

Streamlining for performance
- Options to streamline and
enhance existing EU energy
legislation to meet 2030 goals
and facilitate governance -

Discussion paper

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About the Project

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About Climate Strategies

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Table of Contents

- 1. Introduction3**
- 2. Scope6**
- 3. Introducing EU Energy law relevant to this report8**
 - 3.1. The EU Renewable Energy Directive (2009)8**
 - 3.1.1. Mandatory national overall targets and measures for the use of energy from renewable sources8**
 - 3.1.2. Planning and Reporting.....8**
 - 3.1.3. Cooperation between Member States (and 3rd countries)9**
 - 3.1.4. Addressing regulatory & network barriers for renewable energy.....10**
 - 3.1.5. Infrastructure planning and building standards.....10**
 - 3.1.6. Sustainability criteria for bio-fuels and bio-liquids10**
 - 3.1.7. Transparency platform, Information and training11**
 - 3.2. Energy Performance in Buildings Directive (2010).....11**
 - 3.2.1. Target on new near-zero energy buildings.....11**
 - 3.2.2. National plans for increasing the number of nearly zero energy buildings.....11**
 - 3.2.3. Financial incentives and market barriers12**
 - 3.2.4. Minimum energy performance requirements of new buildings and renovations to existing buildings.....12**
 - 3.2.5. Other provisions13**
 - 3.3. Energy Efficiency Directive (2012)13**
 - 3.3.1. Indicative nationally determined targets and efficiency obligation schemes13**
 - 3.3.2. Planning and reporting14**
 - 3.3.3. Energy Audits14**

3.3.4.	Energy efficiency in buildings and heating and cooling	14
3.3.5.	Relation with internal energy market and addressing barriers on energy efficiency.....	15
3.3.6.	Energy Services	16
3.3.7.	Energy efficiency fund.....	16
3.3.8.	Metering & billing.....	16
3.4.	EU Internal electricity market	16
3.4.1.	Introduction to the EU internal electricity market	16
3.4.2.	Internal Electricity Market Directive (2009)	23
3.4.3.	ACER Regulation (2009)	25
4.	Streamlining for performance	27
4.1.	Introduction	27
4.2.	Streamlining of 2030 renewable energy and energy efficiency targets	28
4.3.	Streamlining of energy related planning and reporting.....	29
4.4.	Streamlining renewable energy and energy efficiency in buildings and heating & cooling	31
4.5.	Streamlining Energy efficiency, renewable energy in the internal electricity market directive	32
4.6.	Legislative design options for post 2020 energy policy	36
5.	Conclusions	38
	References and consulted literature	39

1. Introduction

This report's goal is to analyse how a reform of existing EU energy law can be used as a basis for implementing the EU's 2030 energy goals and (governance) objectives.

On 22 January 2014 the European Commission presented its communication on a policy framework for climate and energy in the period from 2020 to 2030. The communication proposed a target of at least 40 % (domestic) EU-wide greenhouse gas emissions reduction until 2030, as well as a renewable energy target of at least 27 % by 2030 that is binding at EU level. However, the latter will not be translated into binding national targets. The European Commission's reasoning for abandoning nationally binding renewable energy targets is that it would grant Member States greater flexibility in meeting their target in 'accordance with their specific circumstances, energy mixes and capacities to produce renewable energy'. Member States are expected to decide upon and propose their own 'clear commitments', which should 'build upon' their current efforts to meet the 20 % mark by 2020. The European Commission also introduced a new concept under the form of national plans for competitive, secure and sustainable energy. According to the European Commission, these plans should give Member States the flexibility to choose policies that are best matched to their national energy mix and preferences. However, this flexibility must be compatible with the attainment of EU-wide climate and energy objectives, further market integration and increased competition. The Commission argued that there is a need to:

- simplify and streamline the current separate processes for reporting on renewable energy, energy efficiency and greenhouse gas reduction for the period after 2020, and
- have a consolidated governance process with Member States because meeting the relevant targets would require a mix of Union measures and national measures. The latter measures will have to be described in the Member States' national plans for competitive, secure and sustainable energy.

According to the European Commission these plans would:

- ensure that EU policy objectives for climate and energy are delivered;
- provide greater coherence of Member States' approaches;
- promote further market integration and competition;
- provide certainty to investors for the period after 2020.

The Commission finally stated that the explicit aim of the plans and related governance should be to create more investor certainty and greater transparency. It is considering a governance structure with an iterative process led by the Commission to assess the Member States' plans regarding these common issues and to make recommendations as appropriate. The national plans should be operational well

before 2020 in order to guide Member State actions in good time for the 2020–2030 period and to encourage investments. Member States would have the option of updating national plans at least once in the period up to 2030 to take account of changing circumstances while also taking account of investors' legitimate expectations.

On 23 October 2014 the European Council broadly confirmed the European Commission's vision on 2030. The Council however, did support a 2030 target on energy efficiency of at least 27 %. The Council Conclusions additionally state that while the (at least) 27 % target for renewable energy will be 'binding at EU level' and 'fulfilled through Member States contributions', it has to be guided by the need to deliver the target collectively *without preventing* Member States from setting their own more ambitious national targets and implementing them according to the state aid guidelines. The Commission and Council's 2030 view on renewable energy and energy efficiency in the EU can be seen as containing a somewhat conflicting message.

On the one hand, there are indeed an EU-wide binding 2030 renewable energy target and a new energy efficiency goal. Yet, on the other hand, Member States are granted the liberty to decide on their own targets, based on their own capabilities and preferences, without being provided with a reference or minimum target, and despite being required to contribute towards a collective, binding EU target. The risk that this non-binding bottom-up approach does not deliver the EU 2030 targets could be significant given that some Member States are currently not on track to meet their (lower) *binding* national targets for 2020. The absence of nationally binding targets should therefore put more emphasis on specific mechanisms and measures to enhance wider deployment of renewable energy or remove (regulatory and other) barriers that hinder renewable energy growth and energy efficiency investments and services.

At the time of the conclusions by the European Council in 2014 it was not clear how of if the top-level decisions on 2030 energy targets would be implemented through new or amended EU legislation, if at all. The first "State of the Energy Union" communication by the European Commission on 18 November 2015 provided more clarity in this regard. The Communication¹ presented state of play with regard to the implementation of the EU Energy Union and guidance to Member States for the development of national energy and plans as part of the Energy Union governance. It also presented a roadmap² that presents legislative and other initiatives over the coming years to further implement the EU's 2030 climate and energy targets, the energy union and the governance thereof. In this context, the European Commission foresees that a list of existing EU energy laws and strategies which will be proposed in 2016, such as:

¹ http://ec.europa.eu/priorities/energy-union/state-energy-union/docs/communication-state-energy-union_en.pdf

² http://ec.europa.eu/priorities/energy-union/state-energy-union/docs/annex1-communication-state-energy-union_en.pdf

- a renewable energy package: including a new Renewable Energy Directive for 2030; best practices in renewable energy self- consumption and support schemes; bioenergy sustainability policy;
- a review of the Energy Efficiency Directive;
- a review of the Directive on Energy Performance of Buildings including Smart Finance for Smart Buildings initiative;
- an EU strategy for Heating and Cooling – the contribution from heating and cooling in realising the EU's energy and climate objectives;
- an initiative on market design and regional electricity markets, and coordination of capacities to ensure security of supply, boosting cross-border trade and facilitating integration of renewable energy;
- a new deal for energy consumers: Empowering consumers, deploying Demand Side Response; using smart technology; linking wholesale and retail markets; phase-out of regulated prices; flanking measures to protect vulnerable customers; and
- a review of the Agency for the Cooperation of Energy Regulators (ACER) and the energy regulatory framework.

The fact that these initiatives will be taken in 2016 offers a unique opportunity to now first assess the existing provisions in a selection of EU energy law and how streamlining of these directives could assist in achieving some of the policy goals mentioned above, such as:

- simplifying and streamlining the current separate processes for reporting on renewable energy, energy efficiency for the period after 2020
- ensuring that EU policy objectives for energy are delivered;
- providing greater coherence of Member States' approaches;
- promoting further market integration and competition and;
- providing certainty to investors for the period after 2020.

In the next chapter the approach to tackle some of the above-mentioned issues is explained together with the scope, energy only, of this report.

Chapter 3 introduces the relevant existing legislation and outlines the key provisions. It also explains, due to the higher complexity, the fundamental elements of the EU internal energy and in particular electricity market.

Based on this assessment chapter 4 explores the areas where streamlining, consistent with the policy goals stated above, could be considered. Four areas emerge from this analysis:

- Streamlining of 2030 renewable energy and energy efficiency targets;
- Streamlining of energy related planning and reporting;
- Streamlining renewable energy and energy efficiency in buildings and heating & cooling and

- Streamlining Energy efficiency, renewable energy in the internal electricity market directive.

Chapter 4 concludes by presenting an option for the legal design of a selection of post 2020 EU energy policies. The report finally presents some over-arching conclusions together with highlighting areas for further research.

2. Scope

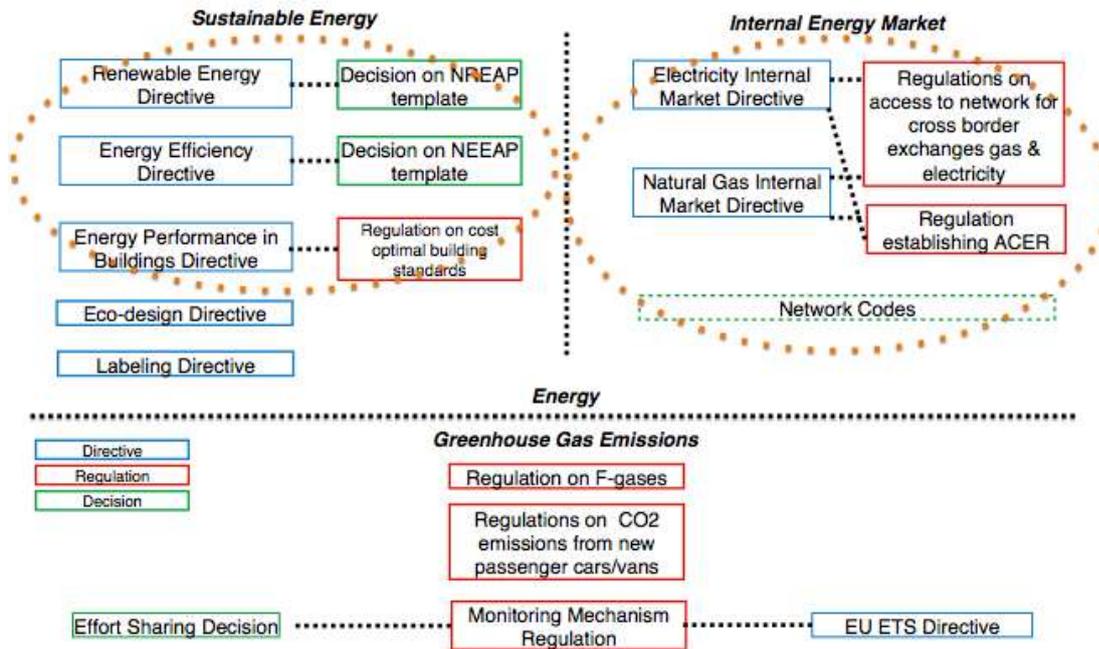
This report will look at a selection of EU energy policies that are relevant to the further development of renewable energy and energy efficiency in the EU and its Member States after 2020. These policies were approached as follows:

- First through an analysis of obligations (for e.g. Member States, European Commission, ...) under existing EU energy legislation. This includes targets, measures and planning & reporting. Followed by,
- the identification of areas in which these obligations can be streamlined, inside or across existing legislation to enhance their effectiveness, coherence and to reduce the administrative burden and
- of areas in existing legislation that can be improved to enhance investor confidence and in particular the achievement of 2030 energy targets and functioning of the internal electricity market.

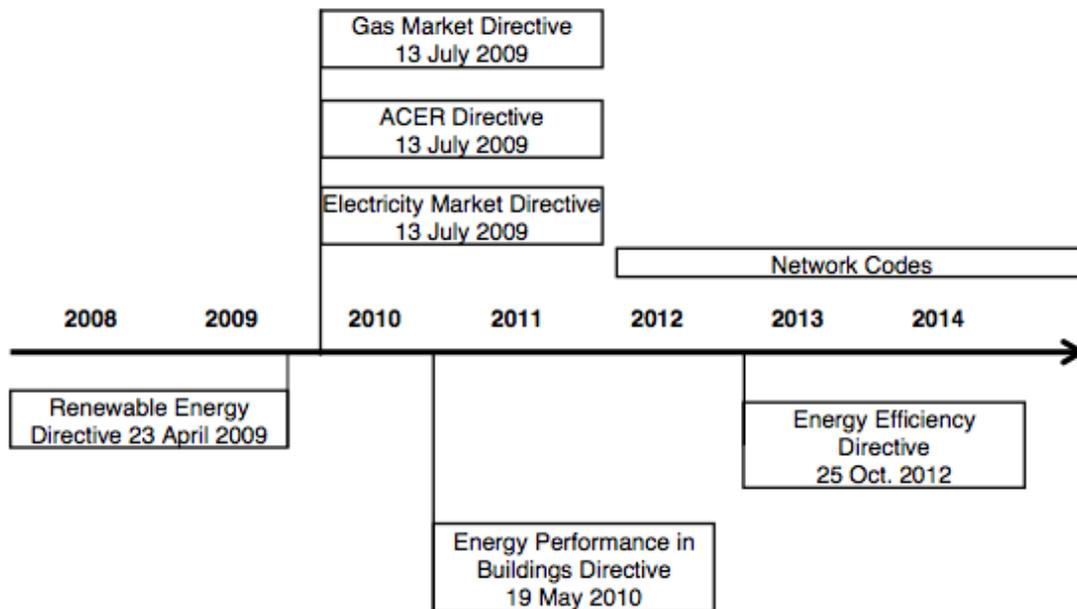
The figure below maps a selection of relevant and existing EU energy and climate legislation, including some of its implementing decisions. The area that is circled will be the main area of analysis in this report, with focus in the internal energy market on the electricity market and in particular:

- The renewable energy directive (2009)
- The energy performance in buildings directive (2010)
- The energy efficiency directive (2012)
- The internal electricity market directive (2009) and
- The ACER directive (2009)

The next chapter will look into the relevant obligations within each of these directives, with the goal to later identify areas where streamlining and enhanced policy design is possible.



Mapping existing EU energy and climate legislation



Development of selection of EU energy legislation over time

3. Introducing EU Energy law relevant to this report

3.1. The EU Renewable Energy Directive (2009)

The main goal of this directive is to establish a common framework for the promotion of energy from renewable sources. It sets mandatory national targets for the overall share of energy from renewable sources in gross final consumption of energy and for the share of energy from renewable sources in transport. The directive lays down rules relating to statistical transfers between Member States, joint projects between Member States and with third countries, guarantees of origin, administrative procedures, information and training, and access to the electricity grid for energy from renewable sources. It finally establishes sustainability criteria for biofuels and bio-liquids.

3.1.1. Mandatory national overall targets and measures for the use of energy from renewable sources

The directive introduced binding 2020 national renewable energy targets for all EU Member States, expressed as renewable energy production over final energy consumption. Member States follow an indicative trajectory that establishes how renewable energy generation over the period 2013-2020 will increase towards the 2020 targets. Member States have to implement policies and measures that are effectively designed to equal or exceed this trajectory. For this purpose Member States can apply support measures for renewable energy production and use cooperation mechanisms between different member states and 3rd countries. Finally, Member States have to ensure that share of renewable energy in all forms of transport in 2020 is at least 10% of the final consumption of energy in transport.

3.1.2. Planning and Reporting

Member States had to adopt National Energy Action Plans (NREAPs) according to the templates issued by the European Commission in June 2009, and present their NREAPs the following year to demonstrate how they seek to achieve their minimum requirements and implement the binding targets and trajectories. This includes specifying the Member State's 2020 sub-targets on renewable electricity, heating and cooling and transport. The plans have to take into account the effects of other policy measures relating to energy efficiency on final consumption of energy and policies and measures planned to achieve the binding 2020 targets. This includes the planned cooperation with other Member States (e.g. statistical transfers, joint projects) and with local and regional authorities. The European Commission adopted a template for the plans including minimum requirements. The Commission also evaluates the national plans. The Member States' NREAPs shall also assess the necessity to build

new infrastructure for district heating and cooling produced from renewable energy sources in order to achieve the 2020 national target

Following the initial submission in 2010, Member States are required to officially submit their NREAPs to the Commission biennially from 2011 with a final report to be submitted in 2021. The reports should include information on all progress made, including the sectoral shares of renewable energy (e.g. electricity, transport, heating and cooling), the implementation of support schemes, the assessment of administrative procedures and removal of regulatory barriers, details of the measures put forward at the national level to achieve the indicative targets and promote the deployment of renewable energy. Member States that slightly deviate from, or fall just short of meeting their indicative trajectory, may not be required to submit an amended NREAP following the evaluation of the Commission of all current and future measures put forward. However, those set to clearly fall short of the target shall be issued a recommendation in order to adjust, and resubmit their NREAPs and seek to realign themselves to their allocated targets and trajectories. The directive does not present explicit or strict mechanisms for penalties, or enforcement of corrective or assistive actions are limited.

3.1.3. Cooperation between Member States (and 3rd countries)

The directive outlines different mechanisms in which Member States can cooperate to achieve the binding targets. Member States can mutually agree to statistically (virtually) transfer their excess produced renewable energy to another Member State, thus counting towards the national renewable energy target of the latter. This enables Member States with excess production, and those States in need of more renewable energy shares, to mutually benefit from the exchange, while allowing the latter to meet its national targets.

Two or more Member States can cooperate to finance (and implement) a renewable energy project thereby sharing the costs and benefits in the endeavour. There is also a provision for cooperation with Non-EU Member States. Member States can also coordinate their national support schemes for renewable energy generation. The joint support schemes should enable Member States to jointly move the realisation of their renewable energy targets in a cost-effective manner but also facilitate the overarching aim of completing the internal energy market.

Finally, the Directive introduced so-called guarantees of origin. These guarantees prove that the electricity has been produced from a renewable energy source, and the type of technology used to create the energy. The guarantees of origin are tradable between the Member States (including Switzerland and Norway). They increase transparency by enabling the producing Member States and sources to be traced.

3.1.4. Addressing regulatory & network barriers for renewable energy

The directive introduces a list of provisions with the goal to reduce or streamline administrative barriers and costs for renewable energy producers and to avoid discrimination against renewable energy sources. In particular, Member States also have to ensure that grid operators do not discriminate against renewables with respect to administrative, procedural, cost or physical connection barriers. Priority access for renewable energy producers to the grid has to be provided. Renewable energy shall get dispatch priority to the grids, taking into account the network security. Finally, appropriate steps need to be taken to further develop the national and cross-border 'transmission and distribution infrastructure', including 'intelligent networks, storage facilities and the electricity system'. Interconnections between the Member States as well as grid connections to renewable sources need to be improved.

3.1.5. Infrastructure planning and building standards

Local and regional administrative bodies have to ensure that when industrial or residential areas are planned, build or renovated, the use of renewable energy for cooling shall be applied where appropriate. Member States also have to introduce appropriate measures through building codes and regulations in order to increase the share of all kinds of energy from renewable sources in the building sector.

This includes (as from 2014 and 2012 for public buildings), requiring the use of minimum levels of energy from renewable sources in new buildings and in existing buildings that are subject to major renovation. Finally, Member States also have to promote the use of renewable energy heating and cooling systems that achieve a significant reduction of energy consumption and use energy or eco-labels, as the basis for encouraging these systems.

3.1.6. Sustainability criteria for bio-fuels and bio-liquids

The Directive puts forward criteria for biofuels used in the transport sector, namely that biofuels must meet the sustainability criteria specified in the directive in order to be considered towards sectoral target for transport and the mandatory national energy target. These criteria includes achieving a minimum of greenhouse gas savings of 35% to be increased to 50% in 2017 to 60% in 2018, and is calculated by factoring the entire life cycle emission. The sustainability criteria also include land-use requirements, social impact, as well as impact on food prices.

3.1.7. Transparency platform, Information and training

The directive introduces a transparency platform. This is an online platform established by the European Commission which aims to ‘facilitate and promote cooperation’ between Member States through, for example, the NREAPs, joint projects and statistical transfers.³ The platform allows for the developments and progress of the Member States to be monitored and broken down, thus allowing for effective monitoring on the current trajectory (and potential divergences if occurring) of the individual States, as well as highlighting the degree of their non-compliance.

3.2. Energy Performance in Buildings Directive (2010)

This main goal of this directive is to promote the improvement of the energy performance of buildings within the EU, taking into account outdoor climatic and local conditions, as well as indoor climate requirements and cost-effectiveness. The requirements in this Directive are minimum requirements and do not prevent any Member State from maintaining or introducing more stringent measures.

3.2.1. Target on new near-zero energy buildings

The directive, as opposed to the renewables and energy efficiency directives, does not contain horizontal targets covering the whole sector. However, it states that by the end of 2020 all new buildings should be nearly zero-energy buildings. New buildings owned and owned by public authorities have to achieve this goal by the end of 2018. Defining what “near zero-energy” means is left to the Member States.

3.2.2. National plans for increasing the number of nearly zero energy buildings

The above-mentioned goals will have to be implemented through the use of national plans for increasing the number of nearly zero energy buildings, which have to be drawn up by the Member States. The plans have to include a definition of nearly zero-energy buildings, intermediate targets and information on policies and (financial) measures for the promotion of nearly zero-energy buildings. This includes information on the use of renewable energy sources in new buildings or existing buildings undergoing extensive renovation.

The Commission’s role is to evaluate these national plans and to issue recommendations. The Commission shall review the progress report submitted by Member States together with its own requirements of analysis and monitoring, present the European Parliament and Council a biennial report starting from 2012. In

³ DG Energy, 2014.

2012, the European Commission published a final report evaluating and reviewing the application and progress achieved by Member States following the requirements and goals under this directive.

3.2.3. Financial incentives and market barriers

Member States have to consider the most relevant instruments to finance and catalyse the energy performance of buildings. Member States had to draw up (by 30 June 2011) a list of existing and, if appropriate, proposed measures and instruments including those of a financial nature, other than those required by this Directive, which promote the objectives of this Directive. Member States have to update this list every three years. Member States communicate these lists to the Commission, which they may do by including them in the Energy Efficiency Action Plans.

The Commission examines the effectiveness of the listed existing and proposed measures referred and can provide advice or recommendations. The Commission may include its examination and possible advice or recommendations in its report on the National Energy Efficiency Plans. The Commission shall, where appropriate, assist upon request Member States in setting up national or regional financial support programmes with the aim of increasing energy efficiency in buildings, especially of existing buildings, by supporting the exchange of best practice between the responsible national or regional authorities or bodies.

The provisions of this Directive shall not prevent Member States from providing incentives for new buildings, renovations or building elements that go beyond the cost-optimal levels.

3.2.4. Minimum energy performance requirements of new buildings and renovations to existing buildings.

Member State have to take the necessary measures to ensure that minimum energy performance requirements for new buildings, new building units or existing building undergoing major renovations are set with a view to achieving cost-optimal levels. To enable these activities the directive introduces a common general framework for a methodology for calculating the integrated energy performance of buildings and building units and for the calculation of the cost-optimal levels of minimum energy performance requirements.

3.2.5. Other provisions

Other provisions in the directive include the introduction of an energy certification system for buildings including their issuance and display. Rules for the inspection of heating systems and air-condition systems. The accreditation of independent experts and the introduction of independent control systems for energy certificates and inspection reports.

3.3. Energy Efficiency Directive (2012)

This main goal of this directive is to establish 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. The directive 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 requirements laid down in this Directive are minimum requirements and do not prevent any Member State from maintaining or introducing more stringent measures.

3.3.1. Indicative nationally determined targets and efficiency obligation schemes

Member States have to set an indicative 2020 national efficiency target. They can choose to base the target on either primary or final energy consumption, primary or final energy savings, or energy intensity. The targets do, however, also be expressed in terms of absolute levels of primary and final energy consumption. Member states have to take into account the overall EU 2020 target and the energy efficiency measures they (have to) implement.

The European Commission published a progress assessment (30 June 2014) that assessed if the European Union is likely to achieve its 2020 energy savings goals (set at 1,474 Mtoe primary, 1,078 Mtoe final). The Commission does this by summing the nationally determined targets and by taking into account the economic activity.

Member States also have to set up an energy efficiency obligation scheme for energy distributors and/or retail energy sales companies. That target shall be at least equivalent to achieving new savings each year from 1 January 2014 to 31 December 2020 of 1,5 % of the annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume, averaged over the years 2010-2013. However, Member States have significant flexibilities in implementing this provision, e.g. through different measures with equivalent effect.

3.3.2. Planning and reporting

By 30 April 2014 all Member States had to submit a National Energy Efficiency Action Plan (NEEAP). They have to do this every three years thereafter. Through the NEAPs, Member States have to show how their energy efficiency improvement measures and related energy savings will achieve the national energy efficiency targets. The European Commission provided a template (as guidance) for the development of the NEEAPs.

Each year (by 30 April), Member States have to report on the progress towards achieving the national energy efficiency targets. The Commission evaluates these annual reports and the NEEAPs and assesses the extent to which Member States have made progress towards the achievement of the national energy efficiency targets and towards the implementation of the energy efficiency directive. The Commission sends its assessment to the European Parliament and the Council. Based on its assessment, the Commission can issue recommendations to Member States.

3.3.3. Energy Audits

Member States have to promote the availability of cost-effective energy audits to all final customers. They also have to ensure that larger enterprises are subject to an independently carried out energy audit, to be repeated every four years.

3.3.4. Energy efficiency in buildings and heating and cooling

Member States have to establish a long-term strategy for mobilising investment in the renovation of the national stock of (public and private) residential and commercial buildings. This includes a list of policies and measures to stimulate cost-effective deep renovations of buildings and their expected energy savings. A first strategy had to be published by 30 April 2014 and has to be updated every three years as part of the NEEAPs.

The Member States also have the obligation that, every year, as from 1 January 2014, 3 % of the total floor area of the buildings the governments own and occupy is renovated to meet at least the minimum EU energy performance requirements as stated in the energy performance in buildings directive.

Member States shall ensure that central governments purchase only products, services and buildings with high energy-efficiency performance, insofar as that is consistent with cost-effectiveness, economical feasibility, wider sustainability, technical suitability, as well as sufficient competition.

Member States have to carry out a comprehensive assessment of the potential for the application of high-efficiency cogeneration and efficient district heating and cooling. This assessment has to be sent to the European Commission (by 31 December 2015). They shall also adopt policies, which encourage the potential of using efficient heating

and cooling systems. Member States shall ensure that, transmission system operators and distribution system operators guarantee the transmission, distribution, grid access and priority dispatch of electricity from high-efficiency cogeneration, in so far as the secure operation of the national electricity system permits. When providing priority access or dispatch for high-efficiency cogeneration, Member States may set rankings as between, and within different types of, renewable energy and high-efficiency cogeneration and shall in any case ensure that priority access or dispatch for energy from variable renewable energy sources is not hampered.

3.3.5. Relation with internal energy market and addressing barriers on energy efficiency

Member States shall evaluate and (if necessary) take appropriate measures to remove regulatory and non-regulatory barriers to energy efficiency. Such measures to remove barriers may include providing incentives, repealing or amending legal or regulatory provisions, or adopting guidelines and interpretative communications, or simplifying administrative procedures. The measures may be combined with the provision of education, training and specific information and technical assistance on energy efficiency. A national evaluation of these barriers and measures had to be part of the first NEEAP.

Member States had to assess (by 30 June 2015) the energy efficiency potentials of their gas and electricity infrastructure, in particular regarding transmission, distribution, load management and interoperability, and connection to energy generating installations, including access possibilities for micro energy generators. They have to identify specific measures and investments for the introduction of cost-effective energy efficiency improvements in the network infrastructure, with a timetable for their introduction. Member States also have to ensure that national energy regulators provide incentives for grid operators to make available system services to network users permitting them to implement energy efficiency improvement measures in the context of the continuing deployment of smart grids as long as these do not adversely impact system security.

The national network tariffs for electricity have to be cost-reflective of cost-savings in networks achieved from demand-side and demand-response measures and distributed generation, including savings from lowering the cost of delivery or of network investment and a more optimal operation of the network.

National network regulation and (transmission and distribution) tariffs cannot prevent the availability of system services for demand response measures (e.g. load shifting, aggregation of demand response, demand reduction through energy service companies and energy storage)⁴. On the other hand, network or retail tariffs can

⁴ This provision applies to electricity markets including include over-the-counter markets and electricity exchanges for trading energy, capacity, balancing and ancillary services in all timeframes, including forward, day-ahead and intra-day markets.

support dynamic pricing for demand response measures by final customers, such as: time-of-use tariffs, critical peak pricing, real time pricing and peak time rebates.

3.3.6. Energy Services

Member States have to promote an energy services market, including access for SMEs to this market by and support the proper functioning of this services market. Therefore energy distributors, distribution system operators and retail energy sales companies refrain from any activities that may impede the demand for and delivery of energy services or other energy efficiency improvement measures, or hinder the development of markets for such services or measures.

3.3.7. Energy efficiency fund

Member States have to facilitate the establishment of financing facilities (or use existing ones) for energy efficiency measures. The Commission assists Member States in setting up these financing facilities and technical support schemes. Member States can set up an Energy Efficiency National Fund to support national energy efficiency initiatives.

3.3.8. Metering & billing

Member States shall ensure that (in so far as it is technically possible, financially reasonable and proportionate) final customers for electricity, natural gas, district heating, district cooling and domestic hot water are provided with competitively priced individual meters that accurately reflect the final customer's actual energy consumption and that provide information on actual time of use. Where final customers do not have smart meters, Member States have to make sure that billing information is accurate and based on actual consumption, where this is technically possible and economically justified.

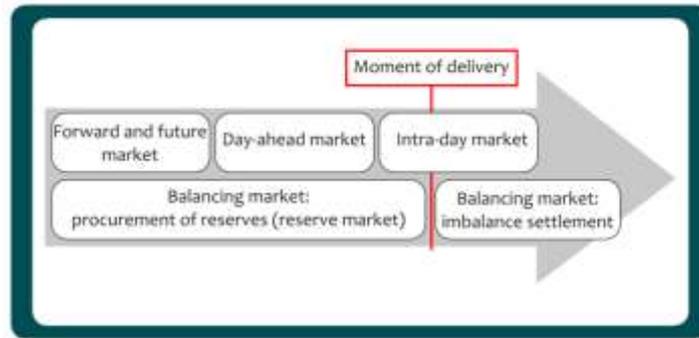
3.4. EU Internal electricity market

3.4.1. Introduction to the EU internal electricity market

Electricity is a commodity, which does not present the same value at any time or place that it is generated or consumed.⁵ Before reaching the final consumer, electricity has been bought and sold several times, and the calculation of the retail price is not only dependent on supply and demand, but must also factor in

⁵ European Commission (2015a)

transmission, distribution and cogeneration tariffs, public levies, energy taxes and VAT, grid losses and the actual energy retailer price.⁶ The short and long-term pricing of electricity is also affected by the type of wholesale electricity market which can be decided years in advance or instantaneously.



Time-related elements of the electricity market (KU LEUVEN 2015-01)

Put simply, *forward and future markets* are defined by contracts with agreed prices for the delivery and/or consumption of electricity at a predefined time. Operation of this scale is normally executed by generators to ensure security of demand and price decreases, by industrial actors to circumvent the occurrence of price increases, and in cross-border exchanges between market-zones. *Day-ahead markets* play a key role in balancing the market at the closing of each day in matching ‘scheduled generation against forecasted demand’ and exports.⁷ This timeframe allows for energy producers to schedule their generation more accurately against demand requirement and the state of their power stations. *Day-ahead markets* can on the whole provide greater clarity as to the state of the energy market.⁸ *Intraday market* allows for the adjustment or fine-tuning after the closing of the *day-ahead market* closer to the real-time of delivery. This process allows for trading to reflect a more accurate state of play, thus leading to an overall positive effect on the system because generators are able to correct their trading positions meaning a decrease in real-time balancing volumes needed and prices. *Balancing market* occurs after the closure of the intraday market when TSOs have to make sure that there is enough supply available to meet the demand and balance out the difference.⁹ Based on this need, Transmission System Operators (TSOs) can decide to either choose to solve this by using energy from the cheapest ‘energy market participant’, or if the timeframe is too short or demand too high, the TSO can either increase their own generation, or reserve capacity on a cross border exchange.¹⁰

⁶ Kessler, (2015); KU Leuven, (2013); KU Leuven, (2015a); European Commission, (2014a); European Commission, (2015a).

⁷ KU Leuven, (2015a).

⁸ EWEA, (2015), p. 13.

⁹ ENTSO-E, Website, (2015b)

¹⁰ The former is known as balancing energy, and latter balancing reserves.

Following the transactions in the wholesale market, electricity is then distributed and sold through retailers to the final consumers at lower-voltages. Distribution Transmission Operators are responsible for the reduction of voltages and the transmission of electricity directly to end-use consumers. The term electricity retail market is applicable only when the consumer has the choice of selecting between competing electricity providers.¹¹ A functioning retail market is a crucial element in a complete internal energy market because it not only serves as the intermediary, between the wholesale market and the end-use consumer, and should (ideally) give the latter the ability to choose between the providers who offer satisfactory, transparent and fair pricing. Access to information for the end-use customer is therefore fundamental to make informed decisions, as well as clearly defined rules and regulations for the sector.¹² Reducing barriers for new market entrants (for example, renewables) helps drive the competition, further pushing the agenda's for renewable integration and energy efficiency through innovation and quality service. Member States together with national regulatory authorities are responsible for ensuring that the 'roles and responsibilities' of 'distribution system operators (DSOs)' (among other market participants), are clearly defined respecting 'contractual arrangements, commitment to customers, data exchange and settlement rules, data ownership and metering responsibility', as well as fostering greater competition and monitoring market activity.¹³ It has also been highlighted that there is limited EU legislation on 'retail market design' and the 'necessary elements' of the retail market, as well as a lack of a clearly defined governing association or organisation for DSOs; the aforementioned of which is closely linked to consumer rights and awareness across Europe.¹⁴

Before reaching the final consumer, electricity has been bought and sold several times, and the calculation of the retail price is not only dependent on supply and demand, but must also factor in transmission, distribution and cogeneration tariffs, public levies, energy taxes and VAT, grid losses and the actual energy retailer. Electricity prices, paid by consumers, are the culmination of wholesale and retail market elements. The wholesale price covers the expenses accrued in the production and delivery electricity, including expenses from the construction, operation and maintenance of electricity producer, to expenses stemming from the transmission and distribution of energy to the final consumers. Addition expenses factored in to the price include network tariffs for the construction, expansion, use and maintenance of infrastructure, as well as levies from applicable climate policies and taxes such as VAT.¹⁵ Prices vary greatly between Member States, while renewables have contributed to slight decreases in wholesale prices, overall electricity prices have generally experienced an increasing trends in prices driven by 'taxes/levies and network costs'.¹⁶

¹¹ NREL, (2013)

¹² CEER, (2012) p. 8; EU Commission (2010), p. 3 & 4.

¹³ Article 36, Article 37 and Article 41, Directive 2009/72/EC;

¹⁴ CEER, (2012); Andoura and Vinois, (2015), p. 65

¹⁵ Kessler, (2015); KU Leuven, (2013); European Commission, (2014d); KU Leuven, (2015a); European Commission, (2014a); European Commission, (2015a).

¹⁶ European Commission, (2014d)

Operation of the energy market on a larger scale beyond the national level and trade at the EU level through successive electricity markets requires greater coordination, regulation and monitoring through harmonised rules of operation, for example in price calculations in cross-border transmissions and flows.¹⁷ Therefore, the ambition of a realising a complete internal energy market was heavily promoted through the Third Energy Package and complimented through the collective work of several key actors (Table 3.1). As it stands, the completion of the internal energy market through regional cooperation is primarily being driven through economic incentives, for instance, in increasing physical interconnections, market coupling and grid operations.¹⁸ Moreover, it requires the involvement and coordination of relevant actors as well as strengthening their roles to reduce the lengthy and complex procedures, which dominate the current landscape.

Table 3.1. Descriptive Summary of Actors: The who's who, and who does what in the internal electricity market

<i>Actors</i>	<i>Description & Responsibilities.</i>
Agency for the Cooperation of Energy Regulators (ACER) ¹⁹	<p>The Agency seeks to achieve the harmonisation and integration of the EU energy regulatory framework, as well as fostering a more competitive market, ensuring the security of supply through energy efficiency infrastructures and monitoring the activities of the market to limit negative practices.</p> <p>Currently, ACER has a limited mandate operating primarily through issuing recommendations and opinions, with restricted decision-making competencies.</p>
European Network of Transmission System Operators for Electricity (ENTSO-E)	<p>ENTSO-E responsibilities include enhancing cooperation between its 41 TSO members around Europe and developing a Pan-European electricity transmission network. Moreover, it is tasked with assisting in the creation of the internal energy market through the greater integration of renewable energy sources to the grid, improved cross-border networks, ensuring the security of supply.</p> <p>ENTSO-E is also mandated to delivery every two years its Ten-Year Network Development Plan (TYNDP) which seeks to inform stakeholders and decision-makers about gaps in infrastructure at the European level.</p>
Transmission System Operator (TSO)	<p>TSOs are tasked with the transportation of energy through safe and reliable infrastructure. In the whole sale electricity market, TSOs are responsible for managing potential disruptions or fluctuations while coordinating needed balance in the supply and demand for electricity.</p>

¹⁷ ENTSO-E, Website, (2015c)

¹⁸ Umpfenbach et. al., (2015), p. 15 - 20

¹⁹ The Council for European Energy Regulators (CEER) was not included in this list as it is not an official European Union body but a not-for-profit association, headquartered in Brussels, Belgium. Although it presents similarities with ACER, their operations do not overlap as ACER has its tasks and responsibilities delineated in the Third Energy Package, and CEER has its own priorities and agendas. (CEER, website, (2015)).

Actors	Description & Responsibilities.
	TSOs have predominantly national mandates and priorities, but also facilitate cross-border exchanges and interconnectivity.
Distribution System Operator (DSO)	<p>The DSO is responsible for the delivery of the electricity to the final consumer(s) either by primary (customers with greater electricity needs such as commercial buildings) or secondary distribution lines with lower voltage (for use in households and appliances) from the TSO.</p> <p>There is currently no central European authority or body overseeing and representing the DSOs.²⁰</p>
European Commission	<p>The Commission is an important entity with a variety of responsibilities aimed at completing the internal energy market. Given the current limited mandates of ACER and ENTSO-E, which puts forward priorities forming the foundations for the development of the network codes.</p> <p>Moreover, the Commission is tasked with the responsibility of monitoring the security of supply, preparing opinions, approving independent system operators, provide guidelines for effective compliance of transmission system owners, arbitrating third-party access to TSO and DSOs as well as monitoring and reviewing the current application and progress the Directive. It is to provide annual reports to the Council and European Parliament.²¹</p>
Member State	<p>To achieve the aspirations of a complete and single internal energy market requires a united and cooperative approach from all EU Member States. Member States are required to push progress towards this goal such as increasing competition in the national and cross-border electricity market, monitoring and regulating the activities of other central actors.</p> <p>National regulators are also prominent actors in the functioning of the internal market with a wide range of tasks and responsibilities (indicated in the Third Energy Package) including but not limited to monitoring and reporting on market progress and competition, ensuring security of supply, ensuring consumer interests and non-discriminatory access to the network, and cross-border connectivity among others.</p> <p>Together with national regulators, TSOs and DSOs are national actors that are also regulated by their respective Member State.</p>

The European Union's electricity sector has undergone a significant shift over recent decades from being previously characterised as monopolistic, in that in each Member State with one or more 'vertically integrated' companies would be charged with overseeing the generation, transmission, distribution and overall supply of electricity.²² The realisation and ambition towards achieving a strong, well-integrated and connected internal energy market began with the First and Second Energy Packages in 1996 and 2003 respectively, and the most recent Third Energy Package.

²⁰ REF

²¹ Directive 2009/72/EC; Umpfenbach et. al. (2015), p. 18 – 20.

²² KU Leuven, (2015a); Auverlot, (2014) p. 47.

Adopted in 2009, the Third Energy Package is comprised of two Directives and three Regulations aimed at regulating and improving the market functionality of the internal energy market for Electricity and Gas; the latter of which is the central focus and concern of this research (Table 3.2).

Table 3.1: Breakdown of EU legislation related to the internal electricity market

	Document	Short Descriptive Summary
<i>TFEU</i>	<i>Treaty for the Functioning of the European Union</i>	<i>Article 194 'Energy' puts forward articles on the establishment and functioning of the internal energy market, energy security of supply, interconnectivity of energy networks, promoting energy efficiency and developing new renewable energy sources. It also puts forward provisions so as to ensure that Member State's 'right to determine the conditions for exploiting its energy resources' and 'its choice between different energy sources' (Article 191(2)).</i>
<i>Third Energy Package (Electricity only)²³</i>	<i>Directive 2009/72/EC Common rules for the internal Market in Electricity</i>	<i>The Directive introduces common rules for generation, transmission, distribution and supply of electricity.</i>
	<i>Regulation (EC) 713/2009 Establishing an Agency for Cooperation of Energy Regulators (ACER)</i>	<i>Through this Regulation, ACER is established as a legal personality and EU community body. Its mandate includes issuing opinions and recommendations to energy regulators, and participating in the development of creating network codes.</i>
	<i>Regulation (EC) 714/2009 Conditions for access to the network for cross-border exchanges in Electricity (ENTSO-E & the network codes)</i>	<i>The Regulation puts forward rules to govern cross-border exchanges for electricity with the overall objective of increasing harmonisation and competition across Europe. This regulation stipulates the tasks and responsibilities for the European Network of Transmission System Operators (ENTSO-E) on conditions for access to the network for cross-border exchanges in electricity. This regulation also provides for areas in the energy sector for which network codes should be developed, as well as establishing a process for their development; there are currently 10 network codes.²⁴</i>
<i>Security of Supply Directive</i>	<i>Directive 2005/89/EC to safeguard and security of electricity supply and electricity infrastructure</i>	<i>This Directive is geared towards achieving the completion of the EU internal energy market for electricity, as well as achieving adequate levels of generation capacity and balances between supply and demand, and the level of interconnections between Member States.</i>

²³ The general objectives and aim of the Third Energy Package with respect to gas and the internal energy market is similar to that of electricity; it includes Regulation (EC) 715/2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005.

²⁴ ENTSO-E, Website, (2015a);

The ten codes are as follows: Capacity allocation & Congestion management, Requirements for generators, Electricity balancing, Forward capacity allocation, Demand connection, Operational security, Operational planning & scheduling, Load frequency control & reserves, High voltage direct current connections, Emergency and restoration.

	Document	Short Descriptive Summary
Critical Infrastructure	<i>Directive 2008/11/EC on the identification and designation of European critical infrastructures and assessment of the need to improve their protection.</i>	<i>This Directive implements a process of identifying and designation critical infrastructures in Europe, and a means of assessing the need to improve their protection.</i>

The Third Package and the strict implementation of its provisions have played a measurable role in the current state of progress in the internal energy market. In 2014, the European Commission's progress report on the internal energy market²⁵ highlighted that positive results regarding energy market integration has been achieved including the decrease in wholesale price of electricity, increased use and efficiency in cross-border connections as well as enabling greater choice for consumer in their energy supplier (such as renewables). The internal energy market has been projected as being a key tool towards facilitating a 'healthy and efficient' energy sector.²⁶ It is geared towards the achievement of ownership unbundling, the establishment of national regulatory authorities in each Member State, and the establishment of the EU Agency for the Cooperation of Energy Regulators (ACER). The unbundling obligations are more stringent towards realising the independence²⁷ of Transmission System Operators through the option of three unbundling regimes.²⁸ The aim of unbundling is to increase competition in the internal energy market through the greater inclusion of independent entities for energy generation, transmission and supply, ultimately moving away the electricity sector towards a more liberal, competitive, and complete internal energy market. By March 2011, Member States were required to have transposed the Internal Electricity Market Directive (2009) and select a preferred unbundling model with a corresponding legal framework.²⁹ Despite the progress achieved infringement procedures have been put forward against several Member States for the failure to transpose the Directive.³⁰

In 2015, the framework strategy for an Energy Union indicated that the Commission 'will use all available policy instruments' and 'insist that Member States fully implement and enforce' the Third Energy Package.³¹ Moreover it stressed that further market integration will require a range of considerations from infrastructure, for example, increasing competencies of relevant EU bodies (e.g. ACER and ENTSO-E), and redesigning and adapting the electricity market to integrate new producers especially 'renewable energy sources' in order to achieve the completion of the

²⁵ European Commission, (2014a).

²⁶ Booz & Company (2013), p. 4; Andoura and Vinouis, (2015), p. 104; European Commission (2014a) p. 1-4; European Commission (2014b).

²⁷ Directive 2009/72/EC - Chapter IV and Chapter V; Gibson-Bolton, (2015); Lehmköster (2015)

²⁸ The three unbundling options are: Ownership unbundling model (Article 9(1)), Independent System Operator (Article 9(8)(a)) and the Independent Transmission Operator (Article (9)(8)(b)).

²⁹ Directive 2009/72/EC Article 9

³⁰ European Commission, (2014a); European Commission (2014b);

³¹ European Commission (2015c), p. 9

internal energy market and a 27% EU renewable energy target.³² In October 2016, the Commission released its 2016 Work Programme with section 3 informing about ‘A Resilient Energy Union with Forward-Looking Climate Change Policy’ indicating that it will release ‘key actions’ needed to ensure Europe’s energy supply, ‘items foreseen in the Energy Union roadmap, as well providing a general report on the progress of the Energy Union.’³³ The work programme indicates that in addition to achieving the 2030 fifteen per cent electricity interconnection target, it will pass ‘legislative proposals on electricity market design’ and ‘regulatory framework’, this step also includes reviewing ACER and a renewable energy package (REFIT).³⁴

3.4.2. Internal Electricity Market Directive (2009)

The primary goal of this directive is to establish the common rules for generation, transmission, distribution and supply of electricity as well as introduce provisions for universal service obligations, consumer rights and protection, while fostering a more integrated and competitive EU internal electricity market. The organisation and functioning of the electricity sector, the conditions for open access to the market and competition requirements, are also included in the provisions of the directive.

Public Service Obligations and consumer rights

Member States shall ensure their electricity undertakings are conducted in accordance with the principles of the directive while seeking to achieve a more competitive, secure and environmentally sustainable EU internal electricity market. This is to say, the security of supply, connectivity for access to the network, environmental safety, energy efficiency, accessible and non-discriminatory prices, developing national energy actions plans that benefit the social security system by providing the necessary electricity to vulnerable customers, and tackling energy poverty are examples of provisions including in the public service obligations of the directive.

Monitoring Security of Supply

Member States are given the responsibility, or if appropriate can delegate the task to regulatory authorities, to ensure the ‘monitoring of security of supply issues’, this includes covering the balance of supply and demand in the national electricity markets, the level of future demand and planned future capacity, maintaining the

³² European Commission (2015c), p. 9 -10

³³ European Commission (2015d); European Commission (2015f)

³⁴ European Commission (2015d); European Commission (2015e); REFIT refers to the European Commission regulatory Fitness and Performance programme which seeks to simplify EU legislation and regulatory cost and implement a stable and more predictable framework.

quality and standards of the networks, and implementing measures for suppliers to deal with peak demands and shortfalls.

Promotion of regional cooperation

To achieve the main goal of the directive in facilitating a functioning and complete EU internal electricity market, Member States and national regulatory authorities shall cooperate with each other to integrate their respective national markets at the regional level. Member States are also required to encourage the cooperation of TSOs on cross-border issues and at the regional level, to avoid the formation of electricity islands that still persist in the EU and further support the agenda of integrating the electricity markets. Compatibility in regulatory frameworks are consequently necessary to achieve a complete electricity market; ACER can contribute increased cooperation by putting forward appropriate recommendations for binding rules.

Transmission System Operation³⁵

The directive establishes rules for Member States in unbundling TSOs as well as the specific tasks and responsibilities of transmission system operators. These responsibilities include fulfilling the reasonable demands for electricity transmission in the long-term, as well as the operation, maintenance and development of efficient, reliable and secure transmission systems. TSOs should also ensure the security of supply and service obligations and are met, and that electricity flow in the system is managed while allowing for the necessary ancillary services to function; such as demand response.

Dispatching & Balancing

Where applicable, and in accordance with the preapproved criteria (that is objective and non-discriminatory) of the national regulatory authorities, TSOs are tasked with dispatching the generating installations in their area and determining the usage of interconnectors. TSOs shall operate within the parameters determined in the renewable energy directive when dispatching electricity produced from renewable sources.

Network development and powers to make investment decisions.

³⁵ The three unbundling options are: Ownership unbundling model (Article 9(1)), Independent System Operator (Article 9(8)(a)) and the Independent Transmission Operator (Article (9)(8)(b)).

TSOs shall submit an annual ‘ten-year network development plan’ to the regulatory authority following stakeholder consultation and taking into account existing and forecasted supply and demand. The ten-year plan is essentially intended to ensure the adequacy of the system, security of supply, and identify new investments opportunities and timeframes for projects. This process is meant to be as transparent as possible and executed through consultations with all ‘actual and potential system users’ and publishing the subsequent results of the process publically.

Distribution system operation

The directive delineates how distribution system operators are to be designated by Member States. The DSO is responsible for fulfilling the reasonable demands for the distribution of electricity in the long-term, as well as the operation, maintenance and development of efficient, reliable and secure distribution systems. Additionally, the DSOs are tasked with providing system users with information for efficient access to and use of the system. When dispatching, Member States may require DSOs to give priority to electricity generated from renewable energy sources.

National Regulatory Authorities

Member States shall designate their own national energy regulatory. The national regulatory authority, together with relevant national authorities, shall execute the tasks delineated in the directive. These tasks include, working in closer cooperation with other national regulatory authorities in Europe, the Agency, and the Commission to achieve an environmentally sustainable, a functioning and complete EU internal electricity market, while ensuring the secure and reliable operation of the electricity networks. To facilitate this, the directive also puts forward further long-term objectives of reducing and eliminating restrictions on electricity trade, improvements and development in cross-border connectivity and capacity, barriers for market access, greater consumer protection as well as universal and public services in electricity supply.

Annual reports on the activities and progress of the national regulatory authorities will be provided to the Agency and Commission. Furthermore, the monitoring responsibilities of the national regulatory authorities are listed in the directive and include monitoring the compliance and performance of the rules and networks, transparency, the level and effectiveness of market opening, competition for retail and wholesale, negative or restrictive contractual practices, and the implementation of the role and responsibilities of TSOs and DSO in accordance with the rules.

3.4.3. ACER Regulation (2009)

The Agency for the Cooperation of Energy Regulators (ACER) seeks to encourage a more competitive electricity market, monitoring infrastructure and market activities, ensure the security of supply, and facilitating achievement of a harmonised and integrated EU energy regulatory framework.

Legal Status and types of acts

Through this Regulation, ACER is established as a legal personality and EU community body. ACER is to provide assistance to national regulatory authorities and (referred to in Directive 2009/72/EC) execute and coordinate at the EU level the regulatory actions carried out in Member States. Its mandate includes issuing opinions and recommendations to regulatory authorities, TSOs, as well as the European Parliament, Council and Commission. Additionally ACER can, in specifically cases (Article 4(d)), take individual decisions and submit non-binding framework guidelines to the Commission.

Tasks of the Agency

The directive delineates the specific tasks and responsibilities of ACER. The Agency can put forward (upon request) or of its own initiative, opinions and recommendations in accordance with its *raison d'être*. ACER is also required to cooperate closely with ENTSO-E in developing and submitting the network codes while monitoring its general tasks and activities.

ACER shall also provide for a framework with which national regulatory authorities can cooperate with regional and EU level authorities. Within its scope of monitoring, the Agency can inform the Commission and relevant Member States of instances in which national regulatory authorities do not comply with the issued opinions. For cross-border infrastructure, the Agency can decide on the competencies of the national regulatory authorities involved, for example, on the conditions for access.

Consultations and Transparency

In the early stage, the directive requires that ACER consult with stakeholders such as 'market participants, transmission system operators, consumers, end-users' and so forth, during the process of developing the framework guidelines. The Agency is to ensure that interested parties can receive 'objective, reliable and easily accessible information' on the findings and results of its work.

Monitoring and reporting on the electricity (and gas) sectors

The internal electricity (and gas) market, are to be closely monitored by ACER together with the Commission, Member States, and relevant national regulatory authorities, aspects to focus on include retail prices and network access; particular access for electricity producers from renewable energy sources. Annual reports will be made public by the Agency on the results of the aforementioned monitoring activities.

Evaluation

The Agency will be evaluated by the Commission and an independent external expert, scrutinising over its working methods in line with its objectives, mandate, defined tasks, work programmes, shall be evaluated

4. Streamlining for performance

4.1. Introduction

This chapter seeks to bring together, on the one hand, the political and policy goals for the period 2020-2030 and on the other hand the elements present in existing legislation that can play a role to bring these about.

With regard to the European energy system and the governance thereof these policy goals include a 2030 EU wide binding target for renewable energy (at 27% of energy consumed) a goal of 27% energy savings, simplification and streamlining of related planning and reporting processes and a consolidated governance process. Furthermore, it is important that the post 2020 policy design does ensure that these targets are delivered, that it enhances the policy coherence in and between Member States and that it promotes market integration and competition. The design must finally provide certainty to investors in renewable energy, energy efficiency and related infrastructure and services.

The overview of the legislation, as presented in the previous chapter shows that there are at least four areas in which post 2020 EU energy policy, that builds on this existing legislation can assist in meeting some of the above mentioned policy goals and instruments.

First of all, the renewable energy and energy efficiency directive both seek implement their respective 2020 targets. The difference between both is the presence of national binding 2020 renewable energy targets as opposed to indicative nationally determined targets on energy savings. After 2020 these targets, most likely, will see a similar footing due to the absence of national binding renewable energy goals. This can be an opportunity to explore if the (national determined) target mechanics under the efficiency directive can be replicated for renewable energy after 2020. Furthermore the positive feedback between renewable energy and energy efficiency is an element that can be further exploited.

The renewable energy, energy efficiency and to a lesser extent the energy performance in buildings and internal electricity directives do contain specific and long term requirements on planning and reporting, including the use of designed by the European Commission. This opens the opportunity to explore streamlining or even merging of these planning and reporting requirements, but also how the post 2020 plans and reports assist in with the delivery of other provisions in the respective directives.

The third streamlining emerging from the overview in the previous chapter is the fact that both the renewable and energy efficiency directives contain important provisions with regard to the building sector. In the presence of another directive specifically targeting this sector (i.e. the energy performance of buildings), it can be an option to consider sectoral streamlining and bring all these elements under a single directive.

Finally both the renewable energy and energy efficiency directive have specific provisions that address issues and actors in the internal energy market. It is expected that renewable energy, energy efficiency and related services and infrastructure will become more important (or even dominant) over the next decade. Therefore, it could be considered to again streamline all these provisions and house them under a single directive.

The next sections will develop each of these streamlining options further. The chapter ends by bringing these elements together to explore a possible legal architecture of the considered EU energy legislation after 2020.

4.2. Streamlining of 2030 renewable energy and energy efficiency targets

In the absence of binding national targets after 2020 the future EU renewable energy framework could become similar to the current policy framework on energy efficiency. As mentioned before, the energy efficiency directive does not contain binding national 2030 targets but instead asks Member States to set their own (indicative) 2020 energy savings targets based on either primary or final energy consumption.

Using the energy efficiency directive as a precedent, it could therefore be an option to have Member States determine their own 2030 renewable energy and energy efficiency targets together with 2020-2030 trajectories to reach them. This would become a new requirement in in a reviewed renewable energy directive but is a continuation of the existing practice in the current energy efficiency directive.

It is important that these new nationally determined 2030 targets respect existing legislation and are therefore more ambitious than, in particular, the current nationally binding the 2020 renewable energy targets. In that sense, meeting the 2020 targets should be the starting point for the development of trajectories towards the nationally determined 2030 goals.

While the 2030 national renewable energy target, and the trajectories towards meeting them, will be nationally determined and hence consistent with Member States' freedom to determine their energy generation mix (article 194 of the TFEU), this does not have to imply they should be indicative. The reviewed directives could foresee these national determined 2030 targets and the 2021-2030 trajectories become binding once they are communicated by EU Member States. This can be achieved through the requirement to enshrine the targets and trajectories into national binding legislation. Member States would be able to set the national determined targets directly in their national legislation and/or through nationally legislated implementing measures that enable the achievement of the target. Having such nationally enshrined targets in place is important for the cost-efficiency of renewable energy efficiency investments. A stable (and long term) political commitment has an impact on the cost of capital for these investments and can reduce the levelised cost of electricity of renewable energy by up to 10% due to a lower risk factor that influences the cost of capital³⁶. Finally, the national legislation that enshrines the target should contain provisions that mitigate excessive deviation from the trajectory and provide, if needed, corrective measures to ensure trajectory and target are maintained. These deviations from the trajectory should be communicated to the European Commission and should include the corrective measures to be proposed.

Streamlining can, however, go beyond the design of targets itself. There exists a strong connection between energy saving and renewable energy. Reducing energy consumption makes it easier to meet a renewable energy goal (expressed as renewable energy generated over total consumption). On the other hand increased deployment of renewable energy reduces the primary energy consumption due to lower conversion losses from primary energy to final energy consumed. With this in mind it would make sense to enhance the link between nationally determined renewable and energy savings targets. First of all, these targets and the related trajectories should be developed (and communicated) at the same time and Member States should therefore be able to make use of the mutual beneficial impact of both technologies. Secondly, the co-development of these targets could be used as a flexibility tool. For instance, if a Member State would deviate from its renewable energy trajectory it could choose to enhance its energy savings target or vice versa. This connected approach requires however that both targets be expressed in a way that makes them compatible. One way of doing this is by expressing the renewable energy goal as the total amount of renewable energy generated over the primary energy consumed in a Member State. But alternative approaches should be possible.

4.3. Streamlining of energy related planning and reporting

³⁶ De Jager et al. 2011: p. 125

The analysis of the different directives shows there are important opportunities for streamlining their respective planning and reporting obligations. Looking at these examples a post streamlined approach for planning and reporting should be built on two pillars: a long term strategic and policy planning document and interim checks regarding the implementation of these plans through reporting.

The renewable energy, energy efficiency, energy performance in buildings and internal electricity market directives contain the following planning provisions:

- National renewable energy actions plans for the period 2020-2030
- National energy efficiency action plans on a 3 yearly basis
- A national evaluation of measures to remove regulatory and non-regulatory barriers to energy efficiency, as part of the NEEAP.
- A list of relevant instruments to finance and catalyse the energy performance of buildings as part of the NEEAP
- A strategy and a list of policies and measures to stimulate cost-effective deep renovations of buildings and their expected energy savings, as part of the NEEAP
- National plans for increasing the number of nearly-0 energy buildings
- National energy action plans as part of the internal electricity market directive regarding benefits in social security systems to ensure the necessary electricity supply to vulnerable customers, or providing for support for energy efficiency improvements, to address energy poverty.

It is possible to bundle all these strategic and policy planning provision in one 2020-2030 national energy plan. The main change would be the time horizon under the NEEAPs, which now stands at 3 years and under a combined national energy plan would be lengthened to 10 years. However, these shorter-term provisions do apply to the implementation of measures and could therefore be moved to a combined bi-annual reporting obligation on the implementation of the national energy plan.

Such national energy plans would allow for better and deeper linking of (planned) renewable energy policies and measures with those related to energy efficiency. The latter can on their turn see an enhanced alignment and integration with provisions on renovation of buildings and roll out of nearly 0-energy building policies. Finally the national energy action plans (on energy poverty and vulnerable customers) would now become integrated into renewable energy, energy efficiency (in buildings) planning. The latter would allow Member States to better connect social impacts and benefits of their national energy policies.

Next to the enhanced linking or integration of planned policies and measures there are other benefits to a joint planning approach. Such plan would include a consistent energy consumption and production projection and economic parameters that can consistently be applied to the planned policies and measures. Furthermore, the direct link between energy efficiency and renewable energy policies can be better modelled. This should improve policy coherence and consistency. It, in particular, allows for a

more cohesive approach in tackling regulatory and financing barriers towards the deployment of renewable energy, energy efficiency and building renovation. Finally, a combined planning document will facilitate a consistent assessment of the plans by the European Commission. A single assessment procedure would reduce the administrative burden but also allow the European Commission to assess the cross-cutting impact of policies and measures mentioned in the plan.

It is important, in the absence of national binding targets in the post 2020 renewable energy and energy efficiency directives that these plans do still contain the national determined efficiency and renewables targets for 2030 as their trajectories through the period 2020-2030. The plans have to provide a list of domestic legislation that will secure the implementation of these targets (e.g. through enshrining the target in national legislation or providing binding policies and measures that secures their achievement).

With a 10 year consolidated planning document in place the related reporting could follow the bi-annual approach of the current NREAPs with focus on implementation of measures and data on actual performance by the Member States.

To ensure that EC can consistently assess if the EU is on track to meet its 2030 targets for energy efficiency and renewable energy the planning and reporting will have to follow a pre-determined and binding format. This would also enhance the transparency and comparability of the plans and reports by the EU Member States. This would require the introduction of uniform and binding templates for energy planning and reporting. In practice, the example of the EU monitoring mechanisms regulation can be followed. In that case the reporting under different EU laws such as the EU Emissions Trading Directive, the EU Effort Sharing Decision is streamlined through a single regulation that contains binding reporting templates.

In practice, the planning and reporting mechanics would still be set under the respective energy directives. This includes the identification of key information to be contained in the plan such as the national determined targets and trajectories and related policies and measures and possible revision of plans in case of a (significant) deviation from these targets and/or trajectories. The directives should also include (streamlined) provisions on timing of planning and reporting and the adoption and assessment procedures for the European Commission. It is important that these provisions are well aligned across the different directives. One option would be to provide a detailed planning and reporting procedure in one (master) directive and have the other directives reference this procedure.

4.4. Streamlining renewable energy and energy efficiency in buildings and heating & cooling

Following the analysis of the different directives in the previous chapter it is striking that the energy efficiency and renewable energy directive contain a significant amount of provisions related to buildings while a specific sectoral buildings directive is in place. This observation indicates that important streamlining of renewable energy and energy efficiency provisions for the building sector should be possible. In principle it could be an option to bring existing provisions regarding buildings, heating and cooling under the energy performance in buildings directive. Elements that can be considered in this context are:

- The enhancement of national building renovation strategies through the introduction of (national) deep building renovation rates and goal of almost full low-carbon renovation goal by 2050, including the integration of renewable energy for heating and cooling and domestic energy storage.
- Elaboration of provision on renewable energy and energy efficiency design codes for urban areas, industrial and commercial sites
- A more specific definition of nearly 0-energy buildings and enhanced/accelerated strategy for their deployment. This can include the option to introduce a strategy for buildings that produce a net surplus of (renewable) energy
- A comprehensive re-assessment of post 2020 minimum building standards that includes provisions for renewable energy (for heating, cooling, electricity) and energy storage.
- Upgrade the renovation rate of public buildings with the integration of renewable energy for heating and cooling.
- Upgrade and streamline public procurement provisions on energy efficiency and renewable energy

These examples show that next to the option to bring provisions on buildings together in a single directive there is ample scope to broaden and enhance these measures at the same time.

4.5. Streamlining Energy efficiency, renewable energy in the internal electricity market directive

Both the renewable energy and energy efficiency directives contain important provisions on the removal of market barriers to the deployment of renewable and energy efficiency related policies, (supportive) infrastructure and/or services. For instance, there are similar provisions related to transparency on costs and rules for grid access and non-discrimination in grid access and priority (or guaranteed) dispatch for both renewable energy and efficient cogeneration in the renewable energy directive and energy efficiency directive. These rules apply to both distribution and network system operators.

The renewable energy directive also contains a list of energy system investments requirements such as the enhanced development of the national and cross-border transmission and distribution infrastructure, including intelligent networks, storage facilities and the electricity system. It also urges the improvement of interconnections between the Member States as well as grid connections to renewable sources. Finally, the directive introduces a list of mechanisms that could facilitate the cooperation between Member States on renewable energy investments. The energy efficiency directive, on its turn has specific provisions that apply to the energy market or market actors in relation to the provision of energy (savings) services, (smart) metering and demand response.

All of the above mentioned elements have a direct connection with the functioning of the internal EU energy market and in particular the internal electricity market directive and the implementing network codes. That directive establishes the foundational rules for actors in the internal market such as the DSOs, TSOs and regulators. The provisions under the renewable and energy efficiency directive could be seen as specific or further requirements for these actors.

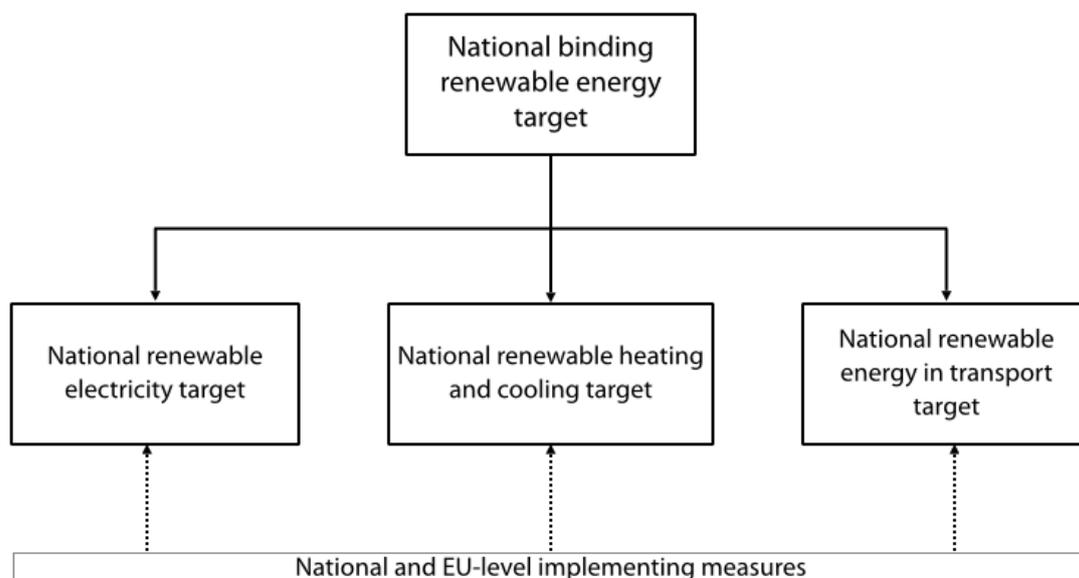
On the other hand, however, due to the continued and growing importance of renewable energy, energy efficiency, energy services, demand response and response in a future EU energy system it could be considered to transfer the market related elements under the renewable and energy efficiency directives to the internal electricity market directive. This approach would facilitate the integration of similar (grid access and dispatch) rules in both the renewable energy and energy efficiency directives. It would, hence, allow for more consistent and efficient implementation of these rules at EU and national level. Consolidated internal market rules would, hence, enhance the transparency of the EU and national energy systems. Furthermore, it should enact clear(er) responsibilities for the implementation of these rules on the relevant actors such as the DSOs, TSOs and national regulators. Implementation (and enforcement) thereof should lead to a broader and enhanced role of ACER.

Finally, another key driver towards streamlining of the currently distributed market rules is that it can enhance the future proofing of the energy market. The design of the EU internal electricity market directive was based on the historical role and tasks of its main actors such as DSOs, TSOs, regulators and last but not least large utilities and suppliers. Unbundling of these roles and assignment of responsibilities is a main element in the directive. However, over the past decade both the tasks of these actors have changed, in practice, and new market players are becoming more important. There is first of all, the emergence of regional power markets and its impact on the tasks of TSOs and national regulators. Secondly, across Europe, auto-production of electricity by what used to be electricity consumers has risen significantly. The latter has impacted the role of DSOs. Finally, ESCOs and demand response aggregators have become more important in Europe. In some markets in the EU, these changes were disruptive for the classical utilities and energy suppliers. Finally, overcapacity of production capacity in combination with unfavourable market conditions for some power generators and related security of supply concerns is leading to the

introduction or contemplation of capacity payment mechanisms in some EU member States.

It is likely that after 2020 with an increase in renewable electricity production (including decentralised production), enhanced services for energy savings and demand response a growing market for energy storage following cost reductions in these technologies and growing regional power markets, these changes will persevere. Therefore, it can be argued that provisions related to electricity markets, that were previously considered to be ancillary to the internal electricity market (and hence are included in other directives), should become part of an enhanced and consolidated EU market design and the implementation thereof.

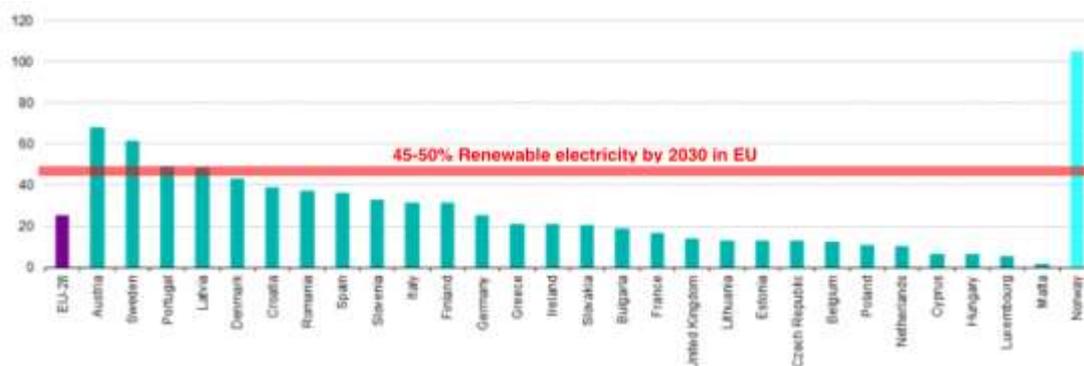
A specific, but high level, example of the above mentioned streamlining and integration would be introduction of an EU wide binding renewable electricity target in the internal electricity market directive. Under the current renewable energy directive Member States have transpose their 2020 binding national renewable energy target into sub-targets for the electricity, heating and cooling and transport sector.



Sub-targets for renewable energy (at Member State) level following the current renewable energy directive and the NREAPs

In the absence of national binding renewable energy targets but given an binding EU wide 2030 target, it is worth considering if that EU level target similarly can be devolved to three sectoral binding targets (i.e. electricity, heating and cooling and transport). The European Commission's impact assessment on a policy framework for climate and energy in the period from 2020-2030 modelled that a 27% EU wide renewable energy goal for 2030 (European Commission, 2014: p. 139) is expected implies an EU wide share of renewable electricity between 44.6 and 47.3% by 2030. This is a significant increase compared to the EU wide renewable electricity generation in 2013 that stood at around 25%.

Furthermore, it can be expected that the share of renewable electricity will not grow uniform across EU Member States or regions, leading to renewable electricity shares by 2030 well above 45% in certain Member States or regions.



Source: Eurostat (online data code: tsdcc330)

Proportion of electricity generated from renewable sources, 2013 (% of gross electricity consumption), Source Eurostat (online data code: tsdcc330)

Higher levels of variable renewable electricity (especially during low consumption periods) can lead to grid perturbation and grid congestion. This risk, in the absence of accompanying system management, is expected to increase when the share of variable renewable electricity generated becomes a dominant form of power generation. It is possible that the current ancillary power system (grid, back-up capacity, storage, demand response, ...) at EU level and in some Member States is in its current form not able to absorb the projected 2030 (variable) renewable electricity generation. Hence, it might at a certain point become a barrier towards further deployment of renewable electricity and hence the achievement of the EU's 2030 renewable energy target. Avoiding this problem will require adequate and pre-emptive investments in the energy systems, including their (domestic and cross-border) management.

Including a 2030 EU wide renewable electricity target as over-arching condition in the EU internal electricity market directive could facilitate the timely removal of system barriers. It would become a guiding principle or boundary principle informing relevant obligations and roles of the actors under the directive and implementing provisions linked to the directive such as the network codes. ACER could be tasked, in this context, to assess future power generation and system adequacies and provide guidance or adopt recommendations towards national regulators and/or TSOs. But also the continued assessments of the of the 10 year network development plans (TYNDP) and regional investment plans and more importantly, their timely implementation will be critical. The 2014 TYNDP already works with scenarios of 40 to 60% annual renewable energy by 2030 but has also identified about 100 hotspots on the European grid where bottlenecks exist or may develop in the future if

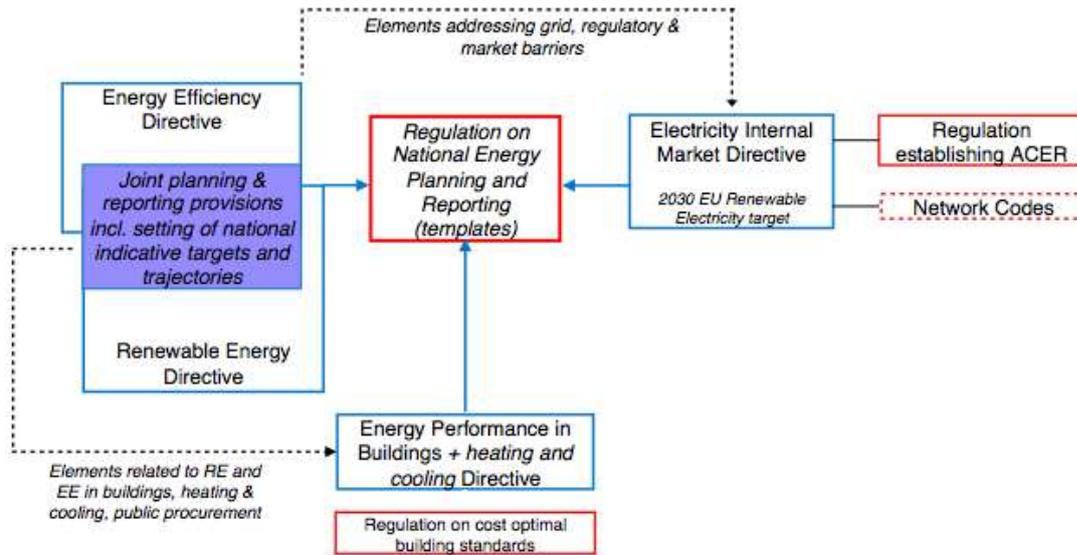
reinforcement solutions are not implemented³⁷. Another element that could be explored, when reviewing the EU internal energy market, is the enhanced role for DSOs in the management of the grid, implementation of renewable energy and energy efficiency supportive actions and their cooperation with TSOs. An updated directive could look into the facilitation of harmonisation of market designs across Member States and facilitation of regional energy cooperation in EU. It should introduce rules to avoid discrimination of self-consumption of renewable energy especially since this can become a relevant tool for (future) grid load management. Finally, the (ongoing and) future development and refinement of network codes could facilitate important system management elements such as demand response, coupled intra-day balancing and High Current Direct Voltage Connection (HVDC) standards and rules.

4.6. Legislative design options for post 2020 energy policy

The streamlining options discussed in the previous sections enable allow now to discuss options on future legal design and structure of the directives, considered in this paper.

The streamlining on planning and reporting will require a close coordination of the existing provisions in the renewable energy, energy efficiency, energy performance in buildings and (to a lesser extent) the internal electricity market directive. The goal would be to have a single planning and reporting process but at the same time allow for measures in the directives that require amendments to national energy plans in case of a deviation from national determined renewable energy or energy savings trajectories in the period 2020-2030. Streamlining, consistency and transparency of future national energy actions will be facilitated by uniform and binding templates for both planning and reporting. This could be achieved through the introduction of a new energy planning and reporting regulation that replaces the current (guidance) decisions.

³⁷ 10 Year Network Development Plan 2014, Entsoe 2014 p.9-10 https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/Documents/TYNDP%202014_FINAL.pdf



Option for legal architecture of selected EU energy legislation after 2020

The analysis in the previous sections showed important sectoral overlaps between the renewable energy and energy efficiency directive on the one hand and the energy performance in buildings directive on the other hand. If streamlining would follow a sectoral approach this could be achieved through transferring existing provisions on buildings, heating and cooling from the renewable energy and energy efficiency directive to a (more comprehensive) reviewed energy performance in buildings (and heating and cooling) directive.

Finally, it can be (carefully) considered to streamline market barrier and access related elements across the renewable energy, energy efficiency and internal energy market directives. One option would be to bring all existing provisions under the internal market directive.

There are, of course, other options to consider, for instance, the complete integration of renewable energy, efficiency and buildings directives into a new sustainable energy directive. Another and more extreme possibility would be the complete absorption of the renewable energy and energy efficiency directives into the internal market directive combined with the creation of a new renewable energy in transport directive and a energy performance in buildings and heating and cooling directive.

5. Conclusions

The analysis of existing EU legislation on energy, in particular the energy efficiency, renewable energy, energy performance in buildings and the internal electricity market directives in the context of politically agreed 2030 framework shows that streamlining options exist that at the same time can enhance these existing laws.

There is evidence and cause for streamlining of existing legislation due to overlapping or similar provisions, in particular on planning and reporting, provisions in relation to the building, heating and cooling sector and on addressing regulatory and market barriers.

Joint planning and reporting on renewable energy, energy efficiency and buildings sector strategies is possible and can lead to more coherent and consistent national policies and measures. It will also reduce the administrative burden following the implementation of these directives.

Existing legislation can also act as a precedent for application post 2020. In particular the principle of nationally determined targets and trajectories under the existing energy efficiency directive could be applied to renewable energy after 2020, in the absence of binding national targets in a future renewable energy directive.

An important area for further research and discussion is the option to transfer and streamline market barrier removal and related provision from the renewable energy and energy efficiency directives to a reviewed internal electricity market directive and its implementing instruments such as the network codes and the ACER.

Finally, the above-mentioned options would be implementable through concerted and synchronised amendments to the legislation considered here. The fact that all of these laws will most likely be reviewed in 2016, within a similar timeframe, offers an interesting opportunity to consider and explore these ideas in more detail.

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