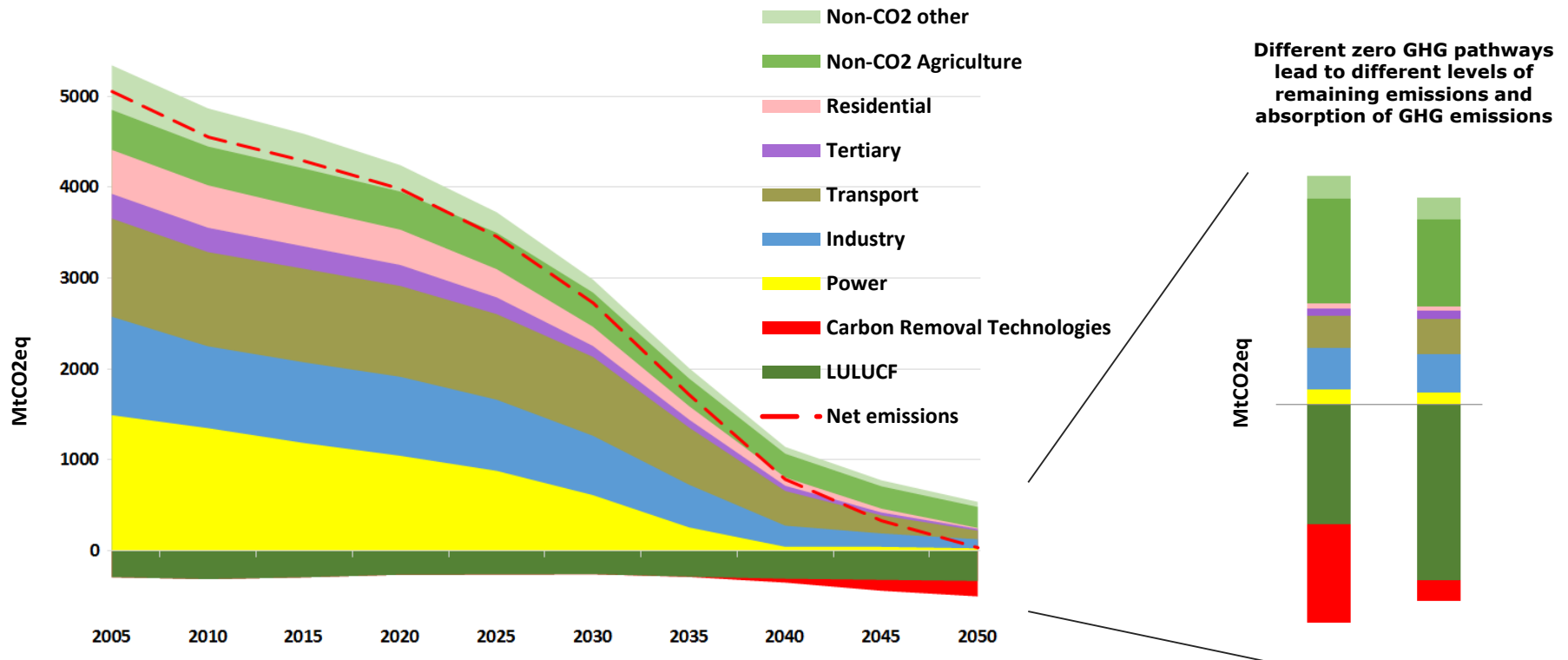


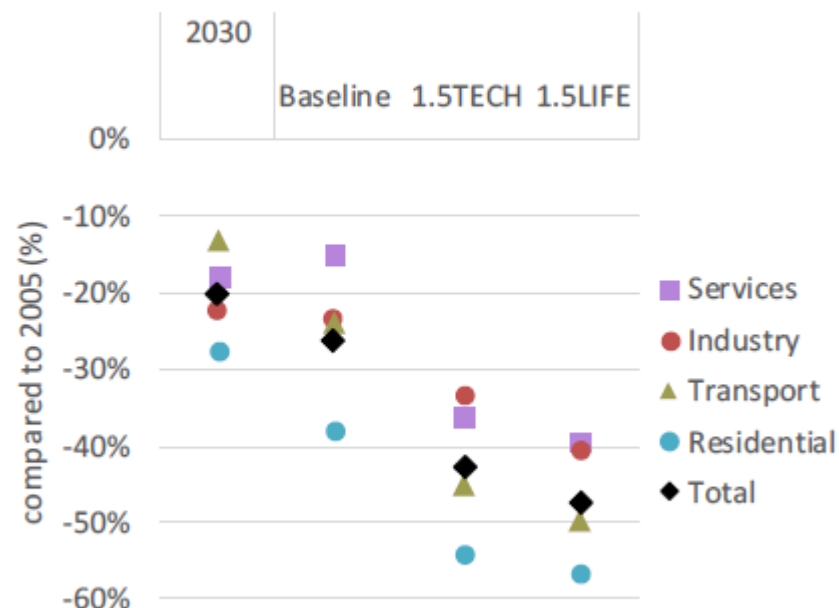
Vision for a Clean Planet by 2050

There are a number of pathways for achieving a climate neutral EU, challenging but feasible from a technological, economic, environmental and social perspectives.



Building Block 1 - Energy efficiency

Changes in sectoral final energy consumption
(% change vs 2005)



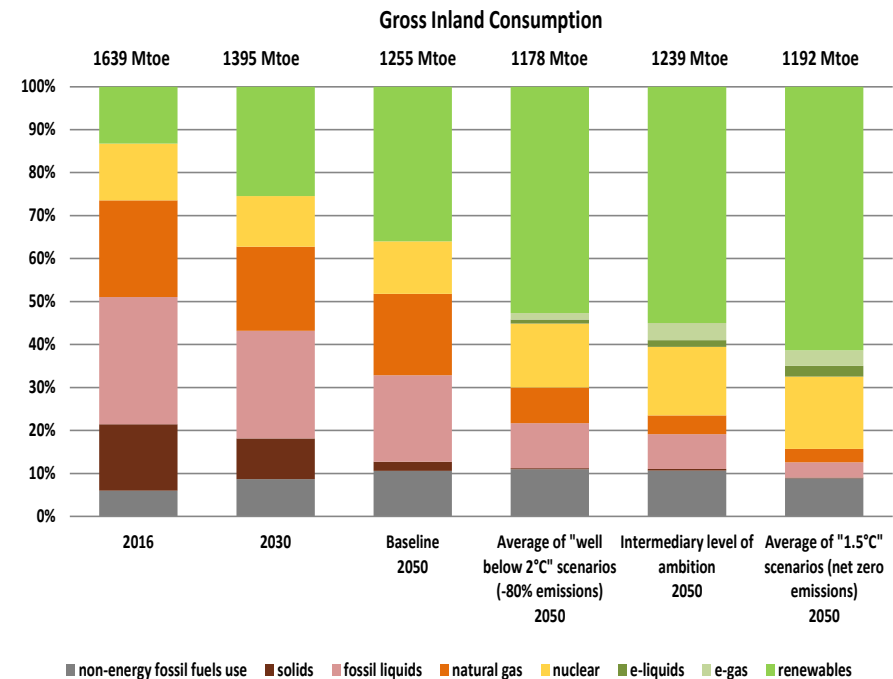
Note: "Services" includes here the agriculture sector.

Source: Eurostat (2005), PRIMES.

- Energy consumption to be **reduced by half in 2050** compared to 2005
- **Buildings key** with **higher renovation rates**

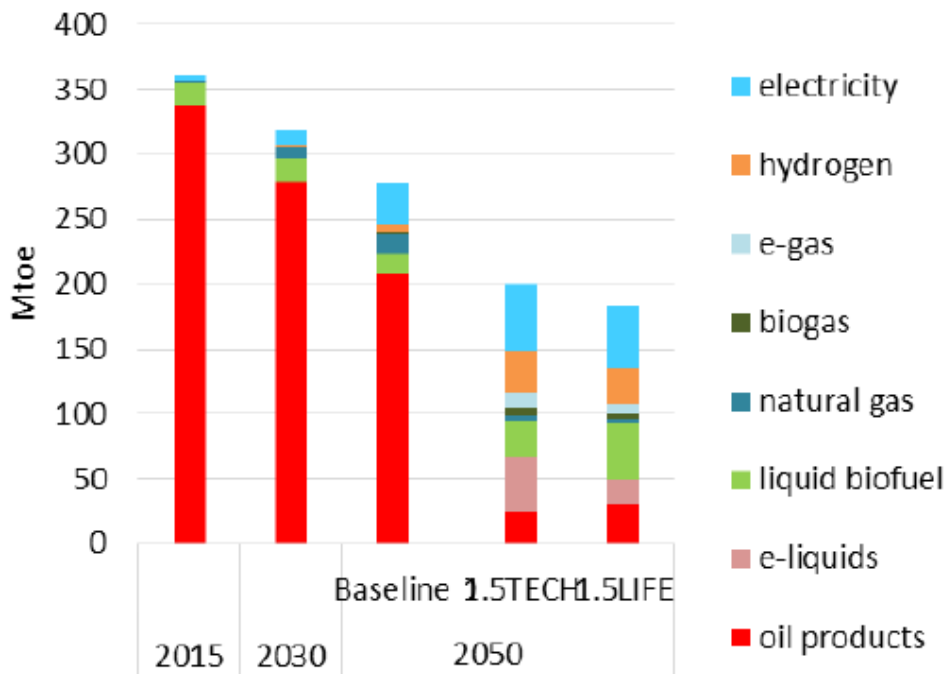
Building Block 2 - Deployment of renewables

- **Doubling** the demand in **electricity**, more than **80%** of it will be **renewable**.
- Production of **carbon-free energy carriers**.
- **Reduction of energy import dependence**.



Building Block 3 - Clean, safe & connected mobility

Fuels consumed in the transport sector in 2050

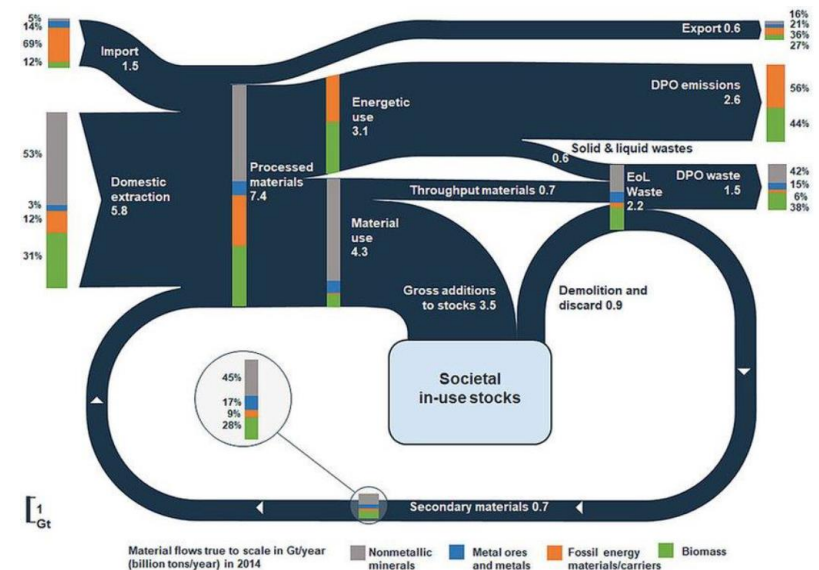


Source: PRIMES.

- Cheaper, efficient and sustainable **batteries** for cars.
- **Alternative** fuels for heavy duty vehicles, aviation, maritime
- **Connected** and more efficient mobility system.
- **Innovative mobility** for urban areas and smart cities.

Building Block 4 - Competitive industry

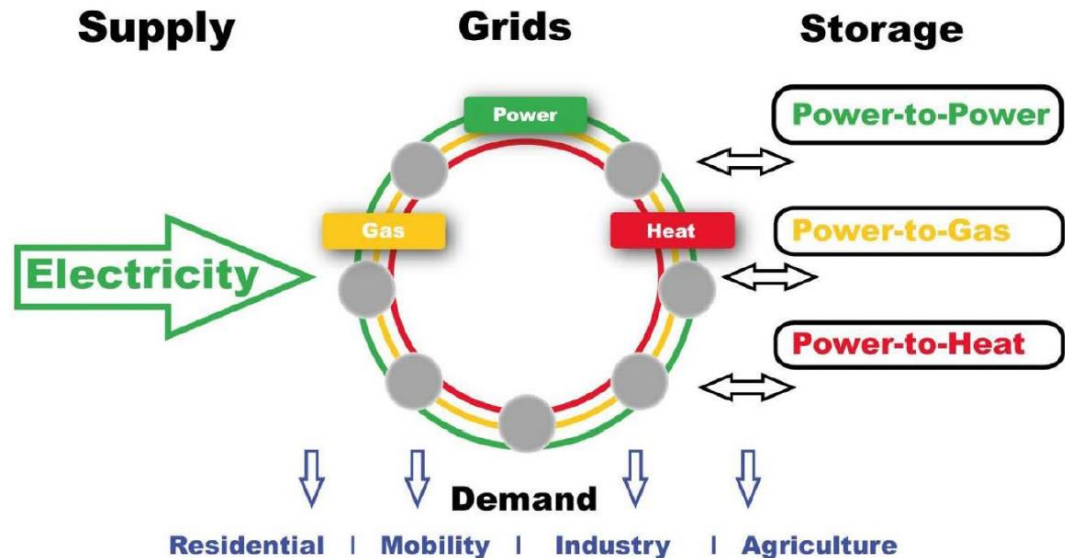
- **Competitiveness**
- **Resource-efficiency and circular economy**
- **Energy emissions**
- **Process emissions** more challenging
- Long-term **investments**



Source: Mayer et al (2018)⁸³⁰.

Building Block 5 - Network infrastructure

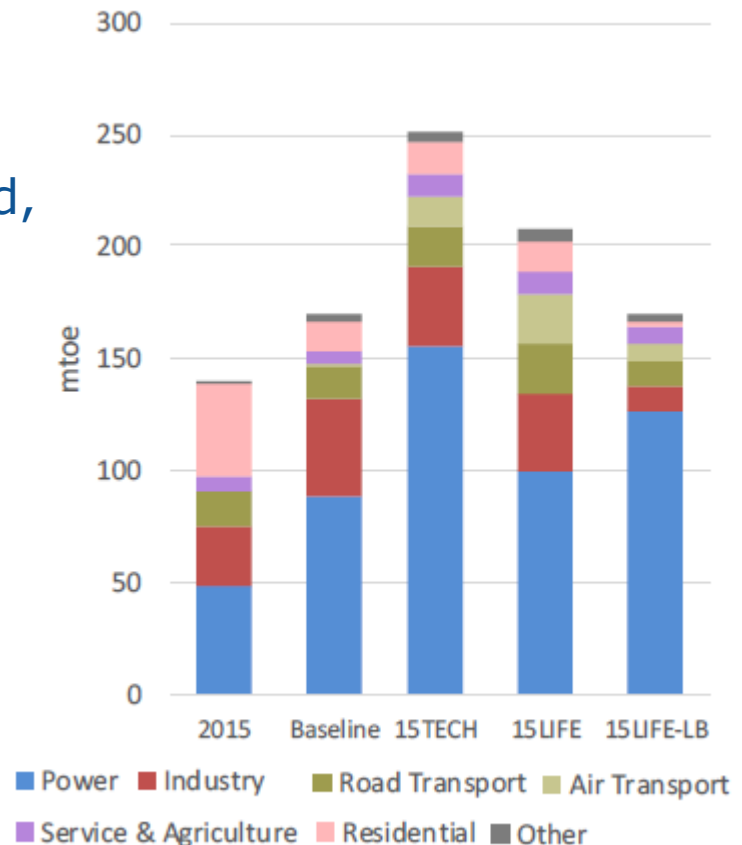
- **Integrated** and **interconnected** smart infrastructure.
- Smart **charging or refuelling stations** for transport.
- **Hydrogen pipelines**
- **Timely replacement** of infrastructure



Building Block 6 - Bio-economy

- **Reducing emissions from agriculture** while continuing to provide sufficient food, feed and fibre.
- **Biomass is multipurpose**
- Key role of **energy crops**
- Enhanced **natural carbon sink**

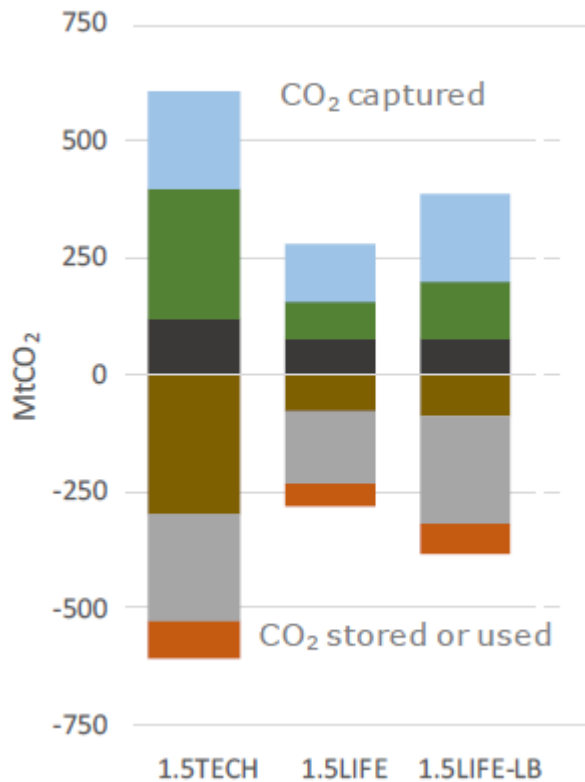
Use of bioenergy by sectors and by scenario in 2050



Source: PRIMES.

Building Block 7 - Carbon Capture and Storage

CO₂ capture and storage or reuse (2050)



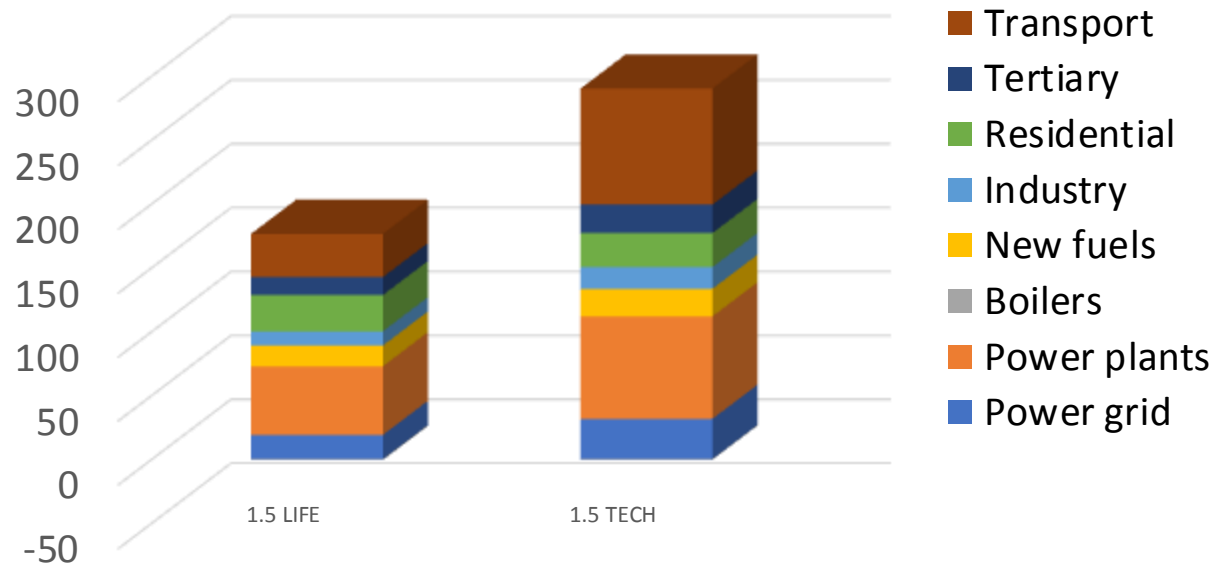
- Net-zero greenhouse gas emissions still requires **CCS for certain energy-intensive industries.**
- CCS can eventually generate **negative emissions.**
- CCS today is **facing barriers**, an enabling framework is needed.

Fossil Fuel
 Biomass
 Direct Air

Underground Storage
 Synthetic Fuels
 Synthetic material

Stimulating clean investment into the EU economy

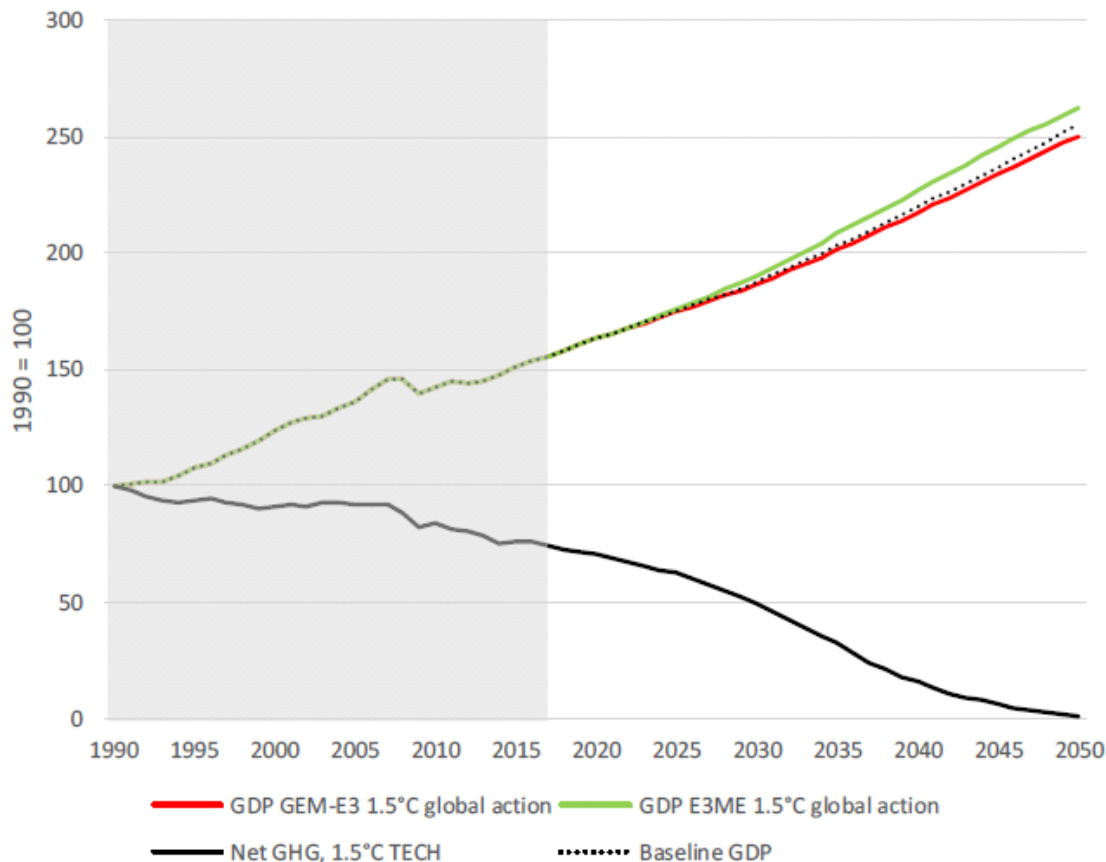
Incremental annual sectoral investment to reach a climate neutral Europe by 2050, [in bn €, average 2031-2050]



- Modernising the EU's economy will **stimulate significant additional investment**

- From 2% of EU GDP invested in the energy system today to **2.8%** to achieve a **net-zero greenhouse gas emissions economy**

Modernisation with full decoupling of EU GDP growth and emissions by 2050

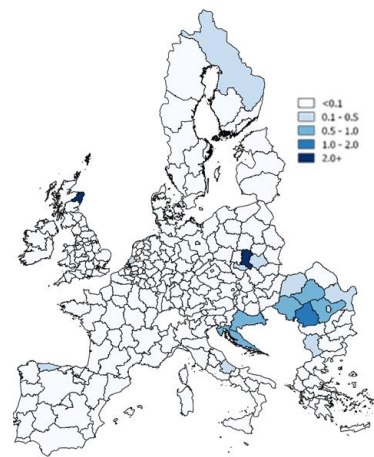


- **Positive for growth** and jobs, with GDP impact up to +2%
- **Co-benefits:** energy imports down, public health, etc.
- **Caveat:** This calculation does not take the climate change damages, adaptation costs or co-benefits of climate action.

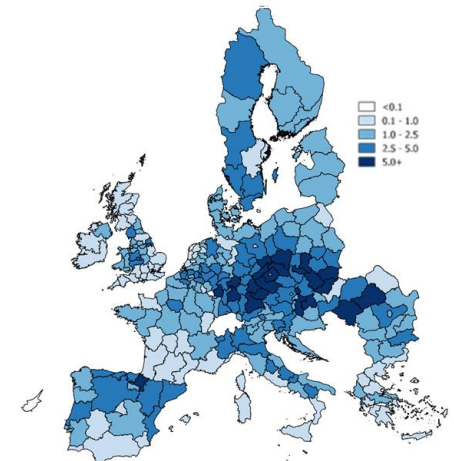
Just transition

- Overall economic impacts positive.
- The transition will **spur green jobs and growth in new sectors**. Some sectors will face **challenges** and others **transformations**
- Modernisation process has to be managed, **no-one left behind**
- EU budget, **employment and cohesion policies** have a role
- **Skill training** is key

Share of employment
fossil fuel extraction and mining



Share of employment
Energy Intensive Industries &
Automotive Manufacturing



Role of citizens and local authorities

- Transition can only be successful with **citizens that embrace change** and experience it as beneficial
 - Personal **lifestyle** choices can make a real difference, while **improving quality of life**
 - **Better spatial planning** are drivers to renovate houses, improving living conditions, reducing travel time
 - Improved planning and public infrastructure to **withstand more extreme weather events** will be imperative
 - The EU should capitalise on and **expand the role of regions, cities and towns**
- 
- A solid orange square located at the bottom center of the slide.

Global dimension

- The EU's long-term strategy **cannot be pursued in isolation.**
- Role of energy and **climate diplomacy**
- **Open markets** and **multilateralism** are a precondition
- EU to prepare for **geopolitical changes**



- **Trade policy** to promote new technologies while defending fair access to markets
- safeguard EU **economic and social development.**

FIGHTING CLIMATE CHANGE TOGETHER

#United4Climate

EU CLIMATE ACTION

EU climate & energy
goals for 2020

REACHED ALREADY



EU climate & energy
goals for 2030

ALL KEY EU LAWS FINALISED



Paris Agreement &
international cooperation

REAPING THE OPPORTUNITIES
& FIGHTING CLIMATE CHANGE TOGETHER



Long-term strategy for a
climate-neutral EU in 2050

EVERYONE TO CONTRIBUTE!



You!

We need everyone
on board!



#EU2050

<https://ec.europa.eu/clima/news/commission-calls-climate-neutral-Europe-2050.en>