

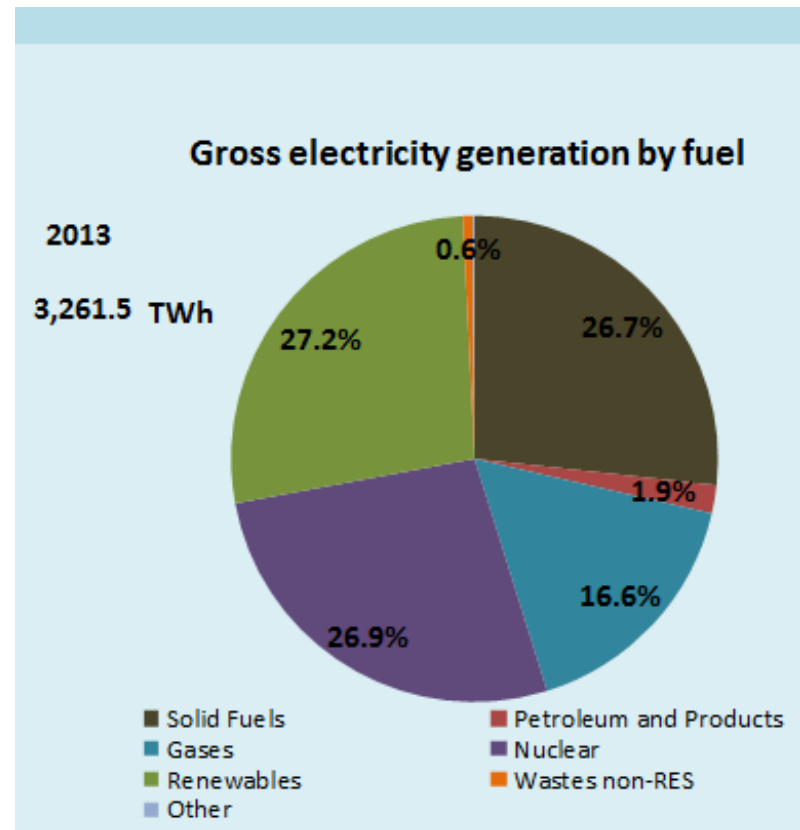
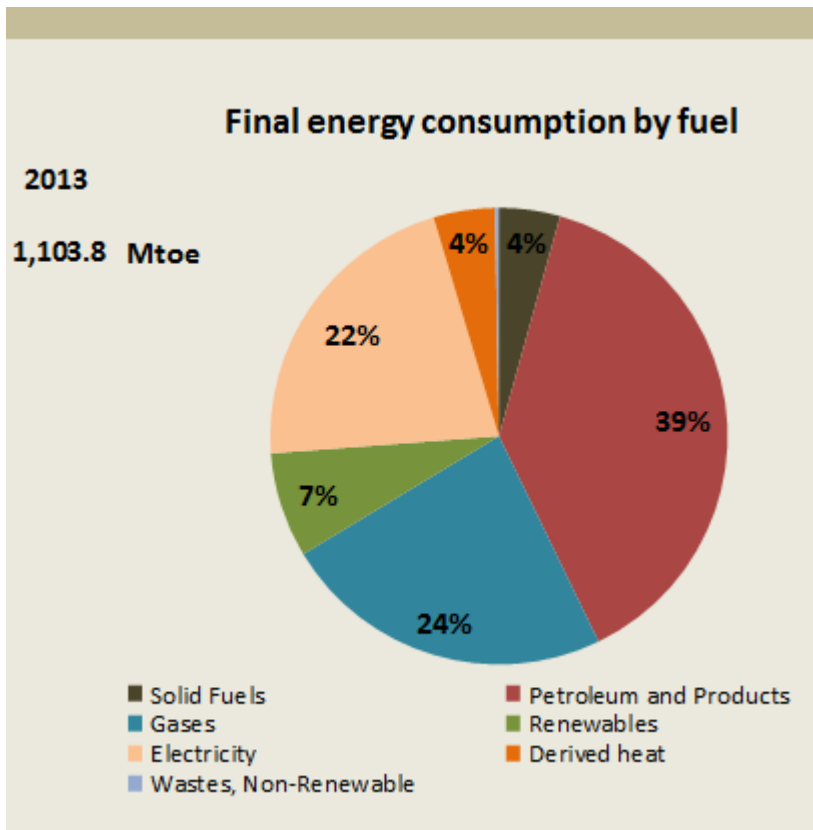


Innovating Gas For the New Energy System

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***EGATEC conference
Vienna, 25 November 2015***

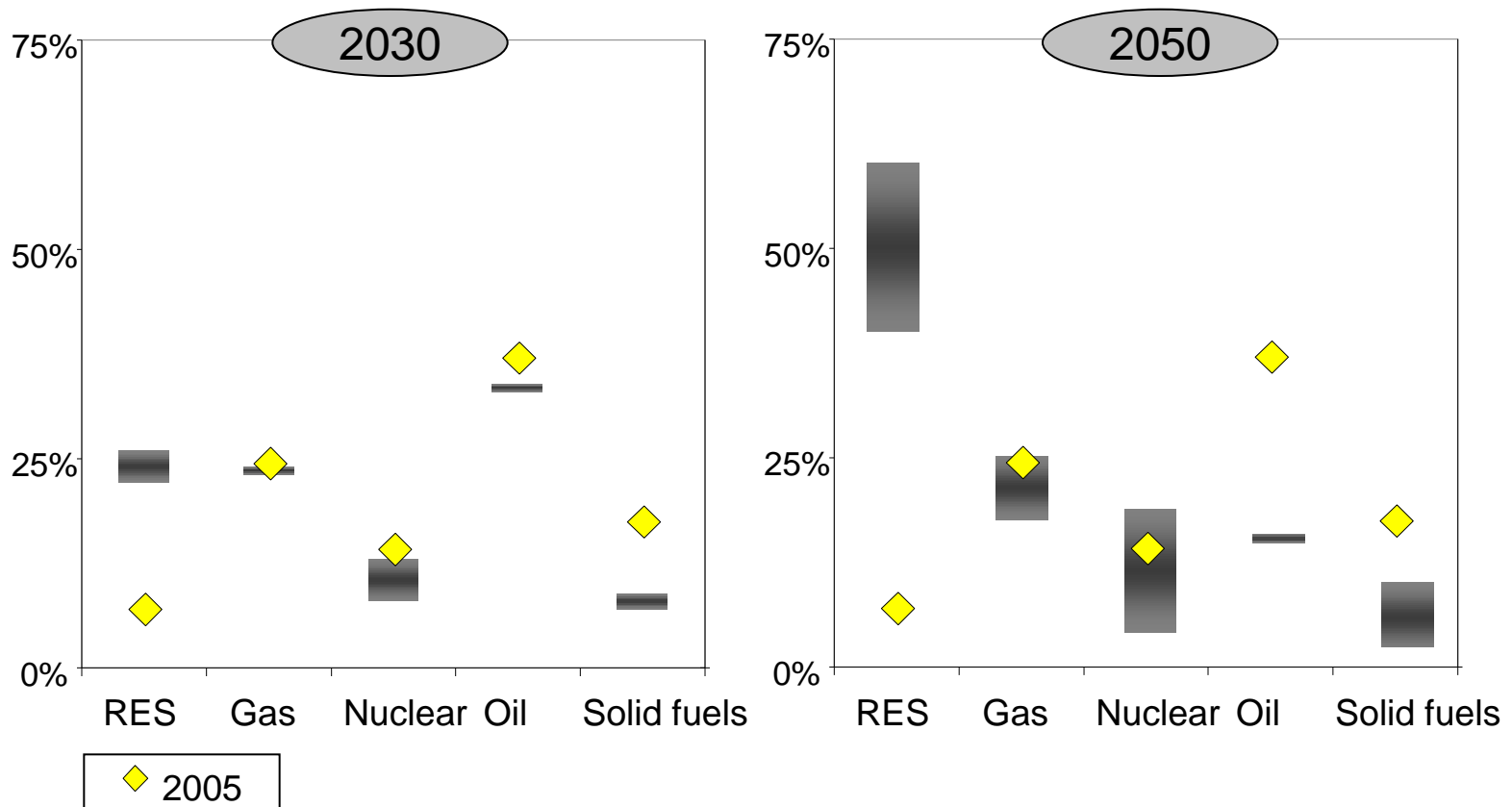
EU energy mix



Looking to the future – Energy Roadmap 2050

- Basis: 20/20/20 objectives of the EU energy policy
- Roadmap 2050: Cutting GHG emissions until 2050 down to 80 – 95 % below the level of 1990
- The Energy Roadmap 2050: the basis for the elaboration of a low carbon 2050 strategy
 - *Supported by multiple **scenario** analyses, to show how to reach the 80 % / 95 % goal while at the same meeting other policy objectives (Competitiveness and Security of Supply)*
 - *Containing robust assumptions for all possible scenarios*

Fuel Ranges (primary energy consumption)



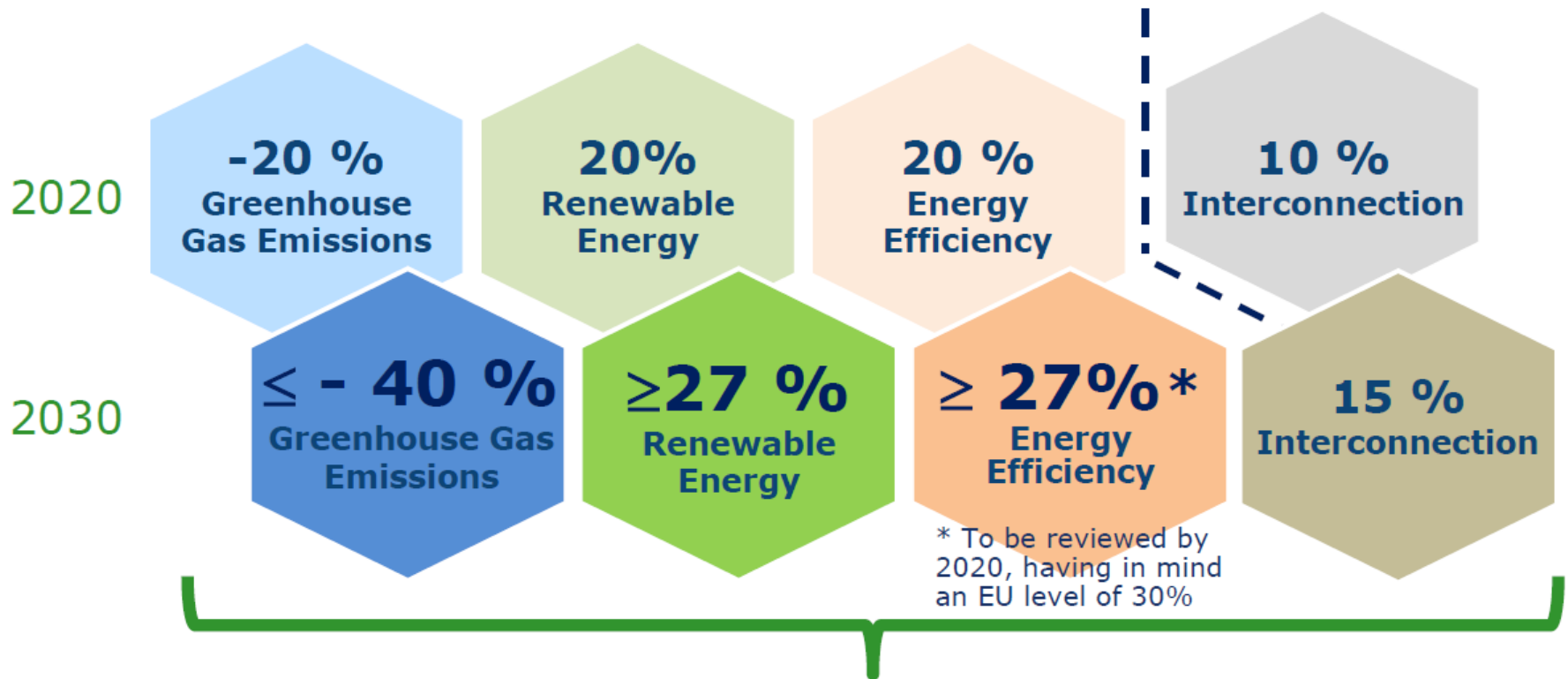
Major energy challenges in Europe

- Import Dependency
- Energy Prices
- Decarbonisation
- Technology mix

How to address energy challenges in Europe

- Complete the internal market and place consumers into focus
- Improve EE- attract investments, behaviour change
- Increase RES – lower technology costs, market integration measures, reform support schemes
- Make use of available energy resources, develop synergies between RES and fossil fuels (e.g. Power to Gas)
- Improve and develop infrastructure – interconnections, smart grids
- Diversify energy supplies and International cooperation (e.g. Energy Community, Eastern Partnership, Inogate)
- **Act on Technologies – Regulations – Financing - Cooperation**

2030 framework for climate and energy policies



New governance system + indicators

The EU Energy Security Strategy

Main messages:

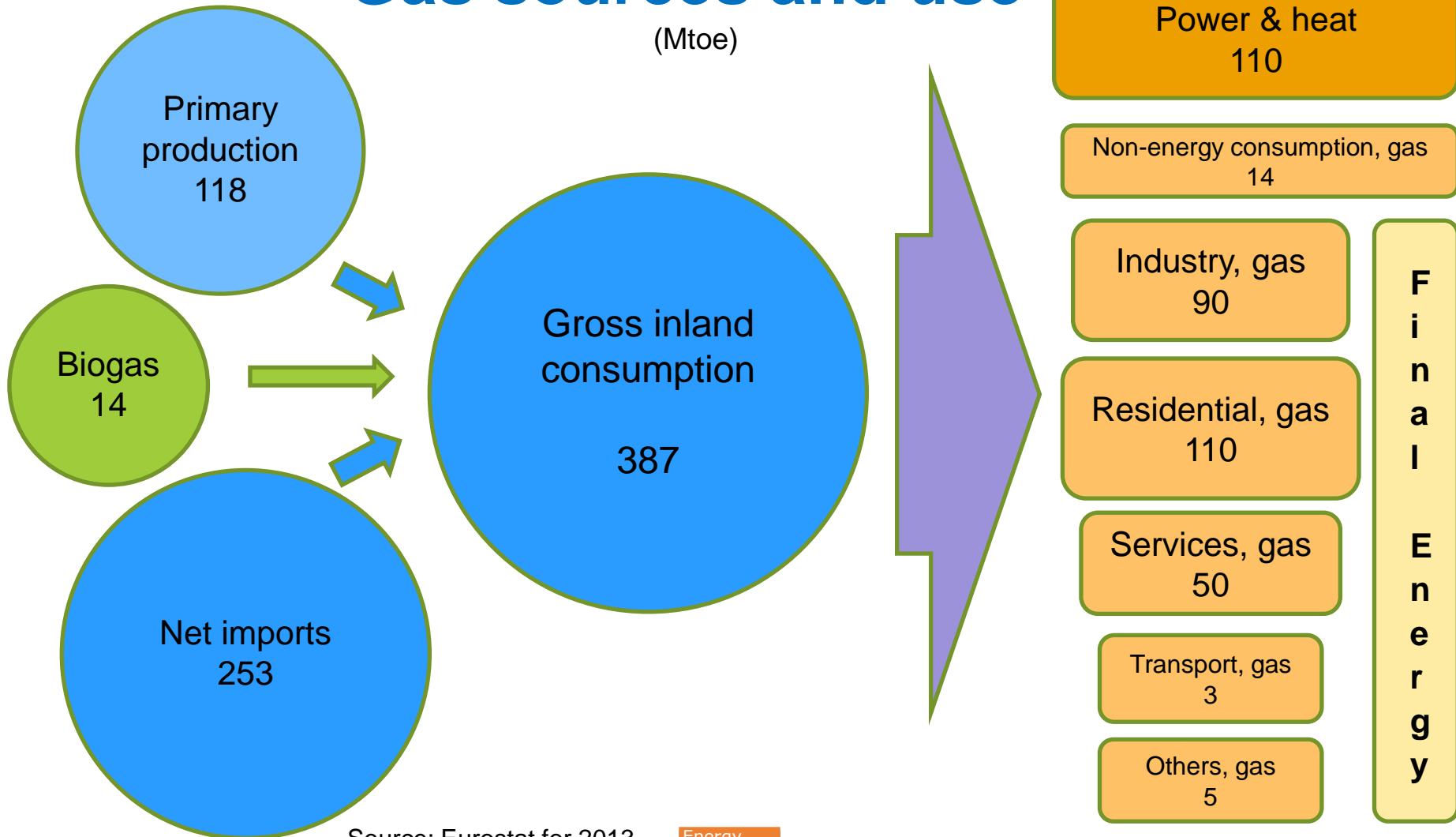
Energy security is inseparable from 2030 climate and energy policy framework.

We need to act now to ensure supplies in short term and in the medium-long term:

| | |
|---------------------------------------|--|
| Moderate energy demand | Increase sustainable energy production |
| Emergency and security mechanisms | Including our neighbours |
| More integrated energy market | Intensify our diversification efforts |
| Accelerate interconnections | Full use of EU financial instruments |
| Compliance of infrastructure projects | Coordination of national energy policies |
| Coherent external energy policy | Synergy with foreign policy instruments |

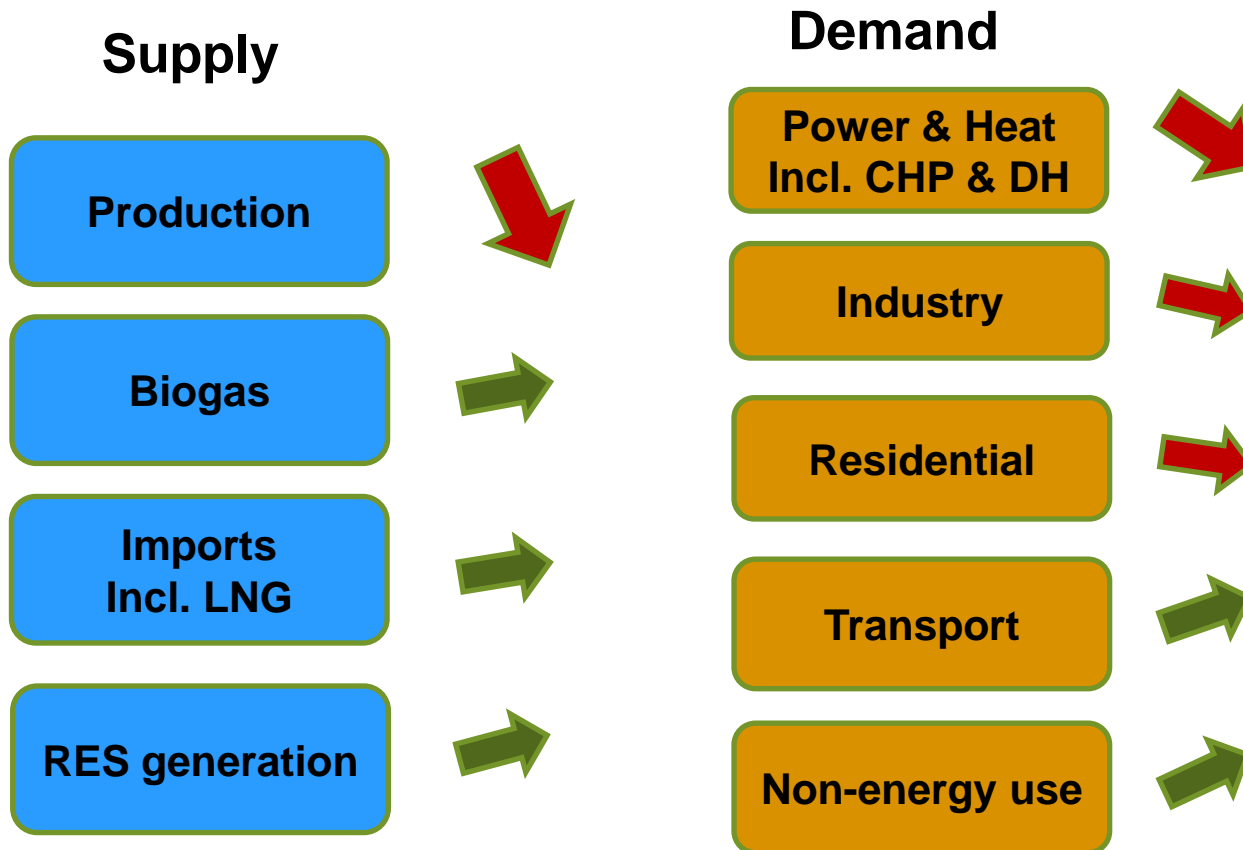
Gas sources and use

(Mtoe)



Source: Eurostat for 2013

Trends towards 2030





The way towards: **The Energy Union**

Where we want to go:

A secure, sustainable, competitive, affordable energy for every European

How we want to reach it:

5
GUIDING
DIMENSIONS

15
CONCRETE
ACTIONS

43
INITIATIVES

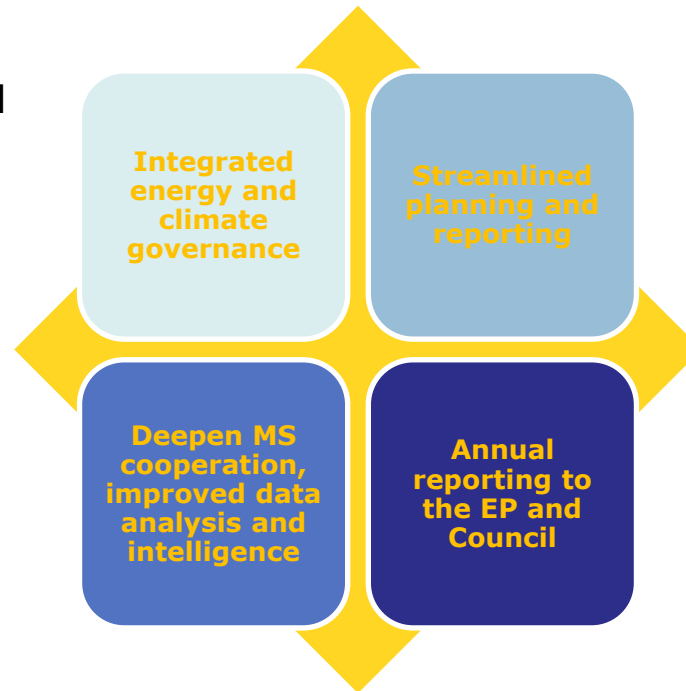
Energy Union

- **Energy security, solidarity and trust**
- **A fully integrated internal energy market**
- **Energy efficiency first**
- **Transition to a low-carbon society**
- **An Energy Union for Research, Innovation and Competiveness**



Delivering the Energy Union: A dynamic governance

The Commission will launch a dynamic governance process for the European Energy Union



Successful implementation depends on the political commitment of all actors concerned, including EU institutions and Member States!

Way forward

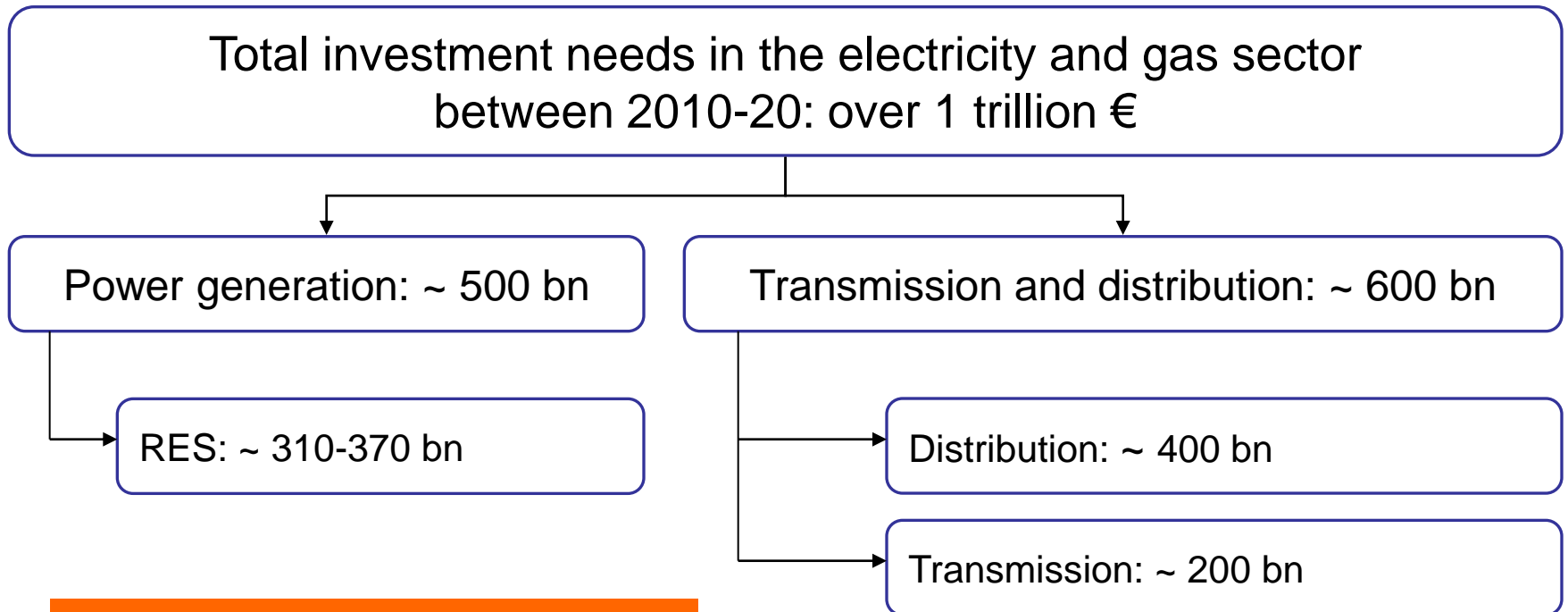
European Council adopted **conclusions on the Energy Union** at the summit on 19 to 20 March

VP high-level **bilateral meetings** with Member States on the Energy Union

Guidance on Governance from the Commission

First report on the state of the Energy Union already in 2015

Energy system investment needs



NB: approximative figures, mainly
from DG ENER calculations based
on data from PRIMES, ENTSO-E,
KEMA, ECOFYS etc.

EU Funding for Sustainable Energy – MFF 2014-2020

- **Cohesion Policy** to allocate some 39 billion € (estimate!) to investments in energy efficiency, renewable energy, smart grids and urban mobility, including research and innovation in those areas in complementarity with Horizon 2020
- **Horizon 2020:** some 5.4 billion € to be allocated to research and innovation in "Secure, clean and efficient energy"
- **Connecting Europe Facility:** some 5 billion € to be allocated to investments in TEN-E infrastructure of highest European added value
- **Other European Structural and Investment (ESI) Funds:**
 - European Agricultural Fund for Rural Development (EAFRD)
 - European Maritime and Fisheries Fund (EMFF)
 - European Social Fund (ESF)
- **LIFE+** and **COSME** might also be relevant for certain aspects
- **EEEF**
- **Aid to developing countries (Energy – 350 mill in 2014)**

The Research Programme Horizon 2020

Topics related to gas received 40m€ in 2014/2015, covering:

- Flexible and efficient fossil fuel power plants
- Environmental impacts of shale gas
- Decarbonisation of the fossil fuel-based power sector and energy intensive industry through CCS

- Supporting Joint Actions on demonstration and validation of innovative energy solutions
- Supporting coordination of national R&D activities

In 2016 and 2017 calls planned for 27m€ and around 40m€.

"The Juncker Plan"

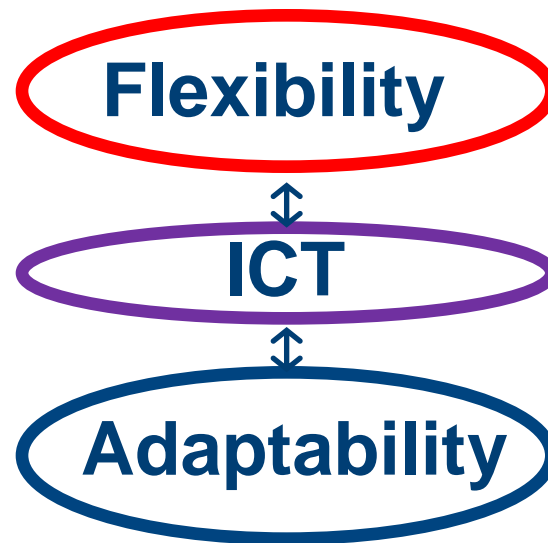
European Fund for Strategic Investments (EFSI)

- Mobilise at least €315 billion in additional investment
- Will finance projects with a higher risk profile
- Established within the European Investment Bank (EIB), with the Commission as strategic partner.

A flexible and adaptive energy system

Smart Energy System

- Generation
- Demand
- Electricity, gas and heat networks
- Storage



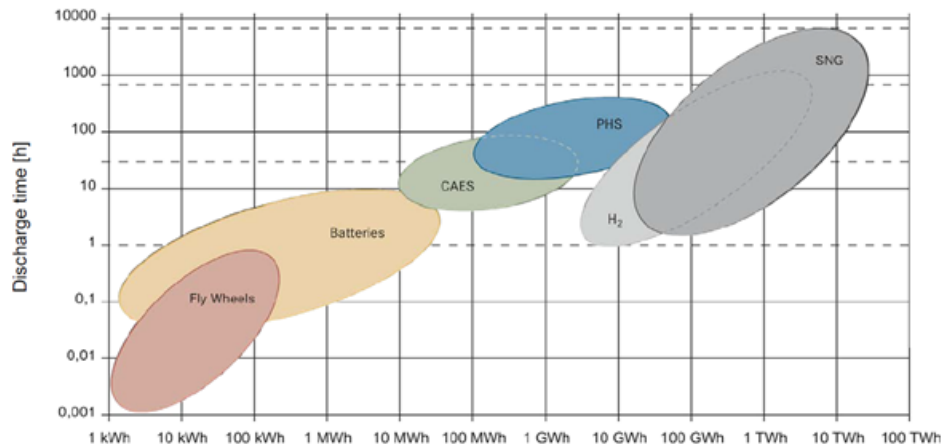
Power generation
Grid
Storage
Demand management
Transport; BEV, etc.
Prosumers
Markets
Fuel switching
Avoid lock-in
Adaptation of the gas grid

Flexible generation and energy storage

- A energy system with large share of variable power sources requires capacity to cover peak demand and technology to use surplus supply efficiently
- Large scale electricity storage facilities faces challenges in the new energy system – closer integration of energy grids could support further progress
- Heat storage is also relevant - heat represents about half of the final energy demand
- Appropriate regulation and markets necessary for a cost-effective transition to low-carbon energy system.

Large scale energy storage and RES integration

- Diversification of supply and routes is a key component of the EU energy policy
- Strategic energy reserves for crisis situations
- Large scale energy storage could complement strategic energy reserves (oil & gas)
 - Synergies between RES and the natural gas grids
 - Indigenous energy sources more important in future



CAES: Compressed Air Energy Storage
 PHS: Pumped Hydro Storage
 H₂, SNG: Hydrogen, Synthetic Natural Gas)

Source: Research Center Jülich

Inclusive gas approach

Regulatory and policy topics to address

- **Supply security**
 - » Revision of the Regulation on security of gas supply (foreseen 2016)
 - » EU energy security strategy (2014)
- **LNG and storage**
 - » "Explore the full potential of liquefied natural gas (LNG), including as a back-up in crisis situations when insufficient gas is coming into Europe through the existing pipeline system"(foreseen 2016)
- **Technology and markets**
 - » Gas quality standards (including the blending and bio-methane)
 - » Certification system (=market) for low-carbon gas (industry, NG grid, mobility, etc.)
 - » Compatibility of gas based solutions with the (electricity) market models
 - » Potential impact of storage on the generation capacity and integrated development of that market (including the various P2G/P2H2 applications)

Thank You for Your Attention!

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

