Renewable energy, energy efficiency and the role of technoloy

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Energy

- Energy policy

  Renewable energy

  Energy efficiency

- Research, development, Innovation and market uptake

- Financing

EU energy policy:

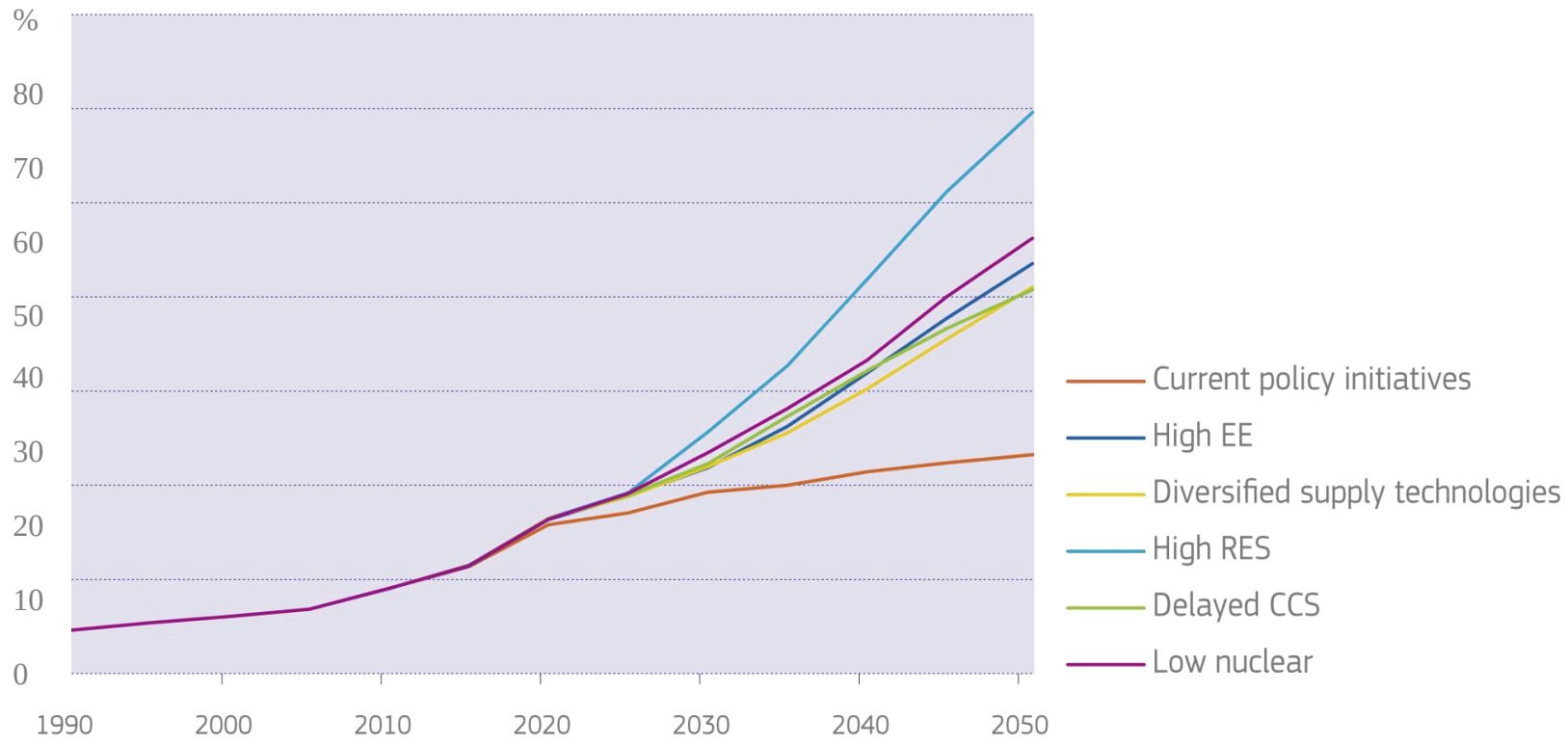
European Commission

The European energy strategy

- Renewables Directive: 20% by 2020
- ETS
- 3rd liberalisation package: unbundling, harmonised grid operation rules, network codes, ACER etc.
- TEN-E priorities and project support
- Infrastructure package: CEF proposal, planning reforms
- Smart grids
- Energy Efficiency Measures (including ESCOs)
- SET plan/R&D
- Development of the longer term framework: 2050, 2030…

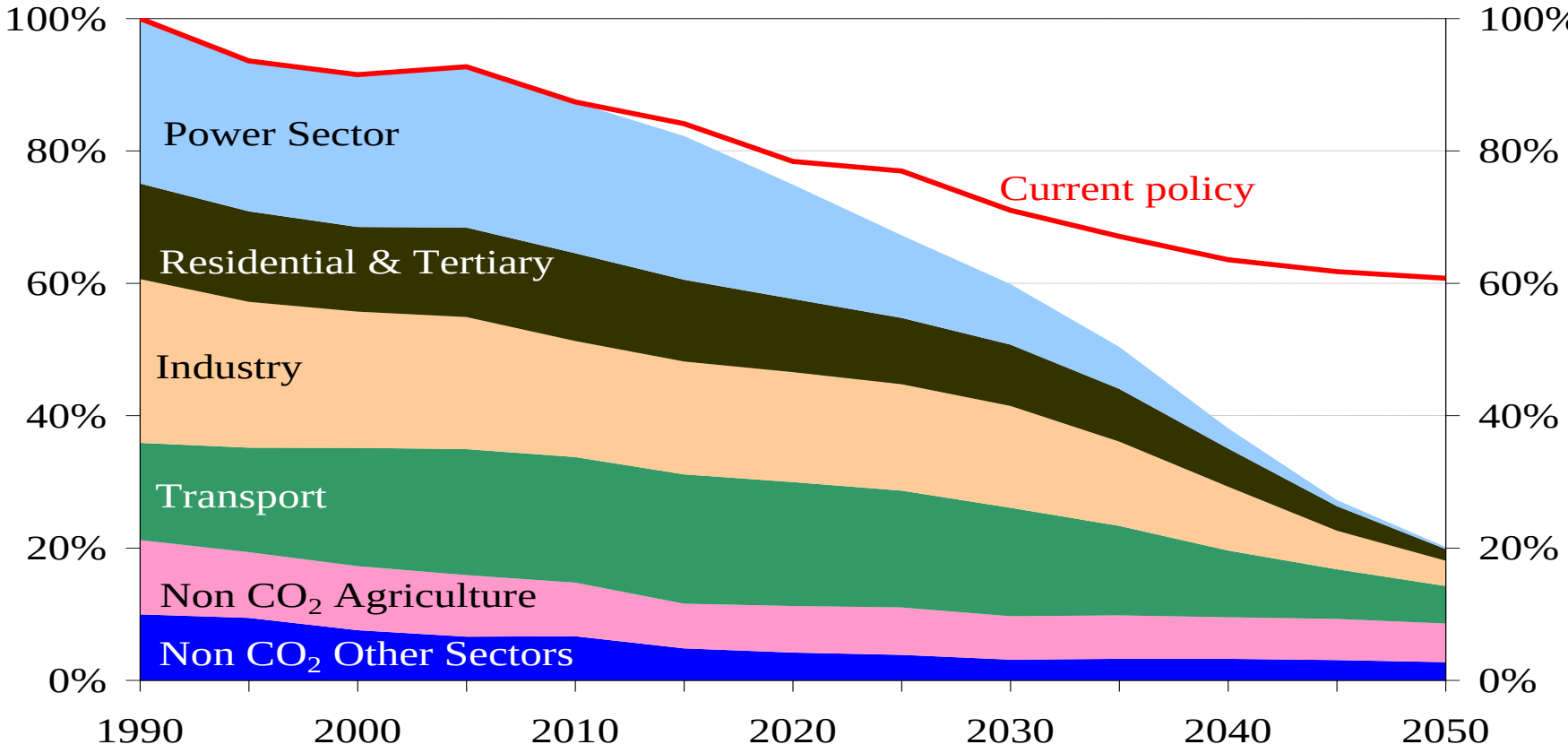
Renewable Energy Sources (RES) –the future in Europe

2050 Energy Roadmap: Renewable Energy as "no regrets option", but business as usual not sufficient for decarbonisation pathway



The share of RES in **electricity consumption** reaches 64% in a High Energy Efficiency scenario and 97% in a High Renewables Scenario that includes significant electricity storage.

Low Carbon Economy: Energy Roadmap for 2050



EU legal framework – Renewable energy directive since 2009:

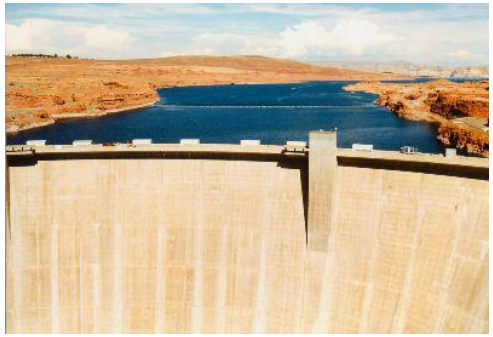
- Mandatory national targets (overall + transport)
- National Renewable Energy Action Plans
- Flexibility between Member States
- Reduction of admin. and regulatory barriers, grid issues, etc.
- Information and training
- Sustainability regime for biofuels

National Renewable Energy Action Plans – key tools to ensure compliance

- Planned RES growth to 2020 leading to 20.6% by 2020
- ½ of Member States to exceed their national targets
- 2 MS will partly rely on imports using cooperation mechanisms
- Total renewable energy consumption will double from 99 Mtoe (2005) to 245 Mtoe (2020)
- Combined EU renewable energy shares in the 3 sectors in 2020 (projections):
  - Electricity from renewable sources – 34%
  - Heating & cooling from renewable sources– 21.5%
  - Transport from renewable sources– 11%
- Commission writing to MS seeking revisions/clarification/resubmission

2020/2030/2050 Key Challenges

- Increasing importance of RES increases requirements on:

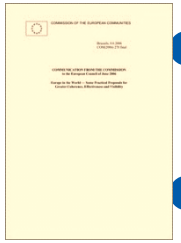


  - Capacity and flexibility
    - of electricity grids,
    - of power plants,
    - of energy storage
    - of demand side management (~smart)
  - Market functioning
  - Internalisation of externalities
  - Stable regulatory framework

Energy Efficiency

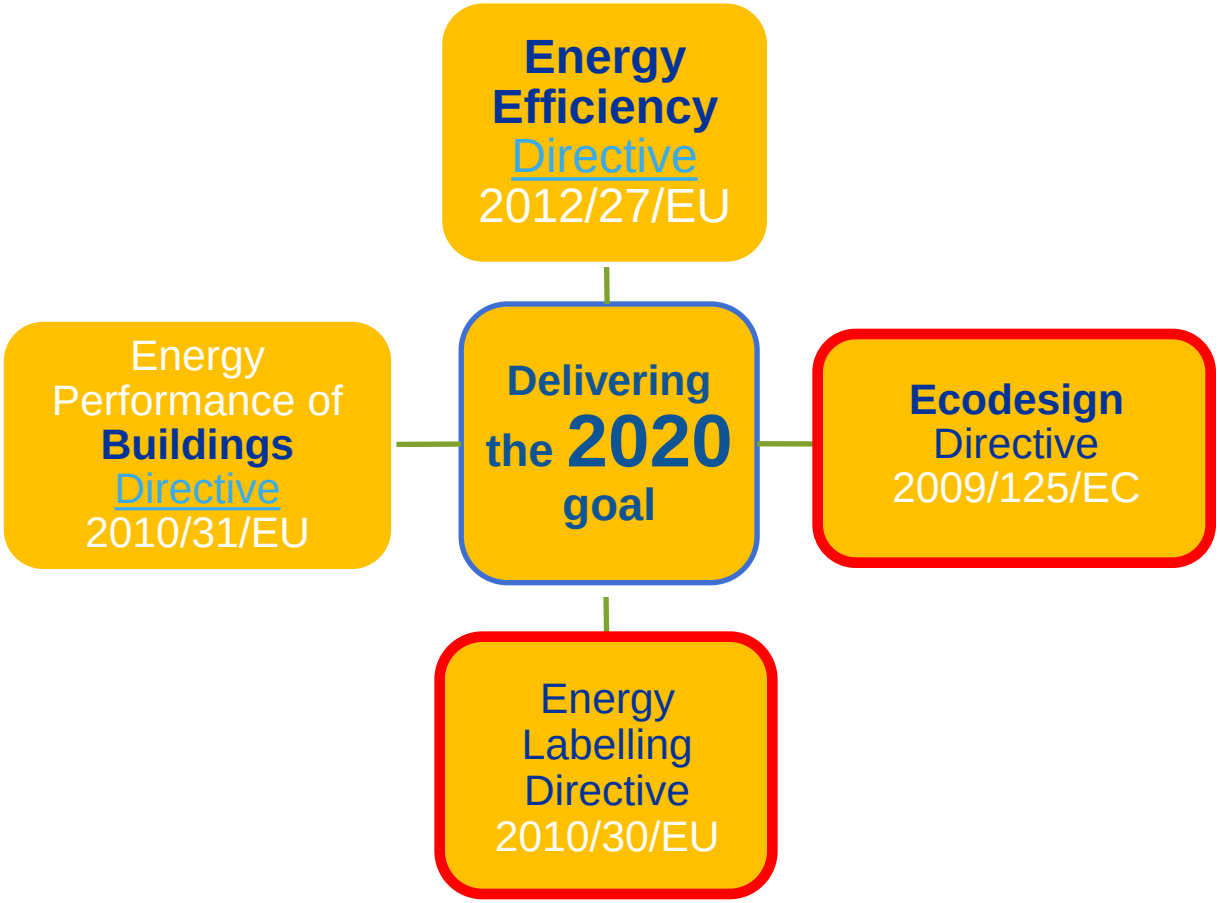
General policy background

- **Strategy "Europe 2020"** [COM(2010)2020]
  - 5 Targets
    - Including the "20-20-20 climate-energy package"
  - 7 Flagship initiatives
    - Including "Resource efficient Europe"



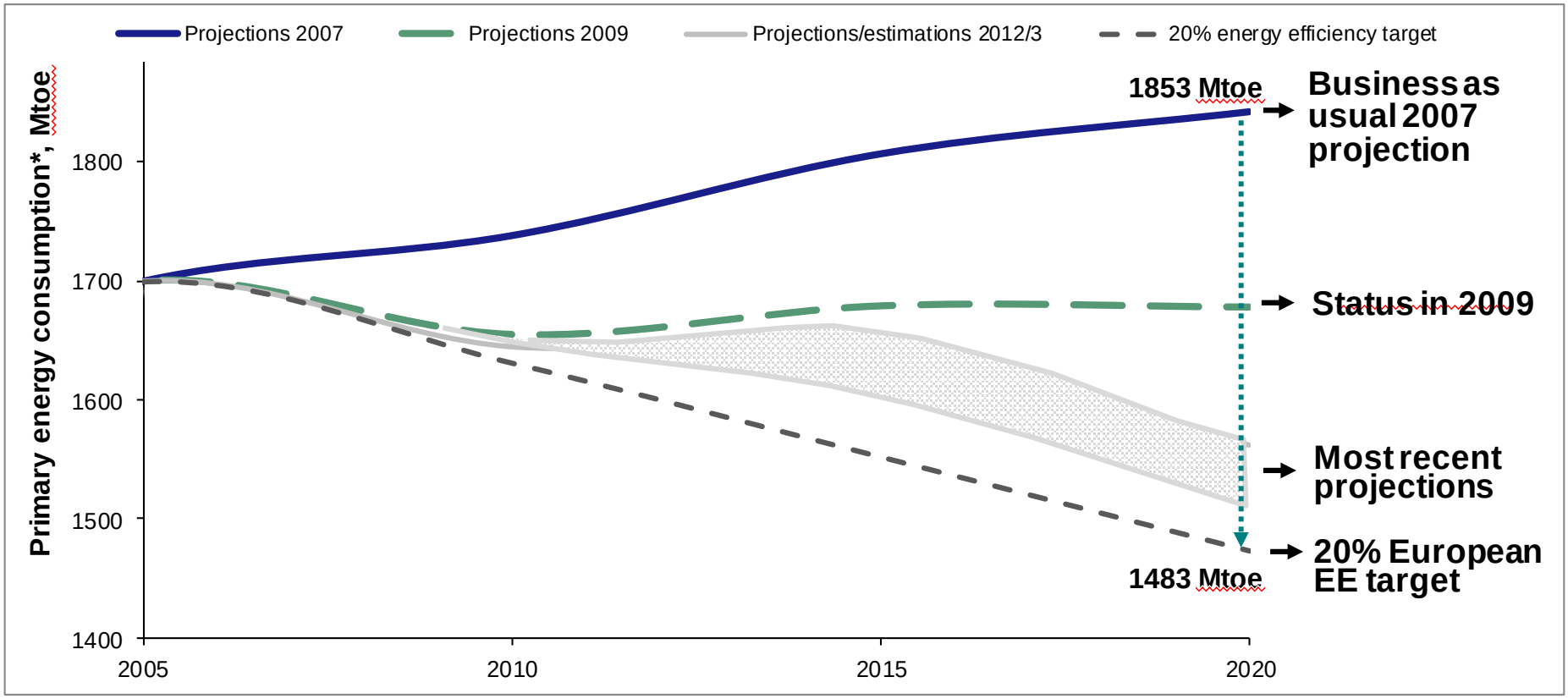
- **Strategy for competitive, sustainable and secure energy** [COM(2010)639]
- **Roadmap for moving to a competitive low carbon economy in 2050** [COM(2011)112]
- **Policy framework for climate and energy in the period from 2020 to 2030** [COM(2014)015]

The legal framework of the EU energy efficiency policy



EU energy efficiency target: More encouraging results

Trends in primary energy consumption compared to EU target in 2020 (1483 Mtoe)

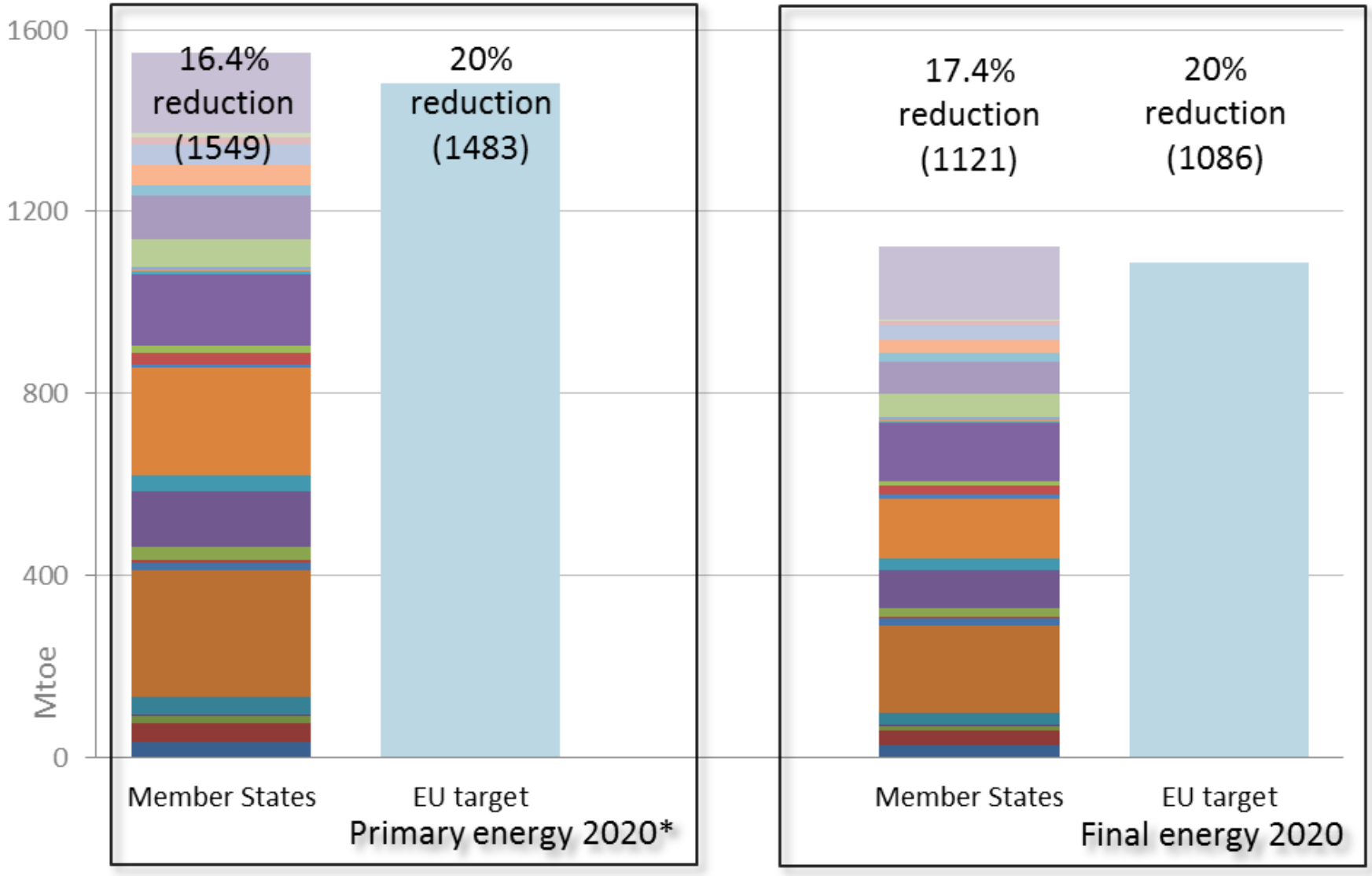


Encouraging recent developments - more results in Commission's '2014 report' on the progress towards the EU target (due June 2014)

** Gross inland consumption minus non-energy uses*

Source: European Commission

National vs. EU target



* *Primary data for HR are based on their 2010 primary energy use*

European Commission

Energy Efficiency Directive 2012/27/EU

- OJ 14 November 2012
- In force since 4 December 2012
- Transposition deadline: **5 June 2014**

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Contents

I *Legislative acts*

DIRECTIVES

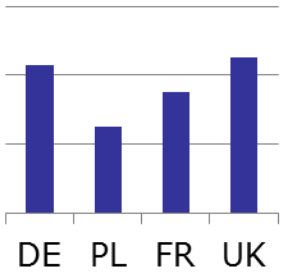
★ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (1) 1

★ Directive 2012/29/EU of the European Parliament and of the Council of 25 October 2012 establishing minimum standards on the rights, support and protection of victims of crime, and replacing Council Framework Decision 2001/220/JHA 57

★ Directive 2012/30/EU of the European Parliament and of the Council of 25 October 2012 on coordination of safeguards which, for the protection of the interests of members and others,

http://ec.europa.eu/energy/efficiency/eed/eed_en.htm

STRONG NATIONAL COMMITMENTS

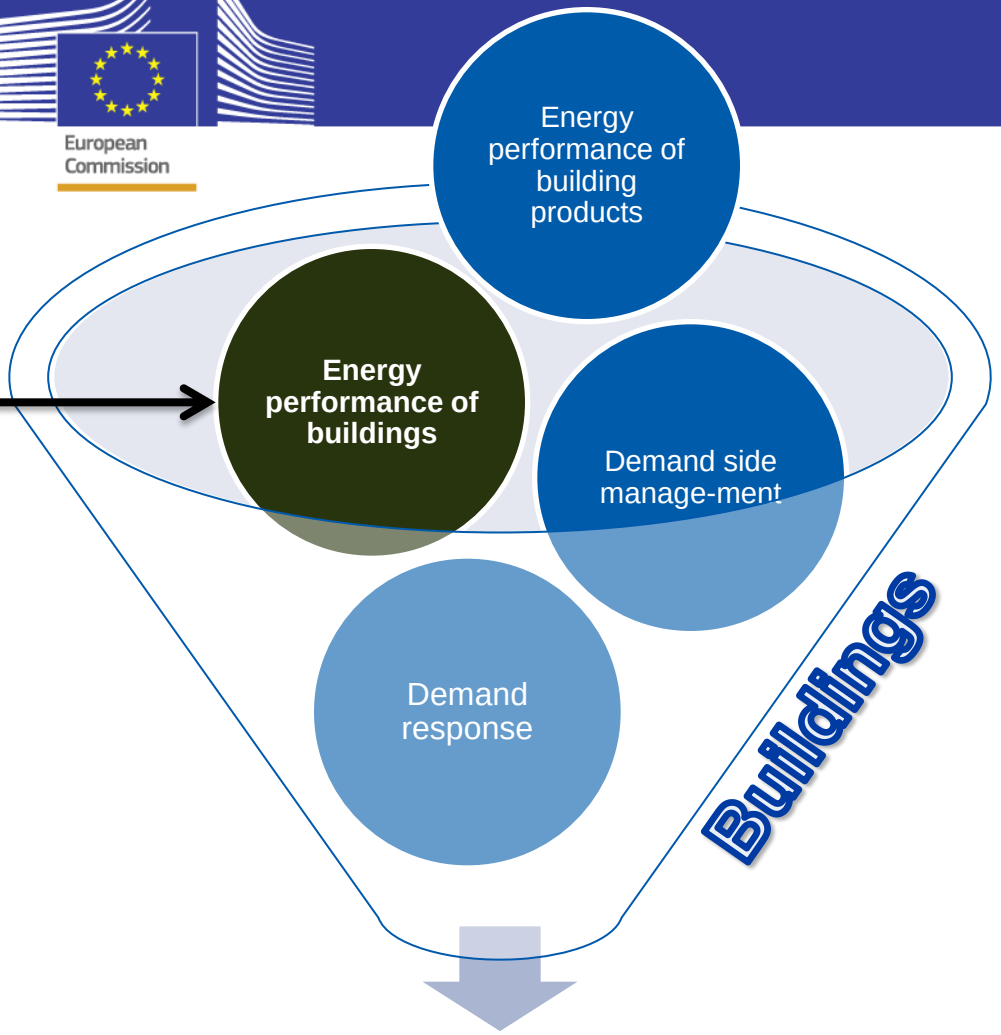


- EU energy efficiency target clearly defined = 1474 Mtoe of primary energy in 2020.
- Indicative national targets for 2020 to be set by Member States.
- Long-term strategies on building renovations.
- Public sector to lead by example (renovation of 3% annually of the buildings owned and occupied by the central government; energy efficiency in public procurements).

Energy performance of buildings

Calculated or measured amount of energy needed to meet the energy demand <u>associated with a typical use of the building</u>, which includes, inter alia, energy used for heating, cooling, ventilation, hot water and lighting

EPBD-recast (2010/31/EU), Article 2(4)



Energy efficiency

EPBD – Key elements (2002/91/EC and 2010/31EU)

- Methodology to rate energy performance of buildings
- Minimum energy performance requirements for new and existing buildings that undergo major renovation + cost optimal methodology
- Energy performance certificates (EPC)
- Introduction of "nearly zero energy buildings" 2021 (public sector 2019)

Overview

Art.2	**Definitions**
Art.3	**Calculation methodology**
Art.4-7	**Setting and ensuring minimum energy performance requirements at cost-optimal level**
Art.8	**Requirements for technical building systems**
Art.9	**Introduction of nearly Zero-Energy Buildings**
Art.10	**Financial incentives and market barriers**
Art.11-13	**Energy Performance Certificates**
Art.14-15	**Regular inspection of heating and cooling systems**
Art.16-18	**Reporting, independent experts and quality control**

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Cost optimal methodology

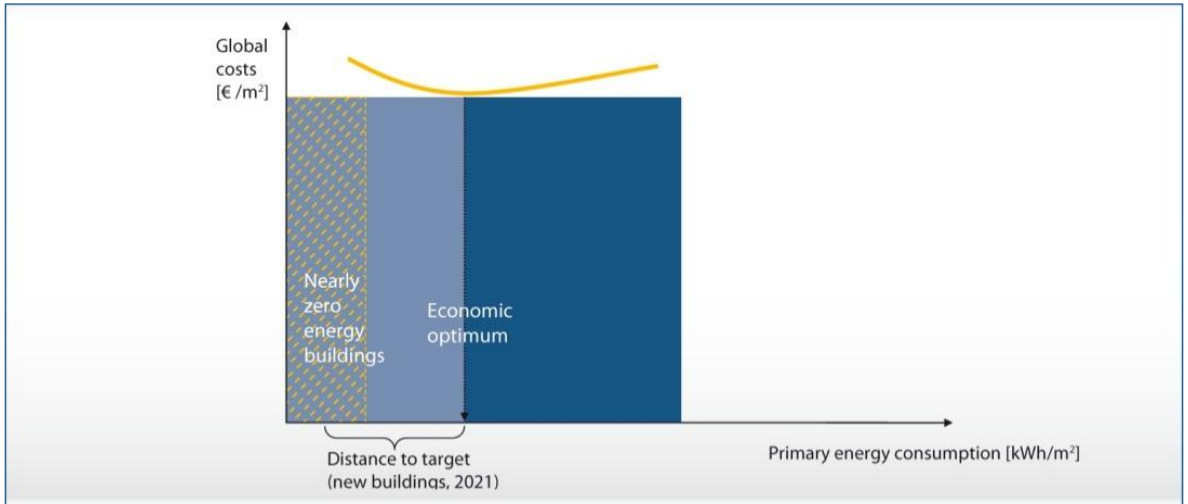

Figure 4: Beneficial areas in relation to cost optimum and distance to target (example only)

→ Aimed at ensuring high ambition level in MS

→ Reports from Member States were due by March 2013

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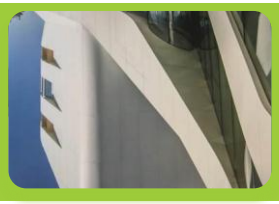
Financing

The key barriers are both technological and non-technological



Technological

- Materials and components -design and design tools
- Deep renovation
- Industry (process industry and fabrication)

Administrative

- Building capacity and skills
- Exchange of best practice

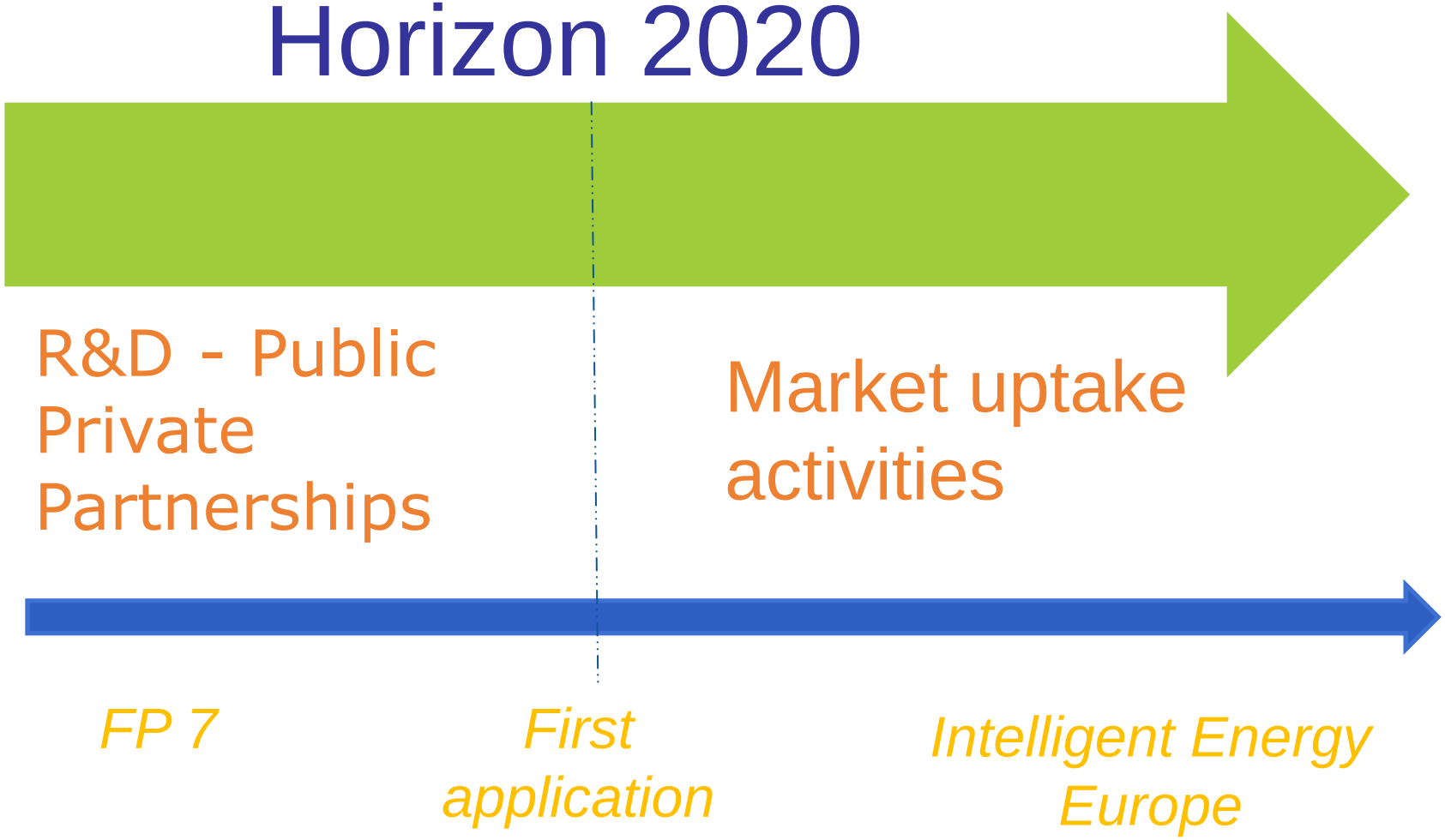
Financial

- Creating favourable market conditions
- Replicating successful business models
- Preparing the ground for investments

Regulatory

- Shaping policy development and implementation
- Tackling regulatory barriers
- Informing stakeholders and fostering commitment

Horizon 2020



Increased availability of EU funds

- More than 27 billion € ring-fenced in the European Structural and Investment funds (MFF 2014-2020)
- Additional flexibility in the new Energy and Environment State Aid Guidelines
- EUR 5.6 billion under Horizon 2020, with more than EUR 840 million earmarked for energy efficiency
- EEE F finance of sustainable energy projects, complementing other EU, national or regional instruments

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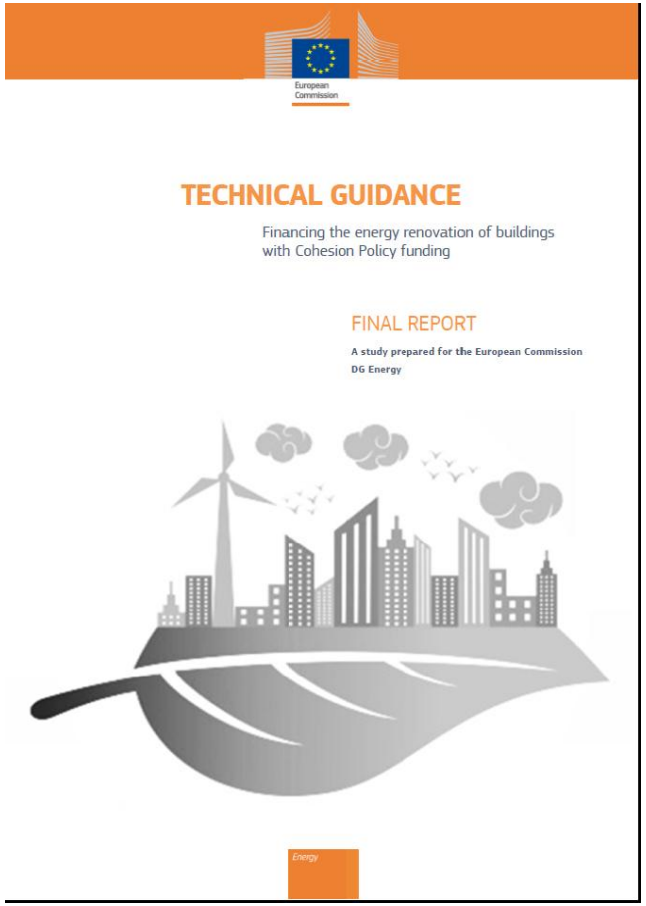
European Commission

Accompanied by guidance for investors and managing authorities



Energy Efficiency
Financial Institutions Group

Energy Efficiency - the first fuel for the EU Economy

How to drive new finance for energy efficiency investments

Part 1: Buildings (Interim Report)

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European Commission

Thank you for your attention!

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