Integration of the EU energy market and challenges of the climate change policy

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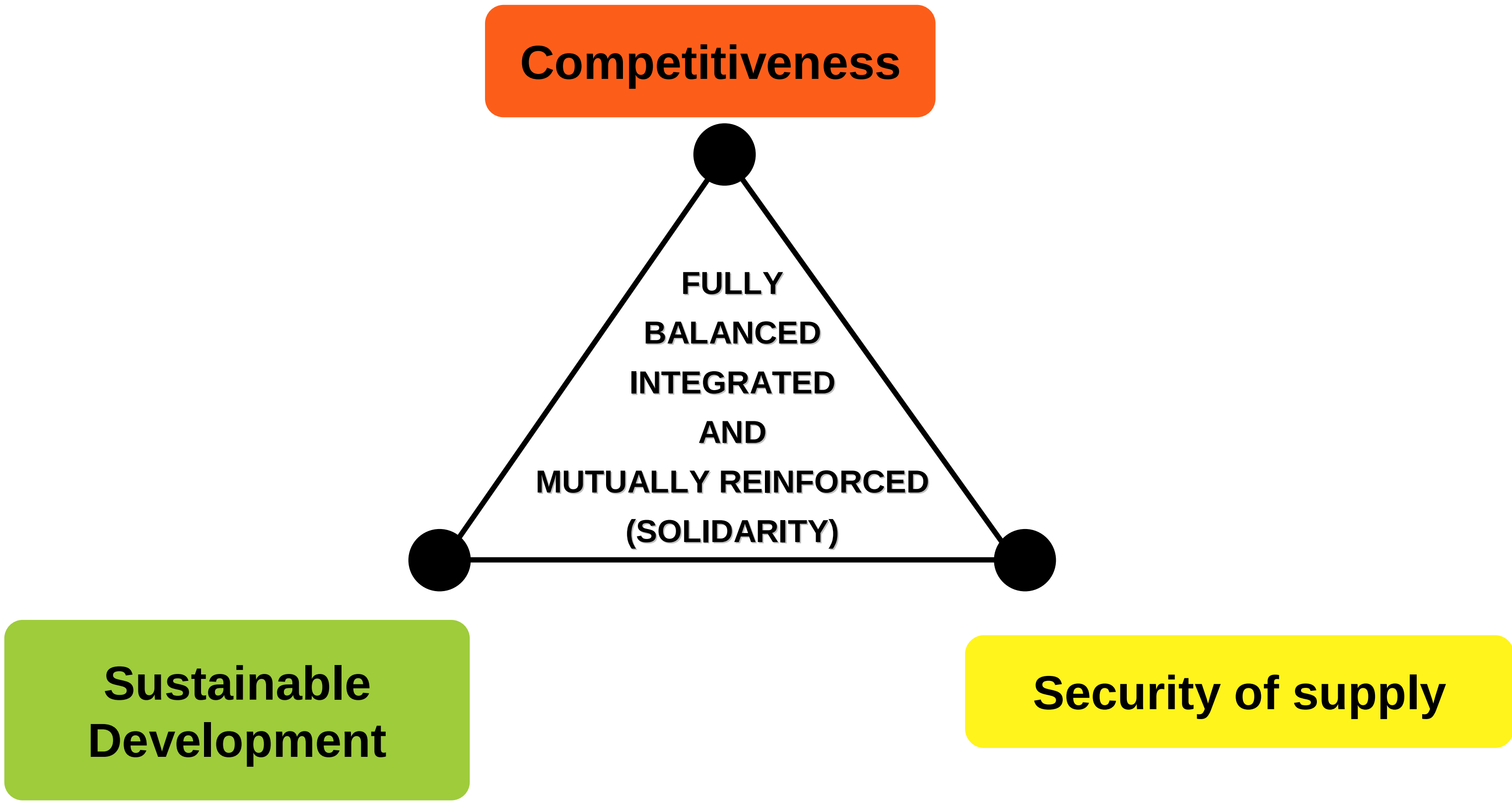
An integrated energy policy: Objectives (1)

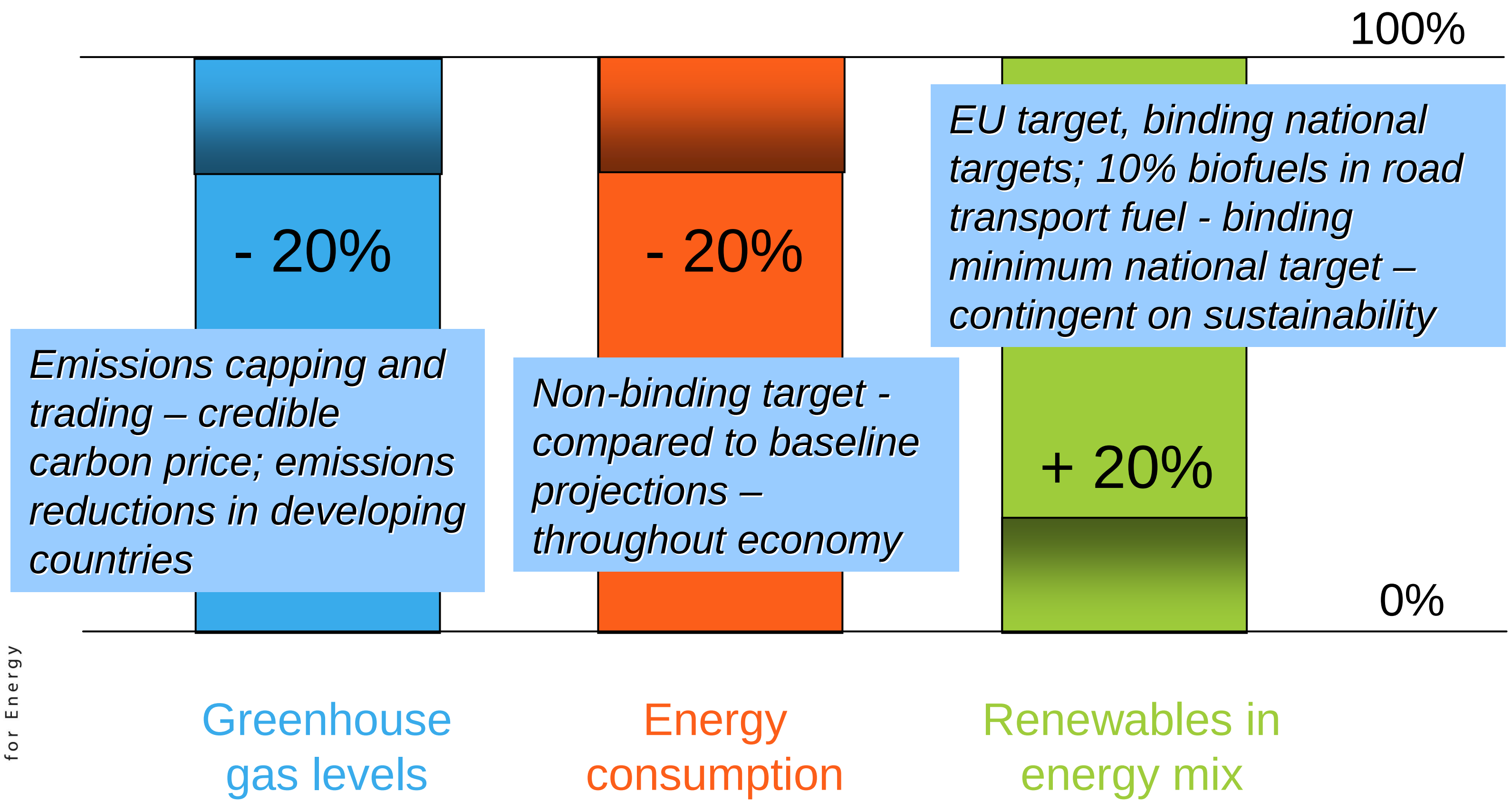


Now founded on Energy Chapter of Lisbon Treaty

Energy policy: Objectives (2)

- Competitiveness
  - Open and liberalised energy markets leading to lower prices and more choice
- Security of supply
  - Promotion of physical interconnection of networks and smart grids
  - Diversification of supplies of and transmission routes for energy from countries outside the EU
- Sustainable development
  - Climate Change policy: 20-20-20 goals

20-20-20 goals by 2020



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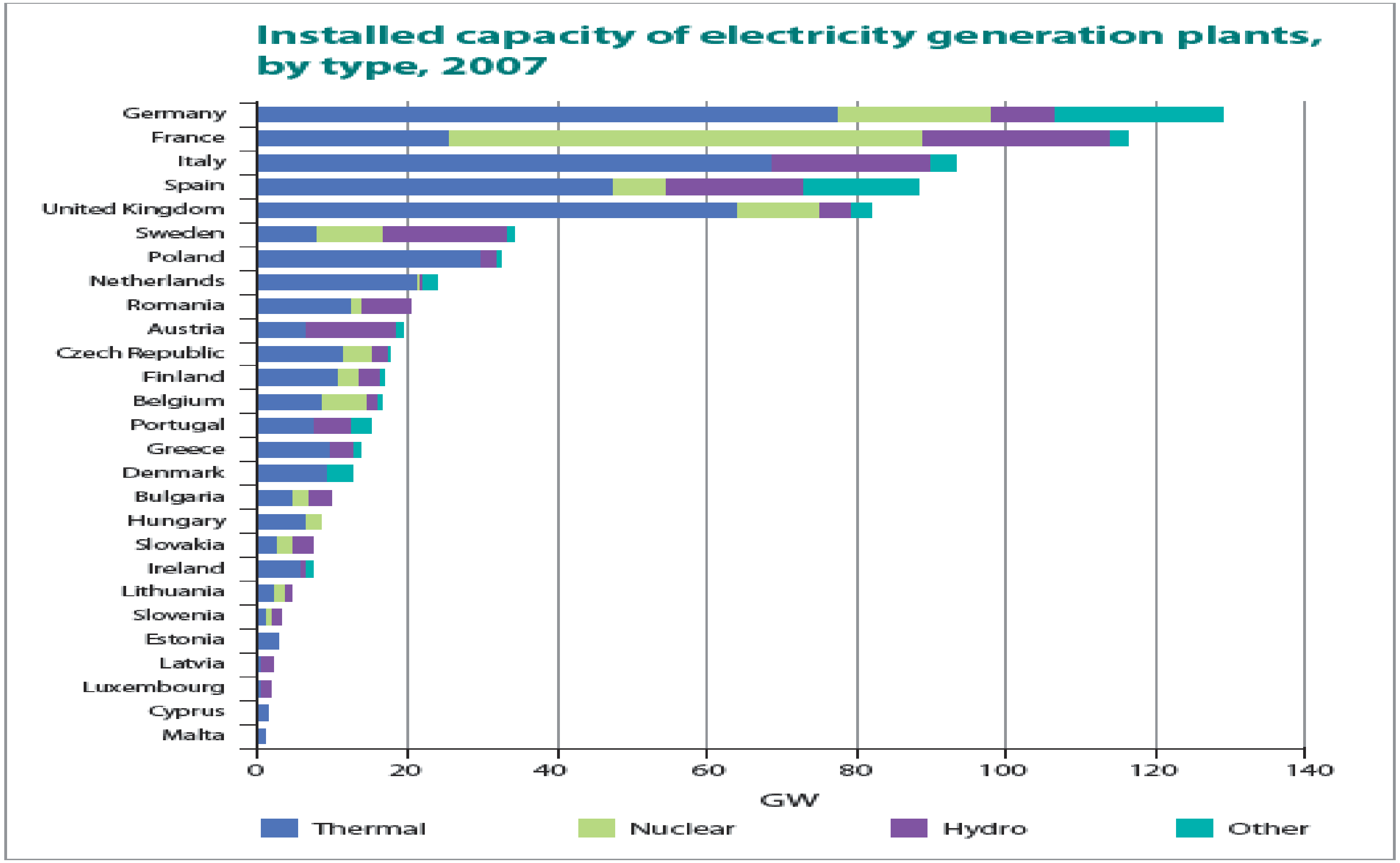
Current generation capacity



(GW)

EU-27	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	***658***	***671***	***683***	**695**	**704**	**716**	**728**	**737**	**747**	**762**	**779**
Thermal	386	393	400	407	410	412	424	427	432	440	449
Nuclear	133	136	138	137	137	138	137	136	135	134	133
Hydro	134	134	136	137	139	142	137	138	139	140	140
Other	*5*	*7*	*10*	13	18	24	29	35	41	48	57

Data source: Eurostat

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EU Energy scenarios

- Energy modelling to 2030 with PRIMES for the EU and all Member States individually provides different types of scenarios (but not forecasts):

  - Baseline showing effects of implemented policies till April 2009, i.e. no assumption on achieving targets (stock-taking exercise);

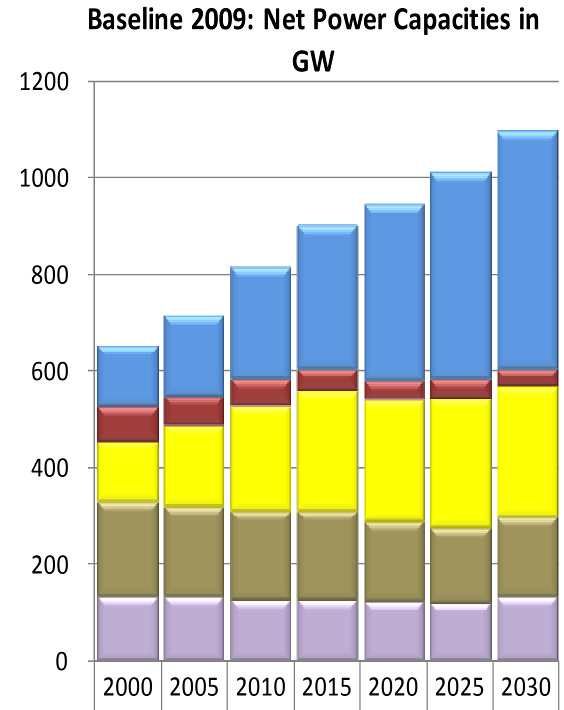
  - Reference scenario showing effects of agreed policies, including achieving of legally binding targets on 20% RES and 20% GHG reduction for 2020).

Power Capacities in Baseline and Reference

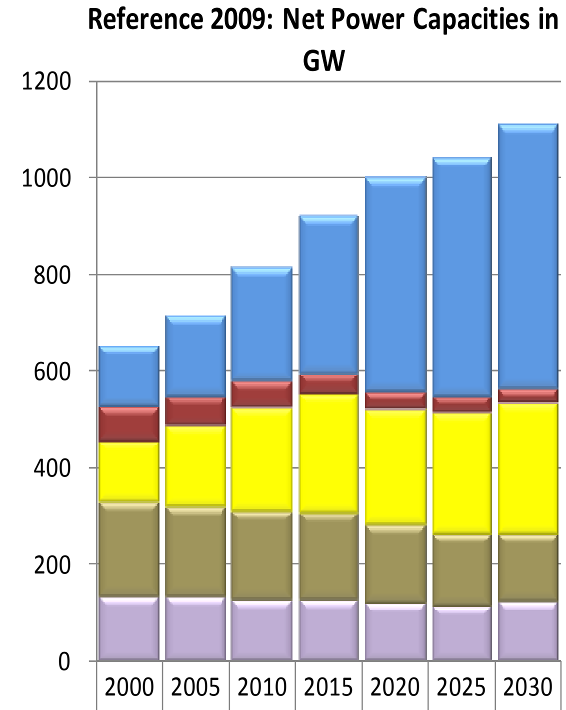
REF: RES capacity accounts for half of total installed capacity in 2030, but operates less hours per year.

Gas-firing plants play an important balancing role in REF being used at lower average rate than in Baseline

Nuclear capacity returns to the 2005 level in 2030 in BL and is less than 2005 in the REF despite pronuclear policy changes in some countries (identical in the two scenarios)

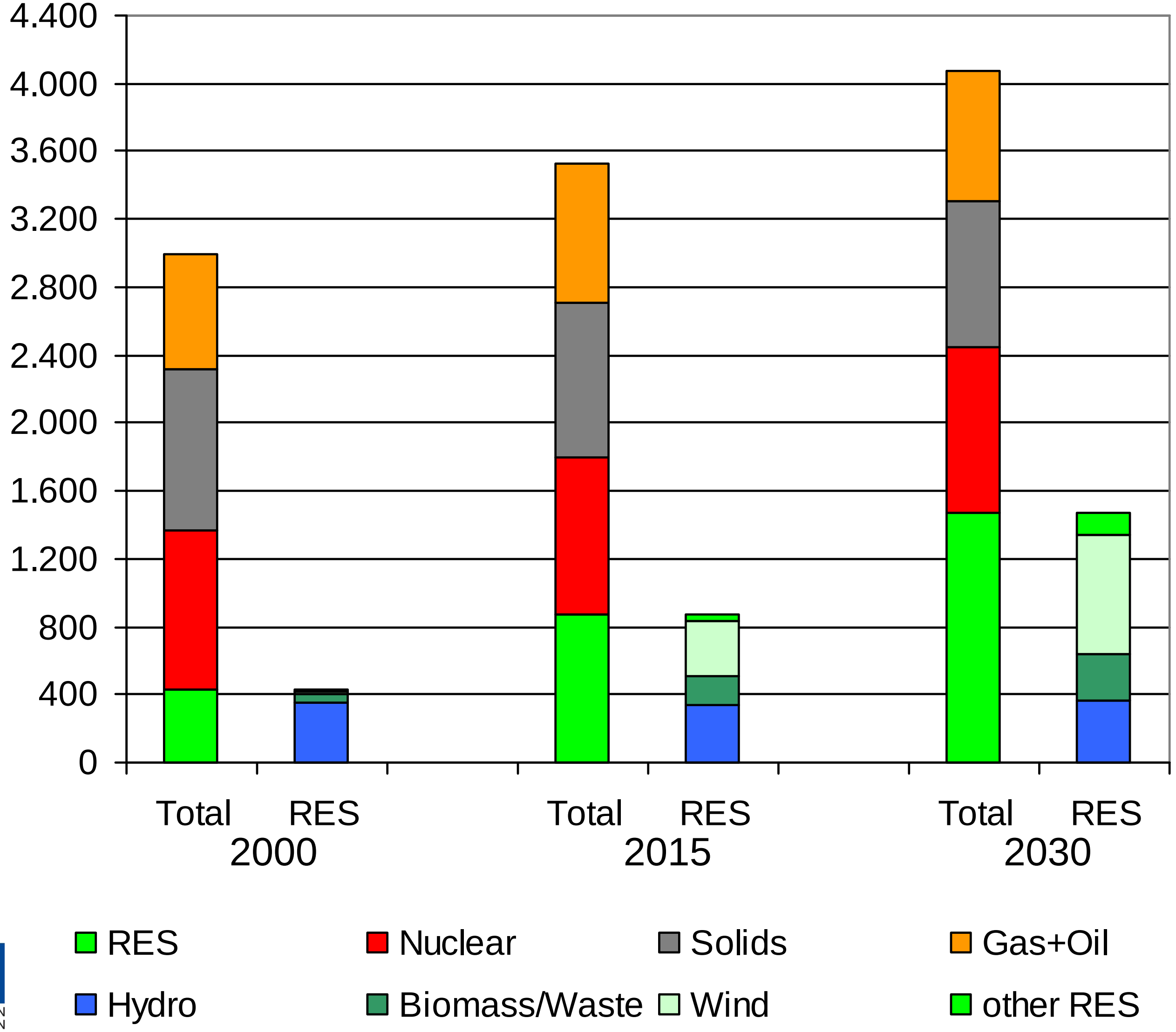


	2000	2005	2010	2015	2020	2025	2030
RES	126	165	232	296	363	428	494
Oil	71	62	56	46	42	39	36
Gas	129	167	218	250	250	267	269
Solids	194	187	184	183	166	155	165
Nuclear	134	134	127	127	124	123	134



	2000	2005	2010	2015	2020	2025	2030
RES	126	165	234	323	445	491	545
Oil	71	62	56	44	37	34	31
Gas	129	167	216	243	238	254	268
Solids	194	187	183	182	161	148	142
Nuclear	134	134	127	127	123	115	124

Reference Scenario: electricity generation (TWh)



Strong growth of electricity demand despite stability of overall demand.

RES dominate by 2030 with nuclear in second position

Share of non fossil fuels 2030: 60 %.

RES expansion due to wind, biomass and other new RES, hydro broadly stable.

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Renewables & Energy Efficiency

- Moving towards a more sustainable and secure energy mix, with greater use of renewables and of CCS (Carbon Capture and Storage), combined, where allowed, with nuclear energy

- Substantial improvement in the efficient use of energy in products, services, transport, industrial processes, buildings and residential homes leading to lower bills

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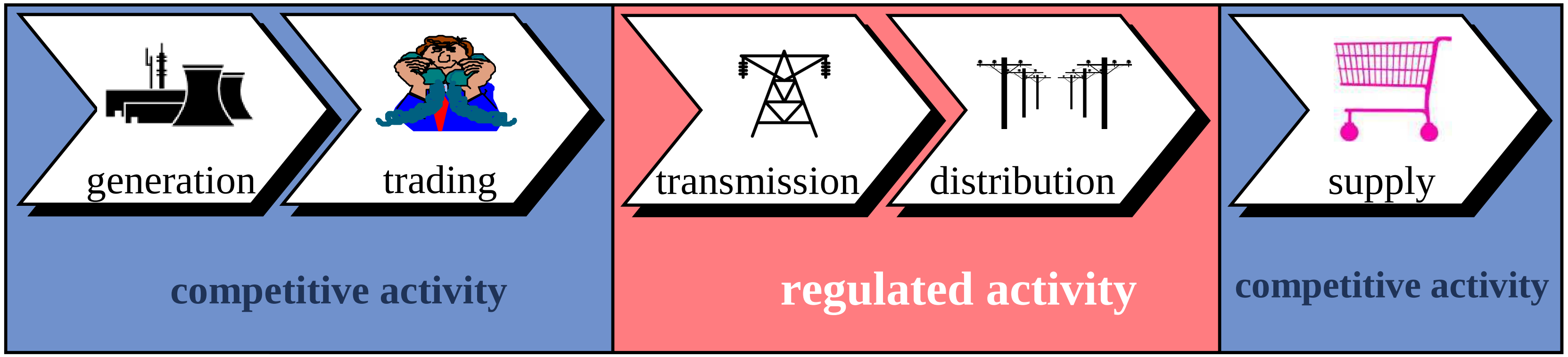
The electricity grid is important…

- Massive investments needed to allow electricity to flow between Member States without bottlenecks
  - Reserve requirements higher or RES targets not met.
- Grids must integrate as off-shore and on-shore sources on renewable production within the EU.
- Grids must be open and smart, i.e. allow integrated intelligent actions of generators and consumers to rationalize energy use



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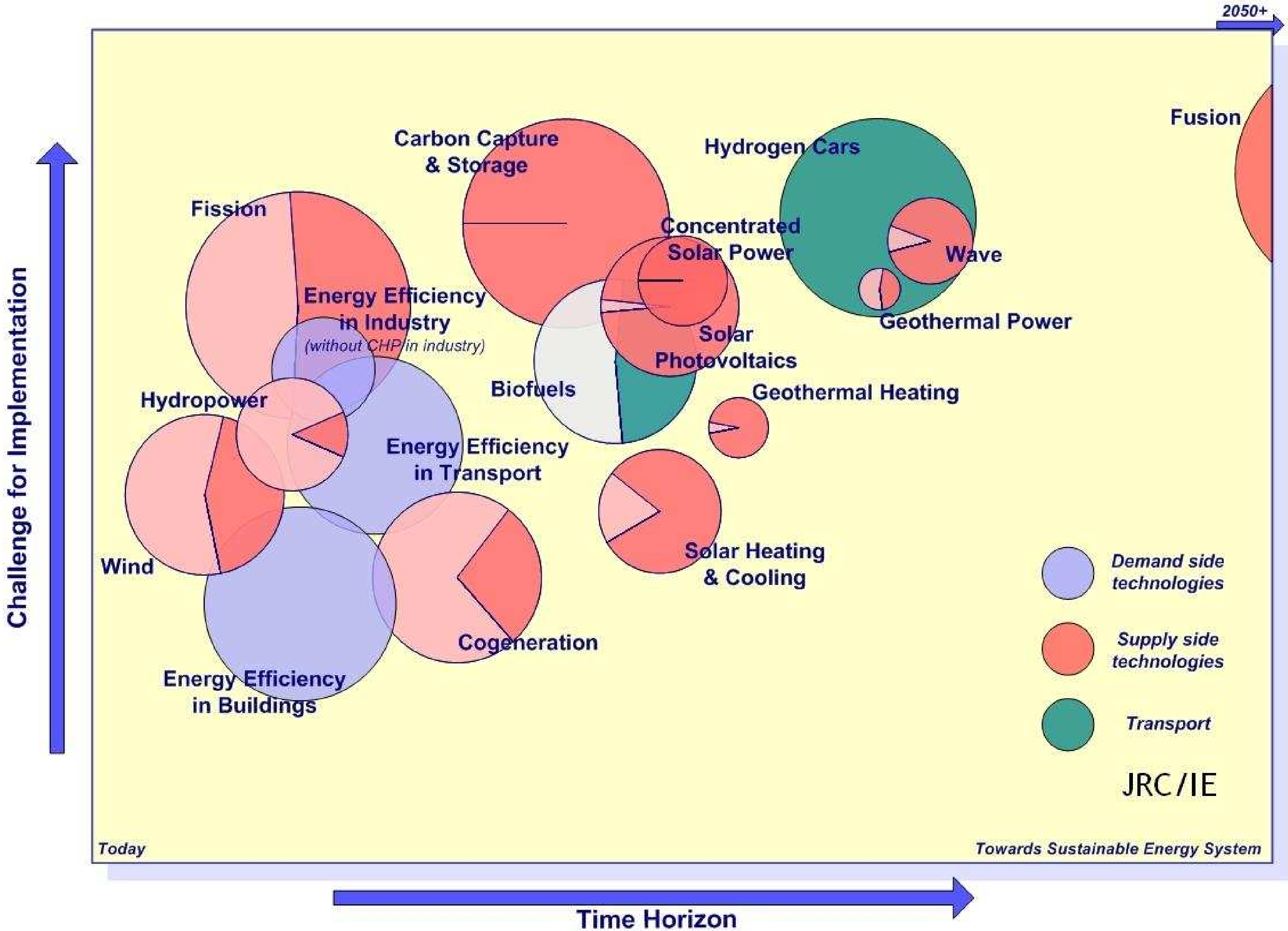
Technology is important…



Implementation of 3rd package is a key…

- 3rd package entered into force 3 September 2009
- 3rd package transposed from 3 March 2011
  - Agency operational
  - ENTSOs become official bodies
  - Ownership unbundling by 3 March 2012 at the latest, certain aspects in 2013

The basic elements of the third package

- Market opening:
  - Third party access rules
  - Unbundling
  - Independent and effective regulatory oversight
- Market integration:
  - High public service standards across the EU
  - Effective EU-wide rules on trade-related regulatory issues (network codes)
  - Creation of ENTSOs + ACER

New requirements and opportunities for energy companies

- Third package applies to European and non-European companies
- Important consequences for vertically integrated companies
  - obligation to unbundle
- and TSOs
  - TPA obligations
  - Application of network codes
- Opportunities for supply companies to enter new markets

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Outlook for the next future

- Focus on implementation (internal energy market, security of gas supply, Renewables Directive)
- EU Strategy 2020 => Energy Action Plan 2011-2015
- European Energy Infrastructure Package
- Action Plan Energy Efficiency
- External Energy Relations
- Roadmap 2050

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