



Energy Policy in the European Union

An outline of EU's policies and strategy on energy related issues

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1. Introduction

The energy policy evolution timeline...

- 1951: *European Coal & Steel Community.*
Coal & Steel: The two key sectors of the economy.
- 1957: *European Atomic Energy Community Treaty.*
Nuclear energy seems to be the future, not coal.
- 1960s: No energy cooperation between Member States.
Focus on a national state level. States are heavily based on the supply of oil, coal and/or natural gas. Promotion of nuclear power. RE attracted almost no interest because of the high cost.
- 1973: Oil crisis – A push for a common energy policy.



1. Introduction

The energy policy evolution timeline...

- 1980s – 1990s: Wider focus on energy related matters. Security of supply remains the main issue. Energy market deregulation, environmental protection & climate change problems emerge.
 - 1995: White Paper – *An Energy Policy for the EU*. Establishing an official basis on which to build a common, community-wide energy policy.
 - 1997: The adoption of the Kyoto protocol. Environmental & climate issues come high on the agenda.
- RE White Paper.
The Community sets its strategy for RES.



1. Introduction

The energy policy evolution timeline...

- 2000s: Developing a common position regarding future energy strategic issues.
- 2005: A mandatory concept on energy policy was approved.
- 2007: *An energy policy for Europe* strategy.

The beginning of a more integrated EU energy policy, which gained considerable momentum since then.

The action plan laid out the three major challenges for European energy policy, which form the core of the common energy policy till today: *sustainability, security of supply, and competitiveness.*

Quantifiable targets set – *20/20/20 targets up to 2020.*



1. Introduction

The energy policy evolution timeline...

- January 2014: The 2030 policy framework for climate and energy was presented:
 - Necessary to ensure regulatory certainty for investors and a coordinated approach among Member States in order to continue progress towards a low-carbon economy.
 - The reduction target of domestic GHG emissions is set to 40% below the 1990 level by 2030.
 - The share of RE is increased to at least 27% of the EU's final energy consumption by 2030.
 - A 30% energy efficiency & savings target is set for 2030.
 - The European Council will take a final decision on the framework in October 2014 at the latest.



1. Introduction

1.1. Towards Sustainability

- Policy options: address different kind of barriers that inhibiting the transition to a more sustainable energy future.
- *Innovation System*: A wide range of factors that affects the appropriate mix of policies in any particular situation.
- Policy options can be grouped into the next 13 categories:
 - Research & Development*
 - Financial incentives*
 - Voluntary agreements*
 - Information & training*
 - Market reforms*
 - Capacity building*
 - Supporting tools*
 - Financing schemes*
 - Accurate pricing*
 - Regulations*
 - Procurement*
 - Market obligations*
 - Planning techniques*



1. Introduction

1.1. Towards Sustainability

The three main areas of the EU energy policy are:

- *Market liberalization*: The creation of a single, integrated European energy market through the creation of trans-European energy networks.
- *Security of energy supply*: Enhance energy security through diversification of both Europe's internal fuel mix and its external sources of energy supply.
- *Protection of the environment & climate*: Policies that move the industry to invest in new, cleaner, and less energy-intensive technologies.



1. Introduction

1.2. Energy Policy Development

EU policy development follows important political principles:

- *Subsidiarity*: taking EU action where it adds value, and leaving alone matters best done at national level.
- *Proportionality*: not going beyond what is necessary to achieve the objectives.
- *Better regulation*: avoiding burdensome legislation, consulting widely on all proposals, and assessing the full impact of proposals before they are made.

The aim: policies are developed in the most democratic, representative, transparent and consensual way possible with clear justifications and balanced assessment of options.



1. Introduction

1.2. Energy Policy Development

Energy policy proposals made by the EC are largely tested for their relevance, appropriateness and timeliness because:

- All legislative proposals are accompanied by “impact assessments” which outline the advantages/benefits and drawbacks/costs of different policy actions.

- Wide stakeholder consultations take place.

(including national authorities, regional bodies, industrial associations, individual companies, consumers and their associations and non-governmental organisations).



1. Introduction

1.2. Energy Policy Development

- Consultation groups also exist.
(The Madrid and Florence Forums (for gas and electricity markets, respectively), the Gas Coordination Group, the Oil Supply Group, the Amsterdam (Sustainable Energy) Forum, the Berlin (Fossil Fuels) Forum and the Prague/Bratislava (Nuclear) Forum).
- Internet consultations take place.
- *Eurobarometers* and other surveys are also used.
- Consultations also take place within and between the different EU institutions.



1. Introduction

1.2. Energy Policy Development

Acknowledging the sensitivities regarding some aspects of energy policy in Member States, EU energy policy actions have respected, and will continue to respect, two principles:

- Member States are ultimately responsible for their national energy mix.
- Indigenous energy resources are a national, not European, resource.



1. Introduction

1.3. Legal Basis

- Before the Lisbon Treaty entered into force in 2009, the energy-related legislation was introduced under various articles of EU Treaties.
- The Lisbon Treaty introduces a *specific legal basis* for the field of energy with the creation of *Article 194* of the Treaty on the Functioning of the EU.
- *Article 194* states that the energy issues fall within competence both EU and Member States and stresses the context of EU energy policy against the background of the internal market and the environment.



1. Introduction

1.3. Legal Basis

Energy policy proposals are discussed and introduced through *Green* and *White Papers* and are entering into force through the European legislation:

- *Directives*: are directly binding on Member States, but often flexible to take into account different national and administrative traditions.
- *Regulations*: are directly binding on Member States and superior to any conflicting national law.
- *Decisions*: are individual legislative acts directly binding for the parties to whom they are addressed.



2. EU Energy Policy

The implemented energy policies can be classified into the next seven broad categories:

- *Renewable Energy*
- *Energy Efficiency & Savings*
- *Internal Energy Markets*
- *Security of Energy Supply*
- *Environmental Protection & Climate Change*
- *Nuclear Energy and*
- *Research & Development*



2. EU Energy Policy

The implemented energy policies can be classified into the next seven broad categories:

2.1. Renewable Energy

- *Energy Efficiency & Savings*
- *Internal Energy Markets*
- *Security of Energy Supply*
- *Environmental Protection & Climate Change*
- *Nuclear Energy*
- *Research & Development*



2. EU Energy Policy

2.1. Renewable Energy

- Since 1986 a Council resolution highlighted the promotion of RE as one of the Community's energy objectives.
- 1997: The Community strategy for renewables was presented in the *RE White Paper* and confirms an indicative target of a 12% share of RES in total final energy consumption by 2010.
- End of 2001: The *RES Directive* on electricity production from RES was adopted. An indicative target was set for the electricity to 22.1% of total EU-15 gross consumption from RES in 2010.

(Adapted to 21% for EU-25 in 2003)



2. EU Energy Policy

2.1. Renewable Energy

- 2003: The *Biofuels Directive* was adopted. National indicative targets were set: 2% by 2005 and 5.75% by 2010 of the share of biofuels in transport.
- March 2007: The heads of states and governments of the EU-27 adopted a *binding target* of 20% RE from final energy consumption by 2020.
- January 2008: The EC presented a draft directive on the promotion of the use of energy from RES which contains a series of elements to create the necessary legislative framework for making the 20% share become a reality.
- June 2009: The new *RES Directive* entered into force.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 1. National Targets

- Up to 2009 the targets set were *indicative*.
Each Member State had its own share target for RE in electricity and all had an overall 5.75% in transport by 2010.
- Currently there are *binding national targets* for RE shares of final energy consumption in 2020, (including a 10% renewables in transport target for all Member States).
- Also interim (indicative) targets per country are set for 2011/12, 2013/14, 2015/16 and 2017/18 as a percentage share of their 2020 target.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 2. National Renewable Energy Action Plans (NREAPs)

- Introduced in 2009.
- They include detailed mandatory outlines and targets for the shares of energy from RES in all sectors by 2020 and adequate measures to achieve these targets.
- They give Member States the flexibility to decide themselves how they want to meet their national targets.
- They create investor security and help to mobilize private capital by setting clear goals and mechanisms on the national level.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 3. **Cooperation Mechanisms**

- Introduced in 2009.
- They are *statistical transfer* mechanisms of a specified amount of energy from RES from one country to another.
- The cooperation between two or more Member States and also with one or more third countries is allowed, on all types of joint projects. Private operators can also be involved.
- The basic idea: To fulfill part of a Member State's RES target in another country, with the potential advantage of accessing cheaper RE production in other countries.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 4. Renewable Energy Guarantees of Origin (RE-GOs)

- Introduced in 2001 (first RES Directive).
- Producers of renewable electricity prove the share or quantity of energy from RES in their energy mix in case of a request from a central body.
- They are accompanied by a unique identification number.
- Some of the information specified in a RE-GO:
The energy source from which the energy was produced, the start and end dates of production, the date and country of issue etc.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 4. Renewable Energy Guarantees of Origin (RE-GOs)

- The purpose of their introduction:

To enable trade between Member States and give them the option to use RE-GOs as a statistical transfer mechanism. Also to increase transparency for consumers.

- Restrictions in their tradability were allowed because concerns were issued about the risk of trade being detrimental to the development of renewables.
- The trade was allowed despite the risks because the costs of not allowing trading were estimated at up to € 8 billion per year by 2020.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 5. Grid Priority Access & Operation

- Introduced in 2001 (first RES Directive).
- TSOs and DSOs must guarantee the transmission and distribution of electricity produced from RES.
- When dispatching electricity, TSOs are to give *priority* to installations using RES (so far as the secure operation of the national electricity system permits).
- Measures must be taken for the development of the transmission and distribution grid infrastructure in order to be ready for further renewable electricity penetration.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 6. Support Schemes for Electricity Production

- General provisions on *support schemes* for electricity production were provided since 2001.
- There are 7 main categories of support instruments in the EU for RES deployment in the electricity production:

Feed-in tariff

Feed-in premium

Quota obligations

Investments grants

Fiscal incentives

Tenders

Tax incentives / exemptions



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 6. Support Schemes for Electricity Production

Feed-in tariff is a fixed and guaranteed price paid to the eligible producers of electricity from RES, for the power they feed into the grid.

- Feed-in tariff systems have been historically and currently still are the main instruments of support in the EU.
- Advantage: The long-term certainty of receiving a fixed level support, which lowers considerably the investment risks thus, lower average support cost for society.
- RES generators do not sell the produced electricity on the power market, but to a single buyer, e.g. TSO.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 6. Support Schemes for Electricity Production

Feed-in premium system: a guaranteed premium is paid in addition to the income producers receive for the electricity from RES that is being sold on the electricity market.

- The flexibility and coverage of the systems differs from country to country.
- Compared to *FIT*, premiums provide less certainty for investors (higher risk premiums and total costs of capital).
- Producer participates in the wholesale electricity market so, production is adjusted to the price signals on the market (i.e. electricity demand).



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 6. Support Schemes for Electricity Production

Quota obligations system: governments impose minimum shares of renewable electricity on suppliers (or consumers and producers) that increase over time.

- If obligations are not met, financial penalties are to be paid. (Penalties are recycled back to the suppliers in proportion to how much renewable electricity they have supplied).
- Quota obligations are combined with Green Certificates, which can be traded and used as proof of compliance.
- Producers are exposed to market signals and support is automatically phased out when technology gets to compete.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 6. Support Schemes for Electricity Production

Tax incentives or exemptions often complement other types of RES incentive programs.

- They are powerful and highly flexible policy tools that can be targeted to encourage specific RES technologies.
- A wide range of tax incentives are present in the EU.
- They can be related to investments or provide income tax deduction or credits at a set rate per unit of produced RE, thereby reducing operational costs.
- Investment and production tax exemptions are most prominently present in the EU.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 6. Support Schemes for Electricity Production

Investments grants for electricity and heating & cooling are available in several Member States and are often devised to stimulate the take-up of less mature technologies.

Fiscal incentives include soft or low-interest loans. Soft loans may also provide other concessions to borrowers, including longer repayment periods or interest holidays.

Tenders are used for larger-scale projects, most commonly for offshore wind utilization. Advantages include the amount of attention it draws towards RE investment opportunities and the competitive element incorporated in its design.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 7. Restrictions on Biofuels & Bioliquids

- Restrictions were adopted because of the 10% share target from renewable fuels in the final energy mix of the transport sector.
- They apply from the cultivation of raw materials up to the greenhouse gas emissions in the end use.
- Measures must be taken in order to verify that sustainability criteria have been fulfilled whether the biofuels or bioliquids are produced within the Community or imported.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 8. Renewable Energy Technologies in Buildings

- The *integration of RE technologies in buildings* was introduced in 2009.
- By 31 December 2014, Member States must require the production of a minimum amount of energy from RES in new buildings and in existing buildings that are subject to major renovation.
- A major pillar towards the *nearly zero-energy buildings* concept which will be implemented from 2018 onwards.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 9. Information & Training

- Each Member State must take steps towards the dissemination of information on support measures and make it available to all relevant actors.
(such as consumers, builders, installers, architects, and suppliers of RE technologies).
- In cooperation with local and regional authorities, suitable information, awareness-raising, guidance or training programs must be developed in order to inform citizens.



2. EU Energy Policy

2.1. Renewable Energy

I.P.: 10. Reporting & Monitoring

- Member States must submit reports to the EC on progress considering the promotion and use of energy from RES.
- The first report was submitted in 2011 and the next every two years thereafter, up to 2021.
- Reports provide detailed information on the whole progress of RE penetration and the framework for their promotion.
- On the basis of the submitted reports from Member States, EC reports every two years to the EP and the Council in order to evaluate and critic the progress of Member States.



2. EU Energy Policy

The implemented energy policies can be classified into the next seven broad categories:

- *Renewable Energy*

2.2. Energy Efficiency & Savings

- *Internal Energy Markets*
- *Security of Energy Supply*
- *Environmental Protection & Climate Change*
- *Nuclear Energy*
- *Research & Development*



2. EU Energy Policy

2.2. Energy Efficiency & Savings

- It is the most cost-effective and fastest way to increase security of supply and reduce the GHG emissions.
- The target is a 20% energy improvement by 2020.
- It makes the RES target easier to attain.
- In 2006 the *Energy Efficiency Action Plan* was adopted, establishing the overall framework for the future development of the energy efficiency policy in the EU.
- The 2006 *Energy Efficiency & Services Directive* was another essential part of the framework for those sectors not covered by the *Emissions Trading System*.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

- The estimations of not achieving the 20% target forces Commission into a more ambitious strategy.
- In 2011 the Commission put forward a new *Energy Efficiency Plan (EEP)* setting out stricter measures.
- The new legislative proposal transforms certain aspects of the EEP into *binding measures* (not binding targets) in order to strict the framework towards the 2020 target.
- The *new Energy Efficiency Directive* entered into force on 4 December 2012. It covers all sectors except transport, and includes, for the first time in an “energy efficiency” directive, measures for supply side efficiency.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 1. EU-Wide Quantified Target

- Introduced with the new EED in 2012.
- The *legal definition and quantification* of the 20% energy efficiency target by 2020:
The EU-28's energy consumption should not exceed the 1483 Mtoe primary energy or the 1086 Mtoe of final energy in 2020.
- It offers a better control of the progress towards the 2020 target.

2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 2. National Targets

- Old directive (2006): Each Member State should take measures towards achieving an overall *national indicative energy savings target* of 9% by 2016.
- New directive (2012): Each Member State must set an *indicative national energy efficiency target* (aligned with the EU-wide target) in any form they prefer:
 - Primary or final energy consumption.
 - Primary or final energy savings.
 - Energy intensity.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 2. National Targets

- The target must be expressed in terms of an absolute level of primary energy and final energy consumption (for better assessment by the EC).
- Also, each Member State is required to set up an energy efficiency obligation scheme to ensure that certain energy distributors or retail energy sales companies achieve a *cumulative annual end-use energy savings target* of 1.5% (over the obligation period 1/1/2014 – 31/12/2020).
 - Or take other alternative policy measures to achieve equivalent energy savings.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 3. National Energy Efficiency Action Plans (NEEAPs)

- Introduced in 2006.
- Member States are required to prepare *NEEAPs*.
- *NEEAPs* articulate in detail each State's strategy in order to pursue and monitor progress towards their target.
- Every following *NEEAP* must include a thorough analysis and evaluation of the preceding.
- All Member States were to submit to the EC three *NEEAPs* in the period between 2007 and 2014. From April 2014, *NEEAPs* must be submitted every three years.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 4. Cogeneration

- Cogeneration also improves security of supply.
- Measures similar to RE systems have been adopted:
 - *Guarantees of origin* for electricity produced from *Combined Heat & Power (CHP)*.
 - *Support schemes*.
 - *Grid priority access* to CHP power plants (including small-scale and micro-cogeneration units).
- In order to achieve high efficiency energy production, a methodology for determining the efficiency of the process with cogeneration technologies is also provided.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 5. Public Procurement

- Requirements for the public sector to follow for the purchase of high performing energy-efficiency products, services and buildings have been established.
- Central governments are required to set the example. It can also apply to other public bodies, including at the regional and local levels.
- July 2007: the first time that the Council and the European Parliament have set *mandatory energy efficiency criteria* for public procurement by adopting a new regulation for implementing the *EU-US Energy Star program* in the EU.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 6. Improvement of Building's Energy Performance

- Buildings account for 40% of total EU energy consumption.
- *Energy performance calculation & requirements:* Each Member State has adopted a methodology for calculating the energy performance of buildings and setting the minimum energy performance requirements.
- *Long-term renovation strategy:* Strategy for investment in the renovation of residential and commercial buildings both public and private (including deep renovations).
- Central governments must set the example: 3% of the total floor areas (>500m²) of heated or cooled public buildings are renovated each year (from the beginning of 2014 onwards).



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 6. Improvement of Building's Energy Performance

- *Energy performance certificate & display:* When buildings are constructed, sold or rented out, an energy performance certificate is made available to the owner or by the owner to the prospective buyer or tenant.
- Its validity cannot exceed a period of 10 years.
- For public buildings with a total useful floor area $>500\text{m}^2$, the certificate must be *displayed* in a prominent place clearly visible to the public.
- July 2015: the threshold of 500m^2 will be lowered to 250m^2 .



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 6. Improvement of Building's Energy Performance

- *Nearly zero-energy buildings:* After 31/12/2018 all new buildings occupied and owned by public authorities are to be nearly zero-energy buildings and from 31/12/2020 onwards all new buildings are to be nearly zero-energy buildings (towards this target the potential integration of CHP and RE systems will have a major contribution).
- *Individual meters:* they reflect accurately the final customer's actual energy consumption and provide information on actual time of use, aiming at better energy management from the consumers.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 7. Improvement of Energy Related Products

- The *eco-design requirements* system:
 - Established in 2009 in order to ensure the free movement of energy related products within the internal market.
 - It defines the principles, conditions and criteria for setting environmental requirements for the products and applies to all energy-using products which are placed on the market.
 - It also covers parts which are intended to be incorporated into products which are placed on the market as individual parts for end-users, the environmental performance of which can be assessed independently.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 7. Improvement of Energy Related Products

- The *labelling and standard product information* system:
 - Established in 2010 in order to allow end-users to choose more efficient products (The system of labels for household appliances introduced in 1992).
 - It applies to energy-related products which have a significant direct or indirect impact on the consumption of energy and other essential resources during use.
 - It is accompanied by educational and promotional information campaigns aimed at promoting energy efficiency and more responsible use of energy by end-users.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 8. Eco-Management & Audit Scheme

- EMAS is a voluntary EU initiative designed to promote continuous improvements in a company's or other organization's environmental performance.
- Developed by the EC in 1993. It became available for participation only for companies of industrial sector in 1995.
- In 2001 EMAS was opened to all economic sectors including public and private services.
- The last updated framework that improves the applicability and credibility of the scheme, entered into force in January 2010.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 9. Taxation

- The current energy taxation framework was adopted at the end of 2003, started as an internal market harmonization instrument.
- It defines the taxable energy products, lays down the minimum rates that are to be applied to each according to their use (motor or heating fuel) and sets up the conditions for exemptions or reductions to minimum levels of taxation.
- Differentiated rates of taxation, total or partial exemptions or reductions can be applied in many cases.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 9. Taxation

- Energy products and electricity are only taxed when they are used as motor or heating fuel and the tax to be paid is calculated according to the *quantity* of fuel that is consumed.
- Member States are allowed to differentiate between commercial and non-commercial use of gas-oil used as propellant.
- Member States can refund, fully or in part, taxes paid by businesses that have invested in the rationalization of their energy use.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 9. Taxation

- The existing framework has become *outdated* and *inconsistent*.
- A *proposal* to overhaul the outdated rules on the taxation of energy products was presented in April 2011 by the EC.
- In April 2012 the EP voted *against the draft Energy Taxation Directive* stating that this is not a good moment to increment energy taxes.
- The vote of the EP *is not binding*, so it is up to Member States to decide if they will follow the Parliament or the proposal from the Commission.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 9. Taxation

The new proposal:

- Taxes on energy would be split into *2 components*:
 - One based on *CO₂ content* (a single minimum rate for CO₂ emissions would be introduced for all non-ETS sectors).
 - The other based on *energy content* rather than the volume.
 - Both CO₂ and energy content elements would be combined to produce the overall rate at which a product is taxed.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 9. Taxation

The new proposal:

- Member States would retain flexibility to apply reduced taxes for certain businesses but above the Community minima.
- Member States can design their own structure for these taxes.
- Taxes below minima could apply just for sectors under risk of carbon leakage.

2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 10. Fiscal Incentives

- Direct fiscal incentives for energy efficiency purposes are, or have been, used in a number of EU Member States.
- In most cases they take the form of a subsidy or rebate provided after the purchase or paid directly at the check-out, in some cases delivered only in case of replacement of the old appliance.
- Direct fiscal incentives address the same policy objective as reduced VAT rates, thus represent in this sense an alternative instrument.

2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 10. Fiscal Incentives

Advantages compared to reduced VAT rates:

- Subsidy schemes can be better targeted to specific consumer groups.
- VAT reduced rates are not effective in the case of taxable economic agents which can deduct VAT paid on inputs.
- Direct fiscal incentives would not probably create the risk of distorting cross-border trade in the same way as reduced VAT rates, if they are targeted only to the residents of a country.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 10. Fiscal Incentives

Advantages compared to reduced VAT rates:

- Subsidies delivered at the check-out or as income tax credits to consumers are more certain to reach the consumer than reduced VAT, which may not be entirely passed through to retail prices.
- They can be more calibrated to the product characteristics.

On the other hand, the creation of a subsidy scheme can be administratively more complex than the differentiation of rates in an existing tax regime (VAT) and thus may entail higher administrative costs.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 11. Education & Awareness

- The success of the energy efficiency policies is strongly influenced by the consumers' purchasing decisions.
- EC plans a number of education and training programs (such as competitions to reward the most energy-efficient school in the EU).
- Since public authorities should set an example, the EC itself plans to obtain EMAS certification for all the buildings it owns, and then to extend the initiative to all EU institutions.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 12. Monitoring & Evaluation

- Impact assessment, monitoring and evaluation are to be an integral part of the EU's energy efficiency policy.
- There is no general requirement to undertake an ex post evaluation of directives or policies.
- Monitoring requirements are usually written into the relevant directives (e.g. Article 24 in the EED outlines in detail the review and monitoring of the progress achieved by the Member States, towards their national energy efficiency targets).

2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 13. International Partnership

- The *International Partnership for Energy Efficiency Cooperation* is a high-level international forum which aims to enhance global cooperation in the field of energy efficiency.
- It was established in 2008 as a result of an EU proposal for an international initiative on energy efficiency.
- Other international initiatives in which the EC is playing an important role include the *Energy Community Treaty*, the *Euro-Mediterranean Energy Partnership* and the *Baku Initiative*.



2. EU Energy Policy

2.2. Energy Efficiency & Savings

I.P.: 14. Supporting Tools

- The *Concerted Action EED* is a project launched in spring 2013 in order to support the effective implementation of the new directive throughout the EU.
- It is funded by the EC and is structured on eight groups, covering all the key requirements of the EED.
- Its main objectives are to enhance information and experience sharing between Member States, to help their national procedures converge as soon as possible in the EED and complement the work of the EED Committee.



2. EU Energy Policy

The implemented energy policies can be classified into the next seven broad categories:

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- *Energy Efficiency & Savings*

2.3. Internal Energy Markets

- *Security of Energy Supply*
- *Environmental Protection & Climate Change*
- *Nuclear Energy*
- *Research & Development*



2. EU Energy Policy

2.3. Internal Energy Markets

- EU efforts to reform electricity and gas industries started in the middle of the 1990s.
- The aim to build a fully competitive internal market for gas and electricity was a principle embedded in the creation of the EU.
- Negotiations between the EU authorities, the Member States and the market stakeholders during the 1990s culminated in an *Electricity Directive* in 1996 and, in 1998, in a *Gas Directive*, that introduced a *first set of common rules* for the EU energy market.



2. EU Energy Policy

2.3. Internal Energy Markets

- The first market directives only included soft reform provisions. They did not provide much of the legislative framework necessary for comprehensive and targeted liberalisation, and had therefore led to uneven results.
- In 2003, the *second market directives* were adopted together with the *Regulation on cross-border exchanges* in electricity.
- Assessments showed lack of implementation in a large number of Member States. The provisions that are being implemented focus on the letter of the legislation and not on the spirit of creating a true internal market.

2. EU Energy Policy

2.3. Internal Energy Markets

- EC proposed a *third liberalisation package in 2007*.
- The proposals were mainly aimed at strengthening the requirements and provisions in the second market directive, and maintaining the vision for a truly competitive internal market.
- In 2009 a *third series of directives* for electricity and gas and *regulations* for establishing the Agency, cross-border exchanges in electricity and natural gas transmission networks were adopted.

2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 1. Designation of Independent Regulatory Authority

- All Member States must designate a single *national regulatory authority* at national level.
- Its duties is to oversee and monitor the whole electricity and gas market in order to facilitate their regular function and the rights and obligations of each one of the legal entities and undertakings involved in the markets.
- It must be independent and exercise its powers impartially and transparently, thus, legally distinct and functionally independent from any other public or private entity.

2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 2. Promotion of Regional Cooperation

- Member States and regulatory authorities must cooperate for the purpose of integrating their national markets at one and more regional levels.
- Regulatory authorities and Member States must promote and facilitate the cooperation of transmission system operators at a regional level, including on cross-border issues.



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 3. Unbundling of Transmission System Operators

- From 3 March of 2012 and thereafter, each undertaking which owns a (electricity/natural gas) transmission system acts as a TSO.
- The same person or persons are not to, directly or indirectly, exercise control over a TSO and at the same time to exercise control or any right over an undertaking performing any of the functions of generation or supply.
- 3 unbundling models determined: the Ownership Unbundled TSO (OU), the Independent System Operator (ISO) and the Independent Transmission Operator (ITO).



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 3. Unbundling of Transmission System Operators

- OU model: provides a strong legal and functional unbundling, separating totally a TSO from any undertaking performing any of the functions of generation or supply.
- ISO model: alternative to the OU model.

The setting up of a TSO that is independent from supply and generation interests should enable a VIU to maintain its ownership of network assets whilst ensuring effective legal unbundling.

2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 3. Unbundling of Transmission System Operators

- ITO is the second main model:
 - The main difference between the ISO and the ITO is the lack of the non-control obligation, which is a prerequisite in both the OU and the ISO models.
 - The main rule for the function of the ITO is that TSO must be equipped with all human, technical, physical and financial resources necessary for fulfilling their obligations, as well as carry out the activity of electricity/natural gas transmission.



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 4. Unbundling of Distribution System Operators

- When a DSO is a part of a VIU, *legal* and *functional unbundling* measures must be applied (the DSO must be independent at least in terms of its legal form and organization and decision making).
- It is not obligatory to separate the ownership of assets of the DSO from the VIU.
- The VIU must be independent (organization and decision-making) from the other activities not related to distribution.
- For DSOs serving <100.000 customers or small isolated systems, unbundling measures may not be applied.



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 5. Unbundling & Transparency of Accounts

- Electricity and natural gas undertakings have to comply with the rules of national law concerning the annual accounts of limited liability companies.
- They must keep separate accounts in their internal accounting for each of their transmission and distribution activities as well as for other electricity and gas activities not relating to transmission or distribution.
- The internal accounts must include a balance sheet and a profit and loss account for each activity.



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 6. Public Service Obligations

- Member States can impose on undertakings *Public Service Obligations (PSOs)*.
- PSOs belong to the universal services, which came as a consequence of the liberalization of the energy market.
- The main elements of the universal services are the obligation to connect, the quality and regularity of supply and prices (e.g. the establishment of last resort, the protection of remote customers, environmental protection).
- PSOs may be related to security of supply, environmental & climate protection, energy efficiency and energy from

RE



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 7. Third Party Access

- Member States must ensure the implementation of a system of *Third Party Access* to the transmission and distribution systems based on published tariffs, applicable to all eligible customers and applied objectively and without discrimination between system users.
- TSO or DSO can refuse access where it lacks the necessary capacity or where the access to the system would prevent them from carrying out the PSOs.
- Clearly specified reasons must be given for such refusal.



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 8. Dispatching & Balancing Criteria

- National regulatory authorities must determine the *criteria* on which the *dispatching of generating installations* and the *use of interconnectors* will be based.
- Dispatching priority must be given to generating installations using RES and CHP.
- For reasons of security of supply, priority can be given to the dispatch of installations using indigenous primary energy fuel sources.
- TSOs must adopt rules for balancing the electricity system and charging system users for energy imbalance.



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 9. Subsidies

- Traditionally, the most important subsidies have been to support coal production, or its gradual phase-out.
- Subsidies have become available to RE as well.
- For energy security and diversification of supply, Member States are also allowed to set PSOs, supporting the use of a particular fuel financially.
- The design of subsidies varies by Member States.
- EC aims to persuade Member States to grant less state aid in general and to redirect spending to horizontal purposes of common interest (e.g. environmental protection).

2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 10. Monitoring & Reporting

- EC must monitor and review the application of the electricity and gas market directives and submit an overall progress report to the EP and the Council on an annual basis (from August 2004 onwards).
- Every two years, the progress report must also include an analysis of the different measures taken in the Member States to meet PSOs, together with an examination of the effectiveness of those measures.
- Report may also include recommendations (e.g. measures intended to prevent market foreclosure) where appropriate.



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 11. Supporting Tools

The Agency for the Cooperation of Energy Regulators:

- Established in 2009
- Its purpose is to assist the regulatory authorities exercising their tasks and, where necessary, to coordinate their action.
- ACER can issue opinions and recommendations to TSOs, regulatory authorities, the EP and the Council or the EC
- It can take individual decisions in specific cases and submit to the EC non-binding framework guidelines on conditions for access in electricity and NG transmission networks.



2. EU Energy Policy

2.3. Internal Energy Markets

I.P.: 11. Supporting Tools

The European Network of Transmission System Operators for electricity and gas:

- Established in 2009
- Its purpose is the cooperation of the TSOs at Community level in order to promote the completion and functioning of the internal market in electricity/gas and cross-border trade.
- ENTSO's tasks will be monitored by ACER and then reported to the Commission.



2. EU Energy Policy

The implemented energy policies can be classified into the next seven broad categories:

- *Renewable Energy*
- *Energy Efficiency & Savings*
- *Internal Energy Markets*

2.4. Security of Energy Supply

- *Environmental Protection & Climate Change*
- *Nuclear Energy*
- *Research & Development*



2. EU Energy Policy

2.4. Security of Energy Supply

- It is the main pillar of a common energy policy since the very beginning of the European integration.
- EU is dependent to varying degrees on energy imports of oil, gas, coal and electricity. Some individual Member States may be self sufficient in one of these energy sources, or overall net exporters.
- The first incident which exposed the vulnerability of importing countries was the Suez Crisis in 1956-57.
- The first *Stockholding Directive* was adopted (emergency stocks of oil and petroleum products corresponding to 65 days of consumption).



2. EU Energy Policy

2.4. Security of Energy Supply

- A second wave of initiatives took place in reaction to the price and supply shocks provoked by the third (1967) and fourth Arab-Israeli conflicts (1973).
- The *second stockholding directive* was adopted, raising the emergency oil and petroleum stock requirement to 90 days of consumption.
- In 1977 the Community developed its own emergency system by adopting *two decisions* on the export of crude oil and petroleum products between Member States and to cut back consumption of primary energy resources in the case of supply difficulties.



2. EU Energy Policy

2.4. Security of Energy Supply

- Recent events (e.g. the rapid rise of fossil fuel prices since 2004, the interruption of gas supplies from Russia on January 2006) turned the energy security policy into a major challenge for the EU.
- Currently, in response to the political crisis in Ukraine, the EC released an EU *energy security strategy* on 28 May 2014. Energy security stress tests will be launched in order to provide information for strengthening existing European emergency and solidarity mechanisms and actions to address medium and long-term security of supply challenges.

2. EU Energy Policy

2.4. Security of Energy Supply

I.P.: 1. Emergency Oil Stocks

- Legislation on emergency oil stocks is dating back to 1968.
- The current framework entered into force in 2012.
- Member States are obliged to maintain total oil stocks (crude oil and/or petroleum products) of 90 days of average daily net imports or 61 days of average daily inland consumption, whichever of the two quantities is greater.
- Biofuels and additives are taken into account only when they have been blended with the petroleum products or when they are stored on the territory of the Member State and are to be blended with petroleum products.



2. EU Energy Policy

2.4. Security of Energy Supply

I.P.: 2. National Emergency Plans

- In the event of a major supply disruption Member States are to have *procedures* in place and *contingency plans* to be implemented.
- These procedures will enable competent authorities to release quickly, effectively and transparently some or all of their emergency stocks.
- In case of a local crisis or fulfilling its international obligations, a Member State can release emergency stock. EC must be informed immediately of the amount released in order to assess the impact of that release.



2. EU Energy Policy

2.4. Security of Energy Supply

I.P.: 3. Central Stockholding Entities

- Introduced with the last framework on emergency stocks.
- A CSE is a body or service that maintains the oil stocks (including acquisition and management of these stocks).
- Each Member State cannot have more than one CSE, established at any location within the Community.

2. EU Energy Policy

2.4. Security of Energy Supply

1.P.:4. Explicit Provisions on Security of Gas & Electricity Supply

- Provisions on security of gas supply were established in 2004 and updated in 2010.
- Provisions on security of electricity supply were established in 2005.
- A list of market and non-market based security measures is provided (e.g. infrastructure standards with reverse flows established in all cross border interconnections between EU countries), upon which, Member States must establish preventive action plans and emergency plans.



2. EU Energy Policy

2.4. Security of Energy Supply

I.P.: 5. Enforcing Infrastructure – The TEN-E Program

- *TEN-E program* aims at increasing the interconnections in both electricity and gas sector and enforce their infrastructure.
- In the electricity sector, the primary aim is to establish additional internal interconnections to support trade of electricity within the EU, equivalent to cross-border transmission capacity corresponding to at least 10% of installed generating capacity.
- In the gas sector, is to provide additional routes and access to more sources of gas, to increase diversification.



2. EU Energy Policy

2.4. Security of Energy Supply

I.P.: 6. External relations

- Cooperation with supplier and transit countries takes place:
 - within *multilateral* frameworks such as the World Trade Organization and the Energy Charter Treaty,
 - through *regional initiatives* such as the Energy Community Treaty and
 - in the *bilateral* context through Partnership & Co-operation Agreements and Free Trade Agreements, which provide legally binding rules for the energy sector.
- The EU's key energy partners are Russia, Norway, the US, India, China and OPEC.



2. EU Energy Policy

2.4. Security of Energy Supply

I.P.: 6. External relations

- Russia is the main external supplier of the EU.
- In the field of the *European Neighbourhood Policy*, Memoranda of Understanding have been concluded with producer and major transit countries such as Kazakhstan, Turkmenistan, Azerbaijan, and Ukraine, and through joint declarations with Morocco and Jordan.
- Regional cooperation initiatives such as the *Black Sea Synergy*, the *Eastern Partnership*, the *Union for the Mediterranean* and the *Central Asia Strategy* contain energy components concerning security of supply.



2. EU Energy Policy

2.4. Security of Energy Supply

I.P.: 7. Supporting Tools

Coordination Groups:

- A *Gas Coordination Group* is established to facilitate the coordination of measures concerning security of gas supply. It is made up of representatives of the Member States.
- Respectively, the *Coordination Group for oil and petroleum products* contributes to analyzing the situation within the Community with regard to security of supply for oil and petroleum products.
- The main bodies to be consulted by the EC in the context of the establishment of emergency & preventive action plans.



2. EU Energy Policy

2.4. Security of Energy Supply

I.P.: 7. Supporting Tools

The *European Energy Program for Recovery*:

- Established in July 2009 in response to the 2008 energy and financial crisis.
- It provides financial assistance to the energy sector, especially to the investments concerning the security of energy supply.
- It is considered as the key element of the *European Economic Recovery Plan*.
- So far, 59 projects have been co-financed: 44 on gas and electricity infrastructure, 9 on offshore wind and 6 on CCS.



2. EU Energy Policy

2.4. Security of Energy Supply

I.P.: 7. Supporting Tools

The *Europe 2020 Project Bond Initiative*:

- It is a recent policy decision which aims to increase debt financing availability for large scale infrastructure projects in energy (TEN-E projects can benefit from this initiative).
- It is an Initiative between EU and the EIB that intends to complement the existing sources of project financing through bank loans or public sector grant programs.
- Its pilot phase started on August 2012 and the first transaction successfully took place in July 2013 in Spain for the Castor underground gas storage project.



2. EU Energy Policy

The implemented energy policies can be classified into the next seven broad categories:

- *Renewable Energy*
- *Energy Efficiency & Savings*
- *Internal Energy Markets*
- *Security of Energy Supply*

2.5. Environmental Protection & Climate Change

- *Nuclear Energy*
- *Research & Development*



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

- Climate change was first recognized as an issue to be addressed by EC environmental policy in the EC's Fourth *Environmental Action Program (EAP)* covering the period 1987-1992.
- By the time the Community adopted its Fifth EAP for the period 1993-2000, climate change was identified as one of the seven priority areas for the EC's environmental policy.
- In 2002 the Kyoto Protocol was ratified. It was committed to an 8% reduction of GHG emissions during the commitment period 2008-2012, compared to base-year emissions, which vary between Member States.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

- The 8% target was distributed among the then EU-15 through a *burden-sharing agreement* in 2002. The latest EU-12 were not subject to the agreement but instead had to fulfil their targets as signatories of the Protocol.
- For the post-Kyoto regime, the EU would again aim to have a single target assigned to it, and redistribute it internally.
- Until 2005, the EC pursued climate change policy solely as a cooperative exercise within the Kyoto framework.

2. EU Energy Policy

2.5. Environmental Protection & Climate Change

- In 2007 the EU agreed to pursue unilateral GHG emissions reductions of 20% below the 1990 levels by 2020, while offering to step these up to 30% in the case of a new global agreement being found.
- Air pollution was also one of the early areas of the EC's energy and environment policy. Pollution control legislation is affecting transport and power generation in particular.
- Most affected are coal-fired power stations, in particular because of the legislation restricting SO₂ emissions. In the area of transport, NO_x and particles are being controlled, with implications for diesel vehicles.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 1. EU Emissions Trading System

- It is the first and biggest international scheme for the trading of GHG emission allowances.
- It operates in 31 countries (EU-28 plus Iceland, Norway and Liechtenstein) and covers approximately 45% of the EU's CO₂ emissions from about 11.500 installations (power stations, combustion plants, oil refineries, iron and steel works, factories making cement, glass, lime, bricks, ceramics, pulp, paper and board).
- Nitrous oxide (N₂O) emissions from certain processes and Perfluorocarbons (PFCs) from aluminium production are also covered.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 1. EU Emissions Trading System

- It operates through the allocation and trading of GHG emission allowances throughout the EU.
- One allowance represents one tone of CO₂ equivalent. A “cap” is set on the total amount of emissions allowed from the installations covered by the ETS.
- The allowances are distributed to the installations in the system and operators of all these installations are then free to trade in allowances.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 1. EU Emissions Trading System

- In the short term ETS works as a statistical transfer mechanism between the power stations and the industrial plants.
- Year by year, the number of allowances is reduced so that total emissions fall, with the aim to be *21% lower in 2020* than in 2005 levels (43% in 2030 according to the 2030 policy framework).

2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 1. EU Emissions Trading System

- *Phase 1* (2005–2007) was a three-year pilot period of ‘learning by doing’ in order to prepare for the next phase of effective function.
- The system was covering CO₂ emissions only from power generators and energy-intensive industrial sectors.
- The caps were set on the basis of best guesses, since reliable emissions data were not available.
- Almost all allowances were given free of charge.
- In practice the number of allowances over exceeded demand and thus their trading price fell to zero.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 1. EU Emissions Trading System

- In *Phase 2* (2008-2012) changes were introduced.
- The system was also covering nitrous oxide emissions (only from the production of nitric acid).
- The volume of allowances was reduced by 6.5% compared to the 2005 level with 90% of them given away for free.
- Economic crisis (began in 2008), over depressed the demand for allowances, leading to a large and growing *surplus of unused allowances and credits* which weighed heavily on the carbon price throughout the second phase.
- Aviation sector joined in, in January 2012.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 1. EU Emissions Trading System

- In *Phase 3* (2013-2020) significant changes took place.
- More sectors and gases are included.
- A different cap system has been applied and auctioning is set as the default method for allocating allowances. The rest of allowances, given away for free, meet specific rules.
- The 2030 framework proposes to establish a *market stability reserve* at the beginning of the *Phase 4* in 2021 in order to address the surplus of emission allowances and improve the system's resilience to major shocks by adjusting the supply of allowances to be auctioned.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 2. A Single EU-Wide Cap

- In the first two phases of the ETS, caps were set through *National Allocation Plans (NAPs)* submitted by Member States.
- In the third phase, a *single EU-wide cap system* is applied. The 2013 cap for the 31 countries of the ETS was set at 2,084,301,856 allowances. Each year the cap will be lowered by 1.74% in order to achieve the 21% emissions reduction in 2020.
- The aviation sector cap remains the same in each year of the 2013-2020 trading period.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 3. National Targets for Non-ETS Emissions

- About 60% of the EU's total emissions come from sectors outside the EU ETS (housing, agriculture, transport, waste management).
- Binding annual GHG emission targets have been established for Member States in order to cover them.
- Targets concern the period 2013-2020 and they are expressed as percentage changes from 2005 levels.

2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 3. National Targets for Non-ETS Emissions

- Targets are *differentiated according to Member States' relative wealth.*
- They range from a 20% emissions reduction by the richest Member States to a 20% increase by the least wealthy.
- The objective is to deliver a *reduction of around 10%* in total EU emissions, compared to 2005 level and together with a 21% cut in emissions covered by the EU ETS, will accomplish the overall reduction goal of 20% in 2020.
- The 10% target becomes 30% according to the 2030 policy framework.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 4. Emission Limit Values for Large Combustion Plants

- LCPs whose thermal input is equal to or greater than 50 MW, irrespective of the type of fuel used, have to comply with the emission limit values for SO₂, NO_x and dust.
- Existing LCPs have different options of commitment to the emission limit values according to when they got permit:
e.g. LCPs licensed before 1st of July 1987 can either “opt in” by committing to the emission limit values or by participating to a transitional national plan, or “opt out” by committing to operate for a maximum of 20,000 hours from 1 January 2008 to 31 December 2015 and then close.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 5. Restrictions on Industrial Activities

- Specific measures for industrial activities are designed to prevent or reduce emissions in the air, water and land, including measures concerning waste, aiming to achieve a high level of protection of the environment.
- In order to receive a permit, an industrial or agricultural installation must comply with certain basic obligations.
- There are special provisions for waste incineration and co-incineration plants, installations and activities using organic solvents and installations producing titanium dioxide.

2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: **6. Transport Labelling System**

- Information on *fuel consumption* and *CO₂ emissions*.
- The labels include mandatory data on CO₂ emissions (g/km) and fuel consumption (l/100km and/or km/l).
- Tax incentives and relative comparison methods on the labels are preferable in order to help shifting consumer decisions to more environmental friendly cars.
- In 2012 the labelling system was also applied on tyres. The label provides information on fuel efficiency, wet grip and external rolling noise through pictograms.

2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 7. Vehicle Emission Standards

- European emission standards define the acceptable limits for exhaust emissions of new vehicles sold in EU Member States.
- Currently, emissions of nitrogen oxides (NO_x), total hydrocarbon (THC), non-methane hydrocarbons (NMHC), carbon monoxide (CO) and particulate matter (PM) are regulated for most vehicle types (including cars, lorries, trains, tractors and similar machinery, barges, but excluding seagoing ships and aeroplanes).
- For each vehicle type, different standards apply.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 7. Vehicle Emission Standards

- New models introduced must meet current or planned standards, but minor lifecycle model revisions may continue to be offered with pre-compliant engines.
- A voluntary agreement between the EC and European Automobile Manufacturers Association (ACEA) was signed in 1998.
- The ACEA agreement sought to achieve an average of 140 g/km of CO₂ by 2008 for new passenger vehicles sold by the association's cars in Europe with an ultimate EU target of 130 g/km for all new passenger cars by 2015.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: **8. Fuel Quality**

- Since 1998 technical specifications on health and environmental grounds for fuels and a target for the reduction of life cycle GHG emissions have been adopted.
- Fuel suppliers are responsible for monitoring and reporting life cycle greenhouse gas emissions per unit of energy from fuel. From 1/1/2011 and every year on they must report to the authority designated by the Member State on the GHG intensity of fuel and energy supplied within each State.
- Environmental specifications for market fuels and rules for calculating the GHG emissions from biofuels are provided.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: **9. Carbon Capture & Storage**

- In 2009 a legal framework for the environmentally safe *geological storage of CO₂* was established.
- *The CCS Directive* provides extensive requirements for the selection of storage sites and storage permits.
- It contains provisions on closure and post-closure obligations, and sets out criteria for the transfer of responsibility from the operator to the Member State.
- EC has taken several initiatives to ensure the coherent implementation of the CCS Directive (e.g. the *Information Exchange Group*).



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 10. Supporting Tools

The *European Climate Change Program*:

- Launched in 2000 and it is considered as the first comprehensive policy on climate mitigation.
- Its goal is to identify and develop all the necessary elements of an EU strategy to implement the Kyoto Protocol.
- In its first phase (2000-2004) 11 working groups covering different areas examined an extensive range of policy sectors and instruments.
- The second phase was launched in October 2005 with new working groups established.



2. EU Energy Policy

2.5. Environmental Protection & Climate Change

I.P.: 10. Supporting Tools

The *European Environment Agency*:

- Established in 1990 and came into force in 1993.
- Its purpose is to provide sound and independent information on the environment, being the major information source for those involved in developing, adopting, implementing and evaluating environmental policy.
- EEA helps the Community to make informed decisions on environmental issues towards sustainable development and coordinates the European environment information and observation network (Eionet).



2. EU Energy Policy

The implemented energy policies can be classified into the next seven broad categories:

- *Renewable Energy*
- *Energy Efficiency & Savings*
- *Internal Energy Markets*
- *Security of Energy Supply*
- *Environmental Protection & Climate Change*

2.6. Nuclear Energy

- *Research & Development*



2. EU Energy Policy

2.6. Nuclear Energy

- Differences in national nuclear energy policies have prevented the EU from developing a common nuclear energy policy.
- Within the EU there are widely differing attitudes to the acceptability of nuclear power and it is up to each Member State to choose to include it as part of its energy mix. Similarly, *nuclear regulation is a national responsibility*.
- Due to the high costs of a nuclear power plant and the controversial nature of nuclear waste, it appears unlikely that Europe will see a resurgence of new nuclear reactors in States where nuclear power does not already play a role.



2. EU Energy Policy

2.6. Nuclear Energy

- Nuclear power generation was gaining favour within Europe due to the fact that it enhances EU efforts to reduce GHG emissions and clean air initiatives:
 - it is a low-emission technology
 - no direct emissions of CO₂, NO_x, SO_x, ozone and particulate matter.
- It also enhances EU security of energy supply:
 - uranium is widely distributed
 - about 50% of global mine production comes from reliable, politically stable trading partners (Canada, Australia, US).



2. EU Energy Policy

2.6. Nuclear Energy

- The accident in Fukushima in March 2011 restarted the debate on the future of this controversial energy source with several countries immediately called into question their nuclear programs.
- Different responses emerged quickly and heterogeneity of national situations in EU was demonstrated, e.g.:
 - Germany has permanently shut down eight of its reactors and plans to close the rest nine by 2022 at latest,
 - Switzerland and Spain have banned the construction of new reactors,
 - Poland restated its ambition to build a reactor etc.



2. EU Energy Policy

2.6. Nuclear Energy

EU nuclear policy aims to:

- Establish a European framework for nuclear safety through the obligation of Member States to adopt a legislative and regulatory framework which ensures the existence of national safety measures.
(system of licenses, inspecting and assessing nuclear facilities, waste management and storage, crisis management mechanism, damage reparation guarantees in case of an accident)
- Greater international cooperation.
- Contribute financially to the development of nuclear energy and the promotion of nuclear safety.

2. EU Energy Policy

2.6. Nuclear Energy

Currently:

- Safety remains at the top of the EU's nuclear energy policy agenda. Member States will have to continue implementing the stress tests, following the Fukushima accident and the EC is expected to publish a report on their implementation.
- A proposal for a revised *Safety Directive* was published in June 2013 and is expected to be adopted by the Council.
- Other developments are in the pipeline like the publication of a proposal on nuclear insurance and liability, the environmental and energy state aid guidelines and the EU 2030 climate and energy framework.



2. EU Energy Policy

The implemented energy policies can be classified into the next seven broad categories:

- *Renewable Energy*
- *Energy Efficiency & Savings*
- *Internal Energy Markets*
- *Security of Energy Supply*
- *Environmental Protection & Climate Change*
- *Nuclear Energy*

2.7. Research & Development



2. EU Energy Policy

2.7. Research & Development

- It is considered as a top priority policy sector and a key element in the Commission's low-carbon strategy, with significant contribution towards the energy efficiency and RES penetration.
- Since 1984, the main instrument for the implementation of European energy research policy and for the provision of funding R&D activities is the multi-annual *Framework Program for Research and Technology Development (FP)*. It covers almost all aspects of European research and is the EU's main financial and legal instrument to the European R&D implementation.



2. EU Energy Policy

2.7. Research & Development

- An important milestone for the energy R&D in the EU was the creation of the *European Research Area (ERA)*.
- It was proposed by the EC on January 2000 and shortly afterwards (at the March 2000 Lisbon European Council) it was endorsed by the EU.
- It is composed of all R&D activities, programs and policies in Europe which involve a transnational perspective and its aim is to become the “*common internal market*” of the EU R&D sector.
- The development of ERA is crucial in order to achieve a high multinational cooperation.



2. EU Energy Policy

2.7. Research & Development

I.P.: 1. The Framework Program

- The FP is the main instrument for the implementation of European energy research policy.
- The *Seventh Framework Program (FP7)* was running from 2007 to 2013. Under its structure, energy research is split into nuclear, with the program running from 2007 to 2011, and non-nuclear energy research, from 2007 to 2013.
- On December 2013 the *Eighth Framework Program* was launched under the name *Horizon 2020* . It runs from 2014 to 2020 and is the biggest EU R&D program ever.



2. EU Energy Policy

2.7. Research & Development

I.P.: 1. The Framework Program

- Horizon 2020 Energy research consist of:
 - the non-nuclear energy program "Secure, clean and efficient energy" which focuses on *Energy Efficiency*, *Competitive Low Carbon Energy* and *Smart Cities & Communities* areas
 - and a separate but complementary program for nuclear energy research activities (under the Euratom Treaty).
- In terms of budget, Horizon 2020 will dedicate €5.931 billion for non-nuclear energy research for the period 2014-20 and €1.603 billion for nuclear research for the period 2014-18.



2. EU Energy Policy

2.7. Research & Development

I.P.: 2. Strategic Energy Technology Plan

- The European Council agreed on an *Energy Policy for Europe* in March 2007, backing the Commission's proposals on energy and climate change, and underlining the need to strengthen energy research on low-carbon technologies.
- Because of the timing of the start of FP7 it had not been possible to reflect the need to strengthen energy research in RE, low-carbon and energy efficient technologies, the Commission adopted the *Strategic Energy Technology Plan (SET Plan)* in November 2007.



2. EU Energy Policy

2.7. Research & Development

I.P.: 2. Strategic Energy Technology Plan

- Its main goal is to accelerate the development and implementation of low-carbon technologies, and strengthen industrial participation in energy R&D through the European industrial initiatives.
- SET Plan includes the initiatives of wind, solar, bioenergy, CCS, European electricity grid, fuel cells & hydrogen, smart cities and sustainable nuclear fission.
- Its time horizon includes both a 2020 perspective and a long-term vision to 2050.



2. EU Energy Policy

2.7. Research & Development

I.P.: 2. Strategic Energy Technology Plan

The SET-Plan also includes the next supporting tools:

- The *SET-Plan Steering Group (SET-Group)*, which coordinates the implementation of the SET-Plan.
- The *European Energy Research Alliance (EERA)*, which aims to accelerate the development of new energy technologies with the help of Joint Research Programs.
- The *SET-Plan Information System (SETIS)*, which supports the implementation and strategic planning of the SET-Plan.



2. EU Energy Policy

2.7. Research & Development

I.P.: 3. Research Fund for Coal & Steel

- It was created when the ECSC Treaty expired in July 2002 and entered into force in 2008.
- It is complementary to and managed outside the FP.
- It supports research projects in the areas of coal and steel, financed by the interests accrued each year by the assets of the ECSC, about €55m/year.
- As the world relies and will rely on steel, more sustainable and clean production techniques must be developed and since coal remains one of the main energy sources, clean coal technologies are to be developed.



2. EU Energy Policy

2.7. Research & Development

I.P.: 4. Supporting Tools

The *European Technology Platforms*:

- Created by the European Council, in March 2003, for strengthening the European research and innovation area.
- ETPs are fora which bring together industry-led stakeholders in order to define medium to long-term R&D objectives on a number of technological areas.
- ETPs help the stakeholders establish long-term Strategic Research Agendas and contribute directly to the FP work plans, ensuring that EU-funded R&D is relevant for users.



2. EU Energy Policy

2.7. Research & Development

I.P.: 4. Supporting Tools

The *Joint Technology Initiatives*:

- They have been developed by some ETPs.
- The concept of JTIs was introduced in FP7 as a way of creating public-private partnerships in European R&D.
- They are a means to implement the SRAs of a limited number of ETPs of which the scale and scope of the objectives is such that cannot be supported by the regular instruments of the FP. To help identify such cases identification criteria have been developed by the EC.



Conclusions

- The breadth and complexity of energy-related issues are increasing in a globalised world with economic and environmental constraints.
- EU is called to face an increasing dependence on fossil fuels, growing energy imports and rising energy costs, which are making European societies and economies vulnerable.
- In order to deal with them, progress towards a sustainable energy development seems the only way.
- The EC has risen by proposing a range of policies that aim to address these challenges and transform them into opportunities for global economic and technological leadership.



Conclusions

- From 2005 onwards, the EC is developing and driving a strong energy policy at EU level.
- It recognizes the increasingly pressing challenges of growing imports of energy, while addressing the environmental impact of energy production and use.
- The development of this strategy is built upon three intrinsically linked elements:
 - sustainable low-carbon development,
 - actions to achieve the goal of a single energy market in order to lower energy costs and promote competitiveness,
 - energy security and external relations.



Conclusions

- While the overall policy development is commendable, there is room for improvement in the policy making of the EC.
- The combination of energy policy with climate policy objectives has led to a suite of measures (notably the ‘20/20/20 energy and climate package’) that has been criticized for not passing the cost benefit test; and the contradiction between climate policies and internal energy market initiatives may endanger the competitiveness of the European economy.
- Therefore, the EU energy policy should be reassessed in order to reconcile the basic priorities mentioned above, taking account of recent global events (e.g. financial crisis).



Thank You for Your Attention

