# Energy Policy and FCH Technologies

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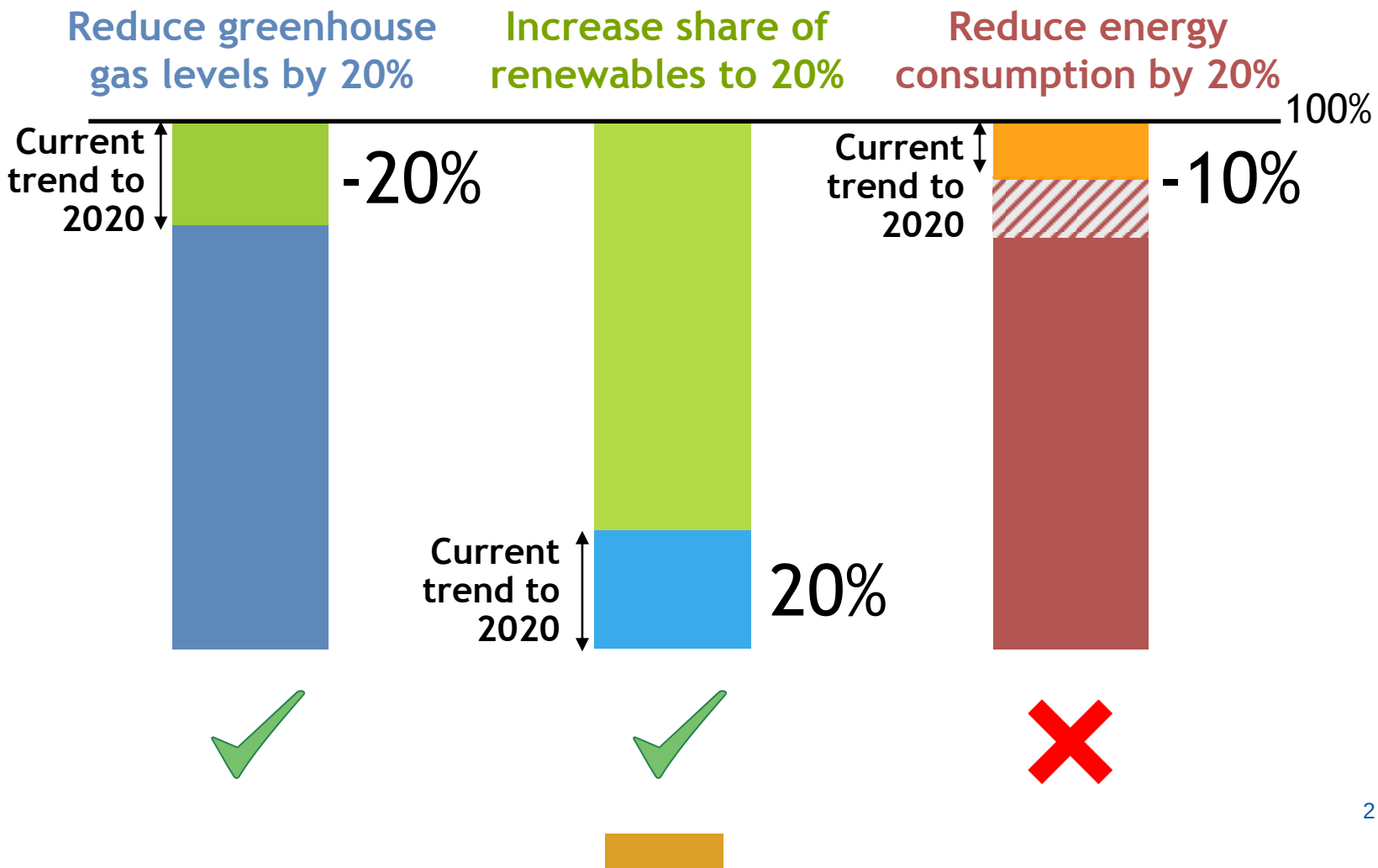
Energy

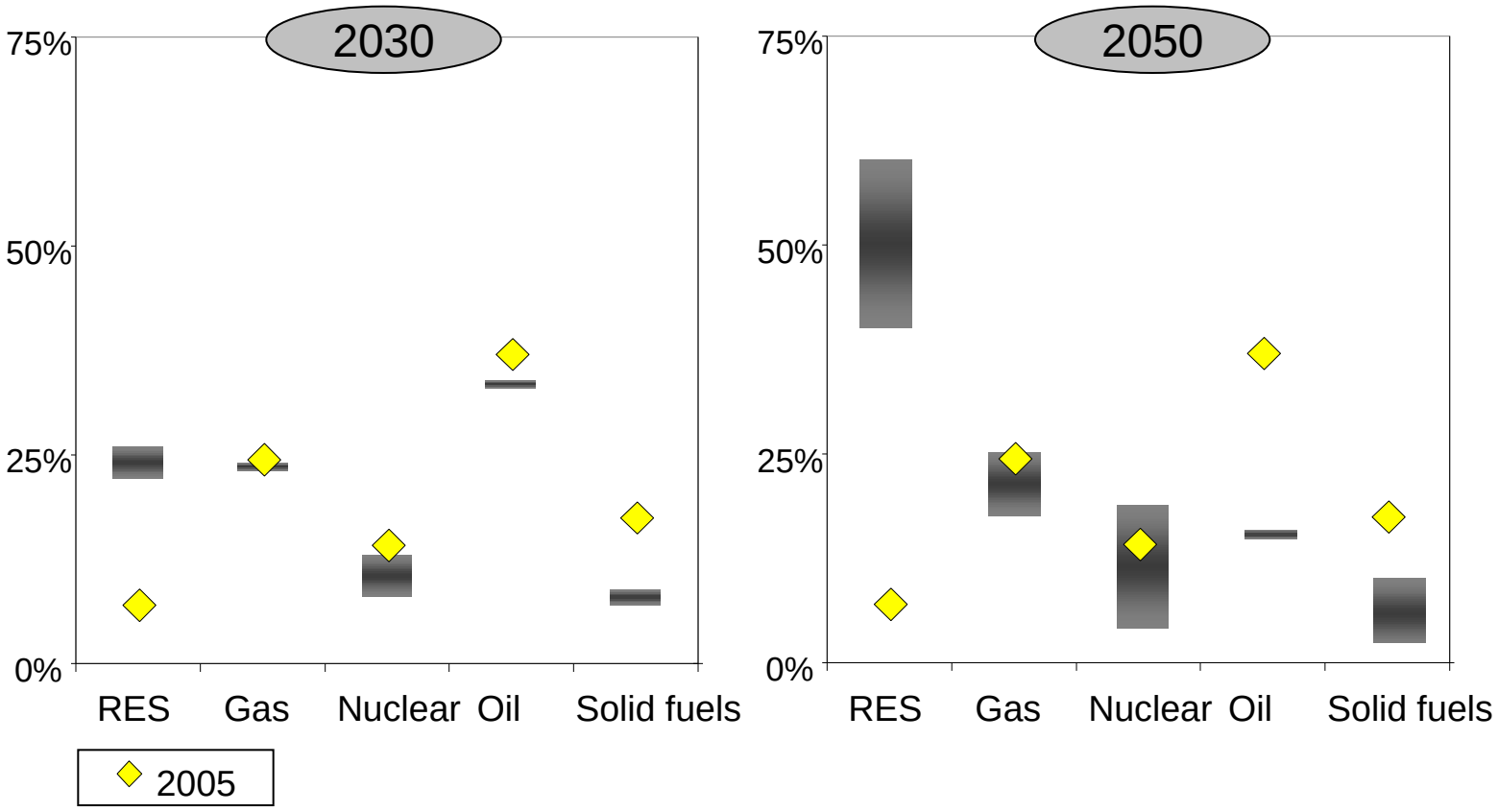
# Meeting the "20-20-20 by 2020" goals



# 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)



# The Way Forward

- 2020 strategy – precondition
- No regret options: energy efficiency, renewable energy, more and smarter infrastructure
- Need for fully integrated, well-designed markets for gas and electricity
- Innovation for low-carbon solutions
- Broader and coordinated approach

⇒ **(1) Launch a dialogue on the development of future energy systems/transformation**

⇒ **(2) Develop milestones for 2030 in an iterative process with Member States, European Parliament, stakeholders**

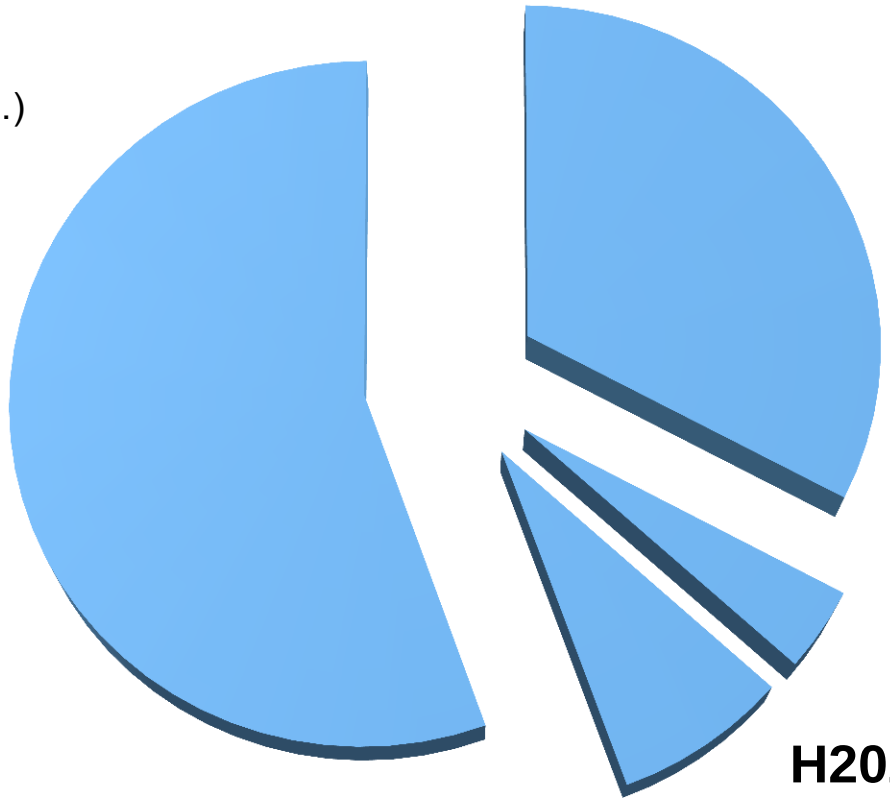
# The Communication on renewable energy policy

The Commission is taking four main actions following the Communication:

- continue to drive forward the integration of renewable energies into the internal energy market and address power generation investment incentives in the market.
- prepare guidance on best practices and experience gained on support schemes.
- promote and guide the increased use of the cooperation mechanisms, including trading of renewable energy.
- ensure improvements to the regulatory framework for energy cooperation in the Mediterranean.

# MFF 2014 - 2020

**Other policies**
(agriculture, external,…)
**55% (€569 bn)**



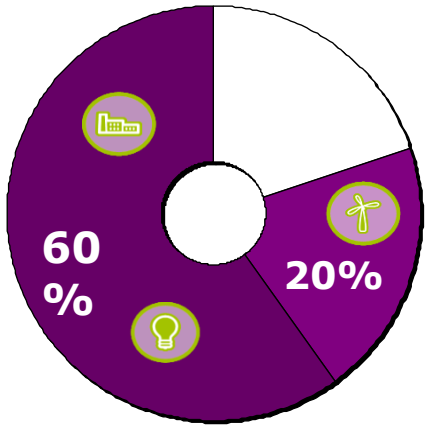
**Cohesion Policy**
**33% (€336 bn)**

**Connecting Europe Facility**
**4% (€40 bn)**

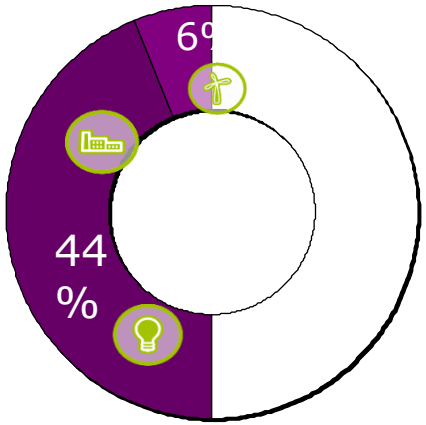
**H2020**
**8% (€80 bn)**

# Concentrating resources to maximise impact

Concentration of ERDF investments on:
energy efficiency & renewable energy
research & innovation
competitiveness of SMEs




**More developed & transition regions**




**Less developed regions**

flexibility – different regions have different needs
special arrangements for ex-convergence regions

# Connecting Europe Facility (CEF)

## Proposed funding (million euro, 2014-2020)

- - €31.7 billion to upgrade Europe's transport infrastructure, including €10 billion from the Cohesion Fund for transport projects in the cohesion countries.
- - €9.1 billion for investments in trans-European energy infrastructure.
- - €9.2 billion to support investment in fast and very fast broadband networks and pan-European digital services.

# How to integrate hydrogen in the energy chain

- Gradual transition towards higher H2 content in the whole energy chain.
- Develop the H2 infrastructure based on current opportunities, where it makes economic sense. A step-by-step approach.
- H2 blending into the NG network - The bridging solution
  - Applications will have an improved combustion/burning
  - HCNG vehicles will be more energy efficient and cleaner
  - Supports the refuelling infrastructure build-up for FC cars.
- Large-scale storage (100's TWh for weeks)
- Synergies of RES hydrogen and fossil fuels

# Steps to take & timing

## H2 production and delivery

- H2 produced from RES .
- Regulations should allow blending of H2 into the NG network.

## Power & heat

- CHP solutions should be improved by increasing the power/heat ratio, which would make these applications generally more suitable for the future energy system.
    - Near zero energy buildings and changes in consumption patterns.

## Mobility

- ICE cars should exploit the possibility of blending hydrogen into the NG network.
    - Immediate environmental impact.
    - Technically and financially solid option today.
    - The cost difference gas-oil will partially finance the expansion of gas infrastructure now and that will benefit the H2 infra later.

# Possible timeline for Hydrogen technologies in a low-carbon transition

| 2020 | 2030 | 2050 |
|---|---|---|
| • Storage: An EU level coordinated approach to the role of large-scale Hydrogen storage and its implementation. Blending of RES hydrogen in NG grid | • Storage: Increasing quantity of RES power smoothly integrated with large-scale H2 storage facilities. | • Storage: Large-scale H2 storage facilities an integral part of the low-carbon energy chain, responding to power and fuel demand. |
| • Delivery: Blending of RES hydrogen in NG grid up to 3% and grid expansion. | • Delivery: Blending of RES hydrogen in NG grid up to 15%, distributed reforming and separation technologies (H2/NG), competitive and build-up of hydrogen pipeline grid. | • Delivery: Blending of RES hydrogen in natural gas pipelines up to 15%, NG/H2 separation technologies common and main parts of hydrogen pipeline grid functional. |
| • CHP: Increased market uptake of micro-CHP appliances. | • CHP: Mature markets for micro-CHP appliances and interaction with electricity grid. | • CHP: Mature markets for micro-CHP appliances and interaction with smart grid. |
| • Mobility: Fuel cell vehicle and battery electric vehicle markets maturing. Market uptake of HCNG fuelled ICE cars. | • Mobility: FC and BEV markets mature. HCNG fuelled ICE cars largely deployed. | • Mobility: ICE, FC and BEV's providing solutions for cost-effective energy efficiency and emissions reductions. |


European Commission
Thank you for your attention!
Energy