

Duarte Brito de Goes, partner, and Maria de Athayde Tavares, senior associate, Campos Ferreira, Sá Carneiro & Associados, Lisbon

Extension of the energy sector extraordinary contribution ("ESEC")

The Portuguese State Budget Law for 2014[1] approved the creation of ESEC, a levy on the value of assets, to be paid by energy operators in Portugal. This levy safeguards the producers of renewables (except certain hydroelectric and cogeneration plants). The costs cannot, directly and indirectly, be passed, on to the consumer.

The revenues are primarily aimed at reducing tariff deficits in the electricity sector, and also to the financing of social and environmental policies in the energy sector.

Although it was designed to be in force within the Portuguese tax system for a limited period, the ESEC was payable in 2014, 2015 and 2016, and in 2017 it has once again been extended. There is no assurance further extensions will not take place, or that a similar tax will not be imposed in the near future.

Energy services regulatory authority ("ERSE")

ERSE is the independent national regulatory authority for the electricity and natural gas sectors. In 2013, ERSE's sanctioning competences and powers were significantly reinforced. This was done by extending its sanctioning powers to all operators of the National Electricity System ("SEN") and the Portuguese Natural Gas System, and by awarding investigative and inspection powers comparable to those of the criminal authorities.[2]

Consequently the number of administrative offense procedures has increased: in 2015 and 2016, 38 administrative offense procedures were initiated, resulting in 15 convictions and 12 cases of fines (€ 8,194,580 in fines).

The Portuguese State Budget Law for 2017[3] provides for the adoption of further organic restructuring measures in the energy sector, in order to concentrate on ERSE competences currently dispersed by other entities and to extend the scope of its action to the liquefied petroleum gases ("LPG") and derived fuels.

Electricity

Special feed-in-tariff for biomass: extension of deadline

In order to encourage the construction and operation of forest biomass power plants, Decree-Law no. 5/2011, of 10 January 2011, as amended by Decree-Law no. 166/2015, of 21 August 2015, sets out a number of measures for fostering the production and use of biomass to ensure the supply of energy plants fuelled by forest biomass, namely by setting a beneficial feed-in tariff.

A 9.6 Z factor[4] is applicable for power plants that comply with the following requirements: (i) started construction by 30 June 2016; (ii) entered into operation by 30 December 2018;[5] and (iii) comply with the obligations set forth for the producers of forestry biomass power plants.

Over-equipment *(sobrequipamento)* of wind farms

Decree-Law no. 94/2014, of 24 June 2014, established the rules applicable to additional power (*potência adicional*) and additional energy (*energia adicional*), as well as to over-equipment of wind farms whose electricity is remunerated under a guaranteed tariff regime, significantly altering the legal framework of the over-equipment of wind farms.

Over-equipment consists in the installation of new wind turbines to achieve an increase in the installed capacity (*potência instalada*) in wind farms and it is legally limited to 20% of the power capacity for connection to the grid (*potência de ligação às redes*). The latter remains unchanged despite the over-equipment and there is no negative impact on the applicable licences (production license and operation licence).

Order in Council no. 102/2015, of 7 April 2015, set forth the necessary procedures for additional energy injection and the authorisation of over-equipment, as well as the requirements for the exemption of the energy individualised telemetry (*telecontagem individualizada*) of the new installations.

Over-equipment does not affect the remuneration of the energy injected into the Public Grid up to the limit of the power capacity attributed to the wind farm within the scope of the respective licensing. This functions in accordance with the guaranteed remuneration systems that are applicable to them under legally established terms. The energy of the over-equipment is remunerated at a fixed tariff of €60.00/MWh, not updatable according to inflation, due from the beginning of delivery of the energy of the over-equipment to the Public Grid and for as long as the guaranteed remuneration lasts; whilst the remuneration solution which applies to the remaining energy shall remain unchanged.

Focus on oceanic energy

Portugal is an Atlantic country with a broad coastal area and insular territories with wide growth potential for the Blue Economy. In order to endow the country with a stable and predictable regulatory framework for the investments in the sea, Decree-Law no. 38/2015, of 12 March 2015 was published, regulating and developing the of Basic Law for Planning Policy and Management of the Maritime National Space (Law no. 17/2014, of 10 April 2014), as well as transposing Directive 2014/89/EU of the European Parliament and of the Council, of 23 July 2014.

Order in Council no. 202/2015, of 13 July 2015, adopted a new and specific remuneration regime applicable to the production of renewable energy from ocean sources or locations (regardless of the form of generator) using technologies in experimental or pre-commercial stage.

The guaranteed remuneration applicable in this case has been set at €80/MWh – applicable up to a 50MW share of power injection capacity reservation in the Public Grid – and for a period of 20 years from the date of commencement of the electricity supply to the grid. A number of situations that may justify the increase of the applicable remuneration are provided for.

In November 2016, the Portuguese Government adopted the Working Group Report – "Energy in the Sea" – establishing a roadmap for an industrial strategy of ocean renewable energy, which aims to launch a new technological export line in offshore wind energy (floating and wave based).

Relevant role as an energy supplier for Europe

Portugal has been a frontrunner on clean energy; considering the country's location and exceptional solar conditions (Portugal has the EU territory with greater number of hours of sun exposure), the Major Planning Options for 2016-2019,[6] specifically intend to establish Portugal as an energy supplier for Europe, through the development of new electricity interconnections between the Iberian Peninsula and France, expected for 2020, as well as through the materialisation of the energy interconnection between Portugal and the Kingdom of Morocco.

In November 2016 the roadmap for sustainable electricity trade was signed by Germany, France, Portugal, Spain and Morocco, significantly stating that it might culminate in an implementable agreement between the signatory parties by the date of COP23.[7]

Prohibition of cross-subsidisation in renewables

The Portuguese State Budget Law for 2017 adopted a rule aiming at eliminating the accumulation of public incentives for the promotion and development of renewable energy, with the feed-in-tariff received by those generators, which has been allowed to this date.

Order in Council no. 69/2017, of 16 February 2017, determines the recovery to the SEN of the amount supposedly received *in excess*, through feed-in tariff reduction granted by the Last Resort Supplier. It also states that half of the overall amount *to be corrected*, in favour of SEN should be deducted from the tariff deficit, whilst the other half should be allocated to future yearly tariffs.

At the moment, two orders are expected to be issued: (i) one to define for each power generation centre affected the excess amount that must be corrected; and (ii) the other to set the value in euros per MWh to be deducted from the remuneration paid by the Last Resort Supplier to each power plant.

A new and competitive model to assure a power guarantee mechanism

The Portuguese State Budget Law for 2017 suspended the power guarantee mechanism, which is designed to avoid power supply interruptions, and replaced it with a market mechanism,[8]

The remuneration of the security reserve is now established through a competitive auction mechanism, supervised and monitored by ERSE, which exclusively remunerates the availability services provided by electricity producers, favouring low carbon technologies. The reserve price limit of each auction is set administratively by order of the Cabinet member responsible for the energy sector, through joint proposal Directorate General of Energy and Resources ("DGEG") and ERSE.

The reserve auction for 2017 was carried out on 30 March 2017, with a closing price of € 4,775/MW to be settled in the last three quarters of the year, and awarded the total volume placed up for auction (1,766MW) to 3 entities.

Oil & Gas

Modification of the national oil system law

Decree-Law no. 244/2015 of 19 October 2015 implemented a broad revision of the basic law of the organisation and functioning of the national oil system,[9] based on the following principles: (i) increasing market competition, in particular by providing for the unbundling of activities in the oil sector; (ii) establishing more demanding rules regarding the suitability requirements and providing for a mandatory certification of the supervisory authority; and (iii) increasing the powers of the oil system supervisory authority (*ENMC – Entidade Nacional para o Mercado dos Combustíveis*) and the controlling powers of the activity of the market operator.

Concerning access to logistics operation centers and large storage facilities, and the transportation of crude oil and petroleum products by pipeline, new rules have been established. These will allow access to public service networks or infrastructures through negotiated solutions which abide by non-discriminatory, transparent and objective conditions and prices. The Third Party Access Rules for Large Oil Facilities Declared Public Interest[10] was recently adopted.

Offshore oil and gas operations

Decree-law no. 13/2016, of 9 March 2016[11] lays down the minimum requirements for the prevention of major accidents in offshore operations and the limitation of the consequences of such accidents. It also sets out their respective powers, as well as the powers and operation of the competent authority (to be exercised jointly by the General Directorate of Natural Resources, Maritime Security and Services, and the Oil System Supervisory Authority).

The timing of this new legal framework is particularly relevant considering that a number of deep offshore concessions for the prospection, research, development and production of oil, along with prospection activities, are currently being carried out.

Full transposition of the New EU ETS Directive

With regards to the transposition of the Renewable Energy Directive, the European Commission questioned Portugal as to the scope of treatment of biofuels and raw materials of foreign origin, as well as the allocation of a higher value to biofuels produced from endogenous raw materials and higher reduction requirements of greenhouse gas emissions for new installations for the production of biofuels, as explicitly stated in the reasoned opinion addressed to the Portuguese Republic on 28 April 2016.

Consequently, in order to overcome the issues identified, Decree-law no. 69/2016, of 3 November 2016, implemented a number of amendments. For example, the definition of a 'producer of biofuels' was amended to eliminate the reference to a tax warehouse, which is a tax and customs matter, therefore only including the registration with the Oil System Supervisory Authority (as is the case for all players in the National Petroleum System).

Endnotes

1. In force as of 1st January 2014.
2. Law no. 9/2013, of 28 January, established the Energy Sector Sanctioning Regime (subsequently regulated by the Regulation on the Procedure for Obtaining Exemption or Reduction of Fines) and then Decree-law no. 84/2013 of 25 June, revised ERSE's by-laws, completing the implementation of the Third Energy Package.
3. Approved by Law no. 42/2016, of 28 December, in force as of 1st January 2017.
4. According to Annex II of Decree-Law no. 189/88, of 27 May, as amended by Decree-Law 225/2007, of 31 May, the latter as amended (*rectificado*) by Statement (*Declaração de Rectificação*) no. 71/2007, of 24 July. Pursuant to the said legislation the forestry biomass Z coefficient is 8.2 (until a maximum national installed capacity of 250MW) and the said tariff is applicable during the first 25 years as from the beginning of the electricity supply to the grid.
5. Or start construction by 30 June 2017 and enter into operation until 31 of December 2019, when it is subject to Environmental Impact Assessment (*Avaliação de Impacte Ambiental*) and Assessment of Environmental Effects (*Avaliação de Incidências Ambientais*) procedures, as per the applicable legislation.
6. The Major Planning Options (*Grandes Opções do Plano*) for 2016-2019 were approved by the Parliament and published in the Official Gazette on 31 March (Law no. 7-B/2016, of 31 March).
7. Conference of parties (COP23), under the United Nations Framework Convention on Climate Change, that will take place from in November 2017 in Germany.
8. Subsequently regulated by the Order in Council no. 41/2017, of 27 January.
9. Approved by Decree-law no. 31/2006, of 15 February, it provides for the main provisions applicable to the storage, transportation, distribution, refinement and supply of oil.
10. Regulation no. 1094/2016, adopted by ENMC – Entidade Nacional para o Mercado dos Combustíveis.
11. That transposes the Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations.

Overview of the legal and regulatory framework in Portugal

A. Electricity

A.1 Industry structure

The basic legal framework for the electricity sector consists of: (i) Decree-Law no. 29/2006, of 15 February 2006,[1] as amended the last time by Law no. 42/2016, of 28 December and Decree-Law no. 172/2006, of 23 August 2006, as amended the last time by Law no. 7-A/2016, of 30 March 2016;[2] (ii) Energy Sector Sanctioning Regime;[3] (iii) several regulations put into force by the Portuguese Energy Services Regulatory Authority (*ERSE, Entidade Reguladora dos Serviços Energeticos*);[4] and (iv) regulations put into force by Directorate General of Energy and Resources ("DGEG").

Activities and market entry

The National Electricity System's ("SEN") value chain in Portugal may be divided as follows:

- **Production** (unregulated activity): open to competition, subject only to licensing. It functions under two main regimes:[5] Ordinary Regime (the energy produced is sold in organised markets or through bilateral contracts, the Portuguese government intervening merely to complement private initiatives, cover market failures or ensure electricity supply) and Special Regime[6] (generation of electricity from endogenous and other renewable sources, except large hydropower plants, allowing producers to deliver to the network through bilateral contracts with the last resort supplier);
- **Transport** (regulated activity): REN – Redes Energéticas Nacionais, SGPS, S.A. is the TSO,[7] operating on an exclusive basis under a 50-year public service concession agreement[8] with the Portuguese State, pursuant to which it is responsible for: (i) planning, implementing, and operating the National Transmission Grid (RNT) and related infrastructures; (ii) all relevant interconnections and other facilities necessary to operate the RNT; (iii) coordinating the SEN infrastructures to ensure the integrated and efficient operation of the system, as well as the continuity and security of electricity supply (as Global Technical System Manager);
- **Distribution** (regulated activity): EDP Distribuição – Energia, S.A., is the DSO on an exclusive basis under a 35-year public service concession agreement[9] with the Portuguese State for the distribution of electricity at high and medium voltage in Portugal mainland and under 20-year municipal concession agreements with the relevant municipalities as per distribution networks of low-voltage;[10]
- **Trading** (regulated and unregulated activity): with the exceptions of the activities of the last resort supplier and market facilitator, supply of electricity is currently a free access business, subject only to prior registration and certain public service obligations regarding the quality and continuity of supply, as well as consumer protection rules as per the prices, access charges and access to information in simple and understandable terms. For this purpose, suppliers have the right of access to the national transmission and distribution grids upon payment of the access tariffs set out by ERSE. The last resort supplier (*comercializador de último recurso*) –EDP Serviço Universal S.A. since 1 January 2007 (incorporated and totally owned by EDP Distribuição – Energia, S.A.) –, is subject to licensing and to a buying obligation (fully or in part) of the electricity produced under Special Regime, whenever the power production centres benefit from guaranteed tariff;
- **Operation of the electricity markets** (regulated activity): this is a free access activity, the operation of organised markets for electricity subject to joint authorisation from the Minister of Finance and the entity managing the organised markets. It is also subject to authorisation from the Minister responsible for the energy sector and, when required by law, from the Minister of Finance;[11]
- **Logistic operation for switching electricity suppliers** (regulated activity): this activity is currently attributed to EDP Distribuição – Energia, S.A. but shall be transferred to the Portuguese Energy Agency – ADENE. For further details please refer to Section C below.

Regulators

ERSE is the independent national regulatory authority for the electricity and natural gas sectors,[12] acting as the regulatory, supervision and sanctioning entity. ERSE carries out its duties independently within the guiding principles of the energy policy established by the Government, in accordance with constitutional and legal acts.

DGEG – a central service under the direct administration of the State endowed with administrative autonomy – has the task to contribute to the design, promotion and evaluation of policies on energy and geological resources, with a view to sustainable development and security of supply, [13] DGEG is the competent authority to grant licences as well as other administrative authorisations regarding the procedures for energy-related activities.

A.2 Third party access regime

The integration of any electrical installation is performed pursuant to a specific network connection, as regulated in:

- The Distribution Grid Regulation (*Regulamento da Rede de Distribuição*), adopted by Order in Council no. 596/2010, of 30 July 2010, which governs the technical operating

conditions of the High, Medium and Low Pressure Tension networks comprised in the Public Grid, as well as the relation conditions between the network operators and the entities with facilities connected to them;

- The Transport Grid Regulation (*Regulamento da Rede de Transporte*), also adopted by Order in Council no. 596/2010, governs the technical operating conditions of the interconnection of the National Transport Network infrastructures, as well as the technical conditions related with the planning and exploitation of the National Transport Network;
- The Commercial Relation Regulation (*Regulamento das Relações Comerciais*),[14] which sets out the provisions regarding the commercial relations between the various parties involved in the SEN, the commercial conditions for the connection to public networks, the operation of commercial relations in the electricity systems of the Autonomous Regions (Azores and Madeira), and the functioning of trade between those electrical systems and the electrical system of continental Portugal;
- The Access to Networks and Interconnections (*Regulamento de Acesso às Redes e às Interligações, RARI*),[15] which sets out provisions related to technical and commercial conditions according to which the access to the networks and the interconnections is processed as well as the conditions in which access is granted or restricted, as well as the reimbursement to which entities are entitled for offering access to their networks.

A.3 Market design

Subject to certain exceptions, each of the activities referred to in Section A.1 shall be carried out independently of other functions, from a legal, organisational and decision-making standpoint (unbundling), which has been implemented as a consequence of the transposition of EU legislation into Portuguese national law.

Electricity sector activities are required to be developed in accordance with the principles of rationality and efficiency in the use of resources throughout the entire value chain (ie, from generation to the final consumption of electricity) and in accordance with the principles of competition and environmental sustainability, with the purpose of increasing competition and efficiency in the SEN, without prejudicing public service obligations.

A.4 Tariff regulation

ERSE is responsible for preparing and approving the Tariff Regulation (*Regulamento Tarifário do sector eléctrico*)[16] that sets the methodology to be used for calculating tariffs. It also sets the ways to regulate the allowed revenues. The various stakeholders in the SEN (consumers and electricity industry) are involved in the process for the approval of the same, since it is preceded by a public consultation and an opinion from ERSE's Tariff Board, hence ensuring regulatory stability and transparency on the basis of a non-discrimination principle applicable to tariffs and billing.

In Portugal the consumers acquire the electricity from the relevant electricity trading entities operating in Portugal, that, on their turn, acquire the electricity from the Portuguese transport or distribution operator of electricity, as applicable, who acquire it from the relevant producers.

The tariff system is additive since for each regulated activity there is an associated regulated tariff,[17] and the final sales tariff applicable to each client is composed of a sum of the various activity tariffs which are attributable to this client's supply.

In the free market energy sales prices are set by agreement between each supplier and their customers. On the contrary, in the regulated market, the tariffs and prices practiced by the last resort supplier are defined by ERSE in the sale tariff to final customers. ERSE also sets the social selling tariffs for final customers to be applied by the last resort supplier to economically vulnerable end-users.

The end of the transitional tariffs for supplies of natural gas and electricity to end customers of natural gas with an annual consumption equal to or lower than 10,000m^3 and for electricity with consumption at normal low voltage has been postponed to 31 of December 2020.[18]

Currently there is a deficit tariff system in the electricity sector in Portugal, in respect of which several changes were made in the applicable legislation[19]. ERSE forecasts that the tariff deficit must have reached an accumulated value of € 5,080,191,000, by the end of 2015[20]. The Portuguese Government intends to progressively reduce the underlying costs, and by 2025, completely terminate the tariff debt.

A.5 Public service obligations and smart metering

Without prejudice to the exercise of free and competitive activities, Decree-Law no. 29/2006, of 15 February 2006, as amended, sets forth a number of mandatory public service obligations, *inter alia*: (i) security, regularity and quality of supply; (ii) guaranteed universal service provision; (iii) ensuring the connection of all customers to the networks; (iv) protection of consumers, particularly with regard to tariffs and prices; (v) the promotion of energy efficiency, environmental protection and rational use of renewable and indigenous resources; and (vi) convergence of the SEN, translated into solidarity and cooperation with the electrical systems of the Autonomous Regions.

The technical and functional requirements of smart meters, as well as the rules applicable to the provision of information and billing and the financing of the costs inherent in the respective installation have been set out by Order in Council no. 231/2013, of 22 July 2013.

A.6 Cross-border interconnectors

The most relevant cross-border interconnections are linked to the Spanish TSO (managed by *REE – Red Eléctrica de España, S.A.U.*). In 2016 the interconnection of Very High Voltage Electric Systems of Portugal and Spain consisted of 8 lines operating on alternating current, of which 6 operate in the 400kV voltage level (one double) and 3 operate at 220kV.[21] A new interconnection between Porugal and Spain is planned for 2018, a 400kV line between Minho and Galicia.

Since May 2014, the Northwest (markets of France, Belgium, the Netherlands, Germany, Luxembourg, United Kingdom, Norway, Denmark, Sweden and Finland) and Southwest regions

of Europe (Iberian market), have been simultaneously calculating electricity prices and cross-border flows across regions which will bring a benefit for end-consumers, derived from a more efficient use of the power system and cross-border infrastructures as a consequence of a stronger coordination between energy markets.

B. Oil & Gas

B.1 Industry structure

The structure and organisation of the natural gas sector in Portugal results from a major rearrangement of the sector set through: (i) Decree-Law no. 30/2006, of 15 February,[22] laying down the general principles governing the organisation and functioning of the National Natural Gas System ("SNGN") and the performance of activities of reception, storage, transport, distribution and sale of natural gas; and (ii) Decree-Law no. 140/2006, of 26 July 2006,[23] setting out the regime of natural gas activities, concession bases and licences.

Activities and market entry

The Portuguese Natural Gas System is now divided in the following segments:

- **Acquisition/Import** (unregulated activity): The natural gas supply for the Portuguese market is done by means of entries in the system via the interconnection points with Spain (Campo Maior and Valencia) as well as the terminal in the port of Sines, through long-term take-or-pay contracts (the main natural gas suppliers being Algeria and Nigeria). The main gas importer is Galp Gás Natural, S.A., that since 2012 no longer has priority in the allocation of capacity in the SNGN infrastructures.
- **Reception, storage and re-gasification of liquefied natural gas** ("LNG") (regulated activity): Such activities have to be performed through a public service concession granted by the Portuguese State, which was executed in 26 September 2006 with REN-Atlântico, Terminal de GNL, S.A. as concessionaire for a 40-year period.
- **Underground storage of natural gas** (regulated activity): This activity is performed through public service concessions granted by the Portuguese State, which were executed on 26 September 2006 with REN, Armazenagem, S.A. and Transgás Armazenagem, S.A., respectively, as concessionaires. Such concessions cover the following activities: underground storage, construction, operation, maintenance and expansion facilities and infrastructure; extraction, treatment and delivery of natural gas.
- **Transmission and technical global management of the system** (regulated activity): This activity includes the transport of natural gas in a gaseous state through a High Pressure (higher than 20 bar) network for the purposes of receiving and delivering the product to distributors, traders or major clients, as well as the transportation of LNG through tank trucks to autonomous units of gas and the respective delivery to distributors or major clients. The transport activity is patrimonial and legally unbundled from the other activities carried out within the SNGN. This activity is also performed through a public service concession granted by the Portuguese State to the TSO – REN – Gasodutos, S.A. – as concessionaire for a 40-year period (as a general rule, the award procedure shall be open).[24] The award of this concession followed the decision to separate the supply of natural gas from transmission, and was executed in 26 September 2006. It is also incumbent upon the transport network the technical global management of the system that comprises the technical coordination of all infrastructures which constitute the SNGN, in order to guarantee the safety and continuity of the product's supply.
- **Distribution of natural gas** (regulated activity): This activity entails the distribution of natural gas in the gaseous state, through Medium and Low Pressure (less than 20 bar) networks for the purposes of receiving and delivering the product to final customers. This activity also includes the reception, storage and regasification of LNG in autonomous units and its delivery to final customers through the respective distribution networks. With regards to regional distribution networks,[25] this activity is performed through the operation of the national network of distribution of natural gas and within public service concessions granted by the Portuguese State, exercised on an exclusive basis. Autonomous local networks, however, are run on the basis of distribution licences[26], also exercised on an exclusive basis and taking into consideration the public service regime.
- **Commercialisation/supply** (regulated and unregulated activity): Gas suppliers are responsible for managing the relations with the end customers, including billing and energy-related, advice and support. Nowadays, these activities can be performed through free or regulated markets, being nevertheless subject to the granting of the respective licence and the payment of a regulated price which grants the access to the storage facilities and units of liquid natural gas and to the transmission and distribution networks.
- **Operation of natural gas markets:** the activity is free and subject to joint authorisation from the Minister of Finance and the Minister responsible for the energy sector and the entity managing the organised markets is also subject to authorisation from the Minister responsible for the energy sector and, when required by law, from the Minister of Finance.
- **Logistic operation for switching gas suppliers:** Subject to ERSE's regulation, this activity has been transiently attributed REN – Gasodutos, S.A. but shall be transferred to the Portuguese Energy Agency – ADENE. For further details please refer to Section C below.

Regulators

Without prejudice to the competences assigned to other administrative bodies, such as DGEG or Portuguese Competition Authority, the regulation and supervisory activities are regulated by ERSE (please refer to Section A.1 above).

B.2 Third party access regime to gas transportation networks

The Access to Networks and Interconnections (*Regulamento de Acesso às Redes e às Interligações do setor do gás natural, RARII*)[27] sets out transparent and non-discriminatory criteria to establish the technical and commercial conditions to access natural gas networks, natural gas underground storage facilities, LNG terminals, and interconnections. In particular, this involves the technical and commercial aspects related to access of third parties to the above mentioned infrastructures.

Access to the Public Grid infrastructures is formalised by means of a written agreement of the following infrastructure use contracts: (i) LNG Receiving, Storage and Regasification Terminal Use Agreement; (ii) Underground Natural Gas Storage Use Agreement; (iii) Transportation Network Use Agreement; and (iv) Distribution Networks Use Agreement.

B.3 LNG terminals and storage facilities

Natural gas is received at the border and transported by high-pressure National Natural Gas Transport Network pipelines connected, through pressure metering and reduction stations, to the medium-pressure pipelines operated by distribution companies.

At the underground storage facility located at Carriço (Pombal), the high-pressure natural gas is stored in gaseous form, in caverns created inside salt formations at depths of over 1,000 metres. This activity is related to the constitution and maintenance of natural gas security provisions, which are crucial to ensure the supply of the product, and the creation of an operational provision to allow the stock management of natural gas to ensure the constant availability of the product in case of additional demand.

The reception, storage and re-gasification of LNG is performed in the only existing facility in Portugal, located in Sines (on the Atlantic coast, about 120km south of Lisbon). The LNG terminal started its operations in 2004, becoming the first in Europe to receive LNG from the USA to Europe in 2016.

B.4 Tariff regulation

For each regulated activity referred in B.1 above, ERSE determines annually the profit allowed in accordance with the methodologies of regulation defined in the Tariff Regulation (*Regulamento Tarifário do Sector do Gás Natural*).[28] The prices are calculated according to the gains which are allowed and established on an annual basis for the relevant players as established in Chapter IV of the Tariff Regulation.

All prices comprise the following: (i) the fixed prices defined for each tariff, in euros per month; (ii) the prices of the utilised capacity in euros per KWh/day, per month; and (iii) the energy prices which differ according to the relevant period (peak or off peak), in euros per KWh. Nevertheless, the prices mentioned can also differ according to the level of pressure, tariff period or annual consumption grade.

B.5 Cross-border interconnectors

Portugal does not have natural gas fields, so there is no natural gas production in the country. The country has three points of entrance: one regasification plant (Sines) and two physical interconnections with Spain.

The 3rd Interconnection of the natural gas sector, between Portugal and Spain, is in the List of Projects of Common Interest, as part of the priority corridor North-South gas interconnections in Western Europe (NSI West Gas) under the sub-group of 'projects allowing bidirectional flows between Portugal, Spain, France and Germany'. The project will be developed in 3 phases in Portugal and 2 phases in Spain and will connect Celorico da Beira to Zamora (pipeline Celorico/Vale de Frades) with a total length of 242/247km (162km in Portugal and 80/85km in Spain).

C. Energy trading

The activity of the logistic operator of change of supplier in the scope of the Electric System and National System of Natural Gas is subject to ERSE's regulation and must be carried out by an independent entity as from the other SEN entities. From now on, it will be carried out by the Portuguese Energy Agency – ADENE – pursuant Decree-Law no. 38/2017, of 31 March 2017. This entity, which reports to the Government, has the task of ensuring that the change of supplier by the end user is effected swiftly, based on simple rules and procedures, transparent, standardised and dematerialised, and ensuring the right of consumers to information.

C.1 Electricity trading

As of September 2006, all consumers are entitled to choose their electricity supplier, by execution of one of the following contracts: (i) contract for the supply of electricity with suppliers in the liberalised market; (ii) in the case of customers with market agent status, contracting the acquisition of electricity in organised markets or through bilateral contracting; and (iii) electricity supply contract with last resort suppliers, only in the legal and regulatory conditions laid down.

The Iberian Electricity Market ("MIBEL") – a joint initiative of the Governments of Portugal and Spain – began operating officially on 1 July 2007, based on a single daily market ("OMIE") which sustains the Mechanism for Joint Management of the Portugal-Spain Interconnection, based on the following legal/regulatory instruments: (i) Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity; (ii) Access to Networks and Interconnections; (iii) Procedures Manual for the Mechanism for Joint Management of the Portugal-Spain Interconnection; (iv) Joint Rules for Contracting Capacity in the Portugal–Spain Interconnection; and (v) Rules and principles for the harmonised allocation of financial rights for the use of interconnection capacity.

C.2 Gas trading

As of January 2010, all natural gas consumers are entitled to choose their natural gas supplier, by execution of one of the following contracts: (i) contract for the supply of natural gas with suppliers in the liberalised market; (ii) natural gas supply contract with last resort suppliers; and (iii) in the case of customers with market agent status, natural gas procurement in organised markets or through bilateral contracts.

The Iberian Natural Gas Market ("MIBGAS") is a gradual process, which has been ongoing since 2007. It is dependent on the harmonisation and integration of the systems of the natural gas sector in Spain and Portugal, aiming at contributing to the achievement of a European market for natural gas – the 3rd Interconnection Portugal –Spain, playing a especially important role in the construction and consolidation of MIBGAS. The MIBGAS pursues the following goals: (i) increased security of supply through market integration and coordination of both systems of the natural gas sector and strengthening of interconnections; (ii) increased competition, reflecting the larger size of the market and a higher number of participants; (iii) simplified and harmonised regulatory framework in both countries; (iv) more efficiency of regulated and liberalised activities as well as market transparency.

D. Climate change and sustainability

D.1 Climate change initiatives

Portugal is among the European countries with the greatest vulnerability to the potential impacts of climate change. Several pieces of legislation have been approved and amended recently in order to address these matters:

- Decree-Law no. 141/2010, of 31 December 2010, last amended by Decree-Law no. 68-A/2015, of 30 April 2015, that partially transposes the Renewable Energy Directive, sets forth: (i) the national targets for the use of renewable energy in gross final consumption of energy and for the share of energy from renewable sources consumed by transport; (ii) the methods for calculating the share of energy from renewable energy sources; and (iii) the mechanism for issuing guarantees of origin for electricity from renewable energy sources.
- The Strategy for Energy Efficiency for 2013-2016, adopted by Order in Council no. 20/2013, of 10 April 2013, addresses EU's concerns regarding energy efficiency promotion, covering 6 specific areas: transport, residential and services, industry, State, behavior and agriculture. With the specific purpose of reducing 30% of the primary energy consumption and a specific goal of 30% for the Public Administration, a set of measures have been adopted in the fields of Energy Certification of Buildings and Energy Efficiency Management Contracts, Energy Efficiency Action Plans, Fleet Management and Public Lighting.
- Decree-Law no. 68-A/2015, of 30 April 2015, lays down provisions on energy efficiency and cogeneration and establishes an application of ECO.AP to local and regional government. It transposes Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC.
- Council of Ministers Resolution no. 28/2015, of 30 April 2016, approved the national strategy for the promotion of economic development based on value creation founded on the reconciliation of economic growth and sustainability of the country's competitiveness and its international position as a green growth reference (*Compromisso Crescimento Verde*).
- In order to reduce the influence of human activity on the climate system and climate change, Council of Ministers Resolution no. 56/2015, of 30 July 2015, further adopted: (i) the Strategic Framework for Climate Policy; (ii) the National Program for Climate Change 2020/2030; and (iii) the National Adaptation Strategy for Climate Change. It also repeals the National Strategy for Adaptation to Climate Change, adopted by Council of Ministers Resolution no. 24/2010, of 1 April 2010, and provides a reduction in Portugal's greenhouse gas emissions in -18% to -23% by 2020 and -30% to -40% by 2030, when compared with 2005 figures, contingent to the results of European negotiations.

D.2 Emission trading

Council of Ministers Resolution no. 1/2008 of 4 January 2008 approved the National Allocation Plan (PNALEII) for the period 2008-2012, as well as the new 2007 targets for policies and measures in the energy supply and transport sectors of the National Programme for Climate Change. Subsequently, the National Programme for Climate Change 2020/2030 aims at ensuring compliance with the national targets for climate change with a view to organising the most appropriate measures for its implementation.

The Directive 2003/87/EC of the European Parliament and of the Council which sets forth the scheme for greenhouse gas emission allowance trading within the EU was transposed into the Portuguese legal system by: (i) Decree-Law no. 233/2004, of 14 December 2004, as amended by Decree-Law no. 30/2010, of 8 April[29], Decree-Law no. 93/2010, of 27 July 2010;[30] and (ii) Decree-Law no. 38/2013, of 15 March 2013, [31] as amended by Decree-Law no. 42-A/2016, of 12 August 2016.

The Portuguese Environmental Agency (*Agência Portuguesa do Ambiente*) was assigned the role of Competent Authority, with general coordination responsibilities for the process European Emissions Trading Scheme.

D.3 Carbon capture and storage

The Environmental Fund (*Fundo Ambiental*) was created through Decree-Law no. 42-A/2016, of 12 August 2016, with the mission of financing measures to enable compliance with the Portuguese State's commitments under the Kyoto Protocol, contributing to the fulfillment of objectives and national and international commitments, particularly those relating to climate change, water resources, waste and nature conservation and biodiversity.

The Environmental Fund – composed of an autonomous set of assets without legal personality – depends on the member of the Government responsible for the environment.

D.4 Renewable energy

The last stage of the ongoing process to consolidate the legal framework on renewable energy sources was the approval of Decree-Law no. 215-B/2012, of 8 October 2012, which transposed the Third Electricity Directive and operated the revision and consolidation of the legal framework applicable to the production of electricity under the so-called Special Regime.

A significant amendment has been introduced in the legal framework, since generation under Special Regime now encompasses two different remuneration regimes: the common regime and the guaranteed remuneration regime.

It is also worth noting that the wind tariff system has been amended with no retroactive effects (Decree-Law no. 35/2013, of 28 February), by mutual agreement with APREN (*Associação de Energias Renováveis*), the Portuguese Renewable Energy Association. These rules provide that, against the payment of a fee, said wind farms will benefit from guaranteed tariff for an additional period of 5 years after the end of the initial 15-year period provided for such feed-in tariff. In addition, Decree-Law no. 35/2013, of 28 February 2013, also established that small hydroelectric power plants operating under the regime previous to Decree Law no. 33-A/2005, of 16 February 2005, shall continue to benefit from such remuneration system for a period of 25 years counting from the allocation of the respective operation licence.

A new and specific remuneration regime applicable to the production by power plants of renewable energy from ocean source or location (*ie* offshore wind or waves) using technologies in experimental or pre-commercial stage has been adopted by Order in Council no. 202/2015, of 13 July 2015.

The Order in Council no. 243/2013, of 2 August 2013, as recently amended by Order in Council no. 133/2015, of 15 May 2015, also establishes the terms, conditions and criteria for the allocation of injection capacity in the public service electricity grid as well as the licensing procedures to obtain the production license and respective operating licence.

As regards the current legal framework for renewable sources of energy, the following should be highlighted:

- Electricity generation is today fully open to competition, subject only to obtaining the mandatory licences and/or approvals for the implementation of the project and carrying out the activity;
- Renewables generation is subject to different licensing requirements and may benefit from special feed-in-tariff pursuant to the type of renewable source used; otherwise it will be remunerated according to market prices; and
- Renewable energy sources are granted prioritisation in relation to generation in the Ordinary Regime, both for access to the network and for dispatch (except for hydropower plants with an installed capacity greater than 30MW), except in situations where this puts at risk security of the supply.

D.5 Biofuel

Decree-Law no. 117/2010, of 25 October 2010, operated the partial transposition of the Biofuel Directive and Renewable Energy Directive, which was finally completed with Decree-law no. 69/2016, of 3 November 2016. This regime is applicable to producers of biofuels and bioliquids and suppliers of liquid or gaseous fuels used in road transport, and sets forth the following rules: (i) the criteria for sustainability of production and use of biofuels and bioliquids, regardless of their origin; (ii) mechanisms to promote biofuels in land transport; and (iii) limitation of mandatory incorporation of biofuels for the years 2011 to 2020.

Decree-Law no. 49/2009, of 26 February 2009, sets forth a specific regime for biofuel promotion mechanisms in road transport, by setting and adjusting minimum mandatory quotas for the incorporation of biofuels in diesel, as well as procedures for their monitoring and control.

E. Nuclear energy

No nuclear energy is generated in Portugal.

F. Upstream

There are no upstream activities in Portugal.

Endnotes

1. The National Electricity System that transposed the Third Electricity Directive.
2. The law governing the generation, transmission, distribution and commercialisation of electricity that transposed the Third Electricity Directive.
3. Approved by Law no. 9/2013, of 28 January, and subsequently regulated by the Regulation on the Procedure for Obtaining Exemption or Reduction of Fines.
4. Such as the Commercial Relations Regulation, the Tariffs Regulation, the Quality Standards of Service Regulation and the Infrastructures Operation Regulation (all available in http://www.erse.pt).
5. Governed by the National Electricity System, the law governing the generation, transmission, distribution and commercialisation of electricity, and Decree-Law no. 189/88, of 27 May, as amended.
6. Decree-Law no. 172/2006, of 23 August, as amended by Decree-Law no. 215-B/2012, of 8 October, and the last time by Law no. 7-A/2016, of 30 March.
7. On 01.09.2015 ERSE issued its decision on the fulfilment of the certification requirements by the TSO of the RNT under a full ownership unbundling scheme.
8. The Basis of the concession are set forth in Decree-Law no. 172/2006, of 23 August, as amended.
9. The Basis of the concession are set forth in Decree-Law no. 172/2006, of 23 August, as amended.
10. Pursuant to the provisions of specific legislation (Decree-Law no. 344-B/ 82, of 1 September 1982, as amended by Decree-Law no. 297/86, of 19 September 1986, Decree-Law no. 341/90, of 30 October 1990, and Decree law 17/92, of 5 February 1992), the right to distribute electricity at low voltage in Portugal is assigned to municipalities. The low-voltage concessions of the 278 municipalities will reach their end between 2016 and 2026, the majority expected to end in 2021 and 2022. The terms of the new concessions will be established after a tender process to be implemented by the competent municipalities.
11. Pursuant to article 56 of the Decree-Law no. 172/2006, of 23 August 2006, as amended, and article 48 of the Decree-Law no. 140/2006, of 26 June 2006, as amended.
12. It is governed by its Statutes, which have been approved by Decree-Law no. 97/2002, of 12 April, as amended by Decree-Law no. 212/2012, of 25 September 2012, and Decree-Law no. 84/2013, of 25 June 2013, the latter completing the implementation of the Third Energy Package.
13. Governed by Decree-Law no. 130/2014, of 29 August, as amended Decree-Law no. 33/2016, of 28 June 2016.
14. ERSE Regulation no. 561/2014, published on the Official Journal *(Diário da República)* on 22 December (2nd series, no. 246). Such Regulation is complemented by sub-regulation to be approved periodically by ERSE and available in http://www.erse.pt/pt/electricidade/regulamentos/relacoescomerciais/Paginas/SubRegulamentacaoELRRC.aspx.
15. ERSE Regulation no. 560/2014, published on the Official Journal *(Diário da República)* on 22 December (2nd series, no. 246). Such Regulation is complemented by sub-regulation to be approved periodically by ERSE and available in http://www.erse.pt/pt/electricidade/regulamentos/acessoasredesaasinterligacoes/Paginas/SubregulamentacaoRARI.aspx.
16. ERSE Regulation no. 551/2014, published on the Official Journal *(Diário da República)* on 15 December (2nd series, no. 241).
17. Global Use of the System, Use of the Transmission Network in Extra High Voltage and High Voltage and Use of the Distribution Networks in High Voltage, Medium Voltage and Low Voltage.
18. Pursuant to Decree-Law no. 15/2015, of 30 January 2015, and Order in Council no. 144/2017, of 24 April 2017.
19. Decree-Law no. 237-B/2006, of 18 December 2006, that regulates the regime applicable to the recovery and transmissibility of the tariff deficit and tariff adjustments should be highlighted.
20. Pursuant to ERSE's Annual Report on the Electricity and Natural Gas Markets in 2015, dated from July 2016 and available in http://www.erse.pt/pt/uniaoeuropeia/Documents/Relat%C3%B3rio%20CE%202015_EN.pdf.
21. Map available in http://www.centrodeinformacao.ren.pt/PT/InformacaoTecnica/PublishingImages/Mapa-REN-2016-MEDIUM.jpg.
22. That transposed the Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC, and was last amended by Law no. 42/2016, of 28 December 2016.
23. Also transposed the Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003, and was last amended by Decree-Law no. 38/2017, of 31 March 2017.
24. On 1 September 2015 ERSE issued its decision on the fulfilment of the certification requirements by the TSO of the RNT under a full ownership unbundling scheme.
25. Operators of regional distribution networks (concession holders): Setgás, Lisboagás GDL, Lusitaniagás, Tagusgás, Beiragás and Portgas (EDP group).
26. Operators of local distribution networks (license holders): Duriensegás, Paxgás, Medigás, Dianagás, Sonorgás.
27. ERSE Regulation no. 435/2016, published on the Official Journal *(Diário da República)* on 9 May (2nd series, no. 89). Such Regulation is complemented by sub-regulation to be approved periodically by ERSE and available in http://www.erse.pt/pt/gasnatural/regulamentos/acessoasredesinfraestruturaseasinterligacoes/Paginas/SubregulamentacaoGNRARII.aspx.
28. ERSE Regulation no. 415/2016, published on the Official Journal *(Diário da República)* on 29 April (2nd series, no. 83).
29. That partially transposes the New EU ETS Directive New EU ETS Directive.
30. As amended by Decree-Law no. 195/2015, of 14 September 2015, that partially transposes the New EU ETS Directive, and by Decree-Law no. 42-A/2016, of 12 August 2016.
31. Also completing the transposition of the New EU ETS Directive. Repeals Decree-Law 233/2004, of 14 December 2004, that remains in force until 30 June 2013 or until the completion of all procedures for the period 2008-2012 as per the provisions on monitoring and annual reporting of emissions, the return of emission allowances and procedures at the level of the Registration of Emissions Licenses.

Overview of the legal and regulatory framework in 41 jurisdictions

This table has been collated using information compiled by the contributing authors for their corresponding jurisdictions and on the basis of information available at the time of writing.

ALBANIA

GENERAL	National regulatory authority (-ies)	• Enti rregullatori i sektorit te energjise elektrike (Regulatory body of the electric system) ("ERE")
	Unbdundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• Independent system operator
ELECTRICITY	Principal electricity generator(s)	• Hydro power plants
	Transmission system operator(s)	Operatatori i sistemit te transmetimit (transmission operator system) ("OST") Market operator (to be approved this year)
	Electricity distributor(s)	• Operatori I shiprndarjes se energjise elektrike (electricity distribution system operator) ("OSHEE")
	Principal electricity supplier(s)	• Korporata elektro-energjetike shqiptare (Albanian electro-energetic corporation) ("KESH")
	Interconnectors	Interconnection lines with bordering countries: 1. Fierze, Albania – Prizren, Kosovo 220kV 2. Koplik, Albania – Podgorica, Montenegro, 220kV 3. Zemblak, Albania – Kardia (Greece), 400kV 4. Tirana, Albania – Podgroica, Montenegro, 400kV
GAS	Importer or exporter country? (name origin of gas if importer)	Importer
	Transportation system operator(s)	Albpetrol SH.A.
	Gas distributor(s)	Albpetrol SH.A.
	Principal gas supplier(s)	Albpetrol SH.A. and from imports
	Interconnectors	N/A

AUSTRIA

GENERAL

National regulatory authority (-ies)	Energie-Control GmbH (E-control)
Unbundling regime full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• FOU • ISO • ITO • ITO+

ELECTRICITY

Principal electricity generator(s)	Verbund EVN Wien Energie
Transmission system operator(s)	Austrian Power Grid Vorarlberger übertragungsnetz
Electricity distributor(s)	• Wiener Netze GmbH • Evn Netz GmbH • Steweag-steg GmbH • Bewag netz GmbH • Kelag Netz GmbH • Salzburg Netz GmbH • VKW Übertragungsnetz AG • Energie AG • Netz Oberösterreich GmbH • TINETZ AG • There are more than 130 other electricity distributors
Principal electricity supplier(s)	• Verbund • Aae Maturstrom Vertrieb GmbH • Myelectric Energievertriebs- und Dienstleistungs GmbH • Oekostrom Vertriebs GmbH • Switch • Bewag • Energie AG Oberösterreich • Evn AG • Kelag • Salzburg AG • Tiwag • Wien Energie Vertrieb GmbH
Interconnectors	Austria has interconnectors with the Czech Republic, Hungary, Italy, Germany, Slovenia and Switzerland

AUSTRIA (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Importer (mainly from Russia) No shale gas
	Transportation system operator(s)	Gas Connect Austria GmbH ("GCA") Trans Austria Gasleitung GmbH ("TAG")
	Gas distributor(s)	Wiener Netze GmbH Evn Netz GmbH Gasnetz Steiermark GmbH Gas Connect Austria GmbH ("GCA")
	Principal gas supplier(s)	OMV Econgas
	Interconnectors	• Trans-Austria Gas Pipeline ("TAG") • March Baumgarten Pipeline ("MAB") • South-East Gas Pipeline ("SOL") • West Austria Gas Pipeline ("WAG") • Hungarian Austrian Gas Pipeline ("HAG") • Penta West Pipeline ("PW") • Kittsee Petrzalka Pipeline ("KIP")

BELARUS

GENERAL	National regulatory authority (-ies)	• The president of the Republic of Belarus; • the National Assembly of the Republic of Belarus; • the Council of Ministers of the Republic of Belarus; • the Ministry of Energy of the Republic of Belarus; • the Ministry of Economy of the Republic of Belarus; and • the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus.
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	N/A

BELARUS (continued)

ELECTRICITY

Principal electricity generator(s)	• Lukomlskaya gres; • Beriozovskaya gres; • Minsk tec-4; • Minsk tec-5; • Gomel tec-2; • Minsk tec-3; • Novopolotsk tec; • Mogilev tec-2; • Svetlogorsk tec; • Mozyr tec; • Bobruysk tec-2; • Grodno tec-2; • High-pressure power plants
Transmission system operator(s)	RUP "ODU" Affiliate of the state industrial group GPO "Belenergo")
Electricity distributor(s)	• RUP "Brestenergo"; • RUP "Vitebskenergo"; • RUP "Gomelenergo"; • RUP "Grodnoenergo"; • RUP "Minskenergo"; • RUP "Mogilevenergo" (regional affiliates of the state industrial group GPO "Belenergo").
Principal electricity supplier(s)	• RUP "Brestenergo"; • RUP "Vitebskenergo"; • RUP "Gomelenergo"; • RUP "Grodnoenergo"; • RUP "Minskenergo"; • RUP "Mogilevenergo" (regional affiliates of the state industrial group GPO "Belenergo").
Interconnectors	RUP "ODU" Affiliate of the state industrial group GPO "Belenergo")

BELARUS (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Importer (the Russian Federation); No shale gas in the jurisdiction
	Transportation system operator(s)	OJSC "Gazprom Transgaz Belarus" State industrial group gpo "Beltopgaz"
	Gas distributor(s)	OJSC "Gazprom Transgaz Belarus" State industrial group gpo "Beltopgaz" • UP "Brestoblgaz"; • UP "Vitebskoblgaz"; • RPUP "Gomeloblgaz"; • UP "Grodnooblgaz"; • UP "Minskoblgaz"; • UP "Mingaz"; and • RUP "Mogilevoblgaz".
	Principal gas supplier(s)	OJSC "Gazprom" (Russia) "Belneftekhim" Concern
	Interconnectors	OJSC "Gazprom Transgaz Belarus" The "Yamal-Europe" Main gas pipeline low-capacity interconnections with Russia, Ukraine, Lithuania and Poland.

BELGIUM

GENERAL	National regulatory authority (-ies)	CREG (Federal regulator) VREG, BRUGEL, CWAPE (Regional regulators)
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Full ownership unbundling ("FOU")
ELECTRICITY	Principal electricity generator(s)	EDF Luminus, Electrabel (GDF Suez), E.ON
	Transmission system operator(s)	Elia System Operator S.V and Elia Asset NL
	Electricity distributor(s)	AIEG, AIESH, , Eandis, Infrax, Ores, Régie de Wavre, Sibelga, Tecteo (Resa)
	Principal electricity supplier(s)	Engie Electrabel, EDF Luminus, Eneco, Eni Gas & Power, E.on Belgium, Lampiris, Essent Belgium, OCTA+, Poweo, Mega, Belpower, energie2030 Engie Electrabel, EDF Luminus, Eni Gas & Power, Essent, Lampiris, Eneco, DNB/GRD, Elegant, Octa+, Ecopower and others
	Interconnectors	France, Luxembourg, Germany, the Netherlands, United Kingdom (forthcoming, expected to be finalised in 2018)

BELGIUM (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Importer. The main suppliers are: the Netherlands (46.5% in 2014) and Norway (33.5% in 2014) with other supply from: the United Kingdom (10.1% in 2014), Qatar (7.7% in 2014) and Germany (2.2% in 2014). Part of the gas imported from the Netherlands and Germany comes from Russia. Qatar is the main source of LNG imports
	Transportation system operator(s)	Fluxys
	Gas distributor(s)	Gaselwest, Imea, Imewo, Intergem, Iveka, Iverlek, Interelectra, Pbe, Iveg, Wvem, IDeg, IEH, IGH, Interest/Ost, Interlux, Intermosane, Sedilec, Simogel.
	Principal gas supplier(s)	Electrabel (Engie/GDF Suez) (31.4% in 2015), Eni Gas & Power (24.5% in 2015), EDF Luminus (9.6% in 2015) and RWE Supply & Trading (5.2% in 2015). There are 36 other gas suppliers, including: Belgian Eco Energy ("BEE"), Coretec, Direct Energie, Electrabel Customer Solutions, Elexys, Eneco België, Enovos Luxembourg, Essent Belgium (RWE), Etrim – Energy Cluster, Gas Natural Europe Belux, GDF Suez, Groene Energie Administratie (Greenchoice), Lampiris, Mega Power Online Sa, Natgas, Octa+, Powerhouse, Scholt Energy Control, Total Gas & Power Belgium, Wingas GmbH
	Interconnectors	France/Spain/Italy, Germany, Luxembourg, the Netherlands, Russia, Norway, United Kingdom

BOSNIA AND HERZEGOVINA

GENERAL	National regulatory authority (-ies)	**Electricity sector** Competences in the electricity sector are divided between the central level government and the entities: • **At central level** - State Electricity Regulatory Commission ("SERC") • **In the Republic of Srpska ("RS")** - Regulatory Commission for Energy of Republic of Srpska ("RCERS") • **In the Federation of Bosnia and Herzegovina ("FBH"):** Regulatory Commission for Energy of Federation of Bosnia and Herzegovina ("FERC") **Other energy sectors** In other energy sectors the central government does not have any competences (oil, gas). In RS, RCERC is competent also for other energy sectors. In FBH, the Ministry of Energy, Mining and Industry is competent for oil and gas sector.
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	The functions of transmission and distribution of electricity are unbundled in different public enterprises. Generation and supply/distribution are legally unbundled in the RS, but not in the FBH. Supply and distribution of electricity are still united in state owned entities in both the RS and in FBH.

BOSNIA AND HERZEGOVINA (continued)

Principal electricity generator(s)	**In the RS:** • Mixed Holding Electricity Company of the Republic of Srpska ("EPC") **In the FBH:** • Electric Power Company of Bosnia and Herzegovina ("EPBH"); and • Electric Power Company of Croatian Community of Herceg Bosnia ("EPCUHB").
Transmission system operator(s)	**Independent System Operator of Bosnia and Herzegovina ("ISO")** - operation of the transmission grid, provision of auxiliary services and coordination of Bosnian cross-border transmission capacities; and **Transmission Company ("Elektroprenos")** - management, maintenance and improvement.
Electricity distributor(s)	**In the RS:** Five subsidiaries of the EPC: • Elektro Doboj; • Elektro – Bijeljina; • Elektrokrajina; • Elektrodistribucija; and • Elektro-Herzegovina. **In the FBH:** • EPBH; and • EPHB.
Principal electricity supplier(s)	**In the RS:** Five subsidiaries of the EPC: • Elektro Doboj; • Elektro – Bijeljina; • Elektrokrajina; • Elektrodistribucija; and • Elektro-Herzegovina. **In the FBH:** • EPBH; and • EPHB.
Interconnectors	BH has interconnections with Serbia, Croatia and Montenegro.

BOSNIA AND HERZEGOVINA (continued)

GAS

Importer or exporter country? (name origin of gas if importer)	BH is an importer country. The origin of the gas is the Russian Federation.
Transportation system operator(s)	**In the RS:** Gas Promet a.d. Istočno Sarajevo Sarajevo Gas a.d. Istočno Sarajevo **In the FBH:** BH GAS d.o.o Sarajevo
Gas distributor(s)	**In the RS:** Sarajevo Gas a.d. Istočno Sarajevo Zvornik Stan a.d. Zvornik **In the FBH:** Sarajevo Gas d.o.o. Sarajevo; Visoko Gas
Principal gas supplier(s)	**In the RS:** Zvornik Stan a.d. Zvornik Sarajevo Gas a.d. Istočno Sarajevo **In the FBH:** Sarajevo Gas d.o.o. Sarajevo; Visoko Gas
Interconnectors	BH has an interconnection with Serbia. BH GAS is competent for importing gas in Bosnia and Herzegovina.

BULGARIA

GENERAL	National regulatory authority (-ies)	• Energy and Water Regulatory Commission • Minister of Energy
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	ITO
ELECTRICITY	Principal electricity generator(s)	• Nuclear power plant Kozloduy (2,000MW) • Thermal power plant AES Maritza East I (670MW) • Thermal power plant Maritza East II (1,556MW) • Thermal power plant Maritza East III (906MW)
	Transmission system operator(s)	• Electricity System Operator EAD (a wholly-owned subsidiary of Bulgarian Energy Holding EAD)
	Electricity distributor(s)	• EVN Electrorazpredelenie AD (EVN Grid) • ČEZ Razpredelenie Bulgaria AD (ČEZ Grid) • Energo-Pro Mrezhi AD (Energo-Pro Grid)
	Principal electricity supplier(s)	• NEK EAD • EVN Electrosnabdyavane AD (EVN Sales) • ČEZ Electro Bulgaria AD (ČEZ Sales) • Energo-Pro Prodazhbi AD (Energo-Pro Sales)
	Interconnectors	• Greece • Macedonia • Romania • Serbia • Turkey
GAS	Importer or exporter country? (name origin of gas if importer)	Importer Russia
	Transportation system operator(s)	Bulgartransgaz EAD
	Gas distributor(s)	• Local distribution companies, most of which are subsidiaries of Overgas AD
	Principal gas supplier(s)	Bulgargaz EAD
	Interconnectors	• Greece • Macedonia • Romania • Turkey

CROATIA

GENERAL	National regulatory authority (-ies)	The Croatian Energy Regulatory Agency (*Hrvatska energetska regulatorna agencija*; "HERA")
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Electricity – ITO Gas – FOU (unbundling certification is still pending)
ELECTRICITY	Principal electricity generator(s)	According to HERA's licence registry a total of 40 companies are licensed as electricity generators, among which the two most important are: • HEP Proizvodnja d.o.o • TE Plomin d.o.o.
	Transmission system operator(s)	Hrvatski operator prijenosnog sustava d.o.o. ("HOPS")
	Electricity distributor(s)	HEP Operator distribucijskog sustava d.o.o. ("HEP-ODS")
	Principal electricity supplier(s)	According to HERA's licence registry a total of 20 companies are licensed as electricity suppliers, among which the most important are: • HEP-Opskrba d.o.o. • HEP-ODS d.o.o. • GEN-I Zagreb d.o.o. • RWE ENERGIJA d.o.o. • Proenergy d.o.o.
	Interconnectors	Croatia (HEP) has cross border interconnections with all of its neighbours (Slovenia ("SI"), Serbia ("RS"), Bosnia and Herzegovina ("BA") and Hungary ("HU")) save Montenegro and Italy. These are, *inter alia*, the following: • Tumbri – Krško (SI) • Melina –Divača (SI) • Pehlin – Divača (SI) • Ernestinovo-Pecs (HU) • Žerjavinec – Heviz (HU) • Mraclin–Prijedor (BA) • Međurić – Prijedor (BA) • Đakovo – Gradačac (BA) • Đakovo – Tuzla (BA) • Ernestinovo – Ugljevik (BA) • Ernestinovo –Sremska Mitrovica (RS) • Konjsko – Mostar (BA) • Zakučac – Mostar (BA) • Plat – Trebinje (BA)

CROATIA (continued)

GAS

Importer or exporter country? (name origin of gas if importer)	Until 31 March 2014, the company PRIRODNI PLIN d.o.o. (owned by INA-INDUSTRIJA NAFTE d.d.) was the 'supplier of suppliers' under the public service obligation ("PSO") of gas procurement at regulated prices. On 1 April 2014, the company HEP d.d. (through its affiliated company HEP-Opskrba plinom d.o.o.) has been appointed the new wholesale gas supplier to other Croatian suppliers with PSOs for the needs of household customers for the period until 31 March 2017.
Transportation system operator(s)	PLINACRO d.o.o.
Gas distributor(s)	According to HERA's licence registry a total of 35 companies are licensed as gas distributors, among which the two most important are: • HEP Plin d.o.o. • GRADSKA PLINARA ZAGREB d.o.o.
Principal gas supplier(s)	According to HERA's licence registry a total of 54 companies are licensed as gas suppliers, among which the most important are: • HEP d.d. (HEP-Opskrba plinom d.o.o., HEP-Trgovina d.o.o., HEP-PLIN d.o.o.) • PRVO PLINARSKO DRUŠTVO d.o.o. • INA d.d. • MET Croatia Energy Trade d.o.o. • CRODUX PLIN d.o.o. • Proenergy d.o.o. • GPZ-Opskrba d.o.o.
Interconnectors	• Rogatec between Croatia and Slovenia (Plinovodi d.o.o.) • Drávaszerdahely between Croatia and Hungary (FGSZ Ltd)

CYPRUS

GENERAL	National regulatory authority (-ies)	Cyprus Energy Regulation Authority ("CERA")
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Liberalised by approximately 65% in total with effect from January 2009.
ELECTRICITY	Principal electricity generator(s)	Electricity Authority of Cyprus ("EAC")
	Transmission system operator(s)	The transmission system operator which was established pursuant to electricity market regulation law.
	Electricity distributor(s)	The distribution system operator which remains under EAC.
	Principal electricity supplier(s)	EAC
	Interconnectors	Cyprus currently has no cross-border links.
GAS	Importer or exporter country? (name origin of gas if importer)	N/A
	Transportation system operator(s)	N/A
	Gas distributor(s)	N/A
	Principal gas supplier(s)	N/A
	Interconnectors	N/A

CZECH REPUBLIC

GENERAL	National regulatory authority (-ies)	• Energy regulatory office ("ERO")
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• FOU in electricity sector, ITO in gas sector
ELECTRICITY	Principal electricity generator(s)	• ČEZ, a.s. ("CEZ") – 67.5% of overall electricity production
	Transmission system operator(s)	• ČEPS a.s. ("CEPS")
	Electricity distributor(s)	• ČEZ Distribuce a.s., E.ON Distribuce a.s., PRE Distribuce a.s. (*DSOs*)
	Principal electricity supplier(s)	• ČEZ
	Interconnectors	Two cross-border inter-connectors with Germany, two with Austria, five with Slovakia and four with Poland.
GAS	Importer or exporter country? (name origin of gas if importer)	Importer (Russia and Norway)
	Transportation system operator(s)	NET4GAS, s.r.o. ("NET4GAS")
	Gas distributor(s)	Gas Net, s.r.o.,("Gas Net"), E.ON Distribuce, s.r.o. ("E.ON"), Pražská plynárenská Distribuce, a.s. ("PPD")
	Principal gas supplier(s)	Gas Net
	Interconnectors	• Five transfer stations: Brandov, Hora SV Kateriny, Lanzhot, Waidhaus and Cieszyn; • four compressor stations (Břeclav, Kralice nad Oslavou, kouřim, veselí nad lužnicí).

DENMARK

GENERAL

National regulatory authority (-ies)	The Danish Energy Regulatory Authority (DERA – Energitilsynet)
Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Electricity and gas: FOU already completed

ELECTRICITY

Principal electricity generator(s)	• Dong Energy A/S • Vattenfall A/S
Transmission system operator(s)	Energinet.dk
Electricity distributor(s)	56 as of February 2016
Principal electricity supplier(s)	• DONG Energy • Energi Danmark • SE (former Sydenergi) • SEAS – NVE • Danske Commodities
Interconnectors	**Eastern Denmark:** • Sweden: Two 400kV AC and two 132kV AC connections with a total capacity of 1,700MW. • Germany: One 400kV dc connection with a transmission capacity of 600MW. A new cable with the capacity of 400MW is expected to be commissioned in the end of 2018. **Eastern Denmark:** • Sweden: Two 285kV DC connections with a total capacity of 740MW. • Germany: Two 400kV AC and two 220kV AC connections with a capacity of 1.780MW and one 150kV AC connection with capacity of 135MW. TenneT TSO GmbH • Norway: Two 250kV DC, one 350kV DC and one 500kV DC connections with a capacity of 1.700MW. • Holland: A 320kV cable with a capacity of 700MW is expected to be commissioned in 2019. • England: In July 2016, the EU approved to provide funding for the establishment of a cable between Denmark and England. The preliminary examination is expected to be completed by the end of 2018.

DENMARK (continued)

GAS

Importer or exporter country? (name origin of gas if importer)	• Exporter • Shale gas: The test drilling project for shale gas in Dybvad, Northern Denmark, was shut down in August 2015. There are no shale gas projects planned.
Transportation system operator(s)	• Energinet.dk
Gas distributor(s)	• HMN • Naturgas I/S • NGF Nature Energy Holding A/S (former Naturgas Fyn) • Aalborg • Muncipality • Energinet.dk
Principal gas supplier(s)	• DCC Energi A/S • DONG Naturgas • Energi Danmark • Energi Fyn Handel • Energi Nord • Engros Gas • E.On Gashandel • Danmark gasel • HMN Gassalg • Nordjysk Elhandel Detail • OK a.m.b.a. • NGF Nature • Energy • Tre-For Energi • SE (former Sydenergi) • Sydfyns Elforsyning • Wingas
Interconnectors	The Danish gas system is connected via one pipeline to Germany and one to Sweden. • Baltic Pipe Project: **The Polish gas** TSO and the Danish gas TSO are investigating the possibility of establishing a connection between the Polish and the Danish gas transmission system. The feasibility study is expected to be completed in the end of 2016.

ESTONIA

GENERAL	National regulatory authority (-ies)	Estonian Competition Authority
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Electricity sector: FOU Gas sector: FOU
ELECTRICITY	Principal electricity generator(s)	Eesti Energia (ca 89%)
	Transmission system operator(s)	Elering
	Electricity distributor(s)	In total there are 34 electricity distributors Elektrilevi has the largest market share (ca 86%)
	Principal electricity supplier(s)	In total there are 16 electricity suppliers Eesti Energia has the largest market share (ca 59%), followed by Elektrum Eesti (ca 11%)
	Interconnectors	1000MW with Finland 900MW with Latvia + 600MW interconnector under construction 650MW with Russia Synchronously interconnected with IPS/UPS
GAS	Importer or exporter country? (name origin of gas if importer)	The majority of the gas supplies are imported from Russia (either directly or via Latvia) by Eesti Gaas Starting from 2015 four additional gas importers have started operations importing gas from Lithuania Imports from the Klaipeda LNG terminal and GET Baltic Natural Gas Exchange, both in Lithuania, amount to ca 25% of total imports There is no shale gas
	Transportation system operator(s)	Elering
	Gas distributor(s)	In total there are 24 gas distributors Gaasivõrgud has the largest market share (ca 69%)
	Principal gas supplier(s)	In total there are 23 gas suppliers Eesti Gaas has the largest market share (ca 80%)
	Interconnectors	Isolated from Europe's gas network, only connections are with Russia and Latvia Balticconnector (the interconnector between Estonia and Finland) is under development with expected completion by 2020

FINLAND

GENERAL	National regulatory authority (-ies)	In Finland the national supervisory authority for electricity and gas markets is the Energy Authority (before.2014 the "Energy Market Authority"). In addition to the Energy Authority, the electricity and gas markets are supervised by the Finnish Competition and Consumer Authority.
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	**Electricity**: The Electricity Market Act requires legal and operational unbundling for both the TSO and large and medium-sized DSOs. For small DSOs that have distributed less than 200GWh annually through their 400v network during the previous three calendar years, unbundling through separate accounts is sufficient. With regard to the TSO (Fingrid Oyj) FOU applies. **Gas**: Finland has made use of an exemption from the unbundling requirements under the Third Gas Directive.
ELECTRICITY	Principal electricity generator(s)	In 2015, 27.1 per cent of the electricity consumed in Finland was produced with nuclear power and 20.1 per cent with hydro power. Furthermore, 19.8 per cent of the consumed electricity was imported. Major electricity generators in Finland are Fortum Oyj, Pohjolan Voima (incl. Teollisuuden Voima), Helen Oy and Kemijoki Oy as well as Vattenfall.
	Transmission system operator(s)	Fingrid Oyj.
	Electricity distributor(s)	There are almost 100 distribution network companies in Finland of which the majority are owned or controlled by municipalities. In 2014, the largest DSO in Finland, Caruna Oy, had approximately 640,000 customers. Furthermore, the 15 largest DSOs in Finland covered over 70% of the electricity distribution network, network users, and revenue.
	Principal electricity supplier(s)	The Finnish electricity generation sector is characterised by a large number of actors. There are approximately 150 companies producing electricity and approximately 400 power plants, from which over half are hydro power plants. The share of the three biggest generating companies of the total installed capacity is about 50%.
	Interconnectors	To Sweden, Norway, Estonia, and Russia. Furthermore, Finland's main grid is part of the synchronous inter-Nordic system, which includes the transmission grids of Sweden, Norway and eastern Denmark in addition to Finland.
GAS	Importer or exporter country? (name origin of gas if importer)	Importer (Russia).
	Transportation system operator(s)	Gasum Oy, a company fully owned by the State of Finland.
	Gas distributor(s)	Contrary to most of Europe, the distribution of natural gas to private households and other minor consumers is not significant in Finland. At the end of 2015, there were 22 natural gas DSOs. Most of the DSOs are owned by municipalities while some are owned by industrial users of natural gas. The share of the top three retail suppliers is about 50% of the total natural gas consumption in retail level.
	Principal gas supplier(s)	Approximately 95% of gas consumed in Finland is transmitted directly by Gasum Oy to end-users, which are mainly industrial operators as well as energy and power companies. In Finland, the retail sale of natural gas accounts for only 5% of total consumption. Natural gas operations such as transmission activities may be carried out subject to a licence granted by the Finnish Energy Authority. However, the mere selling of natural gas does not require a licence but is subject to certain statutory requirements.
	Interconnectors	Currently, there are two pipelines between Finland and Russia, both operated by Gasum Oy. However, the construction of Balticconnector, a submarine interconnector between Finland and Estonia, is scheduled to be completed in 2020. The new pipeline will enable gas transmission between the natural gas pipeline infrastructures of Finland and Estonia and provide for an opening of Finland's isolated natural gas markets to competition.

FRANCE

GENERAL

National regulatory authority (-ies)	• Ministry of Energy • Commission de régulation d'énergie ("CRE")
Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO")	• FOU model for one operator (TIGF), • ITO model for all the others.

ELECTRICITY

Principal electricity generator(s)	• EDF, • ENGIE, • Compagnie du Rhône, • Uniper.
Transmission system operator(s)	• Réseau de transport d'électricité ("RTE")
Electricity distributor(s)	• ENEDIS and approximately 160 local distributors.
Principal electricity supplier(s)	• EDF, • ENGIE, • Uniper, • Alpiq, • Quandran-Enel, • Poweo, • Direct Energie, • Alterna, • Axpo, • Edenkia, • Electricité de Savoie, • Enalp, • Enercoop, • Energem, • Energies du Santerre, • Energies Libres, • Enovos, • ekWateur, • GEG Sources d'Energie, • Hydronext, • Hydroption, • Iberdrola, • Lampiris, • Lucia, • Planète OUI, • Proxelia, • Sélia, • Total, • Vattenfall.
Interconnectors	• Italy, • UK, • Germany, • Spain, • Belgium, • Switzerland.

FRANCE (continued)

GAS

Importer or exporter country? (name origin of gas if importer)	• Importer, notably from Norway, the Netherlands, Algeria and Russia. • Shale gas exploration and production is prevented via the prohibition of hydraulic fracturing techniques.
Transportation system operator(s)	• GRTgaz • TIGF
Gas distributor(s)	• GRDF and approximately 25 local distributors
Principal gas supplier(s)	• ENGIE, • Direct Energie, • EDF, • E.ON, • Eni, • Iberdrola, • Gazprom, • Alpiq, • Alterna, • Antargaz, • Axpo, • Dyneff Gaz, • Endesa, Energia, • Energem, • Energies du Santerre, • Enovos, • Gas Natural Fenosa, • Gaz Européen, • GEG Source d'Energies, • Lampiris, • NATGAS France, • PICOTY, • SAVE, • Sélia, • UNIPER, • Vattenfall, • Gaz de Bordeaux, • Total Energie Gaz, • ES.
Interconnectors	• Belgium, • Germany, • Switzerland, • Spain.

GERMANY

GENERAL	National regulatory authority (-ies)	Federal Network Agency (*Bundesnetzagentur*); Network Agencies of the Federal States
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	FOU, ISO, and ITO
ELECTRICITY	Principal electricity generator(s)	EnBW, E.ON, RWE, Vattenfall, and municipality owned companies (*Stadtwerke*)
	Transmission system operator(s)	50Hertz Transmission, Amprion GmbH, TenneT TSO GmbH, TransnetBW GmbH (trading as EnBW Transportnetz AG)
	Electricity distributor(s)	Approximately 850; more than 700 have less than 30,000 customers
	Principal electricity supplier(s)	EnBW, RWE, Vattenfall, and municipality owned companies (*Stadtwerke*)
	Interconnectors	Austria, Switzerland, France, Luxembourg, Belgium, the Netherlands, Denmark, Poland, Czech Republic
GAS	Importer or exporter country? (name origin of gas if importer)	Importer (39% from Russia, 30% from Norway, 20% from the Netherlands). The remaining 20% is produced domestically.
	Transportation system operator(s)	Bayernets Eni Gas Transport Deutschland Erdgas Münster Transport EWE Netz Gasunie Deutschland GRTgaz Deutschland GVS Netz ONTRAS – VNG Gastransport Open Grid Europe Statoil Deutschland Transport Thyssengas Wingas Transport
	Gas distributor(s)	Over 700, including many municipality owned companies (*Stadtwerke*)
	Principal gas supplier(s)	E.ON/Uniper, BEB, Ruhrgas, Shell, Exxon, VNG, RWE, Wngas, Erdgas Münster and municipally owned utilities (*Stadtwerke*)
	Interconnectors	Austria, Switzerland, France, Luxembourg, Belgium, the Netherlands, Denmark, Poland and the Czech Republic

GREECE

GENERAL	National regulatory authority (-ies)	Regulatory Authority for Energy ("RAE")
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Independent Transmission Operator ("ITO") currently in transition into Full Ownership Unbundling ("FOU").

GREECE (continued)

ELECTRICITY	Principal electricity generator(s)	Public Power Corporation ("PPC"), Heron Thermoilektriki I, Heron II Viotia, Motor Oil, Elpedison, Protergia.
	Transmission system operator(s)	ITO (ex Hellenic Transmission System Operator or "HTSO")
	Electricity distributor(s)	Hellenic Distribution Network Operator ("HDNO")
	Principal electricity supplier(s)	PPC, Heron Thermoilektriki, Elpedison, Protergia, Watt & Volt, NRG.
	Interconnectors	Albania, FYROM, Bulgaria, Turkey, Italia
GAS	Importer or exporter country? (name origin of gas if importer)	Importer (Piped gas from Russia and Turkey and LNG from Algeria)
	Transportation system operator(s)	National Natural Gas Transmission System Operator (NNGTS Operator or DESFA as per its Greek initials).
	Gas distributor(s)	Gas Distribution Companies (EPAs as per their Greek initials).
	Principal gas supplier(s)	Public Gas Company (DEPA as per its Greek initials), M&M,EPAs (Local Gas Suppliers, low and medium pressure).
	Interconnectors	Turkey, Bulgaria

HUNGARY

GENERAL	National regulatory authority (-ies)	Hungarian Energy and Public Utility Regulatory Authority (*Magyar energetikai és közmű-szabályozási hivatal*)
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	ITO
ELECTRICITY	Principal electricity generator(s)	• MVM ZRT. (Paksi Atomerőmű Zrt.), • MET POWER AG + MVM ZRT. (Dunamenti Erőmű Zrt.) • RWE (Mátrai Erőmű Zrt.) • ALPIQ (Alpiq Csepeli Erőmű Kft.) • SPS (Tisza Erőmű Kft.) • EP HUNGARY AS (Budapesti Erőmű Zrt.)
	Transmission system operator(s)	Mavir Zrt.
	Electricity distributor(s)	• Elmű Hálózati Kft., • E.ON Dél-dunántúli Áramhálózati Zrt., • E.ON Észak-dunántúli, Áramhálózati Zrt. • E.ON Tiszántúli Áramhálózati Zrt, • EDF DÉMÁSZ Hálózati Elosztó Kft., • ÉMÁSZ Hálózati Kft
	Principal electricity supplier(s)	• AES Hungary Energiaszolgáltató Kft., • Alpiq Energy SE Magyarországi Fióktelepe, • ELMŰ Nyrt., • E.ON Energiaszolgáltató Kft., • EDF Démász Zrt., • ÉMÁSZ Nyrt., • Veolia Energia Magyarország Zrt., • ELMŰ-ÉMÁSZ Energiakereskedő Kft., • GDF Suez Energia Magyarország Zrt., • MVM Partner Zrt.

HUNGARY (continued)

ELECTRICITY	Interconnectors	Göd-Levice (Slovakia), Győr-Gabčikovo (Slovakia), Albertirsa-Zakhidnoukrainska (Ukraine), Kisvárda-Mukačevo (Ukraine), Sajószöged-Mukačevo (Ukraine), Tiszalök-Mukačevo (Ukraine), Békéscsaba-Nadab (Romania), Sándorfalva-Arad (Romania), Hévíz-Zerjavinec (Croatia), Sándorfalva-Subotica (Serbia), Győr- Wien Südost (Austria), Győr -Neusiedl (Austria), Győr-Wien Südost (Austria)
GAS	Importer or exporter country? (name origin of gas if importer)	Importer (Russia)
	Transportation system operator(s)	Földgázszállító Zrt. (FGSZ)
	Gas distributor(s)	• DBGÁZ Kft. • E.ON Dél-Dunántúli Gázhálózati Zrt. • ISD Power Kft. • FŐGÁZ Földgázelosztási Kft. • MAGÁZ Magyar Gázszolgáltató Kft. • OERG Kft. • TIGÁZ-DSO Kft. • E.ON Közép-Dunántúli Gázhálózati Zrt. • Alpiq Csepeli Erőmű Kft. • NGS Kft.
	Principal gas supplier(s)	• GDF Suez Energia Magyarország Zrt. • ISD Power Kft. • FŐGÁZ Zrt. • TIGÁZ Zrt. • Magyar Földgázkereskedő Zrt. • Alpiq Csepeli Erőmű Kft. • EDF Démász Zrt. • MOL Energiakereskedő Zrt.
	Interconnectors	Beregdaróc/Ukrtansgas (Ukraine), Mosonmagyaróvár/OMV Gas (Austria), Kiskundorozsma/Srbijagas (Serbia), Csanádpalota/Transgaz (Romania), Drávaszerdahely/Plinacro (Croatia), Vecsés/Eustream (Hungary).

ICELAND

GENERAL	National regulatory authority (-ies)	• National Energy Authority (*Orkustofnun*)
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• Hybrid of ITO and FOU. An obligation to become FOU by 1 January 2015.

ICELAND (continued)

ELECTRICITY	Principal electricity generator(s)	• landsvirkjun • ON Power • HS Orka • Orkusalan • Fallorka • Westfjord Power Company
	Transmission system operator(s)	• Landsnet
	Electricity distributor(s)	• Reykjavik Energy (Veitur) • Rarik • HS Veitur • Westfjord Power Company • Nordurorka • Rafveita Reydarfjardar
	Principal electricity supplier(s)	• ON Power • HS Orka • Orkusalan • Fallorka • Westfjord Power Comapny
	Interconnectors	No interconnectors in place. Several submarine cable projects are being considered.
GAS	Importer or exporter country? (name origin of gas if importer)	N/A
	Transportation system operator(s)	N/A
	Gas distributor(s)	N/A
	Principal gas supplier(s)	N/A
	Interconnectors	N/A

IRELAND

GENERAL	National regulatory authority (-ies)	Commission for Energy Regulation ("CER")
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Electricity Sector: ISO Model Gas sector: ITO model
ELECTRICITY	Principal electricity generator(s)	ESB, Energia (Viridian), SSE Airtricity, Bord Gais Energy (Centrica), Tynagh Energy (GE)
	Transmission system operator(s)	Eirgrid
	Electricity distributor(s)	ESB Networks Limited
	Principal electricity supplier(s)	Electric Ireland (ESB), SSE Airtricity, Bord Gais Energy (Centrica), Energia (Virdian) and Vayu (Gas Natural Fenosa).
	Interconnectors	500MW East-West interconnector between Ireland and Wales: owned by EirGrid and the 500MW HVDC Moyle interconnector between Northern Ireland and Scotland: owned by Mutual Energy (Note that the Ireland and Northern Ireland transmission system is operated as a single meshed network).

IRELAND (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Ireland is a net importer of gas from the United Kingdom. There is not currently any shale gas in the jurisdiction.
	Transportation system operator(s)	Owned and operated (ISO and TAO) by Gas Networks Ireland, a wholly owned subsidiary of the state owned Ervia (formerly known as Bord Gáis Éireann.
	Gas distributor(s)	Gas Networks Ireland
	Principal gas supplier(s)	Electric Ireland (ESB), SSE Airtricity, Bord Gais Energy (Centrica), Energia (Virdian) and Vayu (Gas Natural Fenosa)
	Interconnectors	Two sub-sea interconnectors between Ireland and Scotland. South North pipeline connecting Ireland and Northern Ireland.

ISRAEL

GENERAL	National regulatory authority (-ies)	• Ministry of National Infrastructures, Energy and Water Resources • Natural Gas Authority • Electricity Authority (formerly known as the Public Utilities – Electricity Authority).
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	N/A
ELECTRICITY	Principal electricity generator(s)	• Israel Electric Corporation (state-owned) • OPC Rotem, Ltd. • Dalia Power Energies, Ltd. • Dorad Energy, Ltd.
	Transmission system operator(s)	• Israel Electric Corporation
	Electricity distributor(s)	• Israel Electric Corporation
	Principal electricity supplier(s)	• Israel Electric Corporation (state-owned) • OPC Rotem, Ltd. • Dalia Power Energies, Ltd. • Dorad Energy, Ltd.
	Interconnectors	None presently.

ISRAEL (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Importer of LNG through FSRU. No export to date. Export agreements have been signed between the Leviathan and Tamar leaseholders and Jordanian companies. Oil shales exist but are not presently being produced.
	Transportation system operator(s)	Israel Natural Gas Lines Ltd.
	Gas distributor(s)	Natural Gas South Ltd. Negev Natural Gas Ltd. SuperNG Merimon Natural Gas North, Ltd. SuperNG Hadera Valleys Natural Gas Distribution Company Ltd. Rotem Natural Gas Ltd.
	Principal gas supplier(s)	The Tamar leaseholders (the only online reservoir as of 2016): Noble Energy Mediterranean Ltd. Delek Drilling Limited Partnership Avner Oil Exploration Limited Partnership Isramco Negev 2 Limited Partnership DOR Gas Exploration Limited Partnership
	Interconnectors	None that are active.

ITALY

GENERAL	National regulatory authority (-ies)	• Ministry of Economic Development • Authority for Electricity, Gas and Water (Autorità per l'Energia Elettrica il Gas e il Sistema Idrico, "AEEGSI") • Antitrust Authority (Autorità Garante della Concorrenza e del Mercato, "AGCM")
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	FOU model with reference to both the major Italian electricity (Terna S.p.A.) and gas (Snam Rete Gas) TSOs.

ITALY (continued)

ELECTRICITY

Principal electricity generator(s)	• Enel Group (25.7%) • Eni Group (8.6%) • Edison Group (6.4%) • Engie (3.2%) • Czech Gas Holding (3.1%) • A2A (3.0%) • Iren (2.9%) • Edipower (2.4%) • Axpo Group 2.4%) • Erg Group (2.1%) • Saras (1.8%)
Transmission system operator(s)	Terna S.p.A.
Electricity distributor(s)	• Enel Distribuzione (85%) • A2A Reti Elettriche (4.2%) • Acea Distribuzione (3.8%) • Aem Torino Distribuzione (1.3%) • Remaining distributors with less than 1% of the volume of electricity distributed
Principal electricity supplier(s)	• Enel Group (18.1%) • Edison Group (8.9%) • Eni Group (5.6%) • GALA Group (4.9%) • AXPO Group (4.0%)
Interconnectors	Italy imports approximately 14% of its electricity through the interconnection lines along the northern border. Italy is a major electricity importer in Europe. 22 cross-border interconnection lines are currently in operation with Switzerland, Austria, France, Slovenia and Greece.

ITALY (continued)

GAS

Importer or exporter country? (name origin of gas if importer)	Approximately 90% of Italian gas consumption is imported from abroad, mainly from the following countries: • Russia (about 35%) • Algeria (about 30%) • Qatar (about 9%) • Netherlands, Norway and Northern Europe (about 13%) • Libya (about 9%) • The 10% of gas which originate in Italy is predominantly produced by Eni S.p.A.
Transportation system operator(s)	• Snam Rete Gas S.p.A • Società Gasdotti Italia • Retragas • Infrastrutture Trasporto Gas (formerly Edison Stoccaggio)
Gas distributor(s)	• Snam S.p.A. (24.3%) • 2i Reti Italia (16.7%) • Hera (9.0%) • A2A Group (5.9%) • Iren (4.1%) • Several municipally owned and minor private companies
Principal gas supplier(s)	• Eni (23.5%) • Enel Energia(7.2%) • Edison Energia (6.9%) • Iren Mercato (4.1%) • Edison (3.5%) • Enel Trade (3.4%) • Hera Comm (3.1%) • Shell Energia Italia (2.5%)
Interconnectors	Gas cross-border interconnections currently in operation (managed by Snam Rete Gas) are connected to the Italian grid at the following entry points (5 pipelines and 3 LNG regasification terminals): • Mazara del Vallo (Sicily) • Tarvisio (Friuli Venezia Giulia) • Passo Gries (Lombardy) • Gela (Sicily) • Gorizia (Friuli Venezia Giulia) • Panigaglia (Liguria) • Carvazere (Veneto) • Livorno (Toscana)

LATVIA

GENERAL	National regulatory authority (-ies)	The Public Utilities Commission
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• For electricity – ISO • For gas – ITO (by December 2017); FOU as of 2018
ELECTRICITY	Principal electricity generator(s)	Latvenergo
	Transmission system operator(s)	As Augstprieguma tikls
	Electricity distributor(s)	• AS sadales tikls
	Principal electricity supplier(s)	• AS Latvenergo
	Interconnectors	Estonia, Lithuania, Finland, Sweden
GAS	Importer or exporter country? (name origin of gas if importer)	Importer (Russia; Lithuania as of April 2017)
	Transportation system operator(s)	AS conexus baltic grid (as of January 2017)
	Gas distributor(s)	AS Latvijas Gaze
	Principal gas supplier(s)	AS Latvijas Gaze
	Interconnectors	Russia, Estonia, Lithuania

LITHUANIA

GENERAL	National regulatory authority (-ies)	National Control Commission for Prices and Energy
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	FOU
ELECTRICITY	Principal electricity generator(s)	• Lietuvos energijos gamyba AB (includes Elektrėnai Complex, Kruonis Hydro Pumped Storage Power Plant and Kaunas Algirdas Brazauskas' Hydroelectric Power Plant), Vilniaus energija UAB, Kauno termifikacijos elektrinė UAB, INTER RAO Lietuva UAB (importer)
	Transmission system operator(s)	• LITGRID AB
	Electricity distributor(s)	• Energijos skirstymo operatorius AB (ESO) (was established on 1 January 2016 merging LESTO AB (previous electricity distributor) and stock Lietuvos dujos AB (previous gas distributor)
	Principal electricity supplier(s)	• Energijos skirstymo operatorius AB (ESO), Lietuvos energijos gamyba AB, Energijos tiekimas UAB, INTER RAO Lietuva UAB, Enefit UAB, Enerty UAB (previous SBE Energy UAB, Electrum Lietuva UAB, Imlitex UAB
	Interconnectors	• Four 330kV and three 110 kV lines connecting to Latvian system; five 330kV and seven 110kV lines connecting to the Belarusian system; three 330kV and three 110kV lines connecting to the Kaliningrad system; one 300kV constant stream cable with the Sweden system (NordBalt); two 400kV lines connecting to the Polish system (LitPol Link)

LITHUANIA (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	• Importer from Russian Federation • Starting from 2015 – importer from Norway • In June 2015 Lithuanian Geological Survey announced a tender regarding exploration and extraction of shale gas. However, due to strong opposition from the local citizens, the tender did not proceed. The shale gas resources in Lithuania are not explored.
	Transportation system operator(s)	• Amber grid AB
	Gas distributor(s)	• Energijos skirstymo operatorius AB (ESO) was established on 1 January 2016 merging LESTO AB (previous electricity distributor) and stock Lietuvos dujos AB (previous gas distributor)
	Principal gas supplier(s)	• Lietuvos dujų tiekimas UAB, Dujotekana UAB, LITGAS UAB
	Interconnectors	• Minsk (Belarus) – Vilnius (Lithuania) pipeline, Riga (Latvia) – Vilnius (Lithuania) pipeline, Kaliningrad (Russia) – Vilnius (Lithuania) pipeline. • Starting from 2015 – the LNG terminal.

LUXEMBOURG

GENERAL	National regulatory authority (-ies)	Institut Luxembourgeois de Régulation
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Exemption for small grids (art. 44(2) Electricity Directive/article 49(6) Third Gas Directive)
ELECTRICITY	Principal electricity generator(s)	Societe Electrique de L'our (SEO)
	Transmission system operator(s)	Creos Sotel (industrial grid)
	Electricity distributor(s)	Creos Electris Sudstroum Ville d'ettelbruck Ville de diekirch
	Principal electricity supplier(s)	Enovos Leo Electris Sudstroum Steinergy Eida NordENERGIE
	Interconnectors	Creos (Germany) Sotel (Belgium)

LUXEMBOURG (continued)

GAS

Importer or exporter country? (name origin of gas if importer)	Importer Norway Russia Belgium Netherlands
Transportation system operator(s)	Creos
Gas distributor(s)	Creos Sudgaz Ville de Dudelange
Principal gas supplier(s)	Enovos Leo Sudgaz
Interconnectors	Creos (Germany, Belgium and France)

FORMER YUGOSLAV REPUBLIC OF MACEDONIA

GENERAL

National regulatory authority (-ies)	The national regulatory body in the energy sector in the Republic of Macedonia is the Energy Regulatory Commission ("ERC").
Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	In 2006 the Electric Power Company of Macedonia ("ESM") was transformed and the distribution of electricity was unbundled from the transmission and generation of electricity. Today, the main producers of electricity, Macedonian Power Plants JSC Skopje ("ELEM"), the TSO ("MEPSO") and the DSO ("EVN Macedonia") are companies derived from ESM. The first two companies are 100% state-owned companies.

ELECTRICITY

Principal electricity generator(s)	ELEM operates with two out of three thermal power plants in the Republic of Macedonia. ELEM also operates the larger hydro power plants in the country. ELEM produces over 90% of the domestically produced electricity
Transmission system operator(s)	The Macedonian TSO MEPSO is a 100% state owned company with three main activities: (i) the transmission of electricity; (ii) operating the electricity market; and (iii) managing the power system in the Republic of Macedonia.
Electricity distributor(s)	EVN Macedonia operates the distribution and electrical supply system in the Republic of Macedonia. ELEM also has a licence for the distribution of electricity.
Principal electricity supplier(s)	The market is liberalised only with respect to around 271 companies. Another 158 customers with annual consumption exceeding 1GWh in 2015 became eligible from 1 July 2016. All other entities and households get their electricity exclusively from EVN Macedonia. EVN Macedonia also dominates the liberalised part of the market with around 70% of the market share.
Interconnectors	There are cross-border interconnectors between the Republic of Macedonia and: • Serbia (400kV lines); • Republic of Bulgaria (400kV lines); • Greece (400kV lines). The system operator MEPSO organises joint auctions for granting the right to use of the available cross border transmission lines between MEPSO and the neighbouring system operators. The right to use is granted on the principle of marginal price.

FORMER YUGOSLAV REPUBLIC OF MACEDONIA (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	The Republic of Macedonia is an importer of natural gas, trough Russian transit gas pipeline on international corridor 8 which passes through Ukraine, Moldavia, Romania and Bulgaria. No shale gas reserves have been discovered.
	Transportation system operator(s)	The Joint Stock Company GA-MA is the national operator of the natural gas network, jointly owned by the Government of the Republic of Macedonia and local oil derivatives distribution company "Makpetrol AD Skopje". The company operates and manages the natural gas transmission system and third party access.
	Gas distributor(s)	The Directorate for Technological Industrial Development Zones is the licence holder for implementation of energy-relating activities of natural gas distribution, natural gas distribution system management and natural gas supply to tariff-based consumers in its scope which are connected to the natural gas distribution system. JP Kumanovo Gas and JP Strumica Gas also hold licences for natural gas distribution and natural gas supply to tariff-based consumers connected to the natural gas distribution system in the respective municipalities (ie, Kumanovo and Strumica).
	Principal gas supplier(s)	The companies Makpetrol-Prom Gas DOOEL Skopje and Bumak Primo DOOEL Skopje both have licences for national supply of natural gas to tariff consumers. The Directorate for Technological Industrial Development Zones is also licensed to supply natural gas in the zones it manages. JP Kumanovo Gas and JP Strumica Gas also hold licences for supply of natural gas in the respective municipalities.
	Interconnectors	The cross border interconnection, on the border between Macedonia and Bulgaria, in the area called Deve Bair. As the system operator, the company GA MA is authorised to grant the right of use of available cross border transmission lines.

MALTA

GENERAL	National regulatory authority (-ies)	• Malta Resources Authority ("MRA") • Regulator for Energy and Water Services ("REWS") • Environment & Resources Authority ("ERA") • Energy and Water Agency ("EWA")
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	There is no unbundling regime in Malta and no independent ISO/ITO
ELECTRICITY	Principal electricity generator(s)	• Enemalta PLC • Electrogas Malta Ltd.
	Transmission system operator(s)	N/A
	Electricity distributor(s)	• Enemalta PLC
	Principal electricity supplier(s)	• Enemalta PLC
	Interconnectors	The electricity interconnector between Malta and Sicily, connecting the country to the European grid was inaugurated in April 2015. Another interconnector between Malta And Sicily In relation to gas for electricity generation is being considered. This project has been included in the list of EU funded projects. This project is still in its early stages.

MALTA (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Malta Is an importer of gas. LNG is imported by Electrogas Malta Ltd from Azerbaijan (SOCAR). LPG is imported principally from Italy. There is no shale gas in Malta.
	Transportation system operator(s)	N/A
	Gas distributor(s)	Liquigas Malta Ltd. (LPG) Easygas Ltd. (LPG)
	Principal gas supplier(s)	Electrogas Malta Ltd (LNG) Liquigas Malta Ltd. (LPG) Easygas Ltd. (LPG)
	Interconnectors	A study is currently being conducted in relation to the gas pipeline between Malta and Sicily. Its conceptual design and any other preparatory activities linked to this network are expected to be ready in the course of 2017.

MONTENEGRO

GENERAL	National regulatory authority (-ies)	Regulatory Agency for Energy
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	ITO
ELECTRICITY	Principal electricity generator(s)	EPCG
	Transmission system operator(s)	Crnogorski elektroprenosni sistem ("CGES")
	Electricity distributor(s)	Crnogorski Elektrodistributivni System ("CEDIS")
	Principal electricity supplier(s)	EPCG
	Interconnectors	• Bulgaria (440kV); • Hungary (440kV); • Macedonia (one of 440kV and two of up to 220kV); • Montenegro (440kV and two of up to 220kV); • Albania (up to 220kV); • Bosnia and Herzegovina (one of 440kV and one of up to 220kV); • Croatia (440kV) • Romania (440kV)
GAS	Importer or exporter country? (name origin of gas if importer)	N/A
	Transportation system operator(s)	N/A
	Gas distributor(s)	N/A
	Principal gas supplier(s)	N/A
	Interconnectors	N/A

THE NETHERLANDS

GENERAL	National regulatory authority (-ies)	Authority for consumers and markets (*autoriteit consument en markt*)
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	FOU model
ELECTRICITY	Principal electricity generator(s)	• Essent • Engie • Nuon
	Transmission system operator(s)	TenneT TSO
	Electricity distributor(s)	• Enexis • Liander • Stedin • Enduris
	Principal electricity supplier(s)	• Essent • Nuon • Eneco
	Interconnectors	• Germany • Belgium • Great Britain • Norway
GAS	Importer or exporter country? (name origin of gas if importer)	Exporter No shale gas
	Transportation system operator(s)	Gasunie Transport Services
	Gas distributor(s)	• Enexis • Liander • Stedin • Enduris
	Principal gas supplier(s)	• Essent • Nuon • Eneco • Delta
	Interconnectors	• Germany • Belgium • Great Britain

NORWAY

GENERAL	National regulatory authority (-ies)	• Norwegian Water Resources and Energy Directorate (NVE) – not for upstream gas activities
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• FOU (electricity sector) • ISO (upstream gas sector)
ELECTRICITY	Principal electricity generator(s)	• Statkraft SF/Statkraft Energi AS
	Transmission system operator(s)	• Statnett SF
	Electricity distributor(s)	• About 140 companies are involved in grid operations at one or more grid levels. Hafslund Nett AS is the largest distribution grid company.
	Principal electricity supplier(s)	• A large number of companies are involved in generation, supply and trading. Statkraft Energi AS is the largest supplier.
	Interconnectors	• There are DC connectors to Sweden (ca 3700MW), Finland (ca 80MW-120MW) and to Russia (import capacity of 56MW), and AC connectors to Denmark (1700MW) and the Netherlands (700MW). There are two interconnectors under construction; one to the UK and one to Germany, both with a capacity of around 1400MW.
GAS	Importer or exporter country? (name origin of gas if importer)	Norway is a gas exporter It has shale gas reserves
	Transportation system operator(s)	The transmission system is not developed. Gassco AS is the ISO for the upstream gas pipeline system on and from the Norwegian continental shelf.
	Gas distributor(s)	N/A
	Principal gas supplier(s)	N/A
	Interconnectors	N/A

POLAND

GENERAL	National regulatory authority (-ies)	• The President of the Energy Regulatory Authority (Prezes Urzędu Regulacji Energetyki)
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• In practice, the FOU model has been adopted. • The State Treasury is the sole shareholder in gas and electricity TSOs. However, it is also a major shareholder in trade and generation companies.

POLAND (continued)

ELECTRICITY	Principal electricity generator(s)	• PGE Górnictwo i Energetyka Konwencjonalna S.A. (PGE Group) • Tauron Wytwarzanie S.A. (Tauron Group) • ENEA Wytwarzanie S.A. • ZE PAK S.A. • Energa S.A
	Transmission system operator(s)	PSE Operator S.A. - fully state owned
	Electricity distributor(s)	• PGE Dystrybucja S.A. • Tauran Dystrybucja S.A. • Energa – Operator S.A. • ENEA Operator sp. z o.o. • Innogy Stoen Operator sp. z o.o
	Principal electricity supplier(s)	• PGE Obrót S.A., • TauroN Sprzedaż sp. z o.o., • ENEA S.A. • Energa-Obròt S.A.
	Interconnectors	• One with Lithuania • One with Sweden • Two (one not operational) with Germany • Four with the Czech Republic • One with Slovakia • Two (one not operational) with Ukraine • One with Belarus (not operational)
GAS	Importer or exporter country? (name origin of gas if importer)	Importer, mainly from Russia No economically viable shale gas resources have been confirmed yet.
	Transportation system operator(s)	OGO GAZ-System S.A. – fully state owned
	Gas distributor(s)	Main DSO – Polska Spółka Gazownictwa Sp. Z o.o. fully owned by PGNiG S.A.with six local branches Others: • EWE Energia sp. z o.o., • G.EN Gaz Energia S.A., • DUON Dystrybucja S.A., • Polenergia Kogeneracja sp. z o.o., • SIME Polska sp. z o.o., • Enesta sp. z o.o.
	Principal gas supplier(s)	Pgnig s.a., pgnig obrót detaliczny sp. z o.o.
	Interconnectors	• Four with Germany, • two with Czech Republic, • two with Ukraine, • three with Belarus.

PORTUGAL

GENERAL

National regulatory authority (-ies)	• Portuguese Energy Services Regulatory Authority: *Entidade Reguladora dos Serviços Energéticos* ("ERSE"); • Governmental Directorate of the Ministry of Economy: DGEG - Direcção-Geral De Energia E Geologia ("DGEG"),
Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	N/A

ELECTRICITY

Principal electricity generator(s)	• EDP Gestão a Produção de Energia, S.A. • Elecgas • Tejo Energia, S.A. • Turbogás
Transmission system operator(s)	REN – Rede Eléctrica Nacional, S.A.
Electricity distributor(s)	• Cooperativa Eléctrica de Vale D'Este • Cooperativa Eléctrica de Vilarinho, C.R.L. • Cooperativa Eléctrica de Loureiro, C.R.L. • Cooproriz – Cooperativa de Abastecimento de Energia Eléctrica, CRL. • A Eléctrica Moreira de Cónegos, CRL • A Celer – Cooperativa Electrificação de Rebordosa, CRL • Casa do Povo de Valongo do Vouga • Junta de Freguesia de Cortes do Meio • Cooperativa Electrificação A Lord, CRL • Cooperativa Eléctrica S. Simão de Novais • EDP Distribuição – Energia, S.A. • Electricidade dos Açores • Empresa de Electricidade da Madeira
Principal electricity supplier(s)	• Axpo Iberia, S.L. • EDP Comercial – Comercialização de Energia, S.A. • YLCE (ENFORCESCO, S.A.) • Galp Power S.A. • GOLD ENERGY – Comercializadora de Energia, S.A. • Union Fenosa Comercial, S.L. – Suc. Em Portuga
Interconnectors	N/A

PORTUGAL (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Importer (the main natural gas suppliers are Algeria and Nigeria). Potential shale gas.
	Transportation system operator(s)	REN-GASODUTOS, S.A.
	Gas distributor(s)	Operators of regional distribution networks (concession holders): • Setgás • Lisboagás GDL • Lusitaniagás • Tagusgás • Beiragás • Portgas (EDP Distribuição) Operators of local distribution networks (licence holders): • Duriensegás • Paxgás • Medigás • Dianagás • Sonorgás
	Principal gas supplier(s)	• CEPSA GAS Comercializadora, S.A. • Cepsa Portuguesa Petróleos, S.A. • EDP Comercial – Comercialização de Energia, S.A. • EDP Gás.com – Comércio de Gás Natural, S.A. • Endesa – Endesa Energia Sucursal Portugal • Energia Simples • Galp Gás Natural, S.A. • Galp Power, S.A. • Gas Natural Comercializadora, SA • GOLD ENERGY – Comercializadora de Energia, S.A. • Iberdrola Clientes Portugal, Unipessoal, Lda. • Investigación, Criogenia y Gas, S.A. – sucursal (INCRYGAS) • LUZiGÁS • Molgás, Energia Portugal S.A. • Rolear – Automatizações, Estudos e Representações, S.A.
	Interconnectors	N/A

ROMANIA

GENERAL	National regulatory authority (-ies)	The Romanian Energy Regulatory Authority – *Autoritatea Nationala de Reglementare in domeniul Energiei* – ANRE
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	FOU

ROMANIA (continued)

ELECTRICITY

Principal electricity generator(s)	Hidroelectrica SA Nuclearelectrica SA Complexul Energetic Oltenia SA
Transmission system operator(s)	Transelectrica SA
Electricity distributor(s)	CEZ Distributie SA Enel Distributie Banat SA Enel Distributie Dobrogea SA E.ON Moldova Distributie SA FDEE Electrica Distributie Muntenia Nord SA FDEE Electrica Distributie Transilvania Sud SA FDEE Electrica Distributie Transilvania Nord SA
Principal electricity supplier(s)	Principal suppliers to end customers (both regulated and eligible): Electrica Furnizare SA Enel Energie Muntenia SA Enel Energie SA E.ON Energie Romania SA CEZ Vanzare SA Alro SA Principal suppliers on competitive market: Alro SA Electrica Furnizare SA Tinmar Energy SA E.ON Energie Romania SA Repower Furnizare Romania SRL
Interconnectors	Existing interconnectors: Romania - Bulgaria: Overhead line 400kV Isaccea – Dobrudja Overhead line 400kV Țânțăreni – Kozlodui Overhead line 400kV Isaccea – Varna Overhead line 220kV Işalnița – Kozlodui Romania – Serbia: Overhead line 400kV Porțile de Fier – Djerdap Overhead line 110kV Ostrovul Mare – Kusjak Overhead line 110kV Gura Văii – Șip Overhead line 110 kV Jimbolia – Kikinda Romania - Hungary: Overhead line 400kV Arad – Sandorfalva Overhead line 400kV Nadab – Bekescsaba Romania - Ukraine: Overhead line 400kV Roșiori – Mukacevo Romania – Moldova: Overhead line 400kV Isaccea – Vulcănești Overhead line 110kV Stânca – Costești Overhead line 110kV Huși – Cioara Overhead line 110kV Țuțora – Ungheni Overhead line 110kV Falciu – Gotesti Projects: Overhead line 400kV Romania – Serbia (Reșița – Pancevo); Overhead line 400kV Suceava – Bălți (Moldova); Overhead line 400kV Iași – Strășeni – Ungheni (Moldova) (alternatives, Strășeni-Ungheni 330kV or 400kV and Ungheni-Iași 400kV) Submarine cable (HVDC Link 400kV) Romania – Turkey

ROMANIA (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Importer (Russia; Western Europe through Hungary)
	Transportation system operator(s)	Transgaz SA
	Gas distributor(s)	Distrigaz Sud Retele SRL E.ON Distributie Romania SA
	Principal gas supplier(s)	Competitive market: OMV Petrom Gas SRL Romgaz SA ENGIE Romania SA Interagro SA Regulated market: ENGIE Romania SA E.ON Energie Romania SA
	Interconnectors	Hungary – Romania: Csanádpalota – FGSZ Bulgaria – Romania: Negru Voda I, II and III – Bulgartransgaz (only transit) Ukraine – Romania: Medieșu Aurit Import – Ukrtransgaz Isaccea Import (I, III and IV) – Ukrtransgaz (only transit) Romania – Moldova: Iasi – Ungheni Romania – Bulgaria: Ruse – Giurgiu – reverse flow **Projects**: Bulgaria-Romania-Hungary-Austria (BRUA) Romania – Moldova: Onești-Gherăești-Lețcani Eastring: Slovakia – Hungary – Romania – Bulgaria

RUSSIA

GENERAL	National regulatory authority (-ies)	There is no single authority regulating the electricity and gas sectors in Russia. The major regulating bodies are: (i) the Ministry of Energy; (ii) the Federal Antimonopoly Service; (iii) the Federal Service for Environmental, Industrial and Nuclear Supervision; (iv) the Ministry of Natural Resources and Environment, including the Federal Service on Supervision in the Sphere of the Natural Resources Use; and (v) the Ministry of Economic Development.
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Generation and supply businesses cannot carry out the network business activities (except for isolated regions).

RUSSIA (continued)

ELECTRICITY	Principal electricity generator(s)	Four wholesale generation companies (ie, OGK-2, Inter RAO Electric Power Plants, Enel Russia, Unipro); 11 regional generation companies (eg, TGK-1, Mosenergo, Quadra); Rushydro; Rosenergoatom).
	Transmission system operator(s)	Federal Grid Company of the Unified Energy System (controlled by Russian Grids, a state-owned operator of energy grids)
	Electricity distributor(s)	14 regional distribution companies. A controlling stake of each of them is held by Russian Grids.
	Principal electricity supplier(s)	Many regional suppliers, eg, Mosenergosbyt, Mezhregionenergosbyt, Sverdlovenergosbyt, Orenburgenergosbyt
	Interconnectors	Russia conducts import/export operations in relation to electricity with Finland Lithuania, Ukraine, Kazakhstan, Georgia, Azerbaijan, Belarus, China, Mongolia, and South Ossetia.
GAS	Importer or exporter country? (name origin of gas if importer)	Russia is an exporter of gas. Despite Russia's great potential for shale gas production, shale gas reserves remain undeveloped due to large conventional reserves
	Transportation system operator(s)	Gazprom
	Gas distributor(s)	Gazprom
	Principal gas supplier(s)	Gazprom Novatek Rosneft
	Interconnectors	Blue Stream, Nord Stream, Yamal – Europe, Central Asia – Centre

SERBIA

GENERAL	National regulatory authority (-ies)	• Energy Agency
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• ITO
ELECTRICITY	Principal electricity generator(s)	• JP Elektroprivreda Srbije ("EPS")
	Transmission system operator(s)	• Elektromreže Srbije ("EMS")
	Electricity distributor(s)	• EPS Distribucija
	Principal electricity supplier(s)	• EPS (through one subsidiary)
	Interconnectors	• Bulgaria (440kV); • Hungary (440kV); • Macedonia (one of 440kV and two of up to 220kV); • Montenegro (440kV and two of up to 220kV); • Albania (up to 220kV); • Bosnia and Herzegovina (one of 440 kV and one of up to 220 kV); • Croatia (440kV) • Romania (440kV)

SERBIA (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	• Importer (Russia)
	Transportation system operator(s)	• Srbijagas
	Gas distributor(s)	• Srbijagas and 67 licensed suppliers of natural gas
	Principal gas supplier(s)	• Srbijagas and 67 licensed suppliers of natural gas
	Interconnectors	• Hungary - annual capacity of 510 million m^3 • Bosnia and Herzegovina – annual capacity of 80 million m^3

SLOVAK REPUBLIC

GENERAL	National regulatory authority (-ies)	The Ministry of Economy of the Slovak Republic and The Regulatory Office for Network Industries
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	ITO
ELECTRICITY	Principal electricity generator(s)	Slovenské elektrárne, A.S.
	Transmission system operator(s)	Slovenská elektizačná prenosová sústava, A.S.
	Electricity distributor(s)	ZSE Distribúcia, A.S., Stredoslovenská energetika – Distribúcia, A.S., Východoslovenská distribučná, A.S.
	Principal electricity supplier(s)	Západoslovenska energetika, A.S., Stredoslovenská energetika, A.S., Východoslovenská energetika, A.S.
	Interconnectors	Five interconnectors with the Czech Republic, two with Hungary, one double line to Poland and one to Ukraine.
GAS	Importer or exporter country? (name origin of gas if importer)	Importer – mainly Russian gas
	Transportation system operator(s)	eustream, A.S.
	Gas distributor(s)	SPP – distribúcia, A.S.
	Principal gas supplier(s)	Slovenský plynárenský priemysel, A.S.
	Interconnectors	One interconnector with Austria, one with the Czech Republic, two with Ukraine, one with Hungary.

SLOVENIA

GENERAL	National regulatory authority (-ies)	• Energy Agency of the Republic of Slovenia • Slovenian Environment Agency • Energy Directorate within the Ministry of Infrastructure and Spatial Planning • The Government office of the Republic of Slovenia of climate change
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• Electricity: FOU • Gas: ITO

SLOVENIA (continued)

ELECTRICITY

Principal electricity generator(s)	• Holding slovenske elektrarne d.o.o.; • Nuklearna elektrarna Krško d.o.o.; • Termoelektrarna-toplarna Ljubljana d,o.o.
Transmission system operator(s)	Public company Elektro-Slovenija d.o.o. ("ELES")
Electricity distributor(s)	• SODO electricity distribution system operator, d. o. o. • Elektro Celje d.d.; • Elektro Gorenjska d.d.; • Elektro Ljubljana d.d.; • Elektro Maribor d.d.; • Elektro Primorska d.d.
Principal electricity supplier(s)	• Gen-I d.o.o. • ELEKTRO ENERGIJA d.o.o. • PETROL, d.d. • Elektro Celje d.d. • GEN ENERGIJA d.o.o.. • Petrol Energetika d.o.o. • ECE d.o.o. • Elektro Gorenjska Prodaja, d.o.o.
Interconnectors	• ELES has a cross border connection with neighbouring countries: • Austria (Austria-APG) • Italy (TERNA) • Croatia (HEP). • An interconnection between Slovenia and Hungary is being developed in the region of Cirkovce-Pince

GAS

Importer or exporter country? (name origin of gas if importer)	99% of all gas in Slovenia is imported from Austria (approximately 67%), and Russia (approximately 30%).
Transportation system operator(s)	PLINOVODI D.O.O.
Gas distributor(s)	The distribution of natural gas in Slovenia is performed by 16 gas distribution system operators. Gas distributors are either public companies or private companies which have acquired a concession.
Principal gas supplier(s)	Geoplin d.o.o.
Interconnectors	Three cross-border interconnectors with Slovenian transmission system exist: • Ceršak on Austrian border • Rogatec on Croatian border • Šempeter on Italian border

SPAIN

GENERAL

National regulatory authority (-ies)	• National Markets and Competition Commission (*Comisión Nacional de los Mercados y de la Competencia* or "CNMC") • Spanish Ministry of Energy, Tourism and Digital Agenda (*Ministerio de Energía, Turismo y Agenda Digital*)– "METDA")
Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	• In the electricity sector, a Full Ownership Unbundling ("FOU") model apply • In the natural gas sector, a Full Ownership Unbundling ("FOU") and Independent System Operator ("ISO") model apply

ELECTRICITY

Principal electricity generator(s)	• Endesa • Iberdrola • Unión Fenosa • Hidroeléctrica Del Cantábrico - EDP • Viesgo
Transmission system operator(s)	REE (*Red Eléctrica de España*)
Electricity distributor(s)	• Endesa • Iberdrola • Unión Fenosa • Hidroeléctrica Del Cantábrico - EDP • Viesgo
Principal electricity supplier(s)	• Iberdrola, S.A. • Iberdrola Generación, S.A.U. • Endesa Energía, S.A. • Unión Fenosa • Gas Natural Comercializadora, S.A.U.
Interconnectors	• France • Portugal • Morocco • Andorra

SPAIN (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Importer. Main origin: Algeria. Others: Nigeria, Qatar, Trinidad and Tobago, Norway and Peru Shale gas is on the exploration phase in certain Autonomous Regions(investigation permits have been granted)
	Transportation system operator(s)	Enagas Reganosa
	Gas distributor(s)	Gas Natural Fenosa Redexis Gas
	Principal gas supplier(s)	Gas Natural Fenosa Union Fenosa Gas Endesa Gas Iberdrola
	Interconnectors	France (Larrau and Irun), Portugal (Badajoz and Tuy), Morocco, Algeria.

SWEDEN

GENERAL	National regulatory authority (-ies)	Swedish Energy Markets Inspectorate Swedish Energy Agency Swedish Radiation Safety Authority Swedish Competition Authority The National Electrical Safety Board
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Full Ownership Unbundling

SWEDEN (continued)

ELECTRICITY

Principal electricity generator(s)	Vattenfall AB E.ON Sverige AB Fortum Power and Heat AB Statkraft Sverige AB
Transmission system operator(s)	Affärsverket SVENSKA KRAFTNÄT
Electricity distributor(s)	E.ON ELNÄT SVERIGE AB Vattenfall Eldistribution AB Ellevio AB
Principal electricity supplier(s)	Vattenfall E.ON Fortum DIN EL Bixia Jämtkraft Hafslund
Interconnectors	Norway Finland Denmark Poland Germany Lithuania

GAS

Importer or exporter country? (name origin of gas if importer)	Importer. Mainly from Denmark.
Transportation system operator(s)	Swedegas AB
Gas distributor(s)	Göteborg Energi GasnäT AB E.ON Gas Sverige AB Gasnätet Stockholm AB
Principal gas supplier(s)	ApportGas E.ON Försäljning Sverige AB Göteborg Energi Kraftringen energi ab (publ) Varberg Energi Öresundskraft Stockholm Gas Handel
Interconnectors	Denmark

SWITZERLAND

GENERAL	National regulatory authority (-ies)	Electricity Commission ("ElCom")
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Full Ownership Unbundling as of 1 January 2013
ELECTRICITY	Principal electricity generator(s)	Alpiq Group Axpo Group BKW Energie AG Elektrizitätswerke der Stadt Zürich ("EWZ") Repower AG
	Transmission system operator(s)	Swissgrid AG
	Electricity distributor(s)	Hundreds of distributors differing in size and other respects, including municipalities and other regional distributors.
	Principal electricity supplier(s)	Alpiq Group Axpo Group BKM Energie AG EWZ Repower AG
	Interconnectors	Austria (APG) France (RTE) Germany (TransnetBW, Tennet TSO, Amprion, 50Hertz Transmission) Italy (Terna)

SWITZERLAND (continued)

GAS	Importer or exporter country? (name origin of gas if importer)	Importer from: Norway Netherlands Germany Denmark Italy Russia
	Transportation system operator(s)	Transitgas AG
	Gas distributor(s)	More than 100, including: Erdgas Ostschweiz AG ("EGO") Erdgas Zentralschweiz AG ("EGZ") Gasverbund Mittelland AG ("GVM") Gaznat S.A.
	Principal gas supplier(s)	Swissgas AG: Erdgas Ostschweiz AG ("EGO") Erdgas Zentralschweiz AG ("EGZ") Gasverbund Mittelland AG ("GVM") Gaznat S.A.
	Interconnectors	Transitgas Pipeline: Wallbach (Germany) Rodersdorf/Oltingue (France) Griess Pass (Italy)

TURKEY

GENERAL	National regulatory authority (-ies)	**For electricity and downstream oil & gas**: Energy Market Regulatory Authority (EMRA) **For upstream oil & gas**: General Directorate of Petroleum Affairs (GDPA)
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	ISO and ITO models are present. **Transmission Operators**: **Electricity**: Türkiye Elektrik İletim Anonim Şirketi (TEİAŞ) **Natural Gas**: Boru Hatları İle Petrol Taşıma Anonim Şirketi (BOTAŞ) Both companies are fully state-owned.

TURKEY (continued)

ELECTRICITY

Principal electricity generator(s)	As of 5 December 2016, there are 1646 electricity generation licences in force. State-owned Eletkrik Üretim Anonim Şirketi (EÜAŞ) is the principal electricity generation company.
Transmission system operator(s)	Türkiye Elektrik İletim Anonim Şirketi (TEİAŞ)
Electricity distributor(s)	The distribution network is divided into 21 regions, with one distribution company in each. All of these companies have been privatised.
Principal electricity supplier(s)	As of 5 December 2016, there are 214 supply licences in force.
Interconnectors	Interconnection lines with pre-determined capacities to: Bulgaria Azerbaijan (Nakhcivan) Iran Georgia Armenia Syria Iraq Greece

GAS

Importer or exporter country? (name origin of gas if importer)	Turkey is an importer country. The gas is imported from Russian Federation (55.31%), Iran (16.16%), Azerbaijan (12.74%), Algeria (8.09%), and Niger (2.56%). The Ministry of Energy and Natural Resources estimates that around 551 billion cubic meters of recoverable shale gas potential is available in Turkey.
Transportation system operator(s)	The State-owned Petroleum Pipeline Corporation ("BOTAŞ") owns and operates the gas transmission network.
Gas distributor(s)	The distribution network is divided into regions, with one distribution company in each. Turkey continues to privatise the gas distribution sector. As of 5 December 2016, there are 68 distribution licences in force.
Principal gas supplier(s)	The principal gas supplier is BOTAŞ.
Interconnectors	• Russia–Turkey Western Route Natural Gas Pipeline • Russia–Turkey Blue Stream Natural Gas Pipeline • Iran–Turkey Natural Gas Pipeline • Baku–Tbilisi–Erzurum Natural Gas Pipeline • Interconnector Turkey–Greece

UKRAINE

GENERAL

National regulatory authority (-ies)	The Ministry of the Energy and Coal Industry The National Electricity Regulation Commission The State Service of Geology and Subsoil Use The Ministry of Ecology and Natural Resources Antimonopoly Committee of Ukraine
Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	Two options are available: "OU" (equal to "FOU") and "ISO". Naftogas proposes to implement "OU". it may happen in second half of 2017.

UKRAINE (continued)

ELECTRICITY	Principal electricity generator(s)	**1) Thermal power generation** LLC "vostokenergo" (private) Public JSC "DTEK dniproenergo" (private) Public JSC "DTEK zakhidenergo" (private) Public JSC "DONBASENERGO" (private) Public JSC "Centrenergo" (state) **2) Hydroelectric power generation** Public JSC "Ukrhidroenergo" (state) **3) Nuclear power generation** State enterprise "Energoatom" (state)
	Transmission system operator(s)	State enterprise National Power Company "Ukrenergo"
	Electricity distributor(s)	State enterprise "Energorynok"
	Principal electricity supplier(s)	27 suppliers, which provide end users with electricity in a particular region (oblenergos).
	Interconnectors	State enterprise National Power Company "Ukrenergo"
GAS	Importer or exporter country? (name origin of gas if importer)	Importer (Poland, Slovakia Hungary)
	Transportation system operator(s)	Public JSC "Ukrtransgaz" – subsidiary of PJSC "Naftogaz"
	Gas distributor(s)	Public JSC "Ukrtransgaz" – subsidiary of PJSC "Naftogaz"
	Principal gas supplier(s)	Public JSC "Ukrtransgaz" – subsidiary of PJSC "Naftogaz"
	Interconnectors	Public JSC "Ukrtransgaz" – subsidiary of PJSC "Naftogaz"

UNITED KINGDOM

GENERAL	National regulatory authority (-ies)	The Gas and Electricity Markets Authority, acting through Ofgem
	Unbundling regime (full ownership unbundling ("FOU"), independent system operator ("ISO"), independent transmission operator ("ITO") model	FOU, ISO and the "unbundling derogation providing greater independence than the ITO model" pursuant to Article 9(9) of the New Electricity and Gas Directives are available in both the electricity and gas markets ITO model is only available for gas interconnectors
ELECTRICITY	Principal electricity generator(s)	RWE, EDF, E.ON, Scottish and Southern Energy, Scottish Power, Centrica, Drax Power, GDF SUEZ, Energy UK and Intergen
	Transmission system operator(s)	National Grid Electricity Transmission Plc
	Electricity distributor(s)	SSE, UK Power Networks, Northern Power Grid, Electricity Northwest, Scottish Power and Western Power Distribution
	Principal electricity supplier(s)	EDF, E.ON, RWE (nPower), Centrica, Scottish Power, Scottish and Southern Power
	Interconnectors	4GW of Capacity: Interconnexion France Angleterre, Britned, Moyle, Republic of Ireland (East West)

UNITED KINGDOM (continued)

GAS

Importer or exporter country? (name origin of gas if importer)	Net Importer. Gas is imported from Belgium, the Netherlands and Norway via Pipelines and as LNG via ship from several countries including Qatar, Algeria, Australia, Egypt and Nigeria
Transportation system operator(s)	National Grid Gas Plc
Gas distributor(s)	Cadent, Scotia Gas Networks, Northern Gas Networks and Wales and West Utilities
Principal gas supplier(s)	Centrica, E.ON,EDF Energy, RWE (nPower), SSE and Scottish Power
Interconnectors	Interconnector UK, Balgzand and Bacton Line ("BBL"), an Interconnector (Consisting of two Pipelines) between Moffat in Scotland and Republic of Ireland; the Langeled Pipeline, and the Scotland to Northern Ireland Pipeline

Overview of the renewable energy regime in 41 jurisdictions

This table has been collated using information compiled by the contributing authors for their corresponding jurisdictions and on the basis of information available at the time of writing.

ALBANIA

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	100% of energy is generated from renewable resources – exclusively from hydropower. Approximately. 85% of energy is generated from a hydropower plant managed by Kesh and approximately 15% is generated from privately owned hydropower plants.
	Key generators of renewable energy	Hydropower plant, the main one is 'Kaskada e Drint", managed by Kesh.
FINANCIAL INCENTIVES	Feed-in tariffs	There are currently two Feed-in Tariffs. One is for existing hydropower plants up to 10MW which is 7.77 ALL/kWh. The other is for new hydropower plants up to 15MW, which is 9.37 ALL/kWh.
	Green certificates (name of the scheme)	Issued by ERE (the regulatory body for the electricity system)
	Taxation	
	Other	

AUSTRIA

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	Austria traditionally uses two sources of renewable energy: hydropower and biomass. In 2014, 77.9% of the total energy produced was generated from renewable energy sources. Hydropower is the leading source of domestic energy production. In 2014, the share of hydropower amounted to 37%. Wind and solar power increased significantly in 2014, reaching a share of 22% and 34.9%, respectively.
	Key generators of renewable energy	Verbund Hydropower AG Verbund Renewable Power TIWAG-Tiroler Wasserkraft AG Vorarlberger Illwerke AG KELAG Steweag EVN ImWind

AUSTRIA (continued)

FINANCIAL INCENTIVES

Feed-in tariffs	The feed-in tariffs paid by the green power clearing and settlement agent OeMAG in the first half of 2016 ranged from 2.30c€/kWh to 23.81c€/kWh. On average, hydropower received 5.18c€/kWh, wind 8.89c€/kWh, solid biomass 13.24c€/kWh, biogas 17.41c€/kWh and photovoltaics 23.81c€/kWh.
Green certificates (name of the scheme)	Austria has formally used a Tradable Green Certificate ("TGC") scheme for only a short period of time (2000 to 2002), linked to its obligations to small-scale hydro production. Under this TGC-scheme, small hydro generators were obliged to issue so-called "small hydro certificates" in denominations of 100kWh, with all distributors having to purchase certificates representing 8% of their power sales. However, the system was never fully operational and faced certain difficulties (in particular, it lacked homogeneity due to different support schemes in each federal state, meagre market fluidity, opposition to the allocation of the equalisation fund, and doubts concerning compliance with European Community law). Thus, the TGC-system was replaced in 2003 by a new feed-in tariff scheme introducing uniform support for renewables across the federal territory ("Green Electricity Act", *Ökostromgesetz*). Feed-in tariffs are support schemes promoting the use of renewable energy. They provide a fixed price incentive wherein a fixed tariff is granted for each kWh of renewable energy which is fed into the grid. Nevertheless, Austria was the first EU country to introduce the Guarantees of Origin ("GO"), as required by the RES Directive, and to allow foreign certificates meeting the GO requirements to be imported.
Taxation	There is no tax exemption for electricity generated from RES. The tax amounts to €0.015 per kWh (Energieabgabe). If the energy is delivered to Austria and to other energy suppliers, the tax is to be paid by the energy supplier provided that the energy is destined to be further delivered. However, if the energy is used by an electricity company the tax is to be paid by the energy consumer. The same applies to self-generated electricity or electricity which was delivered to Austria. There is a tax exemption from mineral oil tax for the use of pure biofuels. Generally, there is no VAT reduction.
Other	The current Green Electricity Act (*Ökostromgesetz*) has been in force since 2012 and its reform is necessary since a number of wind turbines and photovoltaic systems will end their 13-year funding period by the end of 2016 and will no longer receive support. In general, the funding volume for green electricity is expected to decline overall in 2017: The flat-rate renewables charge per metering point (*Ökostrompauschale*), which amounts to 33 Euros per year and household until the end of 2017, is expected to amount up to 320 mn Euros in 2017. In addition, the renewables contribution (*Ökostromförderbetrag*) is expected to amount to 467 mn Euros in 2017. This means that the sum of the flat-rate renewables charge per metering point and the renewables contribution are decreasing from approximately 960 mn Euros in 2016 to approximately 790 mn Euros in 2017. The costs for green electricity for an average household are reduced from around 120 Euros to approximately 100 Euros per year. The reasons for these developments are lower costs for balancing energy due to improvements in the forecast quality of wind energy. In addition, it is expected that smaller amounts of green electricity will be used.

BELARUS

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**March 2015:** 5.2% of the electricity generated in Belarus was generated from renewable energy sources. Belarus plans to increase the share of RES to 6%. The latest breakdown is for November 2016, according to which the structure of RES is the following: • Biofuel – 35 (5.1%); • Solar energy – 105 (15.3%); • Geotthermal energy – 25 (3.6%); • Fuel wood and other types of biomass – 387 (56.4%); • Water energy – 59 (8.6%); • Wind energy – 75 (10.9%)
Key generators of renewable energy	• State industrial group GPO "Belenergo" (hydro, solar, wind power). • "Bellesbumprom" concern (biofuel, mostly biomass).

FINANCIAL INCENTIVES

Feed-in tariffs	Article 20 of the Acto on Renewable Energy Sources establishes prices for RES energy which equal energy tariffs for manufacturing enterprises, multiplied by a coefficient. Tariffs for plants of RES, commissioned or built on the basis of investment contracts concluded and registered before 20 May 2015: • 2.7 for the first 10 years (0.85 for the next 10 years, 0.45 after more than 20 years of exploitation) for renewable energy plants which use solar energy. • 1.1 for the first 10 years (0.85 for the next 10 years, 0.45 more than 10 years after exploitation) for hydro power plants. • 1.3 the first 10 years (0.85 for the next 10 years, 0.45 after more than 20 years of exploitation) for wind power plants • 1.3 for the first 10 years (0.85 the next 10 years, 0.45 after more than 20 years of exploitation) for fuelwood and other types of biomass. • 1.3 for the first 10 years (0.85 for the next 10 years, 0.6 after more than 20 years of exploitation) for biofuel. • 1.3 for the first 10 years (0.85 for the next 10 years, 0.45 after more than 20 years of exploitation) for geothermal energy and other.
Green certificates (name of the scheme)	Green certificates are issued by the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus, and prove the renewable nature of the energy. Certificates are required for the conclusion of contracts with GPO "Belenergo" for the sale of energy, and for a feed-in tariff to be applied.
Taxation	Installations, component and spare parts used for RES are subect to zero VAT when supplied to Belarus. Equipment used for the generation, receipt, transformation, accumulation or transmission of energy produced from RES can be subject to zero customs duties, in line with international treaties of the Republic of Belarus. The following plots of land are exempt from land tax: (i) plots occupied by installations involved in the production, receipt, accumulation, etc. of electricity produced from RES; (ii) plots of land occupied by a water reservoir used for the production of hydropower; and (iii) land granted for the period of the construction of such facilities are exempt from land tax. The coefficient on the rates of ecological tax for wastewater discharge for power plants with a straight-through arrangement for cooling turbine condensers is decreased by 0.2 if they use renewables to generate energy, and 0.5 if they use non-renewables.

BELARUS (continued)

FINANCIAL INCENTIVES	Other	In order to stimulate the generation of energy from RES, Belarus provides the following benefits for RES plants: • Guaranteed connection to state energy networks; • Formation of a pricing policy stimulating RES; • Stimulation of investment activities, including the creation of favourable conditions for national and foreign investors; • Guaranteed purchase of generated energy by tariffs which are indexed according to BYR/USD exchange rate fluctuations. There are therefore no BYR devaluation risks for renewable energy plants.

BELGIUM

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2012:** 5.8% of the Belgian demand for energy was produced from renewable energy sources (14% of total electricity generation or 11,340GWh). • Wind: 24.4% • Solar: 15.6% • Hydro: 3.4% • Biomass: 56.6% **2020 target:** 13% The Federal Government of Belgium is considering working towards a fixed objective of 100% renewable energy sources by 2050. United Nations 2030 Sustainable Development Goals: 18% renewable energy consumption by 2030
	Key generators of renewable energy	• Aspiravi • Belpower • Belwind • EDF • Luminus • Electrabel • Electrawinds
FINANCIAL INCENTIVES	Feed-in tariffs	N/A (on the contrary injection tariffs are due by decentralised electricity producers).
	Green certificates (name of the scheme)	Federal level: federal GPC for offshore wind parks and hydro installations, awarded in accordance with the green electricity generated. Flanders: GPC (*groenestroomcertificaten*) and CHP (*warmtekrachtcertificaten*), awarded in accordance with the green electricity generated and corrected by a banding factor. The certificates can also be traded and renewable energy generation technologies are eligible for a quota system. Brussels Capital Region: GPC (groenestroomcertificaten/certificats verts), awarded in accordance with the CO_2-savings. Wallonia: GPC (certificats verts), awarded in accordance with the CO_2-savings. Each licensed supplier has the obligation to purchase a certain number of green certificates from the producers of renewable energy. Offshore wind: based on offshore green power certificates (GPCs). For offshore concessions with a financial close on/before 1 May 2014, the offshore GPC can be sold to the TSO at a fixed minimum price. For offshore concessions with a financial close after 1 May 2014, price of offshore GPC is determined on the basis of the 'Levelised Cost of Energy' ("LCOE"). Due to decreasing prices abroad, a new Belgian support regime for offshore concessions has been approved by the European Commission, where the price of the GPCs is also determined on the basis of LCOE.

BELGIUM (continued)

FINANCIAL INCENTIVES

Taxation	Contribution to the financing of the connection costs of offshore projects (art. 7,§2 Federal Electricity Act and Royal Decree of 8 June 2007). Surcharge on the federal GPC to compensate the net costs between the purchase price and the market sale price (art. 7, §1 Federal Electricity Act and Royal Decree of 16 July 2002).
Other	Climate Change: draft National Adaptation Plan (2016-2020) adopted by the National Climate Commission ("NCC"), which identifies specific adaptation measures to be taken at national level to strengthen cooperation and synergies between different entities on adaptation. The plan is to be finalised in 2017. In addition, each region has adopted its own climate plan within its own area of competence. Emissions Trading: auction is the default method of allocating allowances. However, the manufacturing industry continues to receive a share of allowances for free based on greenhouse gas emission performance benchmarks. The free allowances are based on the National Implementation Measures. Carbon Capture and Storage: Belgium has limited capacity for CCS demonstration projects. To date, no large-scale CCS projects currently exist. Smaller CCS initiatives, such as the LEILAC project (Low Emissions Intensity Lime and Cement), which is currently in its FEED phase, exist. Offshore Wind: seven offshore domain concessions have been granted for the construction of offshore wind farms (combined capacity of up to 2,336MW), three of which are operational. Belgian State Secretary of the North Sea announced, on 21 April 2017, that he will propose that the government cancels the three concessions still in the planning stage, to allow for new tenders to take place. Biofuel: oil companies that are subject to the Act on biofuel blending obligations (law of 17 July 2013) have a quarterly reporting duty to the Belgian federal government, and failure to report will result in administrative penalties. Energy efficiency: falls under the powers of the regions, with supporting measures from the federal government. A consultation between the regions and the federal government takes place within the 'Interministerial Conference for Economy and Energy' (*ENOVER/CONVERE*). Under the law of 28 June 2015, CREG must develop tariff methodologies for gas and electricity, which do not incentivise activities detrimental to market efficiency or negatively affect load shedding, the balancing market and the provision of ancillary services. Draft legislation regarding renewable resources: In March 2016, preliminary draft legislation was approved to (i) cancel the current flat support for connection to an offshore wind farm; and (ii) to cancel the favourable regime regarding deviation of production for offshore wind energy to align the Belgian Electricity Law with the European Commission's Energy and Environmental State Aid Guidelines for 2014-2020. Regional energy premium schemes also exist.

BOSNIA AND HERZEGOVINA

OVERVIEW

		2015*	2020 TARGET
Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	Total	34%	40%
	Installed capacities;		
	Solar	8.2MW	20,00MW
	Wind	0.3MW	142,80MW
	Biomass	1.0MW	19.45MW
Key generators of renewable energy	• Mixed Holding Electric Power Company of the Republic of Srpska ("EPC") • Electric Power Company of BH ("EPBH"); • Electric Power Company of Croatian Community of Herceg Bosnia ("EPHB").		

BOSNIA AND HERZEGOVINA (continued)

FINANCIAL INCENTIVES

Feed-in tariffs	Feed in tariffs in BH are regulated at the entity level and the prices vary: • Hydro power plants: BAM 0.1245 – 0.1541 (depending on the capacity of the facility); • Wind: BAM 0.1652; • Biomass: BAM 0.2261 – 0.2413 (depending on the capacity of the facility); • Solar: BAM 0.2012 – 0.2941 (depending on the capacity of the facility).
Green certificates (name of the scheme)	The laws further recognise guarantees of origin and the bodies in charge of issuing, transferring and cancelling guarantees of origin for energy from renewable sources. These bodies have been appointed, but the system and the green certificate scheme are not yet operational.
Taxation	N/A
Other	In addition to feed in tariffs, RES producers may also have following benefits: • Benefits in terms of access to the grid. • the right to a mandatory purchase of electricity; and • the right to a premium for the consumption of electricity for their own needs or for sale on the market.

BULGARIA

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: less than 17% of the total electricity production was produced by RES. Hydro power - 70.8% Solar power - 14% Wind power - 13.5% Biomass power - 1.7% **2020 target**: is 16% of energy produced from RES.
Key generators of renewable energy	• NEK EAD (hydro power plants with installed capacity of 2713MW)[1] • AES (wind power plant St. Nikola with installed capacity of 156MW) • ASTROENERGY, part of CHINT group (solar plant with installed capacity of 50MW near Yambol)

1. According to the Annual Report for 2011 of NEK EAD.

BULGARIA (continued)

FINANCIAL INCENTIVES	Feed-in tariffs	There is a feed-in tariff for electricity from renewable energy sources (except for hydro power plants with capacity exceeding 10MW). **Mechanism:** The public provider and end suppliers are required to purchase all electricity, certified with guarantee of origin as such from renewable sources for the statutory term of the power purchase agreement (the term varies for the different types of renewable energy sources and is set in the law). The applicable price for the specific power plant generating electricity from renewable sources is determined by the date of its commissioning and is fixed for the statutory term of the power purchase agreement. As Bulgaria has already reached its 2020 target, no long-term power purchase agreements, nor preferential feed-in tariffs are currently granted to RES power plants exceeding 30kW.
	Green certificates (name of the scheme)	N/A
	Taxation	N/A
	Other	

CROATIA

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2014:** 27.9% share of RES in the gross final energy consumption. **2020 target:** 20% share of RES in the gross final energy consumption. According to Eurostat data released in February 2016, Croatia has already reached the 2020 target (pursuant to the RES Directive). By October of 2016 the total operational capacities of RES plants in Croatia reached 642.178MW, of which wind farms represented 417.950MW, solar power plants 48.481MW, biomass power plants 24.885MW, biogas power plants 28.186MW, cogeneration facilities 113.293MW, hydro power plants 3.885MW, sewage gas power plants 2.500MW, and landfill gas power plants 3.000MW. According to the HERA's Annual Report for 2015, the share of RES in electricity generation in 2015 reached 10%, of which wind farms made up 71.51%, solar power plants 4.84%, hydro power plants 0.94%, biomass power plants 7.94%, biogas power plants 14.02%, cogeneration facilities 0.72% and sewage gas power plants and landfill gas power plants 0.01%.
	Key generators of renewable energy	• Vrataruša wind farm with 42MW capacity (Selan d.o.o.) • Ponikve wind farm with 34MW capacity (VJETROELEKTRANA PONIKVE d.o.o.) • Jelinak wind farm with 30MW capacity (VJETROELEKTRANA JELINAK d.o.o.) • Velika Glava, Bubrig i Crni Vrh wind farm with 43MW capacity (RP GLOBAL DANILO d.o.o.) • Zelengrad – Obrovac wind farm with 42MW capacity (EKO-ENERGIJA d.o.o.) • Ogorje wind farm with 42MW capacity (AIOLOS PROJEKT d.o.o.) • Rudine wind farm with 43.2MW capacity (VJETROELEKTRANE RUDINE d.o.o.) • Unit L combined-cycle cogeneration in TE TO Zagreb cogeneration plant with 100MW capacity (HEP-Proizvodnja d.o.o.)

CROATIA (continued)

FINANCIAL INCENTIVES

Feed-in tariffs	**Summary:** Until 31 December 2015, Croatia had a system based on a mandatory purchase with a feed-in tariff. The Croatian Energy Market Operator (HROTE) is obligated to purchase RES electricity generated by eligible producers for an incentive price. **Mechanism:** The applicable incentive price for each RES or cogeneration plant is calculated by HROTE on the basis of a number of pricing components set out in the tariff system applicable by the date of its commissioning. The feed-in tariff rate depends on the type of the RES or cogeneration plant and sources used for electricity production and the installed capacity of the plant. The right to an incentive price is granted for a period of 14 years. **Summary:** As of 1 January 2016, a premium tariff support scheme has been introduced in Croatia on the basis of the new Act on Renewable Energy Sources and High Efficiency Cogeneration (*Zakon o obnovljivim izvorima energie i visokoučinkovitoj kogeneraciji*, Official Gazette of the RoC 'Narodne Novine' No. 100/15). However, the implementing bylaw ensuring the full and effective implementation of new support schemes for RES and high-efficiency cogeneration plants is still yet to be adopted. **Mechanism:** Depending on availability of support quotas, HROTE shall issue a call for tender at least once per year. • **Premium tariff:** Operators of RES or high-efficiency cogeneration plants, who have obtained the status of an eligible producer and have been selected as best bidder in a public tender carried out by the HROTE, are entitled to receive a premium tariff in addition to the selling price, which was obtained on the electricity market. • **Guaranteed purchase price:** Operators of RES or high-efficiency cogeneration plants with an installed capacity of up to 30kW are entitled to conclude a power purchase contract at a guaranteed purchase price, if they have been selected as best bidder in a public tender carried out by HROTE.
Green certificates (name of the scheme)	Croatia has introduced the Guarantees of Origin ("GO") and electricity disclosure obligation, which is consistent with the requirements set out in Art. 15 of the RES Directive. A GO issued within the Croatian system is an electronic certificate for the purpose of proving to final customers the share of or quantity of RES in an energy supplier's energy mix. Upon request of the eligible producer, who does not qualify for feed-in support system, GOs can be issued and traded on the market independently of the electricity produced. HROTE has been designated as a single competent body for issuing GOs in Croatia pursuant to the Regulation on Establishing the System of Guarantees of Origin of Electricity (*Uredba o uspostavi sustava jamstava podrijetla električne energije*, Official Gazette of the RoC 'Narodne Novine' No. 84/13, 20/14 and 108/15) and the Rules on Using the Registry of Guarantees of Origin of Electricity (*Pravila o korištenju registra jamstava podrijetla električne energije*, HROTE of 16 April 2014 and HROTE of 29 September 2016). The Registry of GO, which became fully operational in February 2015, implements a system for issuing, transferring and cancelling GOs for electricity produced from RES and high-efficiency cogeneration. By July 2016, six energy suppliers and one electricity producer have been registered with the Register of GO kept by HROTE. The Methodology for Determining Origin of Electricity (*Metodologija utvrđivanja podrijetla električne energije*, Official Gazette of the RoC 'Narodne Novine' No. 133/14) with effect from 21 November 2014, imposed obligations on suppliers regarding the disclosure of the origin of electricity to final customers and duties of HROTE as the market operator, the DSO and the TSO regarding the residual mix calculation.

CROATIA (continued)

FINANCIAL INCENTIVES	Taxation	N/A.
	Other	• Promotion of the use of RES and energy efficiency using funds provided by the Environmental Protection and Energy Efficiency Fund (*Fond za zaštitu okoliša i energetsku učinkovitost; FZOEU*) FZOEU grants interest-free loans for the promotion of RES projects through a public call for tenders. The eligible RES projects include solar power, wind power, biomass, small hydro power plants and geothermal energy. Potential beneficiaries include public or private legal entities and natural persons which have a physical presence (ie place of residence, branch or head office) in Croatia. • Promotion of the use of RES and energy efficiency through loans provided by the Croatian Bank for Reconstruction and Development (Hrvatska banka za obnovu i razvitak; "HBOR") HBOR supports projects aimed at environmental protection and grants loans through the Loan Programme for Environmental Projects, Energy Efficiency and RES intended for investments in land, buildings, equipment and tools. The eligible RES projects include solar power, wind power, biomass, small hydro power plants and geothermal energy. Potential borrowers include municipalities, towns and cities, counties and the City of Zagreb, provided that they fulfil the required statutory requirements, utility companies, other companies, craftsmen and other legal entities or commercial banks which have a cooperation agreement with HBOR on implementation of the programme. The loan method may involve extended credit to end beneficiaries through commercial banks and direct lending.

CYPRUS

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2020 target**: 13% - Current indicative RES trajectory at 7.4%
	Key generators of renewable energy	• Solar energy and wind energy
FINANCIAL INCENTIVES	Feed-in tariffs	N/A
	Green certificates (name of the scheme)	No green certificates currently in place
	Taxation	N/A
	Other	

CZECH REPUBLIC

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015:** Total RES generated was 9423GWh (11.23 % of the electricity generated). **2020 target:** 15.3% pursuant to the Updated National Action Plan for Electricity from Renewable Resources implementing the Renewable Energy Directive.
	Key generators of renewable energy	CEZ

CZECH REPUBLIC (continued)

Feed-in tariffs	**Summary:** **A feed-in tariff** can be granted only to operators of RES plants with an installed capacity amounting 100kW or lower (10MW or lower in case of hydro power). Renewable energy plants are eligible only if put into operation before 31 December 2013. Furthermore, feed-in tariffs can be granted to renewable energy plants provided that they received a state authorisation for their construction not later than on 1 October 2013 and commence their operation within six years from receipt of the authorisation or provided that they received a building permit not later than on 1 October 2013 and commenced their operation before 31 December 2013. **Mechanism:** The producer is obliged to register the chosen form of electricity promotion and its change through the purchaser or compulsorily purchaser or directly in the market operator's system. Electricity promotion in the form of feed-in-tariffs cannot be combined within a single electricity production plant with electricity promotion in the form of 'green bonuses' for electricity. The terms and procedure for deciding how RES will be promoted, and changes to the procedure during the market operator's registration into the system is stipulated by the implementing legal regulation.
Green certificates (name of the scheme)	**Summary:** **Green Bonus:** All producers of electricity from RES are entitled to select the premium tariff option. Operators of renewable energy plants receive the green bonus in an annual or hourly mode on top of the regular market price of electricity. The annual green bonuses are set by the Energy Regulatory Office ("ERO") for the following calendar year. The amount of the hourly green bonus is derived from the market price of electricity on the day-ahead market; their amount will therefore change at every hour. Local operators generating renewable electricity covering only their own consumption are also entitled to a green bonus provided that the generated electricity is used by the producer or a third party without employment of transfer or distribution network. Generated electricity must therefore not have been used to produce more electricity. Power plants using renewable sources are eligible only if they became operational before 31 December 2013. Furthermore, the green bonus is granted to renewable energy plants provided that they received a state authorisation for their construction before 2 October 2013 and commence operation within six years from receipt of the authorisation or, if they received a building permit before 2 October 2013 and commenced operation before 31 December 2013.
Taxation	**Summary:** **Feed-in tariff:** The feed-in tariff for PV installations which started operation between 1 January 2010 and 31 December 2010 is subject to a tax of 10%. The tax applies to all electricity generated from 1 January 2014. Exception: Electricity generated from PV installations with a capacity of up to 30kW. **Green Bonus:** The green bonus for PV installations put into operation between 1 January 2010 and 31 December 2010 is subject to a tax of 11%. The tax applies for all electricity generated from 1 January 2014. **Exception**: Electricity generated from PV installations with a capacity of up to 30kW.
Other	

DENMARK

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**Total: 18.546GWh (67% of the energy generated in 2015)** Wind: 76.2% Wood: 10.6% Waste: 4.3% Solar: 3.3% Straw: 3.0% Biogas: 2.5% Water: 0.1% **2020 target**: 30% of the energy consumption must be covered by renewable energy.
Key generators of renewable energy	• Dong Energy A/S • Vattenfall A/S

FINANCIAL INCENTIVES

Feed-in tariffs	Production from renewable energy sources is subsidised. The subsidy depends on which technology is used to produce the electricity. Eg, for wind turbines, the subsidy varies depending on whether it is offshore or onshore, the size of the wind turbine generator, size of the blades and the date of the connection to the grid, etc.
Green certificates (name of the scheme)	None, but the TSO (Energinet.dk) will issue Guarantees of Origin in accordance with the rules provided in the Electricity Supply Act and the Danish Promotion of Renewable Energy Act.
Taxation	Electricity is included under the Danish rules of exercise duties. The duties are increasing and are as follows:

ØRE/KWh	2015*	2016	2017	2018	2019
Electricity exceeding 4.000 kWh annual in all-year residences that are heated by electricity	38.0	38.0	40.0	40.0	40.0
Other electricity	87.8	87.8	89.8	89.8	89.8

* Previously the electricity tax consisted of five categories.

The rates are based on 2015-level and from 2016 the tax rate will as a main rule follow the development of the Net Price Index

Other	

ESTONIA

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	The EU target for Estonia's end consumption of energy from renewable resources is 25%. Estonia achieved this target already in 2011. As at 2014, the total share of renewable energy in gross final energy consumption was 26.5%. Biomass accounts for ca 60%, wind energy for ca 38% and hydro energy for ca 2%.
	Key generators of renewable energy	Eesti Energia Fortum Nelja Energia Utilitas
FINANCIAL INCENTIVES	Feed-in tariffs	A fixed price for each kWh generated (i) from a renewable source with a generating installation the capacity of which does not exceed 100MW (at the rate of 0.0537 euros/kWh), (ii) from biomass in an efficient co-generation plant (at the rate of 0.0537 euros/kWh), (iii) from waste, peat or retort gas in an efficient co-generation plant (at the rate of 0.032 euros/kWh), or (iv) with a generating installation the capacity of which does not exceed 10MW (at the rate of 0.032 euros/kWh) is paid by the TSO in addition to the price received upon sale of the electricity on the market. Only electricity supplied to the network qualifies for the support. The relevant cost is passed on in the network charges and thus the support is financed by all consumers in proportion to their volume of consumption of network services. The support is paid for a period of 12 years following the commencement of production. Certain restrictions also apply. For example, wind energy producers may use the subsidy for up to a maximum of 600GWh of electricity produced in a calendar year; plants using biomass will qualify for the subsidy only if they also qualify as co-generation plants. The currently applicable system of feed-in tariffs is under revision. It is expected that the support payable for electricity generated from renewable resources will be reduced, however, to what extent and as of when remains unclear as the relevant draft act is still being discussed at the Parliament.
	Green certificates (name of the scheme)	There is no national scheme of green certificates. TSO issues guarantees of origin which certify that the electricity is generated from renewable energy sources or in an efficient co-generation process. Additionally, consumers are offered green electricity packages by electricity suppliers.
	Taxation	Taxation of electricity in general is based on excise levied on the consumption of electricity (at the rate of 0.00447 euros/kWh). There are no separate tax incentives for electricity generated from renewable resources. However, generation of electricity from renewable resources is not subject to environmental charges which are applied to non-renewable electricity generation (eg, charges for use of resources, emissions).
	Other	N/A

FINLAND

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	According to the most recent annual statistics from Statistics Finland, renewable energy sources accounted for 33% of total energy consumption in 2014. Renewable energy sources and their respective shares of the total energy consumption in 2014: • Hydro power: 3.6% • Wind power: 0.30% • Wood fuels: 25% The renewable energy target for 2020 is 38%.
Key generators of renewable energy	Pulp and paper industry, hydro power companies, wind power companies and other energy companies. The major players include eg, Fortum Oyj, Kemijoki Oy, Pohjolan Voima Oy, EPV Energy Oy and the forest industry.

FINANCIAL INCENTIVES

Feed-in tariffs	A state funded subsidy scheme has been established through the Act on Production Subsidy for Electricity Produced from Renewable Energy Resources ("PSRESA"), which contains provisions on production subsidy (feed-in tariff) to be paid for electricity production based on wind power, biogas and wood-based fuels. Electricity generators accepted in the scheme may receive a subsidy for a period of up to 12 years. The feed-in tariff is the guaranteed price (€83.50) reduced by the three month average market price of electricity in the area where the plant is located. However, if the three month average price is less than €30, the feed-in tariff is the guaranteed price reduced by €30 per MWh. The feed-in tariff paid for electricity produced in small wood-fuelled CHP plants and biogas powered CHP plants may under certain conditions be increased by a heat premium that is €20 per MWh for the former and €50 per MWh for the latter. The feed-in tariff for electricity produced with so-called wood chips is different from the above as it fluctuates on the basis of a calculation methodology involving the market price of an EU emissions trading system emission allowance, the price of peat and the level of national taxation on peat. A major amendment was made to the PSRESA in 2015, when the Finnish government decided to introduce a controlled closedown of the feed-in tariff system for new entrants when it reaches the aimed target of 2,500MVA. Therefore, once the total capacity quota of the feed-in tariff scheme (2,500MVA) is reached, all new and remaining quota and acceptance applications will be rejected. Furthermore, the approval of a wind power plant into the aforementioned total capacity quota now requires a quota decision. Such decision is in force for two years or until 1 November 2017, whichever is earlier. The final application for inclusion into the feed-in tariff system must be made during the validity of the quota decision. In practice, this means that the feed-in tariff scheme for wind power plants will close down for new entrants on 1 November 2017, at the latest. The 2015 amendment does not affect projects which have already been approved into the feed-in tariff system or which have received a quota decision prior to the enactment of the amendment.
Green certificates (name of the scheme)	There is no national scheme on green certificates in Finland. However, energy users may purchase green certificates from trading markets or buy their electricity through various green electricity schemes.

FINLAND (continued)

FINANCIAL INCENTIVES	Taxation	Taxation of electricity is based on excise taxes levied on the consumption of electricity. There are no tax exemptions or reliefs for electricity produced from renewable energy sources. Fuels consumed in the production of electricity are tax exempt while fuels consumed in heat production are subject to tax. As for CHP plants, this means that the decisive factor in the taxation is what the plants is producing during a tax period. In 2011, the taxes for consumption of fossil fuels and peat were increased in order to make CO_2-neutral energy sources more competitive. Further, the energy content of and the greenhouse gas emissions from fuels were better taken into account in fuel taxation.
	Other	Investment subsidies: Depending on the size of the investment, either the Ministry of Economic Affairs and Employment or a regional Centre for Economic Development, Transport and the Environment may grant energy subsidies for investments made in: • renewable energy; • improvements in energy efficiency or in the efficiency of energy production or consumption; and/or • reduction of the environmental impacts caused by energy production or consumption. The Ministry of Agriculture and Forestry grants subsidies for the harvesting and chipping of energy wood.

FRANCE

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: France produced 76.3% of its electricity from nuclear energy and 17.5% from renewable sources, including, 3.86% from wind power, 1.35% from solar power, 10.75% from hydro power, and 1.44% from biomass. **2020 target**: the use of renewable energy will amount to 23% of the French gross final electricity consumption by 2020 and 32% by 2030.
	Key generators of renewable energy	**For wind power**, the main operators are: GDF Suez (circa 3,310MW managed by: GDF Suez Futures Energies, La Compagnie du Vent, Maïa Eolis and CN'Air); EDF Energies Nouvelles (circa 5,349MW) RES Group (circa 2,000MW). **For solar power**, main operators: EDF Energies Nouvelles (circa 572MW) GDF Suez (circa 513MW managed by Solairedirect) Akuo Energie (circa 177MW) Other operators: Casino-GreenYellow, Langa Solar, Neoen, Urbasolar

FRANCE (continued)

FINANCIAL INCENTIVES	Feed-in tariffs	The French support mechanism for renewable energy sector was used to be solely based on feed-in tariffs. This regime has been recasted by Energy Transition Law and the implementing decrees of May 2016. The feed-in tariffs regime has been maintained for small scale installations in accordance with the EU Energy Guidelines. It will continue to be allocated through two different mechanisms: ministerial orders and tender procedures.
	Premium system	The Energy Transition Law and the implementing decrees of May 2016 introduced the premium system has the main support regime for renewable energy in accordance with the EU Energy Guidelines. It will be allocated through two different mechanisms: ministerial orders and tender procedures. From 1 January 2017, bidding processes will be the main basis for its allocation to renewable energy producers. The PPE sets out an indicative timetable concerning renewable energy competitive biddings. This timetable provides that a different bidding will be provided for each type of renewable energy.
	Taxation	Tax reduction or exemption from land tax in respect of energy-saving investments for purchasing equipment using renewable energy.
	Other	Special fund amounting €420 million for 2017 dedicated to generation of heat through renewable sources.

GERMANY

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015:** total renewable electricity generation 194TWh (31.5%) • Wind: 79.2TWh (40.82%) • Solar: 38.7TWh (19.94%) • Biomass: 44.5TWh (22.94%) • Hydro: 18.9TWh (9.74%) **TARGETS:** Renewable national electricity—40 to 45% by 2025, 55 to 60% by 2035, and 80% by 2050 Renewable national energy—18% by 2020, 30% by 2030, and 60% by 2050 **Energy efficiency:** Energy consumption—reduction of 20% from 2008 level by 2020, and 50% less by 2050 Electricity consumption—reduction of 10% from 2008 level by 2020, and 25% less by 2050
	Key generators of renewable energy	Various – no key generators

GERMANY (continued)

FINANCIAL INCENTIVES

Feed-in tariffs	The 2017 amendment to the Renewable Energy Act (Erneuerbare-Energien-Gesetz; "EEG") changed the fundamental compensation scheme from a guaranteed price paid by way of feed-in tariffs ("FiT") to a tendering procedure carried out by BNetzA. This change means that funding is market-based rather than government-determined, which enhances compensation between generators and decrease the costs of expansion of energy generated from RES. Government-determined FiTs will still be retained for small plants (below 750kW and below 150kW for biomass) and onshore wind and biomass plants approved before 2016 and will commence operation before the end of 2018. The new tendering process will be rolled out for offshore wind parks that will commence operation in 2021.
Green certificates (name of the scheme)	N/A
Taxation	Electricity is subject to electricity tax (€0.0205/kWh) and the general VAT (19%), both to be paid by the end-consumer. Exemptions from the electricity levy are available for RES generated electricity subject to certain conditions
Other	Emissions Trading: The cap for Germany between 2013 and 2020 is an average of 416 million tonnes of CO_2/year. Greenhouse Gas Emission Allowance Trading: entities which participate in EU ETS in Germany can use clean development mechanisms ("CDM") and / or joint implementation ("JI") projects to meet their surrender obligations by obtaining allowances in overseas projects. By using CDM and JI, projects in Germany can gain certified emissions. Carbon Capture and Storage ("CCS"): annual storage of CO_2 is 1.3 million tonnes with a total capacity of 4 million tonnes, post-closure obligations are 40 years and state can decide where CCS projects can be developed, taking into account geological circumstances and other public interest considerations. Biofuels: there are three types of biofuel in Germany – biodiesel, bioethanol and biomethane. Use is endorsed through a combination of different policies, including mandatory blending requirements, tax benefits and a quota trade system. To achieve the 2020 target of 10% of fuel consumption from biofuel will incur costs for both consumers and producers as production of biofuels is more expensive than that of fossil fuels. Energy efficiency: measures have been put in place in relation to buildings. However, there are limited energy efficiency measures in place in relation to industrial plants and facilities. Off-shore wind park connection: obligation of Transmission System Operators to connect off-shore wind parks at their expense. Loan programme by state owned KfW bank and investment supplement programme by BAFA Plants for the generation of electricity from renewable sources shall be given priority connection to the grid. Furthermore, grid operators are obliged to give priority to electricity from renewable sources when purchasing and transmitting electricity. Moreover, those interested in feeding in electricity may demand that the grid operator expands its grid. Owners of new buildings are required to satisfy a certain proportion of their energy use via renewable sources (subject to certain exceptions). New buildings are required to have an "energy-ID", old buildings have been obliged to have such an energy-ID since 2009 when sold or newly let.

GREECE

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2016:** RES production accounts for 20% of the energy generated. The breakdown per RES technology for this 20% is: Wind 44%, PV 54% (including rooftop PVs), Biofuels 1.2% and Hydro 4.9% Total RES power was approximately 4.500MW. **2020 target:** 20%
Key generators of renewable energy	• Rokas, • Terna, • EDF, • Eltech Wind, • PPC, • Quest, • Enel, • Eunice, • Protergia.

FINANCIAL INCENTIVES

Feed-in tariffs	The Greek State replaced the currently applicable FIT scheme with a sliding Feed-in Premium ("FIP") scheme, which also complies with the recent European directives and principles relating to State Aid in the energy sector for the period 2014-2020 (EEAG).The FIP scheme is an operating aid used to incentivise the gradual market integration of RES. Therefore, the main two principles which characterise such a scheme are (a) the adaptation of a new market-based RES tariff mechanism, reflecting the decreased cost of RES technologies and therefore enabling the gradual integration of RES in the market and (b) the active participation of RES producers in the wholesale electricity market by bearing market risks linked to short term price fluctuations and balancing responsibilities.
Green certificates (name of the scheme)	
Taxation	The National Development Law (Law 4399/2016) covering all private investments (with the exemption of several types of RES) in Greece provides for tax breaks of up to 100% of the maximum allowable amount of aid. The relevant tax relief comprises exemption from payment of income tax on pre-tax profits which result from any and all of the enterprise's activities.
Other	Other financial instruments for the promotion of RES in Greece (with the exemption of several types of RES), according to the National Development Law (Law 4399/2016) are: • Subsidy - Gratis payment by the State of a sum of money to cover part of the subsidised expenditure of the investment, • Leasing subsidy - Includes payment by the State of a portion of the instalments paid under a leasing agreement executed to acquire new machinery and/or other equipment, • Soft loans by ETEAN (National Fund for Entrepreneurship and Development) The amount to be covered by a bank loan may be funded by soft loans from credit institutions that cooperate with ETEAN enterprises.

HUNGARY

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	Gross final energy consumption from RES in 2014 was 9.6% Breakdown of RES capacities in 2014: biomass: 54%, wind: 21%, water: 10%, biogas: 9%, solar: 2%, waste: 4%.
	Key generators of renewable energy	Pannonia Bioethanol Zrt. Alerion Hungária Kft. Iberdrola Renovables Magyarország Kft. Pannonpower Holding Zrt. ELIOS Innovatív Energetikai Zrt.
FINANCIAL INCENTIVES	Feed-in tariffs	A feed-in-tariff system (mandatory off-take regime) allows participating generators to sell electricity at a price regulated by legislation, for a term and in an amount determined by the Hungarian Energy and Public Utility Regulatory Authority. Electricity traders, including universal service providers, power generators and electricity importers, must purchase a fixed percentage of their total electricity consumption or turnover from RES.
	Green certificates (name of the scheme)	N/A
	Taxation	N/A
	Other	N/A

ICELAND

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	99.9% Hydro (71%) Geothermal (29%)
	Key generators of renewable energy	• Landsvirkjun • ON Power • HS Orka • Orkusalan • Fallorka • Westfjord Power Company
FINANCIAL INCENTIVES	Feed-in tariffs	N/A
	Green certificates (name of the scheme)	EECS Scheme certificates issued by Landsnet in accordance with the Renewable Energy Directive.
	Taxation	N/A
	Other	N/A

IRELAND

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: There was 2,787MW of renewable generation installed across Ireland. This figure is comprised of 2,440MW of wind energy, 238MW of Hydro and 109MW of other (including CHP RES, tidal and solar). **2020 target**: 16% pursuant to the Renewable Energy Directive (estimated to require a renewable electricity target of 40% in order to achieve a renewable energy target of 16%). It is projected that in order to meet the renewable electricity targets, the amount of wind generation across Ireland will need to reach an installed capacity level of between 4,800MW and 5,300MW by 2020.
Key generators of renewable energy	ESB Brookfield Energia Renewables (Viridian Group) SSE Airtricity

FINANCIAL INCENTIVES

Feed-in tariffs	Renewable Energy Feed in Tariff ("EFIT" Support Scheme: While it these schemes are referred to as a feed-in tariff and operate in a similar manner to a traditional feed-in tariff from the perspective of the generator, they are not a feed-in tariff in the conventional sense. Rather, they are supplier support regimes that incentivise suppliers to enter into long term fixed price power purchase agreements with generators by protecting them from market downside through a cost recovery mechanism involving public service obligations. There have been three REFIT schemes to date, each with different references prices and supporting a different mix of technologies. All three Schemes are now closed. The Government is currently consulting on a new renewable support regime to replace REFIT.
Green certificates (name of the scheme)	N/A
Taxation	Previously, section 486B of the Taxes Consolidation Act 1997, as amended, provided for a deduction from a company's profit for its direct investment in new ordinary shares in a qualifying renewable energy company before 31 December 2014, which must have been in the solar, wind, hydro or biomass technology categories and approved by the Minister. The deduction can still be made for investments before 31 December 2014; however, the scheme will not apply to investments after that date. Relief from stamp duty on transfers of greenhouse gas emissions allowances. Employment and Investment Incentive Scheme allows individual investors to obtain income tax relief on investment made into EII-certified qualifying companies, which include renewable energy companies. Solid Fuel Carbon Tax is an excise duty which was introduced in May 2013 and which applies to solid fuel (coal and peat) supplied in Ireland. Partial reliefs are available to (i) holders of a greenhouse gas permit and (ii) to solid fuel supplied for use solely in the generation of electricity (excluding CHP generation). The rate of tax for coal is €52.67 per tonne and peat at €36.67 per tonne. The securitisation regime under Section 110 of the Taxes Consolidation Act 1997, as amended, extends to carbon offsets which include greenhouse gas allowances under an approved scheme by a governmental institution and greenhouse gas allowances produced under a voluntary scheme sponsored by a state institution or commercial enterprise which is subject to independent monitoring and reporting. The regime also extends to include forest carbon offsets.
Other	Research and development grants to support innovative domestic and commercial schemes using biofuels, combined heat and power, large-scale wood heating systems and domestic renewable heat technologies. Funding programmes offered through the Sustainable Energy Authority of Ireland. Currently, there is a fund to stimulate the development and deployment of Ocean Energy devices and systems.

ISRAEL

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	Renewable energy constitutes approximately 2% (about 800MW) of the current generation capacity, according to the following internal breakdown: • Solar - more than 90% • Wind – approximately 3%* • Biogas – approximately 3% • Hydroelectric – less than 1% *Note: A quota of 730MW was allocated to Wind Energy which may dramatically increase the share of wind energy generation. **2020 target**: 10% (about 2000MW).
	Key generators of renewable energy	PV IPPs connected to the Transmission Network: • Eshkol Havazelet - Halutzyut Enlight Limited Partnership (55MW) • Zmorot Solar Park Ltd. (50.064MW) • Ketura Solar, Limited Partnership (40MW) • Energix Renewable Energies Ltd. (37.5MW)
FINANCIAL INCENTIVES	Feed-in tariffs	**PV Energy:** In 2012, the Electricity Authority changed the basis of tariff calculation for all Solar PV FiTs, so that instead of a fixed FiT, it will be linked to a formula based on interest rates, inflation, exchange rates and BNEF's module and Inverter Indices (the SSPI). IPPs connected to the Transmission network: As of October 2015, the base tariff is NIS 0.319 (approximately €0.08) per kW/h. Smaller IPPs connected to the distribution network: As of August 2016, the base tariff is NIS 0.2952 per kW/h (approximately €0.07). **Wind energy:** In March 2015, the EA updated the linkage formula for the calculation of FiTs, as follows: Facilities connected to the Transmission Network were set at NIS 0.388/ kW (approximately €0.09) while facilities connected to the Distribution Network were set at NIS 0.364/kW (approximately €0.09).
	Green certificates (name of the scheme)	N/A
	Taxation	A bill introduced in late 2016 granted tax deductions to private households producing RE using PV and wind technology.
	Other	N/A

ITALY

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	38,85% (109.561GWh) of gross total energy production comes from RES. Electricity production from renewable sources breakdown (AEEG on 2015 data on total gross production): Wind: 14.676GWh Biomass: 19.604GWh Hydroelectric: 43.894GWh Solar: 25.206GWh Geothermic: 6.181GWh The 2020 target is a share of 17% energy from renewable sources in gross final energy consumption: Italy reached 17.3% in 2016.
Key generators of renewable energy	ENEL Edison A2A Edipower Engie Iren

FINANCIAL INCENTIVES

Feed-in tariffs	Ministerial Decree dated 23 June 2016 made more than €400 million available for 2016 for RES incentives, to be distributed among a quota power of more than 1.300MW. The Decree provides two different kinds of incentives for new build plants: • All-Inclusive Tariff Feed-In Tariffs Plants up to 500kW*. The all-inclusive tariff is calculated as follows: base values (which depend on the type of plant) plus any potential bonus. The all-inclusive tariff also includes the price of the electricity purchased by the GSE. • Plants up to 500kW* and above 500kW. The Feed-In Tariff is calculated as follows: base values (plus any potential bonus) minus the electricity hourly zone price (prezzo zonale orario dell'energia). The GSE will not purchase the electricity produced by the plant. * Plants up to the 500kW threshold can choose between the all-Inclusive and the feed-in tariff. The all-inclusive and the feed-in tariff are alternatives to the mandatory purchase of energy by the GSE (s.c. ritiro dedicato) and the net metering regime (s.c. scambio sul posto). Three different procedures are available for access to the incentive regime, depending on the specific size of the plant: • Direct access for small plants; • Enrolment in public registries for medium plants; • Dutch auctions for large plants (>5MW). The scheme will cease when the indicative average cost (*costo indicativo annuo medio*), will meet the maximum budget of €5.8 billion. Currently the cost is equal to €5.310 bn.
Green certificates (name of the scheme)	A system of green certificates for the net electricity produced by plants fueled by renewable sources came into operation on 31 December 2012. As of 1 January 2016, these green certificates have been replaced by an incentive recognised until the end of the remainder incentive period.

ITALY (continued)

FINANCIAL INCENTIVES	Taxation	**Taxation regime:** The production and sale of electricity produced from renewable sources are in principle transactions which are taxable on the basis of Italian taxation rules. From a tax perspective, the all-inclusive feed-in Tariff for RES plants and the all-inclusive tariff for PV plants, as they are linked to the injection of energy into the grid, both qualify as a remuneration paid to the energy producers (irrespective of the incentive component incorporated thereto). Therefore, based on the assumption that the producers at issue qualify as business entities resident in Italy for tax purposes, the above remuneration triggers the application of (i) Corporate income tax ("IRES"), levied at a 27.5% rate (which will be decreased to 24% starting from the fiscal year following the one in force at December 31, 2016) and (ii) Regional tax on productive activities ("IRAP"), levied at a 3.9% standard rate. The same payments are also subject to VAT, as they are deemed to be an agreed price for the injection of energy into the grid. In this respect, please consider that under certain specified conditions the VAT application may be subject to the so-called reverse charge mechanism (ie, the VAT requirements concerning the registration and the relevant payment of tax shall be fulfilled by the purchaser of the mentioned energy supply). **The Green Certificates:** were granted by GSE to producerg of electricity from renewable sources (over 1MW). For VAT purpose the sale of such certificates is considered as a supply of services subject to VAT at the ordinary 22% rate. For direct tax purposes, the profits arising from the sale of green certificates is considered business income, taxable as capital gains.
	Other	

LATVIA

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	In 2013 approximately 36% of the energy consumed was produced by renewable energy sources (wind – 0.2%; hydro –5.6%; biofuels – 0.5%; waste to energy – 1.2%; biogas – 1.4%; wood fuel – 28.3%). **2020 target:** 40%
	Key generators of renewable energy	• AS Latvenergo (hydropower); • AS Rīgas siltums (biomass); • SIA Getliņi eko (waste to energy); • SIA Fortum Jelgava (wood fuel)
FINANCIAL INCENTIVES	Feed-in tariffs	Feed-in tariffs calculated pursuant to a special formula and depend on the installed capacity of each respective power station. No new licences granting the right to receive feed-in tariff will be issued until 1 January 2020. New support scheme to be announced in 2017.
	Green certificates (name of the scheme)	N/A
	Taxation	Subsidised electricity tax has been introduced in 2014. The tax is applied to taxable income from electricity sold within the feed-in tariff scheme or from payments for installed capacity. Tax rates depends on the energy source, installed capacity and type of generation.
	Other	N/A

LITHUANIA

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2014:** total 23.9% of gross final energy consumption. **2015:** it increased by 7.7%, out of which: • Wind – 48% • Solar – 4.2% • Hydro – 24.6% • Biomass – 23.2% **2020 target**: 23% (pursuant to the Renewable Energy Directive)
Key generators of renewable energy	• Vėjų spektras UAB • Renerga UAB • Amberwind UAB • Vėjo gūsis UAB • Vėjo vatas UAB • Naujoji energija UAB • Šilutės vėjo projektai UAB • Pamario jėgainių energija UAB • Lietuvos energijos gamyba AB (includes Lietuvos Elektrinė Power Plant, Kruonis Hydro Pumped Storage Power Plant and Kaunas Hydro Power Plant) • Vydmantai wind park UAB

FINANCIAL INCENTIVES

Feed-in tariffs	**Summary:** **Feed-in tariff for "small scale" generation of up to 10kW. Mechanism:** Public suppliers are required to purchase electricity produced from RES in small scale power station at fixed feed-in tariff defined by Energy Commission. The obligatory purchase is applied for 12 years. **Feed-in tariff for "large scale" generation of more than 10kW. Mechanism:** Electricity produced from RES in large scale power stations is traded on the basis of bilateral agreements (electricity can be sold to any supplier or the particular company appointed by the Ministry of Energy) or at Nordpool power exchange, at unregulated prices. The producer is entitled to receive the premium equal to the difference between fixed feed-in tariff defined in the auction and the actual selling price of electricity to the consumers, which is no less than the average market price defined by the Energy Commission. The premium is applied for 12 years. **NB:** Currently only the auctions for allocation of quotas for hydro power plants can be organised. Auctions for allocation of quotas for biomass, solar and wind energy power plants cannot be held due to the fact that targets for total installed capacity of these plants prescribed by the Government are already achieved.
Green certificates (name of the scheme)	N/A

LITHUANIA (continued)

FINANCIAL INCENTIVES	Taxation	**Summary:** Law on the Environmental Pollution Tax provides for exemption from the obligation to pay the pollution tax which is applied to the natural and legal persons using biofuel who have proper documentation to substantiate the use. Pursuant to the Law on the Excise Duty energy products produced by using biomass are subject to partial or full exemption (as applicable) from the excise duty in accordance with the specific conditions established in the legal provision. The electricity produced by using RES is exempted from the excise duty.
	Other	The Law on Renewable Energy provides that the use of RES shall be promoted by applying the specified support scheme consisting of one or several support measures. The following are considered support measures: (i) fixed rate; (ii) the purchase of energy from renewable sources; (iii) reimbursement of the costs of connection of renewable energy installations to energy grids or systems; (iv) reservation of the capacity and transfer capability or other relevant technical parameters of energy grids or systems for connection of renewable energy installations; (v) priority of transmission of energy from renewable sources; (vi) release of electricity producers from responsibility for the balancing of generated electricity and/or reservation of electricity generating capacities during the support period; (vii) support for production and processing of agricultural commodities, namely, raw materials for the production of biofuels, biofuels for transport, bio lubricants and bio oils; (viii) the requirements in relation to mandatory use of renewable energy sources for energy production and/or mandatory consumption of energy from renewable sources, also the requirements for the use of biofuels for transport; (ix) support of investments in renewable energy technologies; (x) other preferences established by laws. Power stations producing energy from RES are connected to the existing networks with a discount of 80% or 60% depending on the installed capacity. A power station which uses RES does not need to pay the fee of power reservation. Lithuanian Environmental Investment Fund ("LEIF") supports investment projects in the form of interest subsidies and loans on soft terms.

LUXEMBOURG

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2014**: 4,5% **2020 target**: 11%
	Key generators of renewable energy	SEO (directly and through subsidiaries) Enovos (directly and through subsidiaries)
FINANCIAL INCENTIVES	Feed-in tariffs	**Feed-in tariffs** varying according to the technology, the capacity of the plant and the year of commissioning. **Mechanism:** model contract approved by the regulator between the operator of a plant and the grid operator.
	Green certificates (name of the scheme)	Luxembourg has joined the AIB EECS standard.
	Taxation	**Compensation mechanism:** contribution levied on consumers to fund public service obligations and renewable energy. Income from certain photovoltaic systems is exempt from income tax based on administrative guidelines
	Other	Investment grants.

FORMER YUSGOSLAV REPUBLIC OF MACEDONIA

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: In accordance with the latest Energy Balance published by the State Statistical Office in October 2014, the percentage of energy generation from renewable energy sources ("RES") for 2015 was 15.6%. **2020 target**: In accordance with the Strategy for Utilisation of Renewable Sources of Energy in the Republic of Macedonia up to 2020 and the Strategy for Energy Development in the Republic of Macedonia up to 2030, the target for energy from renewable sources in total energy consumption in 2020 amounts to 21%. However, in a meeting of the Energy Community member states in October 2012, Macedonia has committed to a 28% share of renewable energy as part of the overall energy consumption in 2020 (which has recently been revised to 29%). No agreement on the conflicting 2020 RES targets (21% in national legislation and 29% within the Energy Community) has been reached so far.
Key generators of renewable energy	The main source of energy produced from renewables in Macedonia is hydropower. Hydropower potential in Macedonia is utilised primarily through seven large hydropower plants and number of smaller facilities. The hydropower plants Vrben, Raven and Vrutok form the Mavrovo hydropower complex. The hydropower plants Globocica and Shpilje along with the Ohrid Lake as an accumulation make up the hydro energy instalment complex of the river Black Drim. The third significant hydropower complex is situated on the river Treska with the hydropower plant Kozjak, Sv. Petka and Matka. Most of the major hydropower plants in Macedonia are operated by the 100% state-owned company Macedonian Power Plants (ELEM). Apart from hydropower, Macedonia also uses a lot of biomass (wood) for heating purposes.

FINANCIAL INCENTIVES

Feed-in tariffs	There are several feed-in or preferential tariffs applicable in Macedonia. Energy generated from photovoltaic systems has a preferential tariff of 16.00 eurocents/kWh (for plants with installed capacity of up to 50kW) and 12.00 eurocents/kWh (for plants with installed capacity from 51kW up to 1000kW). On the other hand electricity generated from small hydropower plants (ie, hydropower plants with installed capacity of up to 10MW) is subjected to feed-in tariffs ranging from 4.50 to 12.00 eurocents/kWh depending on the installed capacity of the plant. Energy generated from windmills has a fixed preferential tariff of 8.9 eurocents/kWh. Energy generated from electricity plants that use biogas or biomass has a preferential tariff that is dependent on the (i) type of fuel and (ii) percentage share of fossil fuels used in the generation process (ranging from approximately 12.7 to 18 eurocents/kWh). Note, however, that these tariffs are applicable only to the installations which were granted authorisation/approval for construction after the entry into force of the decisions with which these tariffs were established. Different tariffs apply to the facilities that were granted authorisation/approval for construction before the entry into force of the decisions with which these tariffs were established.

FORMER YUGOSLAV REPUBLIC OF MACEDONIA (continued)

FINANCIAL INCENTIVES	Green certificates (name of the scheme)	The Rules on Renewable Energy Sources Macedonia set up a guarantee of origin system with regards to the energy generated from renewable sources. Namely, guarantees of origin can be obtained by producers of electricity that produce electricity from renewable energy sources. However, such guarantees of origin can be obtained only by the producers which have not obtained a status of preferential producer and consequently which do not sell the generated electricity at preferential tariffs. The guarantee of origin is issued for electricity of 1MWh and as a general rule such guarantees are valid for 12 months. Guarantees of origin can be transferred from the holder of the guarantee to another licence holder for trade or supply of electricity in the Republic of Macedonia. It should, however, be noted that companies that deal with trade and supply of electricity are not legally required to supply a certain percentage of their electricity from RES, nor are consumers obliged to purchase a certain percentage of their electricity from RES.
	Taxation	The only form of taxation incentives with regard to renewable energy sources is the application of the preferential tax rate for value added tax (5% rather than the regular 18%) for the trade and import of thermal solar systems and components. Other than this, energy from renewable sources is treated in the same manner (taxation wise) as other types of energy.
	Other	N/A

MALTA

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	As an EU Member state, Malta has been tasked with generating at least 10% of its energy from renewable energy sources ("RES") by the year 2020. So far Malta has succeeded in producing 5% of its energy through renewable sources. The estimated renewable energy contribution by source (as a percentage of the RES contribution): • PV systems – 46.86% • Microwind – 0% • Waste to energy (electricity) – 2.69% • Solar Water Heating – 9.17% • Waste-to-energy (heat) – 1.99% • Heat pumps – 15.75% • Imported biomass –1.89% • Bioliquid used in industry – 0.60% • Biofuels – 20.94% • Renewable electricity in transport – 0.10%
	Key generators of renewable energy	• Photovoltaic systems • Solar Water Heating • Heat pumps • Biofuels

MALTA (continued)

FINANCIAL INCENTIVES

Feed-in tariffs

Caps and Feed-in Tariffs applicable to solar PV installations approved under the FIT Scheme

FIT Scheme	Capacity of Solar PV installation installed in any location	Feed-in tariffs applicable between 03/08/2015 and 30/06/2017 in case of (a), and between the 01/02/2017 and 30/06/2017 in case of (b)	Maximum units allocated per annum for FIT payment to PV systems approved under this FIT Scheme between the 03/08/2015 and 30/06/2017 in case of (a), and between the 01/02/2017 and 30/06/2017 in case of (b)
(a)	=> 1kWp and <40kWp	15.5 cents per kWh	17.6GWh per annum (11MWp)
(b)	=> 40kWp and < 1MWp	15 cents per kWh	8GWh per annum (5MWp)

Green certificates (name of the scheme)

- Energy Performance Certificates for buildings administered by the Building Regulation Office.
- ECO certification for ensuring the environmental, socioeconomic and cultural sustainability of hotels and tourist accommodation facilities administered by the Malta Tourism Authority.

Taxation

- Eco-contribution tax and tariffs on certain products to disincentivse the use of products which are not eco-friendly.
- Excise duty on non-bio-degradable plastic bags to further incentivise waste separation.
- Duties on certain materials used in the construction industry, particularly in large scale buildings, to compensate for environmental impact.

Other

- Grant schemes for installation of PV panels, heat pump water heaters, double-glazing, roof insulation and solar water heaters.
- Incentives to assist businesses to invest in certain energy efficient projects.
- A scheme for hotels to benefit from gains on savings registered in their energy consumption.
- The funds collected from certain eco-contribution taxes are re-invested into specific projects aimed at embellishing and improving the Maltese islands.
- A scheme for the sale of solar bonds to the public to finance the renting of PV panel systems fitted by commercial enterprises and PV systems in public zones.
- Schemes to promote the use of public transport.
- Incentives for the use of bicycles, including for investment in bicycle racks by companies for their employees.
- Tax deduction for companies providing transport to employees.
- Various scrappage schemes and grants for small or low emission vehicles.

MONTENEGRO

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2014:** 56.51% of energy consumption is from RES (mostly hydropower) **2015:** 50.84% of energy consumption is from RES (mostly hydropower) **2020 target:** 33% target pursuant to the Renewable Energy Directive.
	Key generators of renewable energy	Elektroprivreda Crne Gore ("EPCG")
FINANCIAL INCENTIVES	Feed-in tariffs	**Summary:** Feed-in tariffs are established by the Government of Montenegro by the Decree on the Tariff System for the Establishment of Preferential Prices of Electricity from Renewable Sources of Energy and Efficient Co-generations. **Mechanism:** Execution of a long term power purchase agreement with the public supplier (Montenegrin electricity market operator - COTEE). Applicable feed-in tariffs for wind power plants is 9.6 c€/kWh, for hydro power plants tariffs vary from 6.8 to 10.44 c€/kWh (depending on the threshold capacity of the power plant), for solid biomass power plants from wood and agriculture the tariff is 13.71 c€/kWh and for solid biomass power plants using the biomass from wood-processing industry, the tariff amounts to 12.31 c€/kWh, for biogas power plants 12.00 c€/kWh, for highly-efficient CHP plants the tariff varies from 8.00 to 10.00 c€/kWh (depending on the threshold capacity of the power plant), for rooftop solar (at the building or construction facility) 15.00 c€/kWh and for waste gas power plants the tariff is 8 c€/kWh. Feed-in tariffs are adjusted annually, pursuant to the inflation in euro zone.
	Green certificates (name of the scheme)	**Summary:** The **Guarantees of Origin** ("GO") are instruments issued by the Energy Regulatory Agency issued upon a request from the RES electricity producer.
	Taxation	**Summary:** Although the Montenegrin Energy Act envisages several incentive measures, there are currently no tax incentives for the generation of electricity from RES.
	Other	

THE NETHERLANDS

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	Energy generation from renewable sources: 12%, of which: Biomass: 49% Wind power: 46% Solar power: 4% Hydro power: 1% RED target for renewable energy: 14%
	Key generators of renewable energy	Biomass (70%) Wind, onshore and offshore (20%)

THE NETHERLANDS (continued)

FINANCIAL INCENTIVES	Feed-in tariffs	Renewable Energy Production Incentive Scheme (*Stimulering duurzame energieproductie, SDE+*)
	Green certificates (name of the scheme)	Guarantees of origin (*garanties van oorsprong*)
	Taxation	Small-scale investment allowance (*KIA – Kleinschaligheidsaftrek*) Energy-saving investment credit (*EIA – EnergieInvesteringsaftrek*) Environmental investment credit (*MIA – Milieu-Investeringsaftrek*) VAMIL tax scheme (random depreciation of environmental investments (*VAMIL – Willekeurige afschrijving milieu-investeringen*) Energy saving and renewable energy sporting accomodations (*EDS - Energiebesparing en duurzame energie sportaccommodaties*)
	Other	

NORWAY

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2016**: Energy generation from renewable energy sources amounted to approximately 98% of the total electricity consumed More specifically,.96% of the electricity was generated by hydro power and 2% by wind power. **2020 target**: 67.5%
	Key generators of renewable energy	Statskraft Energi AS, E-CO Energi AS, Norsk Hydro AS, Agder Energiproduksjon AS, BKK Produksjon AS, Lyse Energi AS, NTE Energi AS, Eidsiva Vannkraft AS, Statoil and Hafslund Produksjon
FINANCIAL INCENTIVES	Feed-in tariffs	N/A
	Green certificates (name of the scheme)	A joint Norwegian-Swedish electricity certificate market for investments in electricity production from renewable energy sources was introduced in 2012. The certificate scheme provides incentives for eligible investments in electricity production from RES (as defined in the Renewable Energy Directive) in both Sweden and Norway. The scheme will be in effect until the end of 2035.
	Taxation	In 2015 Norway introduced new depreciation rules for investments in wind power plants. An identical depreciation regime was also introduced in Sweden. This new regime became effective upon ESA's decision on state aid which came through on 6 July 2016, declaring that the scheme constituted state aid compatible with the functioning of the EEA agreement. The new regime allows linear depreciation of production factors over a five year period.
	Other	The state-owned enterprise Enova has as a goal to strengthen the work on making energy consumption and generation more sustainable, while simultaneously improving security of supply. It is financed via funds allocated from the Energy Fund. The Energy Fund, in turn, is financed through a small additional charge to the electricity bill, and supports the introduction of new technology, energy efficiency measures etc. The Energy Fund has been allocated the proceeds from the Green Fund, whose capital this year is 67.75 billion NOK.

POLAND

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: Total is 21890.1GWh (approximately 13.5% of electricity generated) Co-fire (biomass with coal) 4120.8GWh Hydro power 1828.4GWh Wind power 10536. 6GWh Note: the amount of renewable energy is confirmed with green certificates) **2020 target**: 15%, pursuant to the Renewable Energy Directive.
	Key generators of renewable energy	Wind, hydro and biomass.
OVERVIEW	Feed-in tariffs	So-called 'obligated sellers' are obliged to buy the energy generated in RES installations commissioned before 1 July 2016 from producers of renewable energy. The electricity is purchased at the average annual price of the previous calendar year, or at a price offered in auction in case of producers that have won the auction. energy generated by natural persons in so called "micro-installations" (with a capacity up to 40kW, connected to grid with a voltage of a nominal rated voltage of below 110kV or a renewable source of heat which has a total capacity of up to 120kW) must be settled by the so called obligated seller with the energy obtained from the grid at a 0.7 ratio (if the capacity of the installation is below 10kW, the ratio equals 0.8). The settlement costs, as well as distribution costs are covered by the seller.
	Green certificates (name of the scheme)	Producers of renewable energy sources, traders selling electricity to final customers, and commodity brokers are obliged to either obtain 'certificates of origin' issued by the Polish Energy Authority and submit them for redemption, or to pay a 'substitution fee'. The certificates can be obtained only for the energy generated using RES installations commissioned before 1 July 2016. For new installations, the green certificates scheme has been replaced by an auction system.
	Taxation	
	Other	The connection of micro-installations to the distribution system grid is exempt from connection fees; the fee for connection of RES installations with capacity of less than 5MW and CHP source with capacity of less than 1MW equals half of the regular one.

PORTUGAL

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2016**: 58% The total of renewables installed capacity recorded at the end of December 2016 was of 13,332MW, of which 5,270MW are wind, 463MW are solar photovoltaic, 6,835MW are hydro generation, 89MW are biogas and 558MW are biomass. **2020 target**: 60% The Portuguese Renewables Action Plan for 2013-2020 and the National Energy Strategy for 2016, both adopted on 10 April 2013 (Order in Council no. 20/2013) under the international financial assistance scenario, reformulated the guidelines of the Portuguese energy policy, within a logic of economic rationality and sustainability, while also adopting, *inter alia*, the following indicative targets for 2020 in accordance with the Renewable Energy Directive: • 60% of market share target of electricity generated from renewable energy sources; • 32,300GWh of electricity generated from renewable energy sources; • 15,824MW of total installed capacity, of which it is estimated that 5,300MW shall be wind, 720MW shall be solar photovoltaic, 8,940MW shall be hydro generation and 769MW shall be biomass.

PORTUGAL (continued)

OVERVIEW

Key generators of renewable energy	Acciona Energia Portugal (Grupo) Aerogeradores De Portugal Auditerg Brookfield Renewable Capwatt - Brainpower Cavalum Centeol Eda - Electricidade Dos Açores Edf En Portugal Edp - Gestão Produção Energia Edp Inovação Edp Renováveis Eem - Electricidade Da Madeira Eevm Ehatb Ekz Renewables Eneólica Enercon Enereem Energias Renováveis Energetix Energias Hidroelétricas Energiekontor Eólica Da Castanheira Eólica Do Penedo Ruivo Finerge Generg Gerbasto - Energias Renováveis Gesfinu Hdr - Hidroeléctrica Hidrocentrais Reunidas Hidroeléctrica Da Boavista Hidroeléctrica Do Casal Hidroeléctrica Do Peio Hidroerg (Grupo) Iberdrola Iberwind Ie2 Portugal Martifer Solar Noroeste Novinergi Parque Eólico Do Pisco Perform Pinto Triunfante Rew Irland Tecneira The Navigator Company Trustwind Ventinveste WHS Energy Services WTG Energias

PORTUGAL (continued)

Feed-in tariffs

Feed-in tariffs are pending reduction or even abolition. Below are the relevant regimes regarding the feed-in-tariff applicable in Portugal:

- Portuguese renewable plants whose licensing rights have been granted between June 1999 and 31 December 2001 (and also to the plants already licensed in June 1999 that have decided to change to the 1999 Regime), are subject to the 1999 regime: Decree-Law no. 168/99 introduced in Portugal a first version of the above referred renewables remuneration formula, a guaranteed remuneration system for 12 years, as well as the legal obligation of the relevant operators of the public grid to acquire electricity produced from renewable sources from duly licensed producers.
- Portuguese renewable plants whose licensing rights have been granted between 1 January 2002 and 17 February 2005 are subject to the 2001 Regime: Decree-Law no. 339-C/2001 introduced the "Z coefficient" in the formula, according to which the environmental portion is multiplied by this coefficient, which varies according to the technology associated. Due to the introduction of this Z coefficient, the payment system of renewables, which was only based on avoided costs, has evolved into a concept that also takes into account the costs according to different technologies, thus establishing different payments for technology. The 12 years limit for the guaranteed tariff was eliminated, but reinstated to this regime by the 2005 Regime.
- Portuguese renewable plants whose licensing rights have been recognised between 17 February 2005 and 1 June 2007 are subject to the 2005 regime[1]: Decree-Law no. 33-A/2005 introduced in Portugal the guaranteed remuneration up to 15 years subject however to specific power limits [to the first 33GWh injected to the grid per MW of power injection capacity (ascertained according to a power factor of 0.98) for wind and 21GWh for solar photovoltaic) and also depending of the renewables technology used.
- Portuguese renewable plants whose licensing rights have been recognized between 1 June 2007 and 7 November 2012 are subject to the 2007 regime;[2] Decree-Law no. 225/2007 reviewed the formula and introduced the possibility of increasing the capacity of the plants (*sobreequipamento*) and the relevant remuneration conditions thereto.
- Finally, Portuguese renewable plants whose licensing rights have been recognised under Decree-Law no. 215-B/2012, of 8 October, shall be subject the remuneration regime yet to be approved by Order in Council of the Government.

The current legal regime applicable to new projects in renewable energy is set out in Decree-Law no. 172/2006, which introduced a major change in the remuneration regime by creating a remuneration scheme according to market prices (*regime geral*) (through organised markets or bilateral contracts), while maintaining the guaranteed remuneration scheme (*regime de remuneração garantida*) (depend on public tender procedures and therefore the *ex ante* analysis of the public interest based on the pursuit of the overall objective of safety assurance and regular supply), side by side.

In 2013, there was a change in legislation in Portugal which ended the period of guaranteed remuneration. This legislation allowed the producers of renewable energy to choose the remuneration framework for the following years between several alternatives. After a guaranteed period, or if the power limit is reached, both in respect of wind (15 + 5 years) and solar photovoltaic (15 years), the electricity generated will be remunerated according to the market prices, without prejudice to any potential sale under the green certificates regime. Should any plant under any of the above regimes change to market prices, it would be prevented from reverting back again to the guaranteed remuneration system.

PORTUGAL (continued)

FINANCIAL INCENTIVES

Feed-in tariffs (continued)	It should be noted that, unlike other EU countries, Portugal chose to keep untouched the charges for projects in operation or in the final stage of licensing. Recently the Major Planning Options (*Grandes Opções do Plano*) for 2016-2019 state that the Government intends to ensure a gradual and smooth transition from the current FiT model to a system of remuneration for renewable energy at market prices, specifically stating that it shall be accompanied, where appropriate, by a transaction mechanism of green certificates (which represent the value of the environmental component of renewable electricity). **1.** The 2005 Regime could also be applicable to Portuguese renewable plants already licensed in 17 February 2005 that have requested the change to the 2005 Regime to the public authorities. **2.** The 2007 Regime could also be applicable to Portuguese renewable plants already licensed in 1 June 2007 that have requested the change to the 2007 Regime to the public authorities.
Green certificates (name of the scheme)	In Portugal, the green certificates may be implemented only following termination of the FiTs, which is currently expected to occur between 2020 and 2030. After the feed-in period, the production of electricity from renewable sources supplied to the grid will be remunerated at market prices and from the revenues (if any) of the sale of such certificates that may exist at that time. REN bares the responsibility for the issuance of green certificates in Portugal; nevertheless the implementation of these certificates has not yet been completed. Moreover no certificate has, to date, been formally emitted.
Taxation	The Portuguese State Budget Law for 2014, in force as of 1 January 2014, approved an energy sector extraordinary contribution to be paid by energy operators in Portugal, that was maintained in 2015, 2016 and 2017 (Law no. 42/2016, of 28 December), safeguarding however the producer of renewables (except certain hydroelectric and cogeneration plants). The Green Tax Reform adopted by Law no. 82-D/2014, of 31 December, is the result of the review of environmental and energy taxation, which, among other measures, approved a more favorable tax regime to properties used for the production of renewable energy.
Other	Public Grid operators must allow producers of renewable energy ("*produtores em regime especial*") access to their networks, and shall allow priority access to power generated by power production centres which use renewable power sources – pursuant to article 33W of Decree-Law no. 172/2006, of 23 August, as amended by Decree-Law no. 215-B/2012, of 8 October. The producers of renewable energy are entitled to sell (all or part) of the electricity produced to the last resort supplier (*comercializador de último recurso*), ie, EDP SU, whenever benefiting from guaranteed tariff, or, when that does not occur, to any other supplier. Also worth mentioning the existing incentives to promote investment in R&D activities, such as ocean based or sourced energies, which in the long run may be able to attract investments based on new technology and creation and retention of know-how. The self-production and self-consumption regime has also recently been amended, with the aim of reducing energy dependence and increasing investment in renewables.

ROMANIA

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: 41% out of which 27% hydro;[3] 11% wind; 2% solar; 1% biomass. **2020 target**: 24% (same as pursuant to the Renewable Energy Directive). **3.** Including hydropower plants exceeding 10 MW installed capacity, which do not count towards the 2020 target of 24%
	Key generators of renewable energy	Hidroelectrica (hydro) CEZ Romania (wind) EDPR Romania (wind and solar) Enel Green Power Romania (wind and solar) Verbund (wind) Samsung (solar)
FINANCIAL INCENTIVES	Feed-in tariffs	**Feed-in tariff for "small scale" generation of up to 1MW or 2MW for high efficiency cogeneration from biomass:** suppliers in the vicinity of the producer are required to acquire electricity generated at regulated tariffs, determined per each technology type. Producers receiving this feed-in-tariff will no longer benefit from green certificates. Applicable as of clearance from CE on state aid.
	Green certificates (name of the scheme)	**Trading of green certificates combined with the mandatory quota system:** producers of renewable electricity receive green certificates for the electricity produced and fed into the system and have the right to sell such green certificates independently from the electricity generated and electricity suppliers (as well as certain producers) are obliged to acquire a definite quota of green certificates, proportional to the amount of the traded electricity; green certificates are further invoiced by electricity suppliers to end consumers. **Support scheme for high efficiency cogeneration from RES:** a tariff granted for each MW of electricity produced from high efficiency cogeneration and fed into the system or at the producer's discretion, an extra green certificate in addition to those granted for the electricity generated from that specific RES.
	Taxation	N/A
	Other	

RUSSIA

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**First half of 2016**: 20.35%, including hydro – 20.32% and solar – 0.03%. **2024 target**: 4.5% of the electricity generated (excluding major hydro power plants).
	Key generators of renewable energy	PJSC "*Rushydro*"

RUSSIA (continued)

FINANCIAL INCENTIVES	Feed-in tariffs	Measures to support renewable energy sources generators include: (i) tenders for the sale of capacity, allowing successful bidders to receive capacity payments guaranteeing return of their investments within 15 years; (ii) subsidies from the federal budget for the compensation of grid connection costs; (iii) fixed regulated price premiums for produced electricity; and (iv) obligations on transmission and distribution companies to compensate losses in their grids by purchasing electricity produced primarily by certified renewable energy sources generators. However, some of these measures do not have full effect due to lack of legislation.
	Green certificates (name of the scheme)	The procedures and criteria for qualifying as a renewable energy sources generator include the requirements that such a generator shall: (i) generate power solely from renewable energy sources or combine generation of such power with traditional power; (ii) be commissioned (not be subject to repair works or decommissioned); (iii) be connected to electricity grids; (iv) be equipped with relevant metering devices; (v) be equipped with relevant metering devices that allow to measure amount of each type of fuel used in relation to generators that combine generation of power from renewable energy sources with traditional power; and (iv) be included in the scheme and prospective development program of the electricity industry approved by the relevant regional authority. After having qualified as a renewable energy sources generator, the generator shall be put in a special register and becomes able to obtain a "green" certificate which confirms that the generator produces a certain volume of power from renewable energy sources.
	Taxation	The price of the electrical capacity is be increased for the renewable energy generators to cover certain proportion of the property tax and the current allowable capital and operational expenses.
	Other	None

SERBIA

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015:** approximately 23% of energy consumption is from RES (mostly hydropower and small percentage biomass, two small wind power plants and PV). No electricity from other renewable sources to date. **2020 target:** 27% target, pursuant to the Renewable Energy Directive.
	Key generators of renewable energy	EPS

SERBIA (continued)

FINANCIAL INCENTIVES	Feed-in tariffs	**Summary:** Feed-in tariffs determined by the Government of Serbia. **Mechanism:** Execution of a long-term power purchase agreement with the public supplier (Serbian national electric utility – EPS). For hydro power plants, tariffs have been set between 6 and 12.60 c€/kWh for biomass power plants between 8.22, and 13.26 c€/kWh, for biogas power plants between 15 and 18.333-1.111*P (P being the installed power of the facility) c€/kWh, for natural gas and fossil fuel fired CHP plants between 7.46 and 8.20 c€/kWh, for wind power plants 9.2 c€/kWh, for solar power plants between 9 and 14.60-80*P (P being the installed power of the facility) c€/kWh, for geothermal power plants between 8.2 c€/kWh (depending on their installed capacity) and for waste fired power plants 8.57 c€/kWh, landfill and sewage gas power plants and wind power plants, 8.44 c€/kWh respectively (regardless of their installed capacity). Feed-in tariffs will be adjusted pursuant to the inflation in euro zone in the previous year. Please note that certain limitations have been placed on the applicability of feed-in tariffs with respect to renewable energy sources.
	Green certificates (name of the scheme)	The Guarantees of Origin ("GO") are instruments issued by the TSO, and are issued upon a request from the RES electricity producer.
	Taxation	Although the Serbian Energy Act envisages the possibility of introducing tax incentives for electricity produced from RES, there are currently no tax incentives for generation of electricity from RES.
	Other	Priority dispatch and covering of balancing costs.

SLOVAK REPUBLIC

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2014:** energy generation from renewable energy sources was 11.6% of total energy consumption. **2020 target:** 14%
	Key generators of renewable energy	• Slovenské elektrárne, a.s.
FINANCIAL INCENTIVES	Feed-in tariffs	**Summary:** The feed-in tariff scheme applies to electricity generation from renewable energy sources and high-efficiency cogeneration depending on the source and installed capacity. **Mechanism:** The scheme is based on an additional payment included in the feed-in tariff set for a particular type of renewable energy, eg, for solar energy. The additional payment is equal to the difference between the set feed-in tariff and the price set for the electricity, to cover losses in the distribution grid.
	Green certificates (name of the scheme)	**Summary:** A green certificate (pursuant to the Slovak law – a guarantee of origin of electricity from renewable sources of energy) is issued in electronic form for each 1MW of electricity generated from renewable energy source or by cogeneration upon request of the electricity producer. A certificate is issued for 12 months and is also tradable in other EU Member States. There are no mandatory quotas for use of a guarantee of origin of electricity from renewable sources of energy.
	Taxation	**Summary:** Electricity generated from renewable energy sources is generally exempt from the consumption tax generally levied on electricity.
	Other	

SLOVENIA

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015:** The share of energy in the gross final consumption of energy in 2010 was approximately 23% (with approximately 51% thereof deriving from wood and other solid biomass, 35% from hydroenergy, 5% from biofuels and the rest from geothermal, solar energy and biogas. **2020 target:** 25% pursuant to Slovenian Action Plan for Renewable Energy and to the Renewable Energy Directive.
Key generators of renewable energy	• Elektro Ljubljana OVE d.o.o. • GEN Energija d.o.o. • Biomasa d.o.o.

FINANCIAL INCENTIVES

Feed-in tariffs	Feed-in tariffs are managed by the Centre for Support within Borzen d.o.o. The centre promotes supporting schemes for electricity production from renewable energy sources and high efficiency cogeneration. The financial incentives may be granted in two basic forms, namely (i) a guaranteed purchase (for production units with a nominal power capacity below 1MW) and (ii) operating premium. Under the guaranteed purchase, Center for RES/CHP (*Center za podpore*) at Borzen takes over the electricity from the power plant at a guaranteed price and sells it to the market. Under the operating premium, the producer is entitled to a premium equalling the difference between the full (guaranteed purchase) price and the market price, which is determined *ex ante* on an annual basis, based also on plant type.
Green certificates (name of the scheme)	If a certain amount of electricity is generated from renewable sources the Energy Agency (*Agencija Republike Slovenije za energijo*) issues guarantees of the origin of electricity and RECS green certificates (one for every 1MWh of energy).
Taxation	The Motor Vehicle Tax Act (*Zakon o davku na motorna vozila*) provides an incentive to purchase motor vehicles which emit less CO_2.
Other	The Decree on the self-supply of electricity from the renewable energy sources (*Uredba o samooskrbi z električno energijo iz obnovljivih virov energije*) allows households and small business customers to e self-supply electricity from renewable sources, based on netmetering (*neto merjenje*). The Eco Fund (*Eko sklad*) encourages the development of environmental protection by providing loans or guarantees for environmental investments.

SPAIN

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: The total energy generation from renewable sources represented 36.9% of the total energy mix production in Spain (267,584GWh).
	
	The forecast of energy generation from renewable sources for 2020 is expected to be 39% of the total gross energy production.
	
	We include below the breakdown for the different renewable sources. The details included below reflect the actual capacity for 2015 and the estimated capacity for year 2020:
	• Hydropower:
	  ◦ 2015: 20,353MW
	  ◦ 2020: 22,672MW
	• Onshore wind energy:
	  ◦ 2015: 23,020MW
	  ◦ 2020: 35,000MW
	• Offshore wind energy:
	  ◦ 2015: 11MW
	  ◦ 2020: 750MW
	• Solar thermoelectric:
	  ◦ 2015: 2,300MW
	  ◦ 2020: 4,800MW
	• Solar power:
	  ◦ 2015: 4,664MW
	  ◦ 2020: 7,250MW
	• Biomass:
	  ◦ 2015: 754MW
	  ◦ 2020: 1,950MW
	• Geothermal:
	  ◦ 2015: 0MW
	  ◦ 2020: 50MW

Key generators of renewable energy	• Abengoa, S.A. • Acciona Energía, S.A. • Endesa Cogeneración y Renovables, S.A. – ECYR • Iberdrola, S.A.

SPAIN (continued)

FINANCIAL INCENTIVES	Feed-in tariffs	Royal Decree 413/2014, of 6 June, which regulates the production of electricity from renewable energy sources, cogeneration and waste (the "RD 413/2014"), implemented a new system of specific remuneration (*retribución específica*) – on top of the remuneration received for the sale of energy valued at market rates – for certain plants that generate electricity using renewable energy, cogeneration or waste-to-energy technologies (including biomass plants) in order to be able to cover the costs necessary to compete on an equal footing with other technologies while obtaining a reasonable rate of return in reference to the standard plant applicable in each case. The specific remuneration has two different components: • an installed power component that covers the investment costs of a standard installation that cannot be recovered through energy sales, if any; and • an operation component covering the shortfall between operating costs and income obtained by the standard installation from the market, if any. In order to calculate the specific remuneration, each plant is allocated a standard reference plant on the basis of its characteristics by ministerial order. As established by RD 413/2014, a set of remuneration parameters applies to each standard plant. These parameters make up the specific remuneration applicable to the plants falling under the umbrella of each standard plant. In addition, exceptionally, it is possible for the remunerative regime to include a subsidy for investment in non-peninsular power systems when the overall cost of electricity generation is reduced, as well as a subsidy for participation in what are known as system adjustment services. Plants that participate in system adjustment services will receive the remuneration established by applicable regulations.
	Green certificates (name of the scheme)	N/A
	Taxation	Act 15/2012, of 27 December, on tax measures for energy sustainability, establishes the following measures: • Electricity production tax over the total income received from the power produced by each of the tax payer's installations is set at a tax rate of 7%. • Radioactive waste produced as a result of the generation of nuclear power is taxed, as well as the storage of nuclear waste in centralised plants. • So-called "green cents" on natural gas were introduced, fuel-oil, coal and diesel. • A duty on hydroelectric water was also introduced.
	Other	N/A

SWEDEN

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: 64% (hydro power 47%, wind power 11%, biofuels 6%, solar power 0.02%) **2020 target**: 50% of the total energy consumption
	Key generators of renewable energy	Vattenfall AB E.ON Sverige AB Fortum Power and Heat AB Statkraft

SWEDEN (continued)

FINANCIAL INCENTIVES	Feed-in tariffs	N/A
	Green certificates (name of the scheme)	The electricity certificate system was provided by the Swedish energy agency. The certificate is a market-based support system for renewable electricity production.
	Taxation	The main legal framework for energy taxation is set out by the Energy Tax Act (SFS 1994:1776), which contains provisions on energy tax, carbon dioxide tax, sulphur tax on fuels, and energy tax on electricity. The framework is designed as a way by which Sweden will reach its energy goals. If the requirements of the Biofuel and Bio Liquid Sustainability Criteria Act (SFS 2010:598) are met, a tax exemption is awarded. The Thermal Effects on Nuclear Reactors Act (2000:466) impose a tax on the operator of a nuclear rector, amounting to SEK 14 770/MW on the highest allowed output capacity of the reactor.
	Other	The government has proposed the gradual abolishment of the tax on nuclear energy, as set out in the Thermal Effects on Nuclear Power Reactors Act (2000:466). The Environment Protection Agency (NATURVÅRDSVERKET) financially supports local investments that reduce emissions through the government funded initiative "KLIMATKLIVET". Measures that can be supported are concrete climate initiatives in areas such as transport, industry, residential, commercial, and green engineering and energy. The initiative is governed under the ordinance on support of local climate investments (SFS 2015:517).

SWITZERLAND

OVERVIEW	Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: Renewable energy represented 62.9% of total energy generation, of which 58.4% hydro, 1.87% waste, 0.17% wind, 1.76% solar, 0.45% biomass, and 0.20% sewage gas **2020 target**: 20% increase of energy generation from RES in relation to the total energy expenditure between 2010 and 2020. Wherever possible, increases in electricity consumption will be covered by RES.
	Key generators of renewable energy	Alpiq Group, Axpo Group, BkW Energie AG, Repower AG, EWZ Swiss Federal Railways ("SBB") EnAlpin Groupe E Industrielle Werke Basel ("IWB") Energie Wasser Bern ("EWB")

SWITZERLAND (continued)

FINANCIAL INCENTIVES

Feed-in tariffs	**Mechanism:** Feed-in tariff at cost ("KEV") is an instrument that was developed by the federal government to promote electricity production from renewable energy sources. It covers the difference between the production cost and the market price, and guarantees producers of electricity from renewable sources a price that corresponds to their production costs. This form of remuneration is available since 2008 for hydropower (up to 10MW), solar power, wind energy, geothermal energy, biomass and waste material from biomass. The feed-in tariff at cost for electricity from RES have been specified and updated on the basis of reference facilities for each technology and output category. Remuneration will be applicable for a period of 20 to 25 years, depending on the technology. Owners of new facilities have to apply to the national grid company (Swissgrid), however, there is a long waiting list at the moment (<http://www.bfe.admin.ch/themen/00612/02073/index.html?lang=de>). The feed-in remuneration at cost is on the average of approximately CHF 0.15 per kWh (<http://www.bfe.admin.ch/themen/00612/00615/index.html?lang=de>).
Green certificates (name of the scheme)	Certified green electricity is sold by power companies to consumers which are willing to receive green power. Producers of RES may choose between this model and a cost-covering remuneration. Electric companies such as IWB (Canton of Basel) and EWZ (Canton of Zurich) provide their customers with renewable energy only. Other generators follow their lead by at least supply certain areas with purely renewable energy. The green-certificates model is not mandatory for Swiss electricity generators.
Taxation	As of 2008, the CO_2 levy is a key instrument to achieving statutory CO_2 emission targets. An increase to CHF 84 per ton of CO_2 occurred as of 1 January 2016. A further increase may be probable in 2018, depending on the development of emissions. The CO_2 levy is considered a steering tax.
Other	

TURKEY

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2015**: According to provisional data in EÜAŞ's electricity sector report: • **Natural gas:** 37.81% of overall electricity generation • **Hydro-power:** 25.76% of overall electricity generation • **Wind-power:** 4.45% of overall electricity generation • **Coal:** 13.23% of overall electricity generation • **Liquid fuel and asphaltite:** 15.22% of overall electricity generation • **Geothermal:** 1.3% of overall electricity generation • **Waste and other resources:** 2.23% of overall electricity generation **2023 targets**: • increasing the share of renewable energy sources to 30% • maximising the use of hydro-power • increasing wind power installed capacity to 20,000MW • establishment of new power plants with 600MW of geothermal energy • installing new power plants with 3,000MW of solar energy • 2023 targets for installed power capacity (MW) and electricity generation/GWh): • hydro (34,000/91,800); • wind (20,000/50,000); • geothermal (1,000/5,100); • solar (5,000/8,000); and • biomass (1,000/4,533).
Key generators of renewable energy	In 2015, EÜAŞ generated 21.3% of the total generated electricity (ie, 259.4kWh), while 55.7% of electricity is generated by private companies. The breakdown of key generators in 2015 is as follows: • EÜAŞ (21.32%) • Auto-producers (0.06%) • Private companies (55.77%) • Built-operate power plants (16.47%) • Built-operate-transfer power plants (4.75%) • Power plants subject to transfer of operation rights (1.63%)

TURKEY (continued)

FINANCIAL INCENTIVES

Feed-in tariffs

Energy generated by power plants is subject to a system which can be considered as partially feed-in tariffs and partially feed-in premium.

- The RER Law guaranteed the prices in terms of US cents and access to loans was relatively easy due to predictable cash flows.
- Power plants within the scope of RERSM may sell the generated energy directly to the free market. In return for sales income, they will pay the RERSM income to the market operator. RERSM income will be calculated by multiplying the sales volume with the market trade value.

The RER Law sets forth different feed-in tariffs according to the renewable energy resource. These are as follows:

SCHEDULE I	
TYPE OF GENERATION FACILITY BASED ON RENEWABLE ENERGY RESOURCES	**PRICES APPLICABLE (USD CENT/kWh)**
Hydroelectric generation facility	7.3
Wind power based generation facility	7.3
Geothermal power based generation facility	10.5
Biomass based generation facility (including landfill gas)	13.3
Solar power based generation facility	13.3

Green certificates (name of the scheme)

- In order to benefit from the renewable energy support mechanism, investors must obtain a renewable energy resource certificate. This certificate enables EMRA to monitor and track the power generated from a renewable energy resource, at the time of the power is traded on domestic and international markets.
- The RER Support Mechanism includes price, terms, procedures and principles regarding payments, from which companies generating energy based on renewable energy resources within the scope of the RER Law can benefit. The prices in Schedule I will apply for ten years for generation licences subject to the RER Support Mechanism that are commissioned until 31 December 2020. However, in line with other developments, the foremost being security of supply, amount, price and payment terms and resources applicable to this law, will be determined by a decree of the Council of Ministers.

Taxation

- The RER Law provides that renewable energy facilities can benefit from certain tax incentives upon a Council of Ministers' Decree.
- Renewable energy facilities, related roads and transmission lines established in a forestry area or on the State Treasury land benefit from 85% discounts on land allocation, lease or utilisation fees for ten years, provided that generation commences before 2015. Additional incentives are provided if domestic equipment is used in facilities commissioned before 31 December 2020.

Other

Other incentives

If the mechanical and/or electro-mechanical equipment used in the renewable energy generation facilities commissioned before 31 December 2020 are manufactured in Turkey, the prices in Schedule I will be added to the prices given in Schedule II (provided in the RER Law) for five years.

UKRAINE

OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2016**: Total is 1 613,2kWh (1.27% of the electricity generated). **2030 target**: 4.5% (target pursuant to the Energy Strategy of Ukraine)
Key generators of renewable energy	• Wind Parks of Ukraine, LLC • Wind Power LLC • Fuhrlander AG • Windkraft Ukriane • CNBM (owns Active • Solar assets) • Renge Development • EcoOptima • Paradigma Invest Group • Ukrainian Systems Solar

FINANCIAL INCENTIVES

Feed-in tariffs	**Summary:** The "green" tariff for generated electricity depends on the source of renewable energy. It is effective until 1 January 2030. In 2015 the "local content premium" replaced the "local component requirement" established in 2013. The "local content premium" provides an additional premium to the tariffs established for the facilities using components produced in Ukraine. A 5% premium on top of the regular feed in tariff is provided for 30% local content, while a 10% premium is provided for 50% local content. In the case of wind turbines, the blade and tower are each considered to be 30% of the plant, while the main frame and nacelle are each considered to be 20% of the plant. **Mechanism:** The NERC establishes "green" tariffs for each producer quarterly by multiplying coefficient, which value depends on the source of energy, to the January 2009 general retail tariff for low-voltage electricity consumers (in EUR). The product is converted to UAH in accordance with the effective exchange rate.
Green certificates (name of the scheme)	N/A
Taxation	N/A
Other	**Summary:** all electricity produced from RES, which was not sold to consumers, is bought by state enterprise "Energorynok" for monetary funds.

UNITED KINGDOM

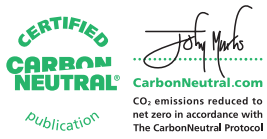
OVERVIEW

Percentage of energy generation from renewable sources with breakdown (wind-,solar-,hydro-, geothermal power, biofuels, waste to energy etc.) And 2020 target for renewable energy	**2013:** Total is 53.67TWh (14.9% of total UK electricity generation) • Renewable energy fuel use (2013): • Bioenegy: 70.5% • Wind: 21.8% • Hydro and shoreline wave/tidal: 3.6% • Other: 4.1% (Source: Digest of UK Energy Statistics) **2020 target:** 20%
Key generators of renewable energy	• SSE • Infinis • EDF Renewable Energy • RWE AG • Drax • E.ON

FINANCIAL INCENTIVES

Feed-in tariffs	**Summary**: feed-in tariff for "small scale" generation of up to 5MW with effect from 1 April 2010 by means of amendments to the licence conditions of electricity suppliers in Great Britain, raised to 10MW for ground mounted solar under the Energy Act 2013 **Mechanism**: under terms of the licence, larger suppliers are required to agree terms for the payment of the feed-in tariff with eligible generators, including households. The tariff comprises a payment for each unit generated and an additional payment for export, calculated by reference to tariff tables set out in each supplier's licence. Generators can elect to sell their export independently. **Feed-in tariff based on CfD**: the UK Government has enacted powers to introduce feed-in tariffs for "large scale" renewable and other low carbon generation which will take the form of long-term contracts for difference, entered into with a central government counterparty – the Low Carbon Contracts Company (the "LCCC"). The LCCC became operational on 1 August 2014.
Green certificates (name of the scheme)	**Summary**: The Renewables Obligation ("RO") is an obligation placed on licensed suppliers to supply a certain amount of the electricity they supply from renewable sources in each year. The RO scheme will close on 31 March 2017, with the exception of new solar PV generating stations above 5MW, for which the scheme will close from 1 April 2015. **Note**: the Non-Fossil Fuel Obligation (the "NFFO") is no longer open to new generators but will continue to operate alongside the RO until all fixed-price contracts entered into under that scheme (the NFFO) expire (2019); there is an equivalent regime applicable in Scotland.
Taxation	**Summary**: The Climate Change Levy ("CCL") is a tax chargeable on non-domestic supplies of various commodities including electricity. By removing certain exemptions on the levy for fossil fuels used for power generation, a floor price for carbon was introduced on 1 April 2013. **Mechanism**: Renewables Levy Exemption Certificates ("LECs") issued by Ofgem can be used by energy suppliers to claim exemption from the CCL as evidence that a generator has produced "renewable source electricity" from an eligible generating station.
Other	N/A

Notes



The cover and all inner pages of this publication are printed on Splendorgel EW - papers with FSC® certification.

The papers used are either elemental or totally chlorine free and the manufacturing mills are certified to the ISO 14001 standard for environmental management.

All inks used are vegetable oil based. This publication is fully recyclable.

If you do not wish to keep this book, please pass it on to someone else or dispose of it in your recycled paper waste. Thank you.

The use of the FSC® logo identifies products which contain wood from well-managed forests certified in accordance with the rules of the Forest Stewardship Council®.

For further information on any matters in this publication, please contact:

Albania
Krenar K. Loloci
+355 4 225 0736
kl@lolocilaw.com

Austria
Bernd Rajal
+43 1 534 37 50203
b.rajal@schoenherr.eu

Belarus
Natalia Anoshka
+375 17 236 47 11
anoshka@peterkapartners.by

Belgium
Lode Van Den Hende
+32 2 518 1831
lode.vandenhende@hsf.com

Bosnia and Herzegovina
Stevan Dimitrijevic
+387 51 962 600
stevan.dimitrijevic@dimitrijevicpartners.com

Davorin Marinkovic
+387 51 962 600
davorin.marinkovic@dimitrijevicpartners.com

Bulgaria
Stefana Tsekova
+359 2 933 1073
s.tsekova@schoenherr.eu

Croatia
Petra Santic
+385 1 4576 494
p.santic@schoenherr.eu

Bernd Rajal
+43 1 534 37 50203
b.rajal@schoenherr.eu

Cyprus
Spyros A. Evangelou
+357 22 559 999
spyros.evangelou@cy.pwclegal.com

Iacovos Kouppas
+357 22 559 719
iacovos.kouppas@cy.pwclegal.com

Czech Republic
Veronika Hockova
+420 225 996 500
v.hockova@schoenherr.eu

Jitka Linhartová
+420 225 996 500
j.linhartova@schoenherr.eu

Denmark
Anders Stubbe Arndal
+45 38 77 43 05
asa@kromannreumert.com

Estonia
Jaanus Ikla
+372 640 7170
jaanus.ikla@rln.ee

Triin Frosch
+372 640 7170
triin.frosch@rln.ee

Finland
Toni Siimes
+358 20 506 6578
toni.siimes@roschier.com

France
Christophe Lefort
+33 1 53 57 7400
christophe.lefort@hsf.com

Germany
Silke Goldberg
+49 30 221510 419
silke.goldberg@hsf.com

Greece
Gus J. Papamichalopoulos
+30 210 817 1500
g.papamichalopoulos@kglawfirm.gr

Hungary
Sándor Habóczky
+36 1 8700 688
s.haboczky@schoenherr.eu

Péter Gullai
+36 1 8700 686
P.Gullai@schoenherr.eu

Iceland
Baldvin Bjorn Haraldsson
+3540 5 500 500
baldvin@bba.is

Ireland
Alex McLean
+353 1 920 1195
alex.mclean@arthurcox.com

Israel
Renelle Joffe
+972 3 610 3890
renj@meitar.com

Italy
Monica Colombera
+39 02 89 63 071
mcolombera@legance.it

Alfredo Fabbricatore
+39 02 89 63 071
afabbricatore@legance.it

Latvia
Girts Lejins
+371 6724 0689
girts.lejins@rln.lv

Martins Tarlaps
+371 6724 0689
martins.tarlaps@rln.lv

Lithuania
Simona Oliškevičiūtė-Cicėnienė
+370 5 250 0800
simona.oliskeviciute@rln.lt

Ruslanas Cerniauskas
+370 5 250 0800
ruslanas.cerniauskas@rln.lt

Luxembourg
Christian Point
+352 40 78 78 206
christian.point@arendt.com

Marianne Rau
+352 40 78 78 206
marianne.rau@arendt.com

Gilles Dauphin
+352 40 78 78 206
gilles.dauphin@arendt.com

Former Yugoslav Republic of Macedonia
Veton Qoku
+389 2 3223 870
veton.qoku@karanovic-nikolic.com

Art Mehmeti
+389 2 3223 870
Art.Mehmeti@karanovic-nikolic.com

Malta
Roderick Zammit Pace
+356 21 22 6088/6268
roderick.zammitpace@bar.com.mt

Montenegro
Slaven Moravcevic
+381 11 32 02 600
s.moravcevic@schoenherr.rs

Milos Lakovic
+381 11 32 02 600
m.lakovic@schoenherr.rs

The Netherlands
Marc van Beuge
+31 20 605 65 82
m.van.beuge@houthoff.com

Norway
Karl Erik Navestad
+47 9 829 4566
ken@adeb.no

Poland
Jerzy Baehr
+48 61 855 32 20
j.baehr@wkb.com.pl

Portugal
Duarte Brito de Goes
+351 211 926 832
duarte.britogoes@csassociados.pt

Maria de Athayde Tavares
+351 211 926 836
maria.athaydetavares@csassociados.pt

Romania
Monica Cojocaru
+40 21 319 67 90
m.cojocaru@schoenherr.eu

Russia
Danila Logofet
+7 495 363 6500
danila.logofet@hsf.com

Serbia
Slaven Moravcevic
+381 11 32 02 600
s.moravcevic@schoenherr.rs

Milos Lakovic
+381 11 32 02 600
m.lakovic@schoenherr.rs

Slovak Republic
Michal Lucivjansky
+421 2 571 007 01
m.lucivjansky@schoenherr.eu

Soňa Hekelová
+421 2 571 007 01
s.hekelova@schoenherr.eu

Slovenia
Marko Frantar
+386 1200 0962
m.frantar@schoenherr.eu

Bernd Rajal
+43 1 534 37 50203
b.rajal@schoenherr.eu

Spain
Miguel Riano
+34 91 423 4000
miguel.riano@hsf.com

Marta Sanchez-Villalta
+34 91 423 4000
marta.sanchezvillalta@hsf.com

Sweden
Markus Olsson
+46 8 553 191 14
markus.olsson@roschier.com

Björn Winström
+46 8 553 190 87
bjorn.winstrom@roschier.com

Switzerland
Mariella Orelli
+41 43 222 1000
mariella.orelli@homburger.ch

Turkey
Okan Demirkan
+90 212 355 9900
odemirkan@kolcuoglu.av.tr

Gökçe Ildiri
+90 212 355 9900
gildiri@kolcuoglu.av.tr

Ukraine
Vladimir Sayenko
+380 44 499 6000
vsayenko@sk.ua

United Kingdom
Silke Goldberg
+44 20 7466 2612
silke.goldberg@hsf.com

European Union
Silke Goldberg
+49 30 221 510 419
silke.goldberg@hsf.com