Supporting the European Strategic Energy Technology Plan (SET-Plan)

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The need for the SET-Plan

- **Technology is vital** to achieve the EU Energy and Climate Change policy objectives

- But today **we are falling short**:
  - Insufficient energy research budgets in the EU
  - Structural weaknesses in technology innovation
  - International competitors are already accelerating their efforts

- **We need to use the ambition and the targets of the EU Energy Package to create a new European policy for energy technology (SET-Plan)**

The essence of the SET-Plan

- **Joint strategic planning** – New governance structure - align innovation efforts with energy policy goals

- **Effective implementation**
  - European large projects on technology development
  - Strengthening European energy research capacities

- **Increased resources**, both financial and human

- Reinforced **international cooperation**

Candidate technologies

- **Medium term**
  - 2nd generation biofuels
  - Carbon Capture and Storage (CCS)
  - Wind energy
  - Photovoltaics (PV) and Concentrated Solar Power (CSP)
  - A single European electricity grid
  - Energy efficiency
  - Fission technologies
- **Long term**
  - Next generation Renewable Energy Sources (RES)
  - Energy storage technologies
  - Hydrogen fuel cell vehicles
  - New generation (Gen-IV) of fission reactors
  - ITER fusion facility

The contribution of the JRC

- **Facilitator of the consultation process with the European energy research and industry**
  - Hearings and workshops with 18 technologies
- **Lead author of the Impact Assessment**
  - Assessment of the policy options for the SET-Plan
- **Capacity Map**
  - Analysis of the European research and innovation capacities in the EU
- **Technology Map**

The Technology Map

- The **Technology Map** is a brief and comprehensive description of the current status and prospects of key energy technologies.

- ✓ The **purpose** of the technology map is to provide information for the identification of potential European initiatives that could be considered as part of a SET-Plan.

- ✓ The goal of the technology map **is achieved** by quantifying the contributions of technologies to CO2 emission reductions, fossil fuel savings and changes in the cost of energy.

The Content of the Technology Map

For each technology the Map describes:

1. The current status and the anticipated technological developments
2. The current and future share in the European energy demand
3. The quantified impacts of technology penetration on:
   - *Greenhouse gas emissions*
   - *Security of supply*
   - *Competitiveness*
4. Barriers to penetration in the European energy market
5. Needs to realise its potential
6. Synergies with other technologies and sectors

Technologies addressed in the current Map

Power and Heat

- Wind power generation
- Solar photovoltaic power generation
- Concentrated solar power generation
- Solar heating and cooling
- Hydropower generation
- Geothermal
- Ocean wave power generation
- Cogeneration of heat and power
- Zero emission fossil fuel power generation
- Nuclear fission power generation
- Nuclear fusion

Energy Infrastructures

- Electricity networks (Smart Grids)

Transport

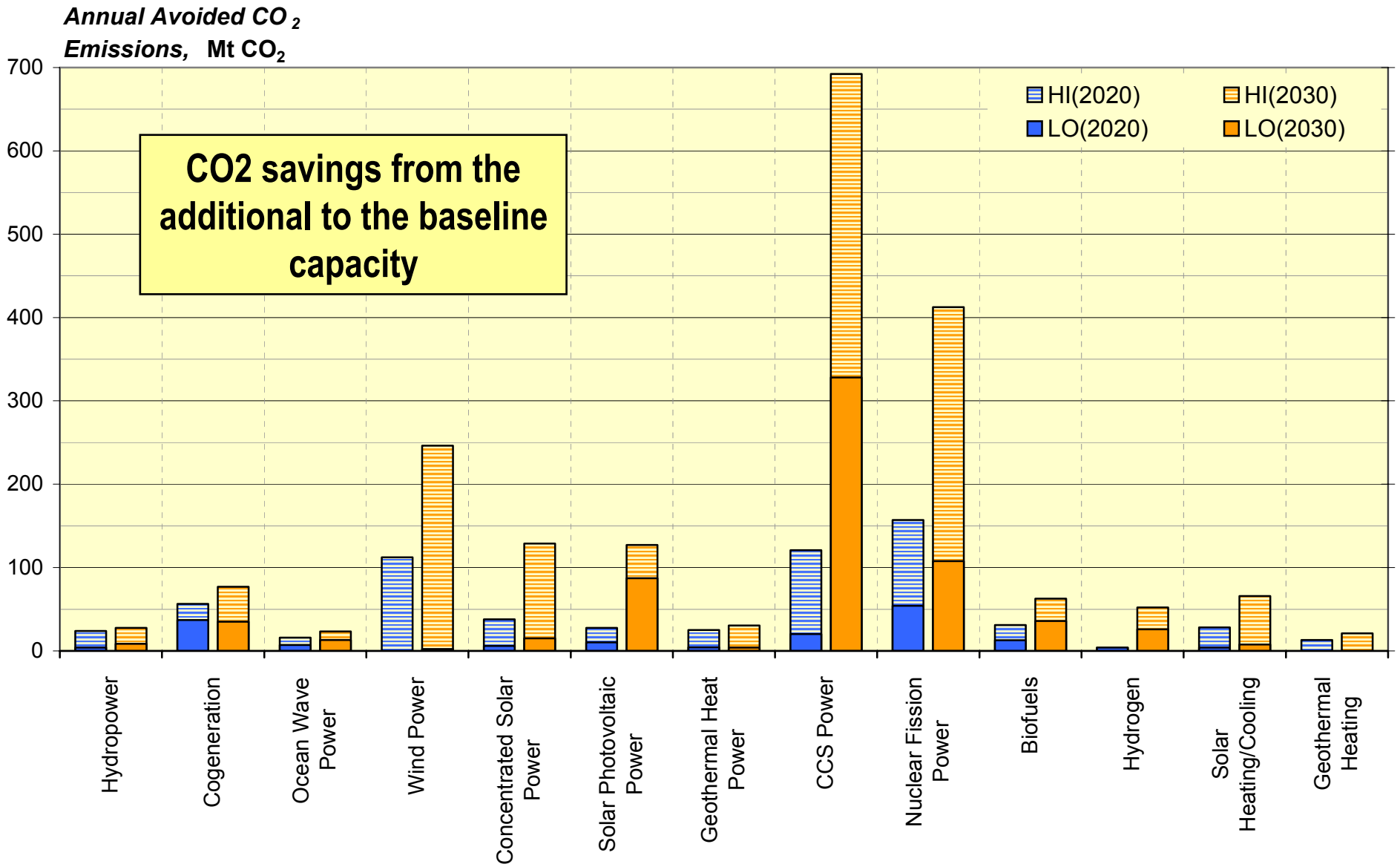
- Biofuels
- Hydrogen and fuel cells

Methodology

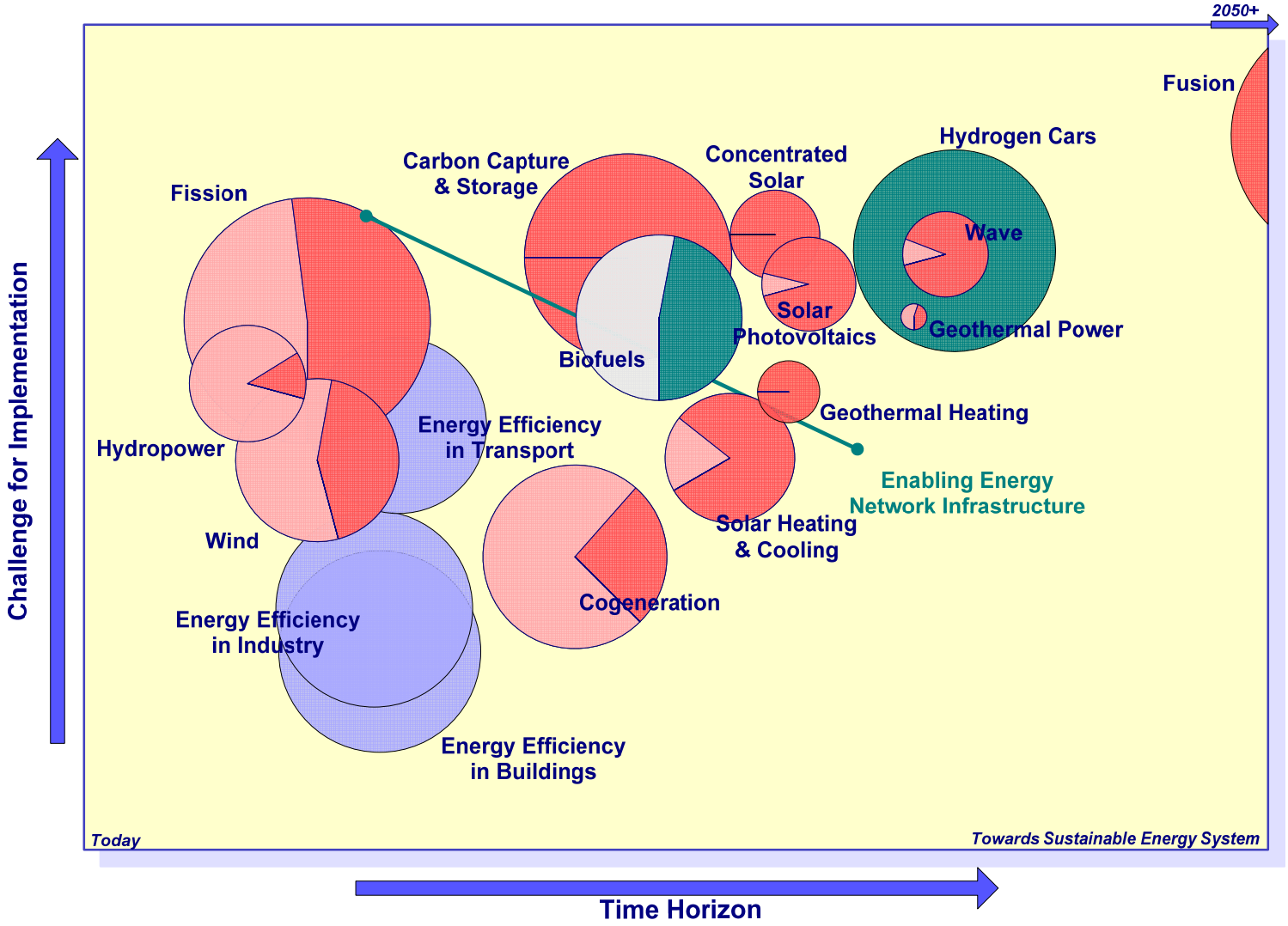
A common assessment framework for all technologies

- Basic principle: Evaluation of the additional effect of the penetration of each technology individually into an established BAU baseline scenario
- Time horizon: 2030
- Key assumption: Technologies replace their fossil fuel based conventional counterpart technologies that produce the same energy carrier
- Input: SET-Plan hearings and workshops, relevant FP projects, JRC data and analysis

Example – CO2 emission reductions



Potential contribution of technologies



Epilogue

Change will not come about overnight

But it won't come at all if we do not act

We have to build a strategic and inclusive process that will progressively strengthen energy research and innovation in Europe. But we have to start now – delay will cost jobs and growth in the medium and longer terms

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