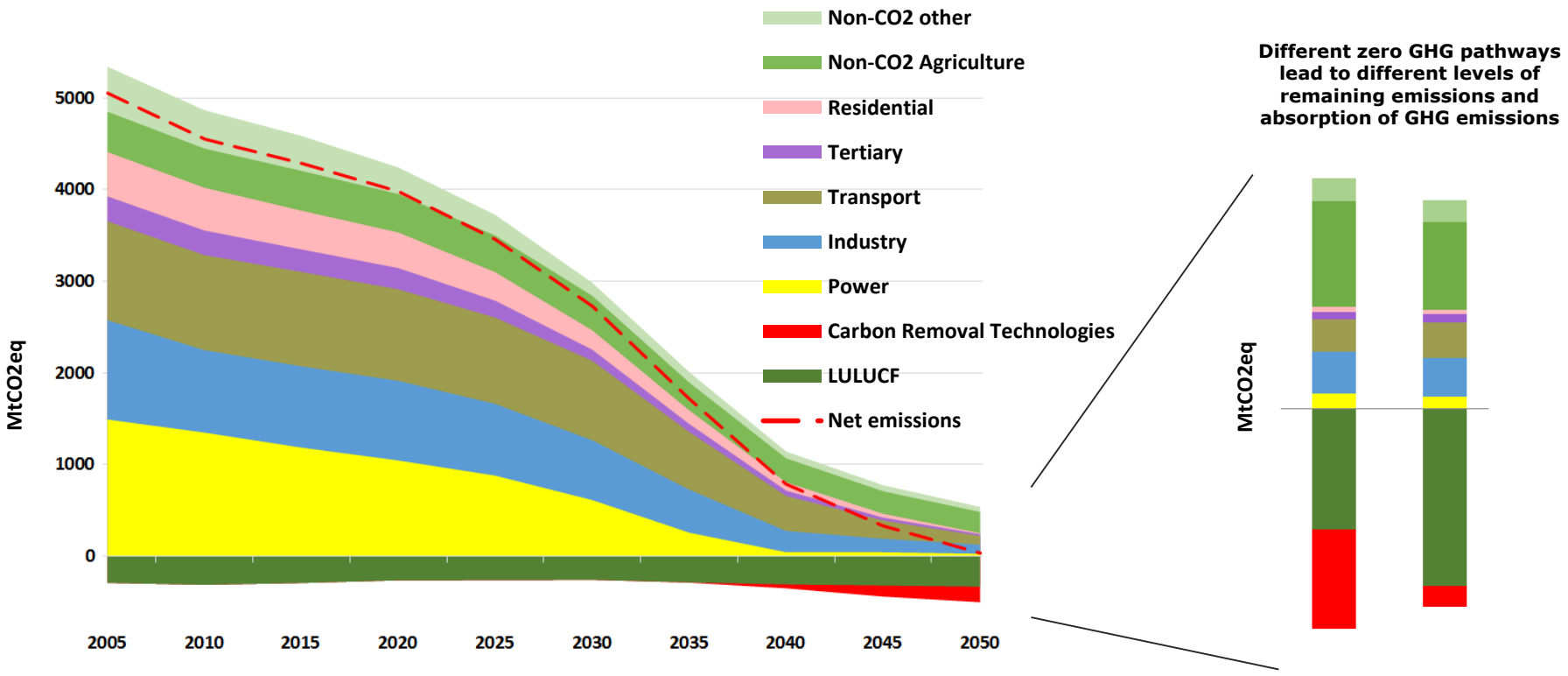
A European strategic long term vision for a prosperous, modern, competitive and climate neutral economy by 2050

, Bratislava, 19/11/2019

Elena Višnar Malinovská, Head of Unit, European Commission

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.



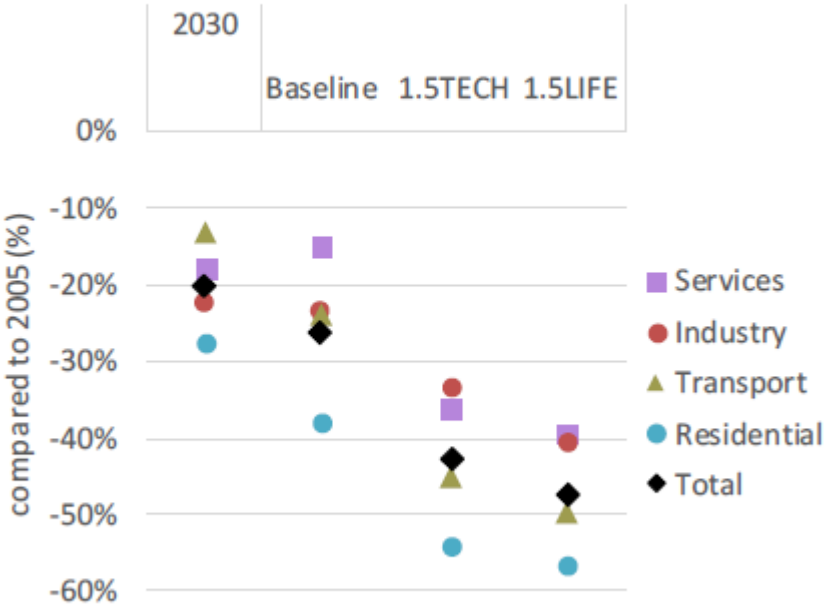
7 Building Blocks

1. Energy efficiency
2. Deployments of renewables
3. Clean, safe & connected mobility
4. Competitive industry and circular economy
5. Infrastructure and inter-connections
6. Bio-economy and natural carbon sinks
7. Tackle remaining emissions with carbon capture and storage

Building Block 1 - Energy efficiency

- Central role
- Energy consumption to be reduced by as much **as half in 2050 compared to 2005**
- Most of the housing stock of 2050 exists already today
- Requires **adequate financial instruments and skilled workforce** to sustain significantly higher renovation rates

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

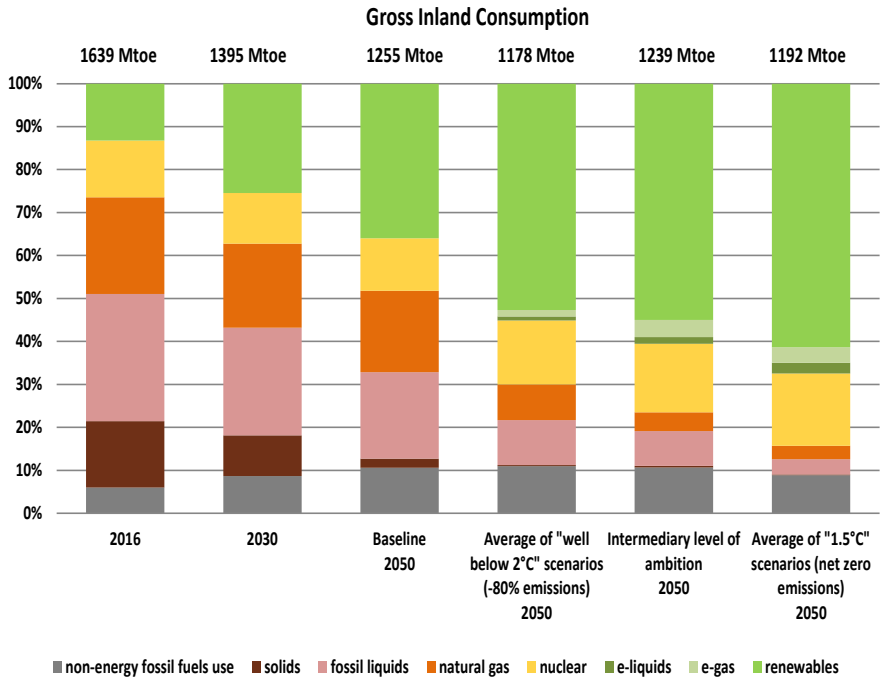


Note: "Services" includes here the agriculture sector.

Source: Eurostat (2005), PRIMES.

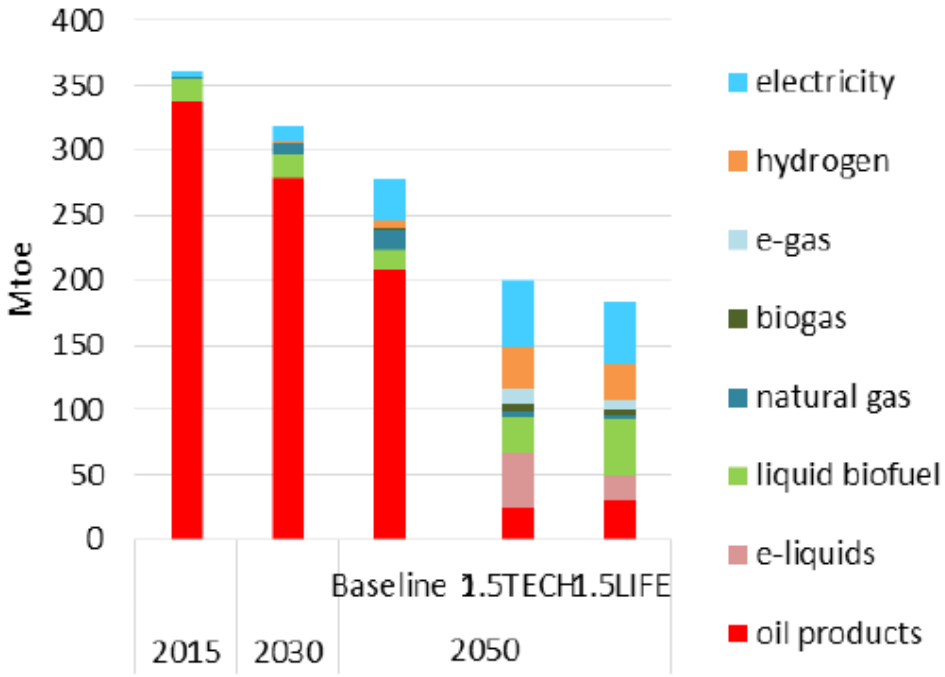
Building Block 2 - Deployment of renewables

- The share of electricity in final energy demand will **at least double**, **more than 80%** of it will be renewable.
- Renewable electricity allows production and deployment of carbon- free energy carriers such as hydrogen and e-fuels to decarbonize heating, transport and industry.
- **Decentralized, smart and flexible** power system.
- Reduction of energy import dependence, cumulative savings from reduced import bill of **€ 2-3 trillion over the period 2031-2050.**



Building Block 3 - Clean, safe & connected mobility

Fuels consumed in the transport sector in 2050

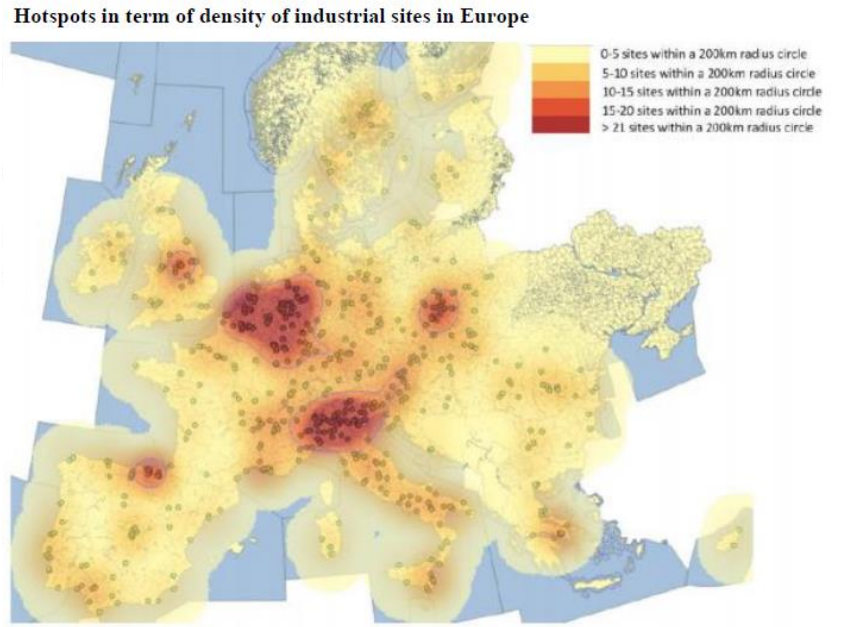


Source: PRIMES.

- Cheaper, efficient and sustainable batteries, highly efficient electric powertrains, connectivity and autonomous driving offers prospects to decarbonise road transport.
- **No single silver bullet for all transport modes** with alternative fuels having a role in heavy duty or long distance transport modes (advanced biofuels, carbon-free e-fuels, hydrogen).
- Digitalisation, data sharing and interoperable standards leading to a more efficient mobility system.
- Innovative mobility for urban areas and smart cities, underpinned by changing behaviour, leading to improvement of quality of life.

Building Block 4 - Competitive industry

- Competitive resource-efficient industry and circular economy, increased recovery and recycling of raw materials (including critical materials), **new materials and business concepts.**
- Electrification, energy efficiency, hydrogen, biomass and renewable synthetic gas to reduce energy emissions in the production of industrial goods.

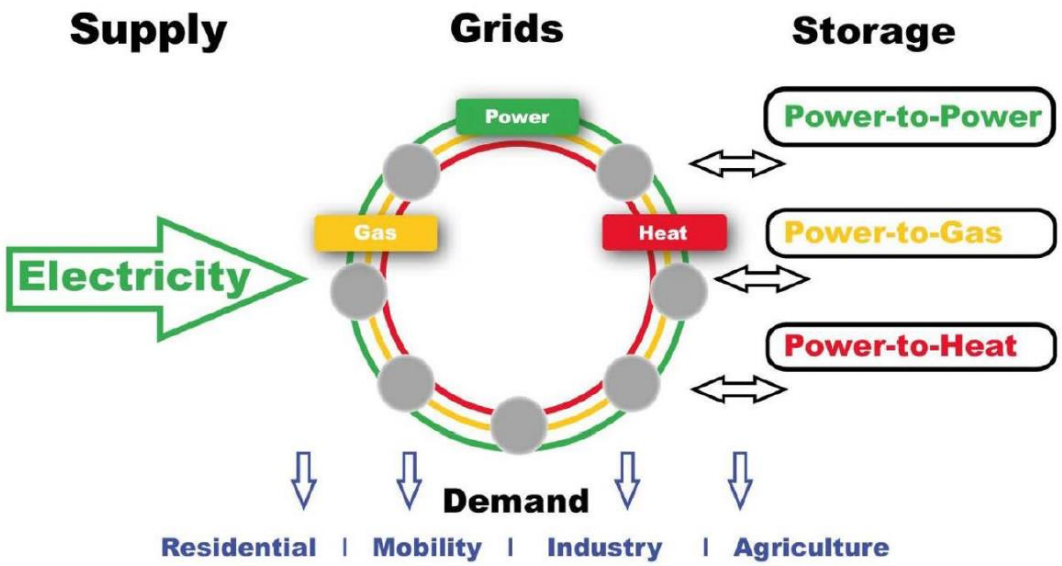


Source: EPOS SPIRE Project.

- Process-related reductions more difficult. Biomass and hydrogen can reduce certain emissions (steel production, some chemicals), others will require **CO2 to be captured and stored or used.**
- In the next 10 to 15 years, technologies that are already known will need to demonstrate that they can **work at scale.**

Building Block 5 - Network infrastructure

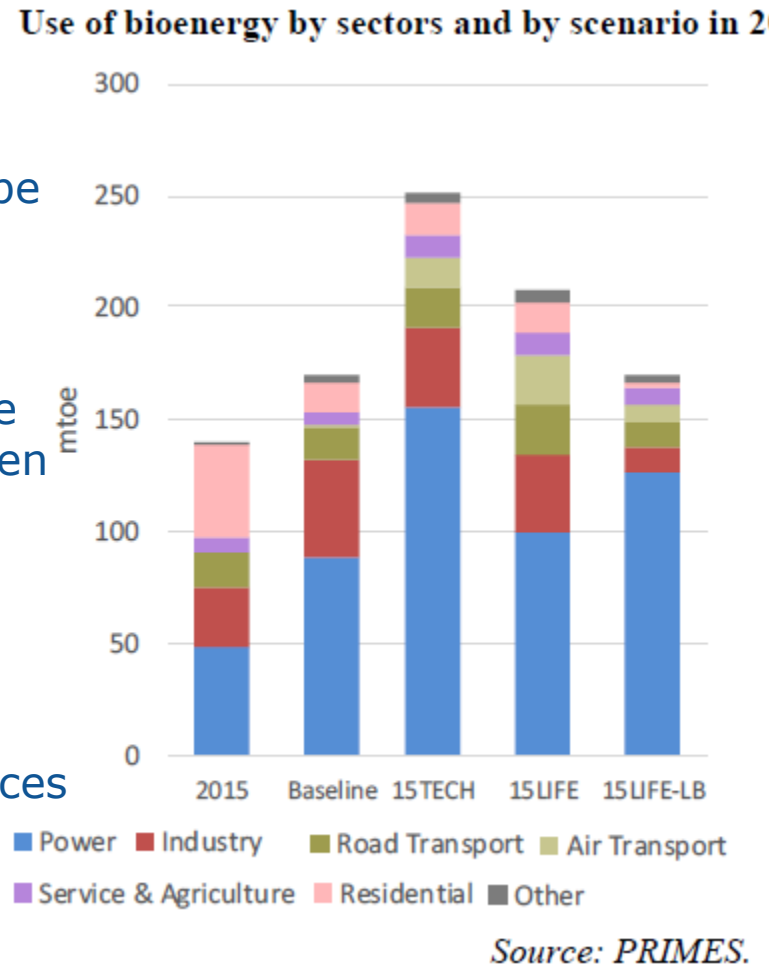
- Integrated and interconnected smart infrastructure.
- Completion of the Trans-European Transport and Energy Networks.
- Smart electricity and data/information grids, hydrogen pipelines, **further sector integration**.



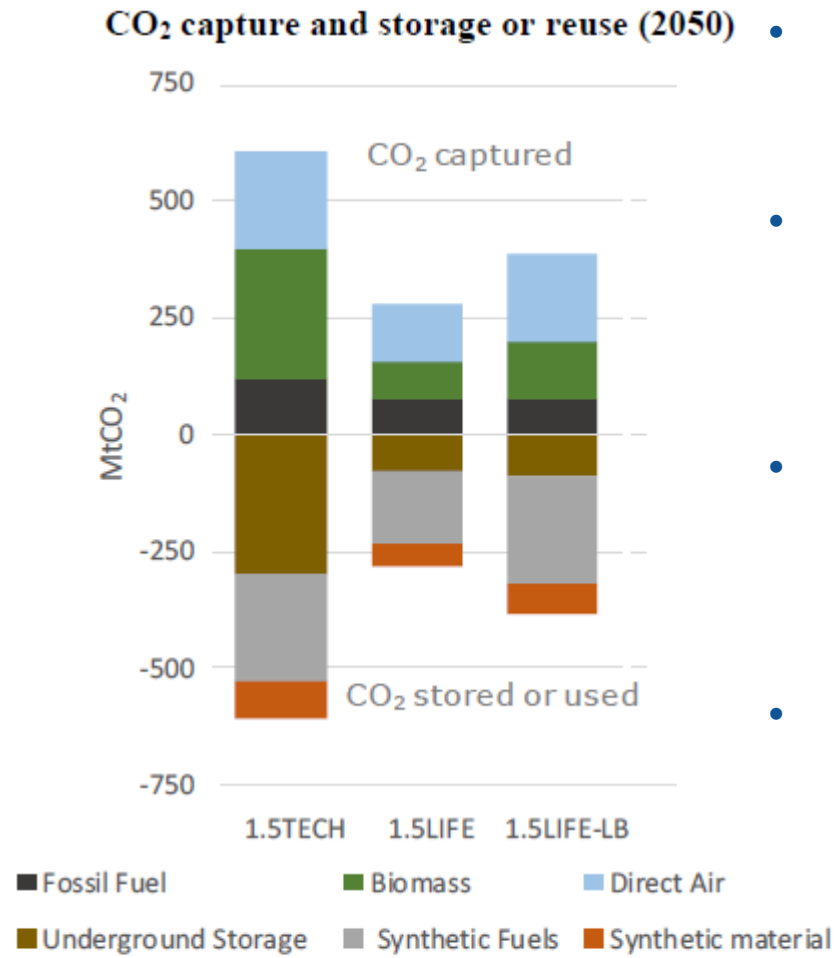
- Smart charging or refuelling stations for transport. **Increased synergy between transport and energy systems.**
- Retrofitting existing infrastructure and assets and timely replacement of ageing infrastructure compatible with the deep decarbonisation objective.

Building Block 6 - Bio-economy

- Agriculture to provide sufficient food, feed and fibre. Agricultural non-CO_2 emissions can be reduced (but not to zero) and soil carbon can be increased through **improved farming techniques**.
- Biomass is multipurpose: supply direct heat, biogas, biofuels, alternative to carbon intensive materials and generate negative emissions when coupled with carbon capture and storage; therefore increased demand (up to 80%).
- **Natural carbon sink can be enhanced through afforestation and restoration** of degraded forest lands and other ecosystems (benefiting biodiversity, soils and water resources and increase biomass availability over time).



Building Block 7 - Carbon Capture and Storage

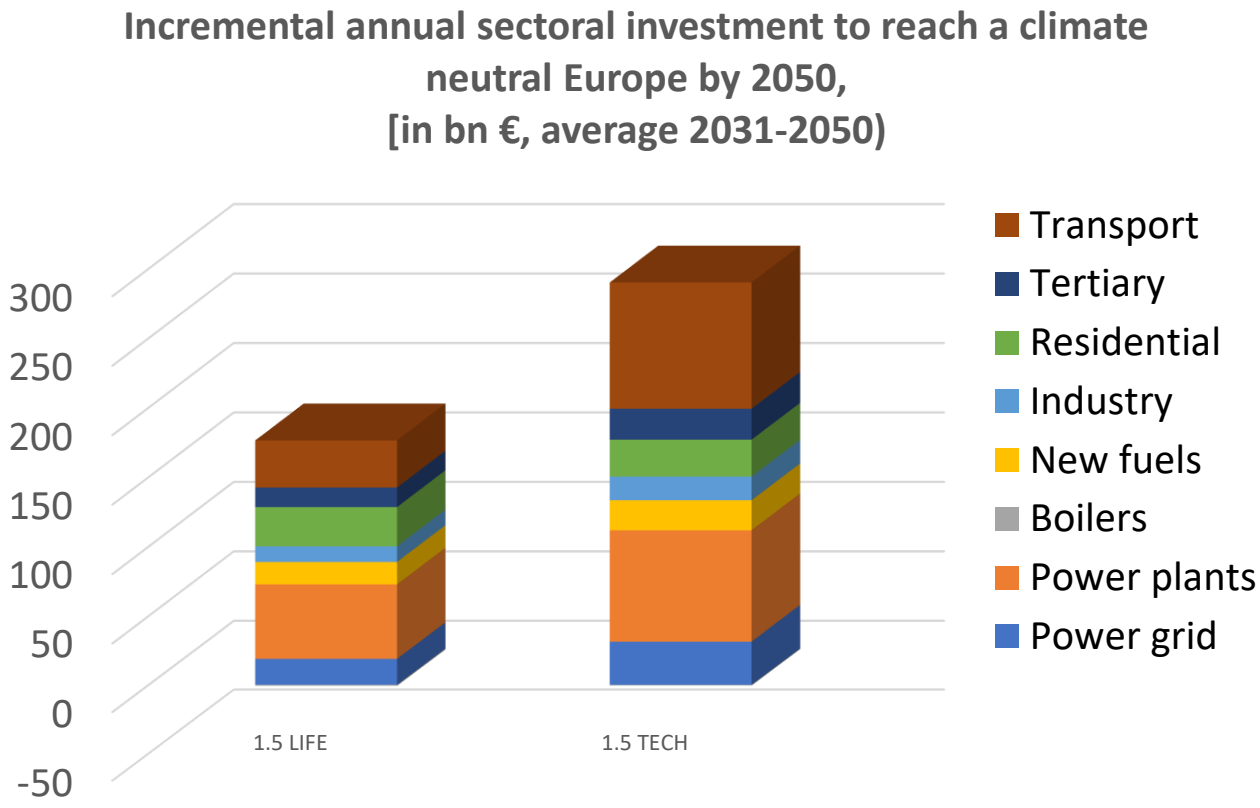


Source: PRIMES.

- Rapid deployment of renewable energy and new options to decarbonize industry reduced the need for CCS.
- But to achieve net-zero greenhouse gas emissions, **CCS still required for certain energy-intensive industries** and eventually to generate negative emissions.
- CCS today is facing barriers: lack of demonstration plant and proof of economic viability, regulatory barriers in some MS, public acceptance.
- An enabling framework is needed to spur research and innovation, scale up private investments, provide the right signals to the markets and reassure public opinion.

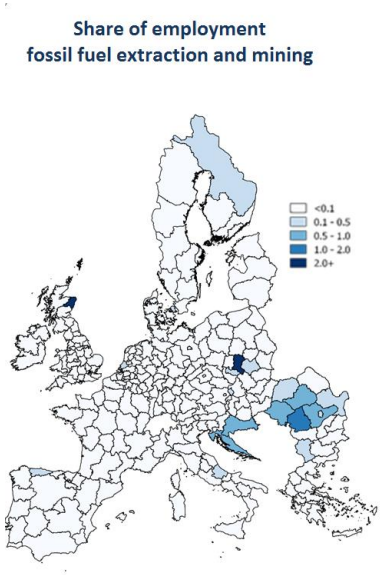
Stimulating clean investment into the EU economy

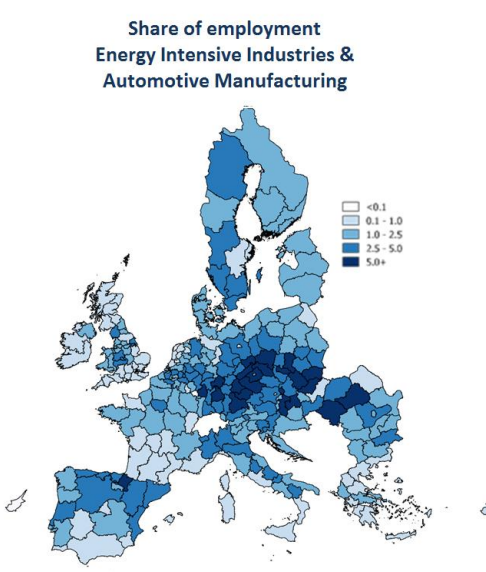
- Modernising the EU's economy will stimulate significant additional investment
- From 2% of EU GDP invested in the energy system today to 2.8% to achieve a net-zero greenhouse gas emissions economy



Just transition

- Overall economic impacts of the deep transformation are positive.
- The transition will spur growth in new sectors. 'Green jobs' already represent 4 million jobs in the EU.
- But some sectors will face challenges (e.g. coal mining and fuel extraction) and others will transform (e.g. energy-intensive industries and automotive sector).
- Modernisation process has to be managed, no-one left behind, EU budget, employment and cohesion policies have a role
- Skill training is key

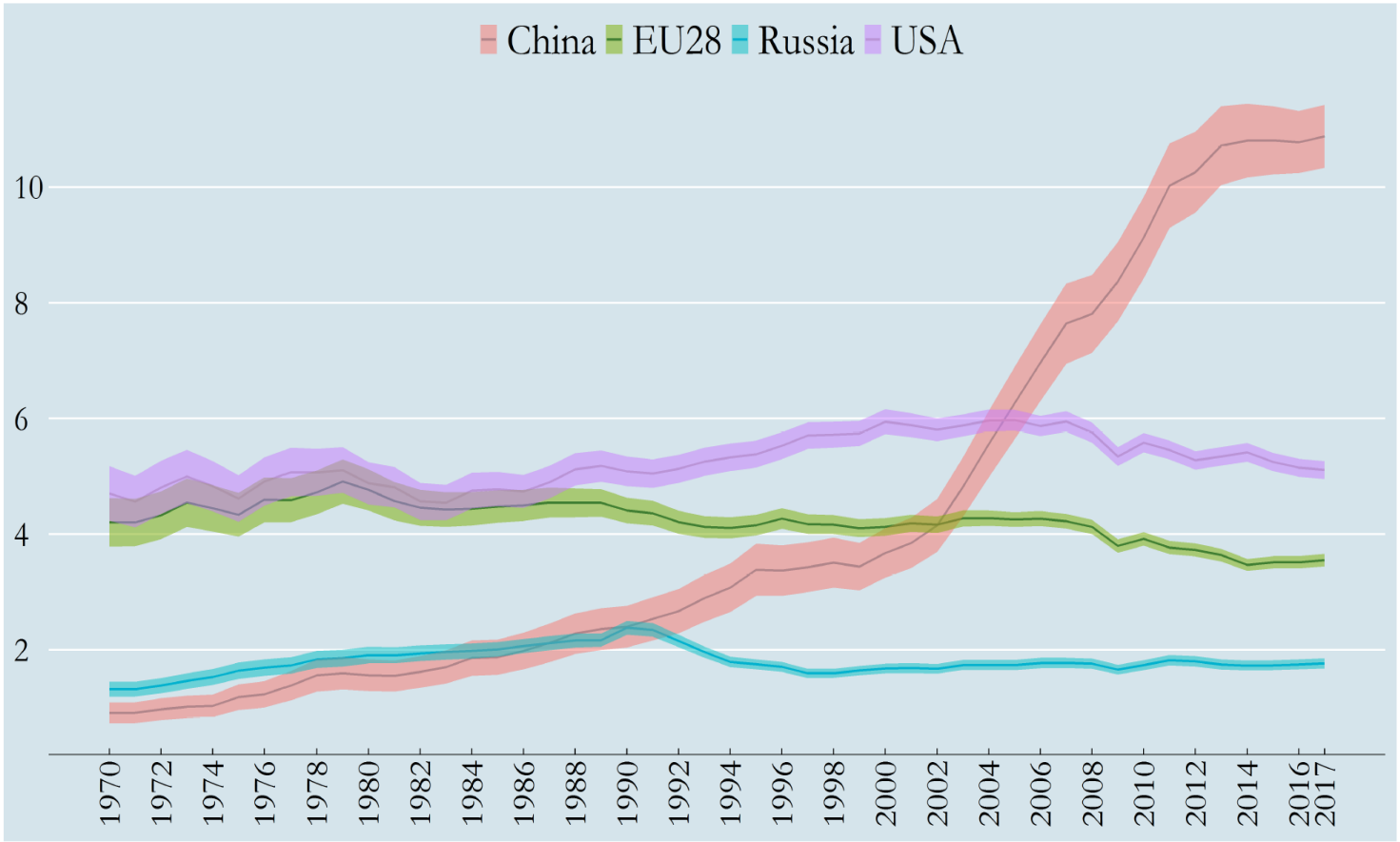




Role of citizens and local authorities

- Moving towards a net-zero greenhouse gas economy can **only be successful with citizens that embrace change, get engaged** and experience it as beneficial for their lives and that of their children.
- Increasing willingness of consumers to engage in sustainable activities. **Personal lifestyle choices** can make a real difference, while improving quality of life.
- Cities are already the laboratories for transformative and sustainable solutions with 75% of our population living in urban areas. **City refurbishment and 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.

Global dimension: The development of annual CO_2 emissions since 1970



Global dimension

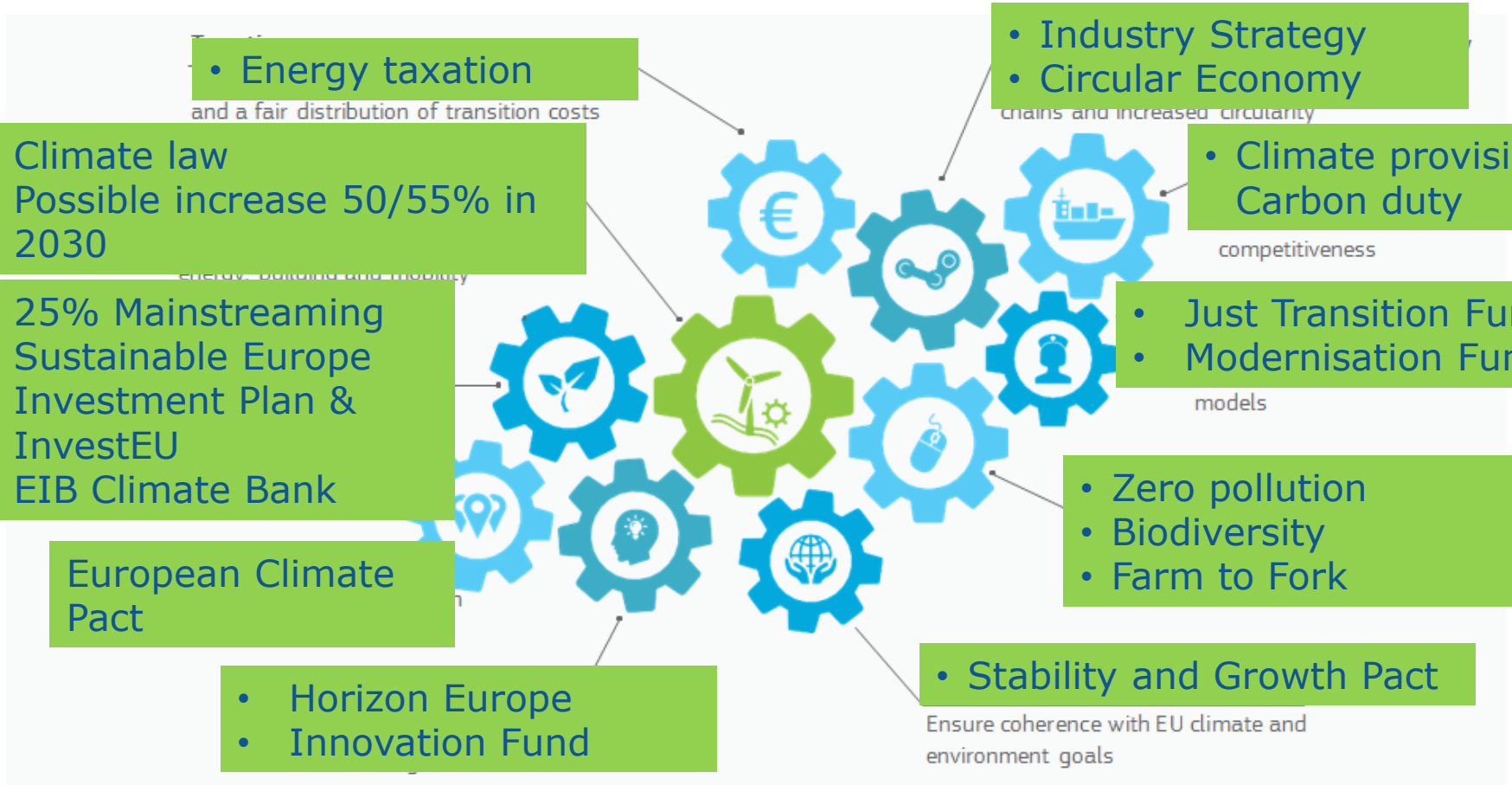
- Open markets, a globalised world and multilateralism are a precondition to benefit from this transition domestically and globally.
- The EU's long-term strategy cannot be pursued in isolation. Role of energy and climate diplomacy and other political dialogues, security and development cooperation
- EU to prepare for **geopolitical and geo-economic shifts with new and changed dependencies**

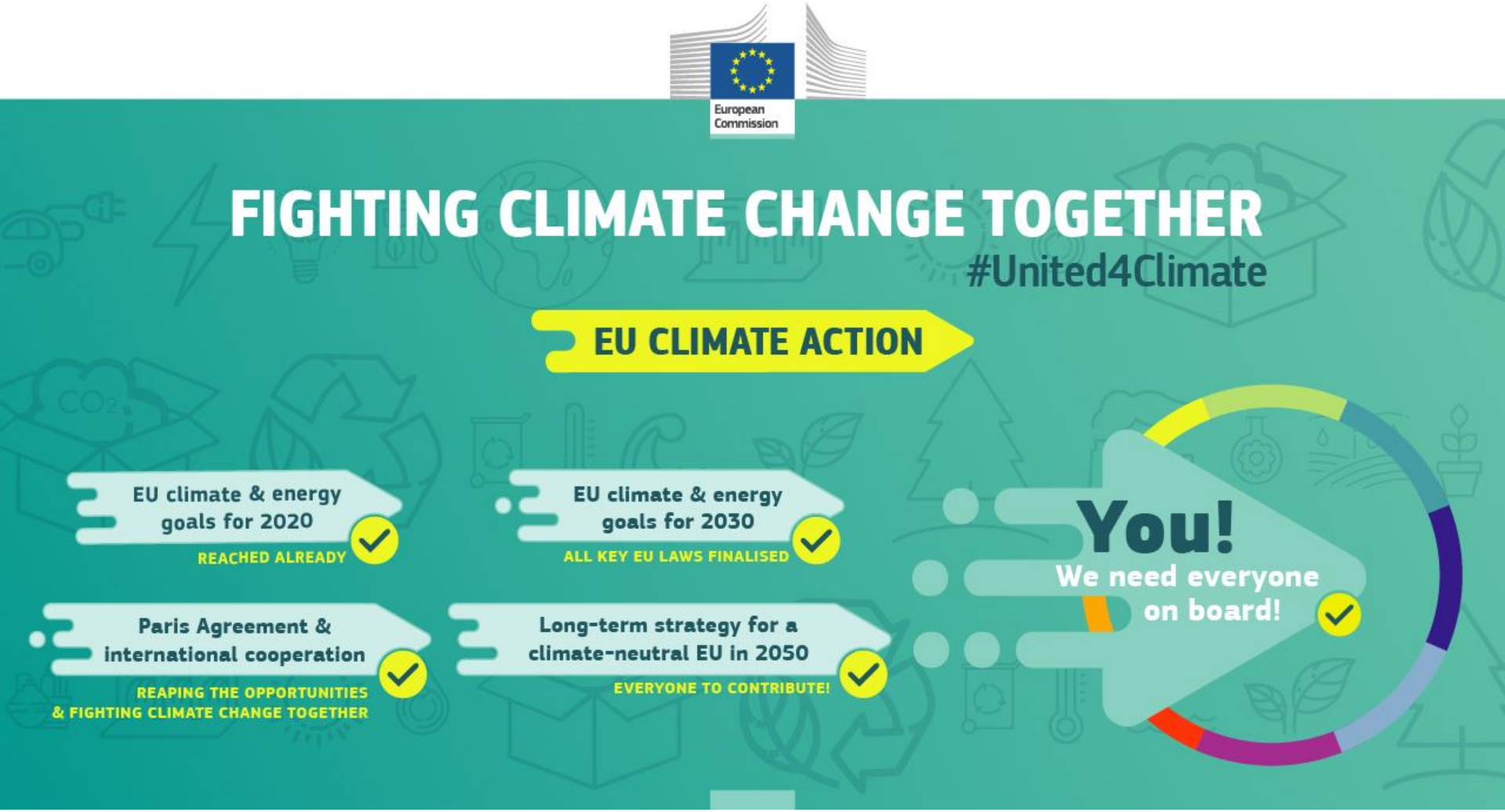
Emissions trading schemes under development worldwide

- Trade policy to promote uptake of new technologies while defending the right to fair access to markets and critical raw materials.
- EU must take all necessary measures to safeguard and boost its own prospects for economic and social development.
- As the world's largest single market, EU standards on products affect global markets

Absolute size, $MtCO_2e$ 2015
Source: ICAP Status Report 2015

Outlook : 'Green Deal'





#EU2050

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