Drivers and regulatory framework to roll out the Smart Grid deployment in Europe

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EUROPEAN
COMMISSION

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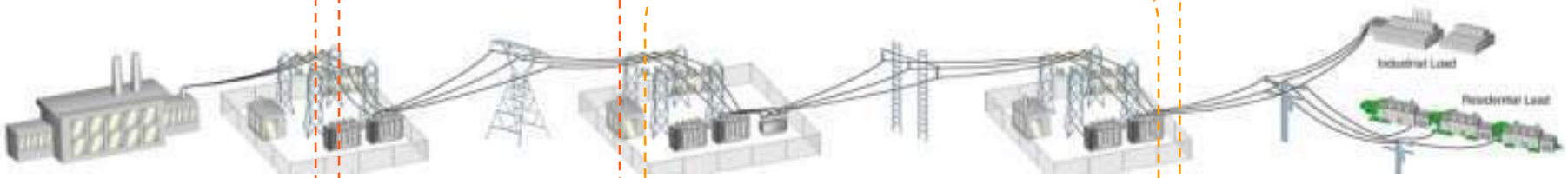
- Third Energy Package contribution
- Smart Grids: challenges and actors
- What European Commission is doing?
- Final remarks and next steps

The electricity grid



•Generation

- Net Generation Capacity +650 GW
- Peak Demand ~450 GW
- RES and DER

•Transmission

- 30-40 TSOs
- HEV-HV lines 230 000 km
- 5 synchronous areas

•Distribution

- More than 3500 DSOs
- MV/LV lines 1 500 000 km
- Network losses ~7 %

•Customers

- Citizens served +500 millions
- Consumption +3000 TWh/year

The policy drivers

- The low-carbon and renewable **generation targets,** coupled with **system efficiency, reliability and internal market** development objectives, require **extensive changes to the power grids.**

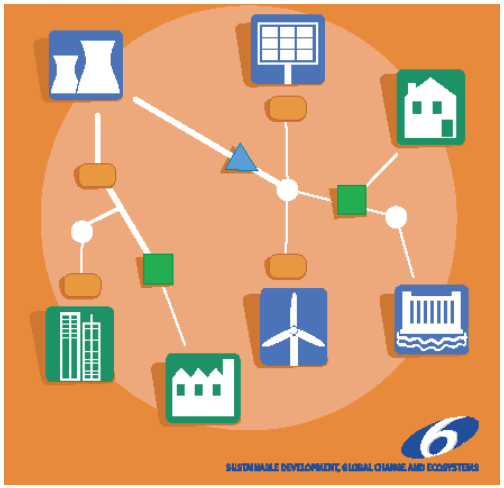
- The future grids must fully exploiting the use of **both large centralised generators and smaller distributed power sources throughout Europe.**

"Smart Grids"

- "Smart" coexistence of central and decentralised generation with lower carbon generation and efficient demand/response

- Load trading and cost optimisation by means of dialog towards time-variable tariffs and variable incentives depending on present load

- Customer integration based on new interfaces, bi-directional communication and large flow of information

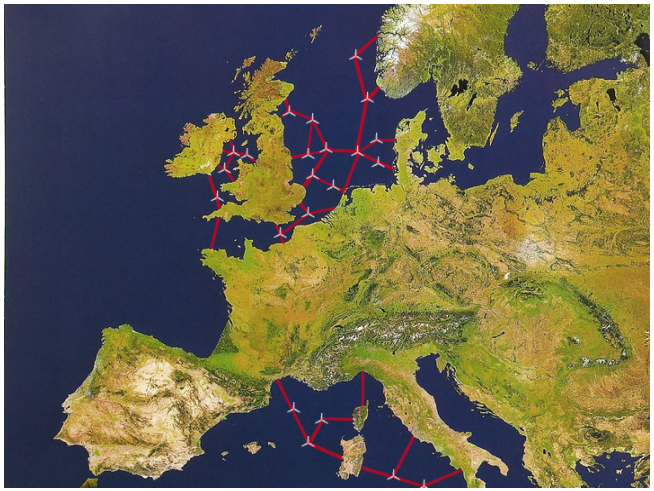


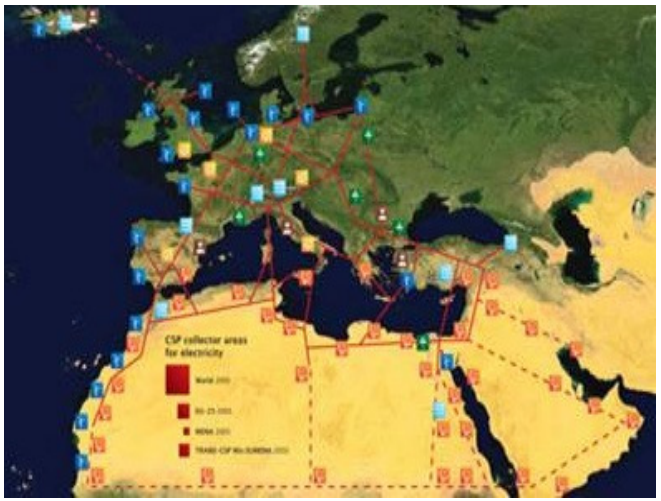
European Technology Platform and Smart Grid Working Groups since 2004

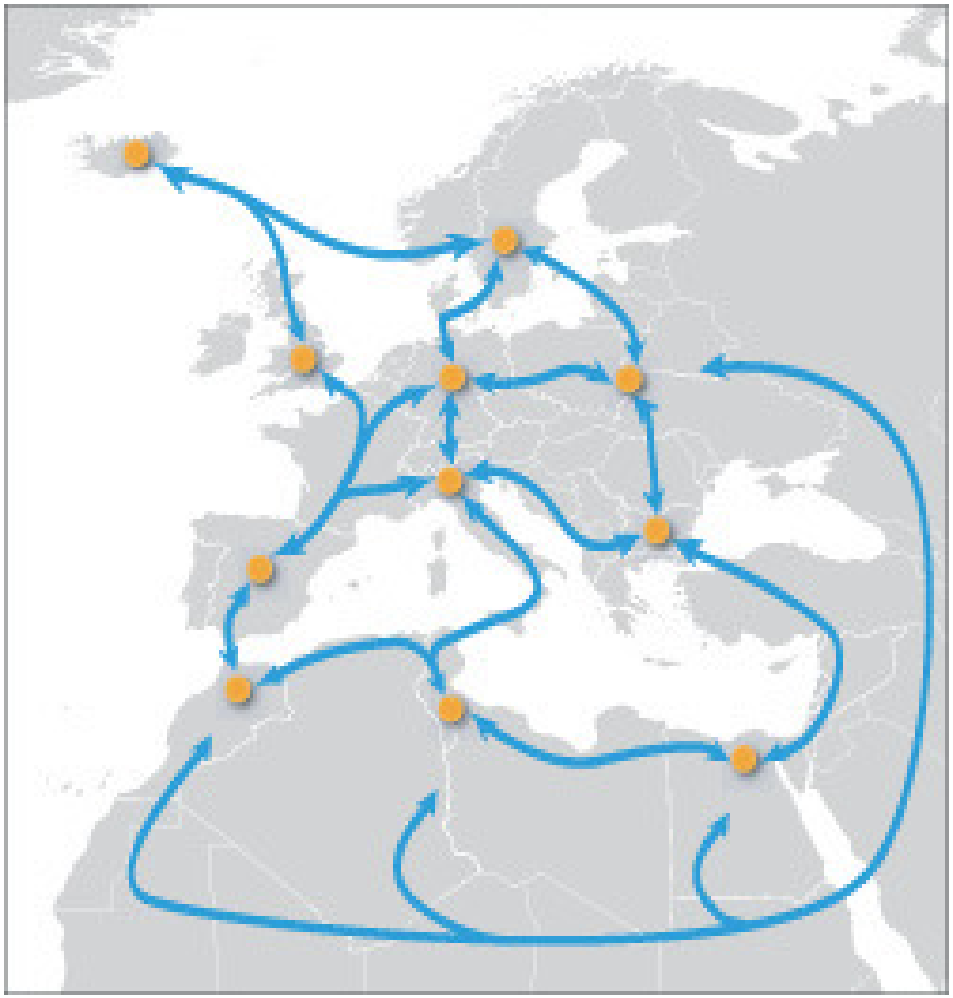
http://www.smartgrids.eu

http://ec.europa.eu/ictforsg

”Supergrids”: Smart Grids towards cost-efficiency and effectiveness for all grid users







Sources: 3E/Greenpeace, TradeWind & Office of Metropolitan Architects (OMA), Imera, Mainstream Renewable Power, Adamowitsch, Supersmartgrid.net, Desertec

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Third Energy Package – new regulatory framework (OJ L 211 14 August 2009)

http://ec.europa.eu/energy/gas_electricity/third_legislative_package_en.htm

- **Stronger powers for national regulators**
  - Monitoring, investigations, enforcement
- **Regulatory Agency at EU level (ACER)**
  - Co-ordination of national regulators, Advice to EC
- **Effective unbundling of networks**
  - Ownership Unbundling, ISO, ITO
- **Cooperation of network operators (ENTSO)**
  - Development of harmonised network rules
- **Retail Market measures**
  - New roles on consumer protection and monitoring

Take long-term objectives…

Regulators and Network Operators (Art 12, 25 and 35)

- **Promoting a competitive, secure and environmentally sustainable internal electricity market within the Community**

- **Ensuring appropriate conditions for the secure, effective and reliable operation of electricity networks, taking into account long-term objectives**

- **Ensuring that system operators and system users are granted appropriate incentives, in both the short and the long term, to increase efficiencies in system performance and foster market integration;**

Statements on Smart Grids

Directive 2009/72/EC of 13 July 2009

- **Recital 27**

Member States should encourage the modernisation of distribution networks, such as through the introduction of smart grids, which should be built in a way that encourages decentralised generation and energy efficiency.

- **Article 3, 11**

In order to promote energy efficiency, Member States, or where a Member State has so provided, the regulatory authority shall strongly recommend that electricity undertakings optimise the use of electricity, for example by providing energy management services, developing innovative pricing formulas or introducing intelligent metering systems or smart grids, where appropriate.

- **Annex I**: Measures on Consumer Protection and preventions for the smart meters assessment by 2012 and roll-out by 2020.

Rollout of Smart Metering – Annex 1 of the Directives

- Strong support from the European Parliament
- Declaration by the European Commission to help with interpretation
- Assessment before 3rd September 2012 of long term costs and benefits
- Those positively assessed to be installed within 10 years…
- Otherwise: 80% by 2020.
- First step towards supporting user-related features

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Challenges and actors

- Why its **large-scale deployment** has not yet happened?. Some reasons:
  - Limited pilot experiences so far
  - Limited statistical significance of the quantification of benefits achieved in these experiences
  - Existing uncertainties regarding the global investments needed, the new market models and the technology needed
- **Key challenges** for the Smart Grid deployment are
  - Largely of **regulatory nature**
  - Appropriate **demonstration projects**
  - Coordination and dissemination of **lessons learned**

Challenges and actors/cont.

- Network owners and operators are in a position to **initiate the transition towards Smart Grids** and will be responsible for most of the investments.
- This requires the **support of legislators and regulators** to provide the framework for incentives, criteria and obligations for **"smart" investments**.
- **European-scale Public-private partnerships** could provide an important role take the first steps.
- The **3rd Energy Package** provides the appropriate environment for the implementation of Smart Grids across Europe and its provisions support it to a large extent by 2020.

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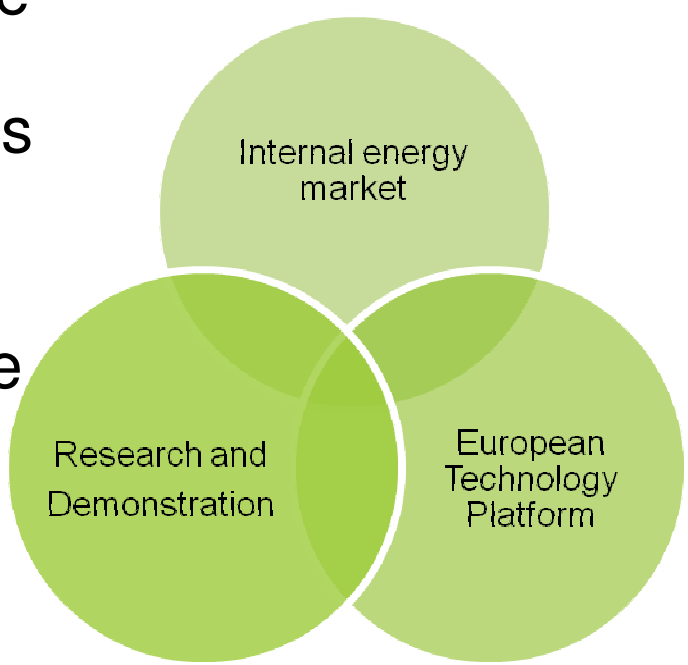
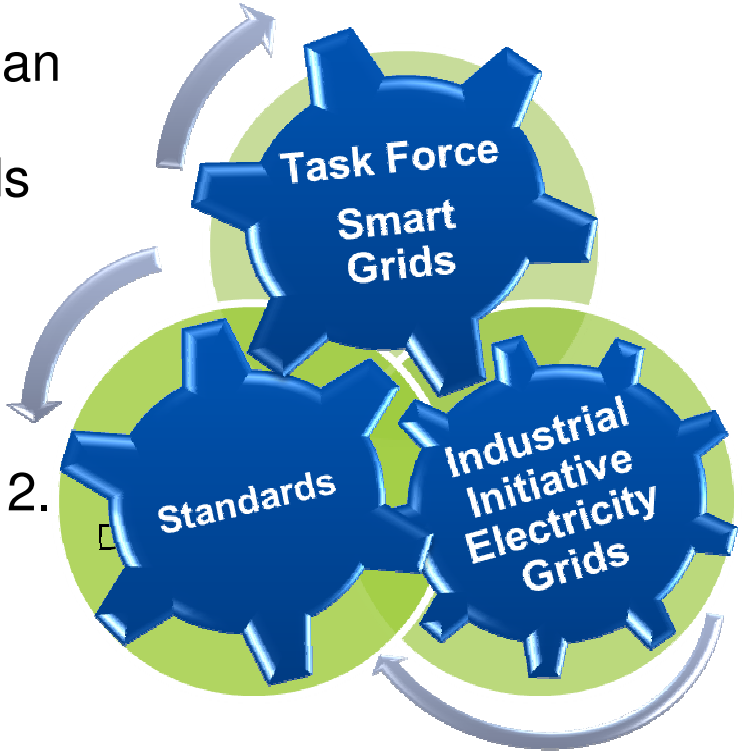
What the European Commission is doing?

- The implementation of more active transmission and distribution systems in the form of Smart Grids is central to the development of **the internal market for energy**
- **Research and Pilots Actions** are growing since 2000 under European Union's Framework Programmes for R&D and CIP.
- European **Technology Platform Smart Grids**, is supported by the European Commission since 2004.



What the European Commission is doing? - cont.

- **Task Force** to advice the Commission on policy and regulatory directions at European level and to coordinate the first steps towards the implementation of Smart Grids under the provision of the Third Energy Package. From end 2009 to middle 2011.
- A mandate for **European Standards** to enabling interoperability of utility smart-meters has been launched for 2009 – 2012.
- **European Industrial Initiative on Electricity Grids** under the SET Plan for the deployment of half of the EU network operating on the 'smart grid' principle by 2020.



Why the Task Force?

- Present EU policies require Member States to implement changes to the grids. Smart Grid solutions embrace the changing structure of generation, the market and the use of electricity
- The implementation of more active transmission and distribution systems in the form of Smart Grids is central to the deployment of the internal market for energy.
- This evolution is a complex subject and requires a coordinated approach addressing various issues and all the actors

Why EU level?

- The Third Package's provisions for rollout 80% of Smart Meters in Europe by 2020 represent an innovative regulatory framework, unique worldwide, towards the enabling involvement and active participation of all grid users.

- Beyond this first step, there is a need to **develop the European policy and regulatory** directions to drive forward the implementation of Smart Grids.

The EU added value

- **The Third Package's provisions** to encourage the long term modernisation of the grids across Europe are to be transposed by Member States.

- **Coordination of initial efforts at European level** to exploit synergies and consistency among regulatory authorities, regulated companies, end users and technology providers would help.

The Mission of the Task Force

Advice the Commission on policy and regulatory directions at European level and to coordinate the first steps towards the implementation of Smart Grids under the provision of the Third Energy Package.

Making it happen - Specific objectives and deliverables

1. Produce a **common vision** in conjunction with institutional actors and key stakeholders for the implementation of Smart Grids.

2. Identify the **strategic decisions and regulatory recommendations** for EU-wide implementation of Smart Grids: policy, functionalities, scenarios and criteria for funding Smart Grids deployment though regulatory means.

3. Produce a **strategic Roadmap** for the implementation of Smart Grids and Smart Meters into the European internal market.

Main Milestones

November 2009

- Agree and adopt the MISSION statements
- Reach consensus on structure and composition of possible Ad-hoc Expert Working Group/s

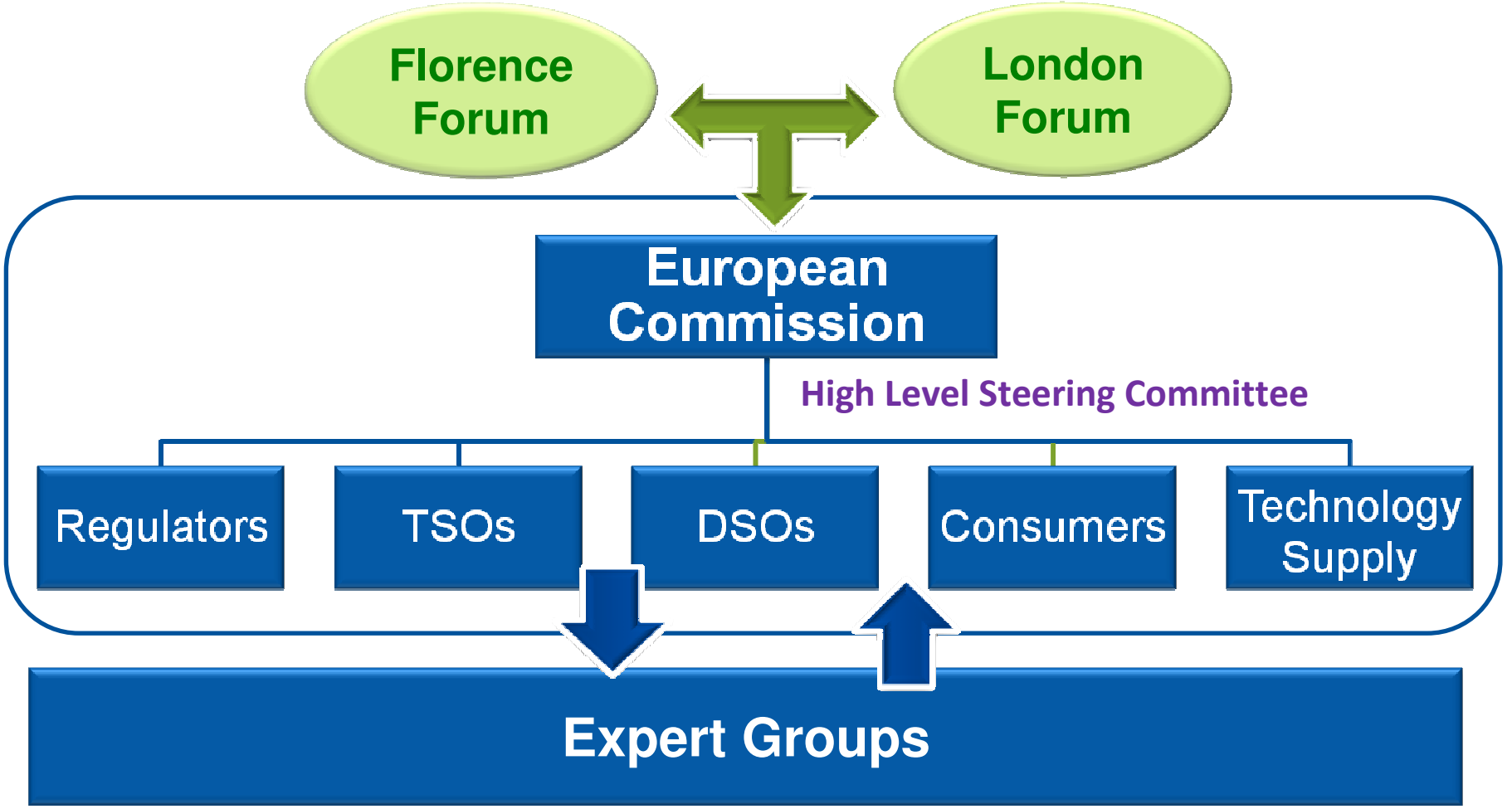
2010

- May 2010 : Deliverable 1 "Common Vision"

2011

- Jan. 2011: Deliverable 2 "Strategies and Regulatory recommendations"
- May 2011: Deliverable 3 "Roadmap for Implementation"
- Continue/stop

Task Force for Smart Grids



Task Force- Work Programme

Key topics and initial efforts to consider:

- Expected services and functionalities
- Empowering consumers
- Supporting power system security
- Regulated and competitive markets
- Implementation and coordination of first steps

Initial Expert Groups (till June 2010)

1. Functionalities of Smart Grids and Smart Meters.

2. Regulatory recommendations for data safety, data handling and data protection.

3. Roles and responsibilities of actors involved in the deployment of Smart Grids.

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Final remarks

- Present **EU targets require changes to the grids**. Smart Grids solutions embrace the changing structure of **generation, market and use of electricity.**
- This **evolution is a complex subject** and a true **industrial take-up** has not been happening to date. It requires a coordinated approach addressing various issues and all the actors.
- Key challenges are of **regulatory nature**.
- The **Third Energy Package** provides the appropriate environment for the implementation of Smart Grids across Europe and its obligations support it to a large extent by 2020.
- A new **Task Force** has been launched to set up the policy, further regulation recommendations and coordinate the first steps towards the **implementation of Smart Grids.**

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http://ec.europa.eu/energy/index_en.htm