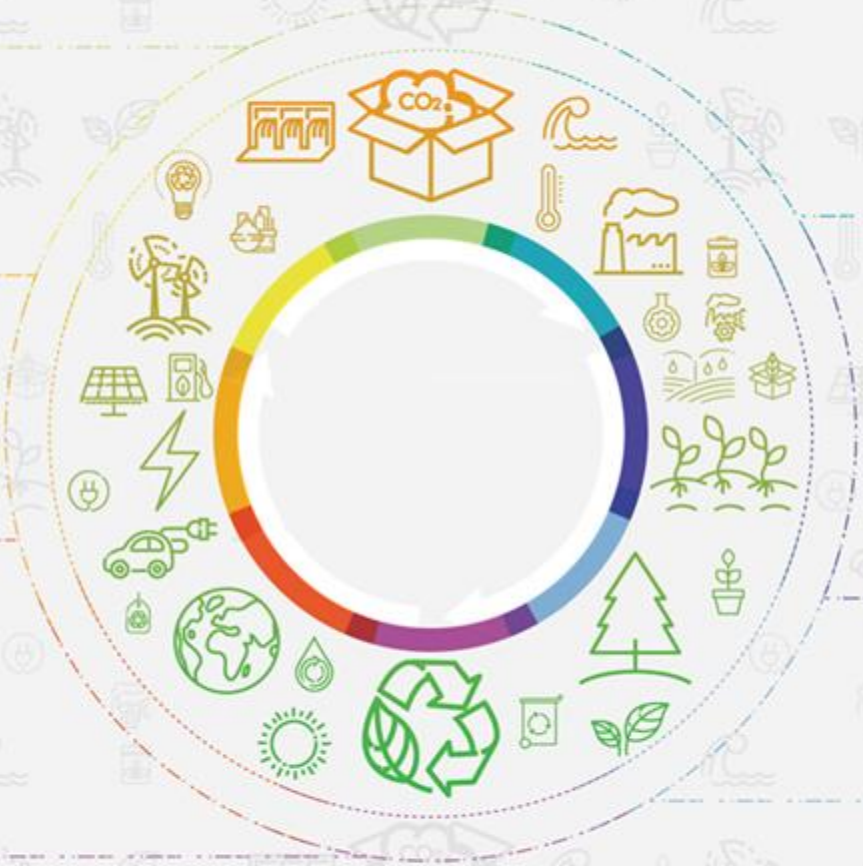
A Clean Planet for all

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

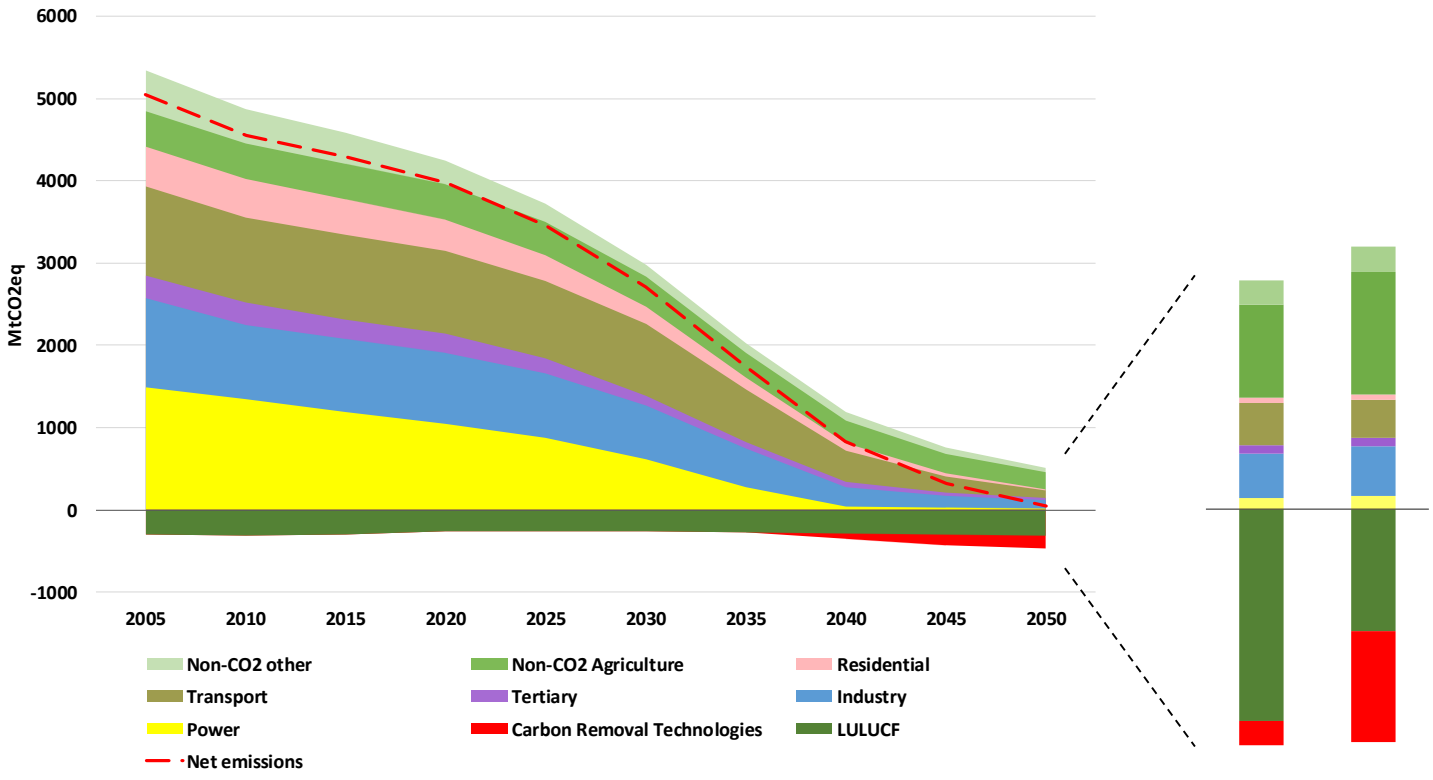


Political context

- Parties of the Paris Agreement to present long-term low greenhouse gas emission development strategies by 2020
- In October 2017 the European Parliament also invited the Commission "*to prepare by COP24 a mid-century zero emissions strategy for the EU*"
- In March 2018, European Council invited the Commission "*to present by the first quarter of 2019 a proposal for a Strategy for long-term EU greenhouse gas emissions reduction*".
- Regulation on Governance of the Energy Union calls on the Commission to present an EU long-term strategy by April 2019, including pathways that achieve net zero GHG emissions by 2050 and negative emissions thereafter

All sectors have to contribute

GHG emissions trajectory in a 1.5°C scenario



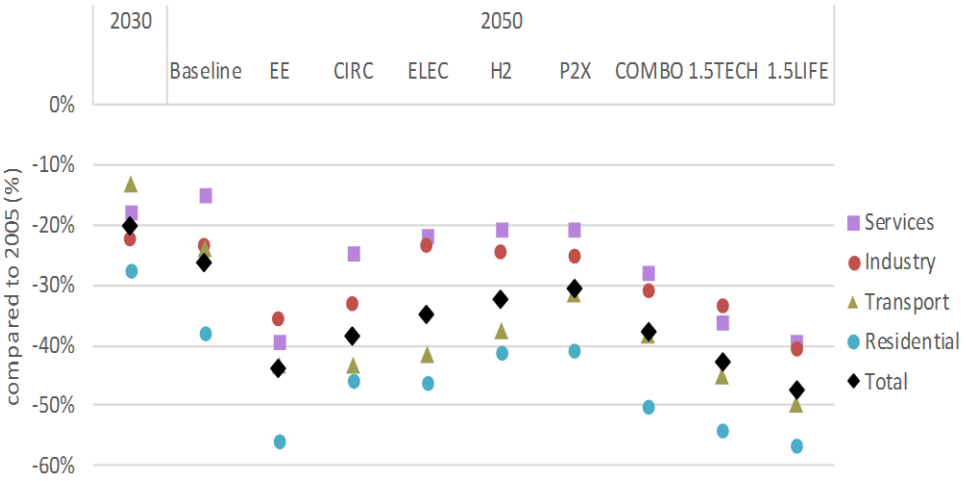
Detailed assessment supported by scenario analysis

Long Term Strategy Options

	Electrification (ELEC)	Hydrogen (H2)	Power-to-X (P2X)	Energy Efficiency (EE)	Circular Economy (CIRC)	Combination (COMBO)	1.5°C Technical (1.5TECH)	1.5°C Sustainable Lifestyles (1.5LIFE)
Main Drivers	Electrification in all sectors	Hydrogen in industry, transport and buildings	E-fuels in industry, transport and buildings	Pursuing deep energy efficiency in all sectors	Increased resource and material efficiency	Cost-efficient combination of options from 2°C scenarios	Based on COMBO with more BECCS, CCS	Based on COMBO and CIRC with lifestyle changes
GHG target in 2050	-80% GHG (excluding sinks) ["well below 2°C" ambition]					-90% GHG (incl. sinks)	-100% GHG (incl. sinks) ["1.5°C" ambition]	
Major Common Assumptions	• Higher energy efficiency post 2030 • Deployment of sustainable, advanced biofuels • Moderate circular economy measures • Digitilisation					• Market coordination for infrastructure deployment • BECCS present only post-2050 in 2°C scenarios • Significant learning by doing for low carbon technologies • Significant improvements in the efficiency of the transport system.		
Power sector	Power is nearly decarbonised by 2050. Strong penetration of RES facilitated by system optimization (demand-side response, storage, interconnections, role of prosumers). Nuclear still plays a role in the power sector and CCS deployment faces limitations.							
Industry	Electrification of processes	Use of H2 in targeted applications	Use of e-gas in targeted applications	Reducing energy demand via Energy Efficiency	Higher recycling rates, material substitution, circular measures	Combination of most Cost-efficient options from "well below 2°C" scenarios with targeted application (excluding CIRC)	COMBO but stronger	CIRC+COMBO but stronger
Buildings	Increased deployment of heat pumps	Deployment of H2 for heating	Deployment of e-gas for heating	Increased renovation rates and depth	Sustainable buildings			CIRC+COMBO but stronger
Transport sector	Faster electrification for all transport modes	H2 deployment for HDVs and some for LDVs	E-fuels deployment for all modes	Increased modal shift	Mobility as a service			• CIRC+COMBO but stronger • Alternatives to air travel
Other Drivers		H2 in gas distribution grid	E-gas in gas distribution grid				Limited enhancement natural sink	• Dietary changes • Enhancement natural sink

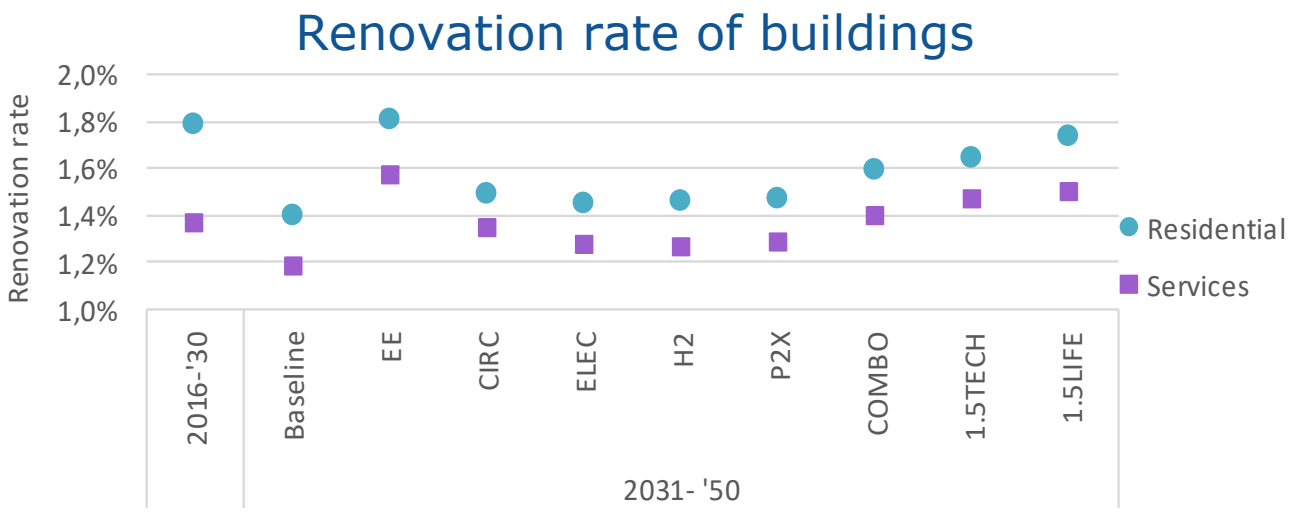
European Commission

Changes in final energy consumption (2050 compared to 2005)



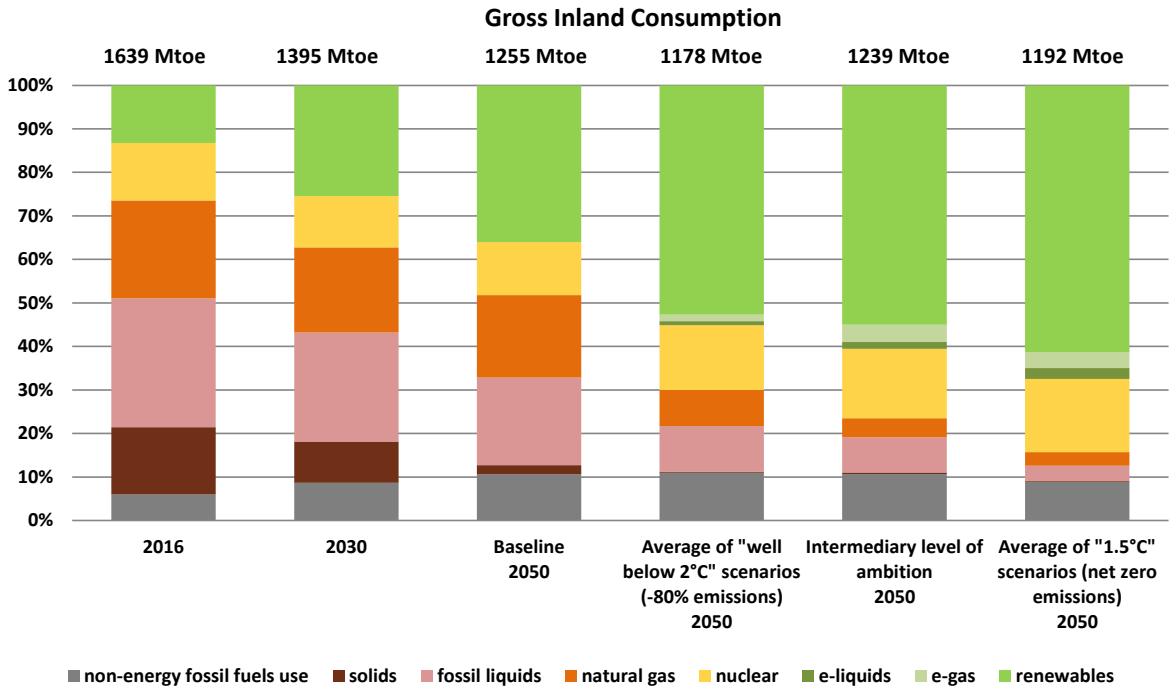
Buildings are key in the reduction of energy demand in the EU

- New buildings only 10-25% of 2050 stock
- So energy demand reduction will have to go through EE-oriented renovation of the current building stock

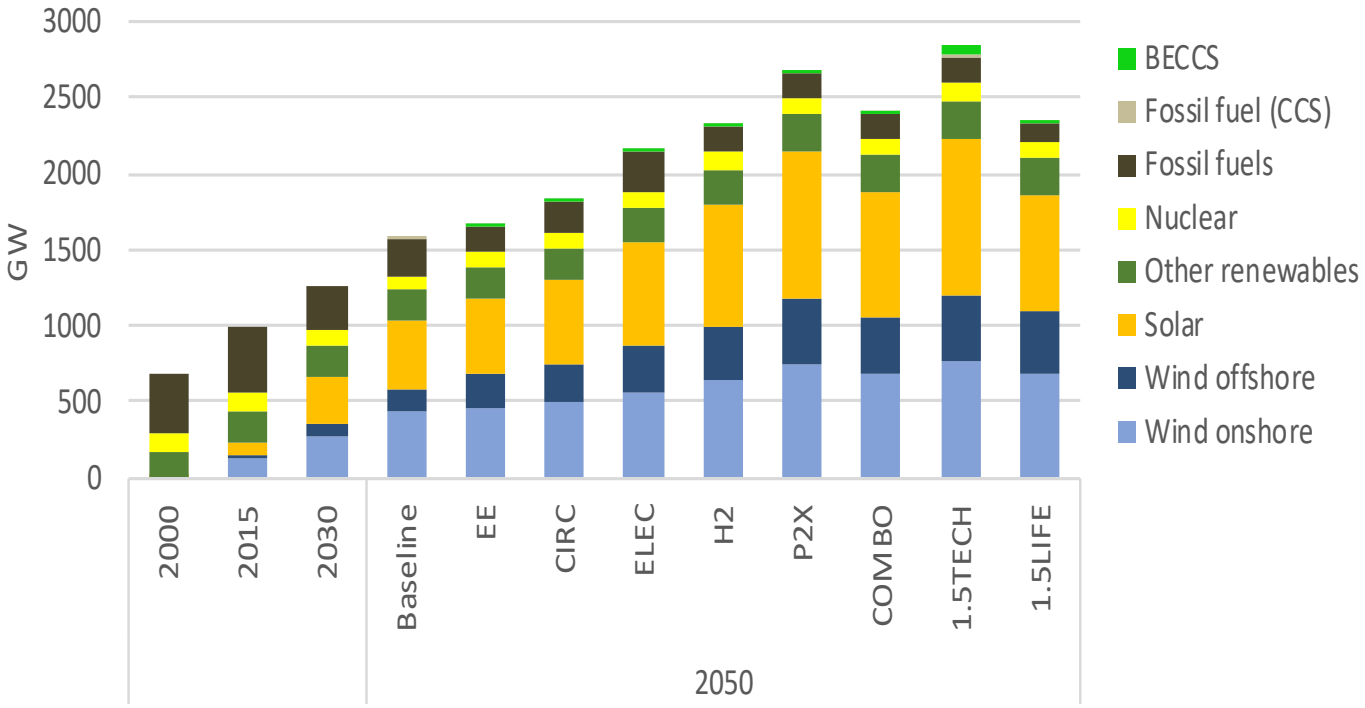


Deployment of renewables

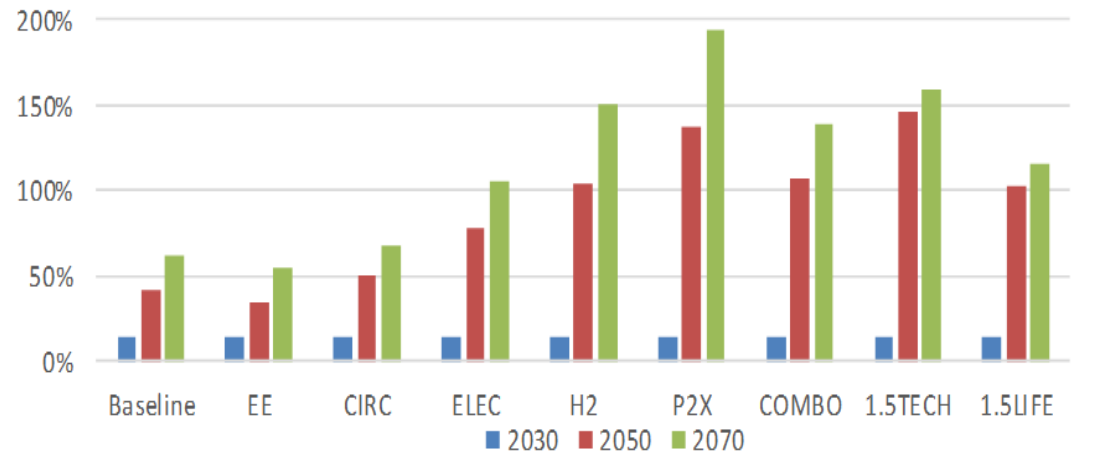
Primary energy in 2050 largely coming from renewable sources



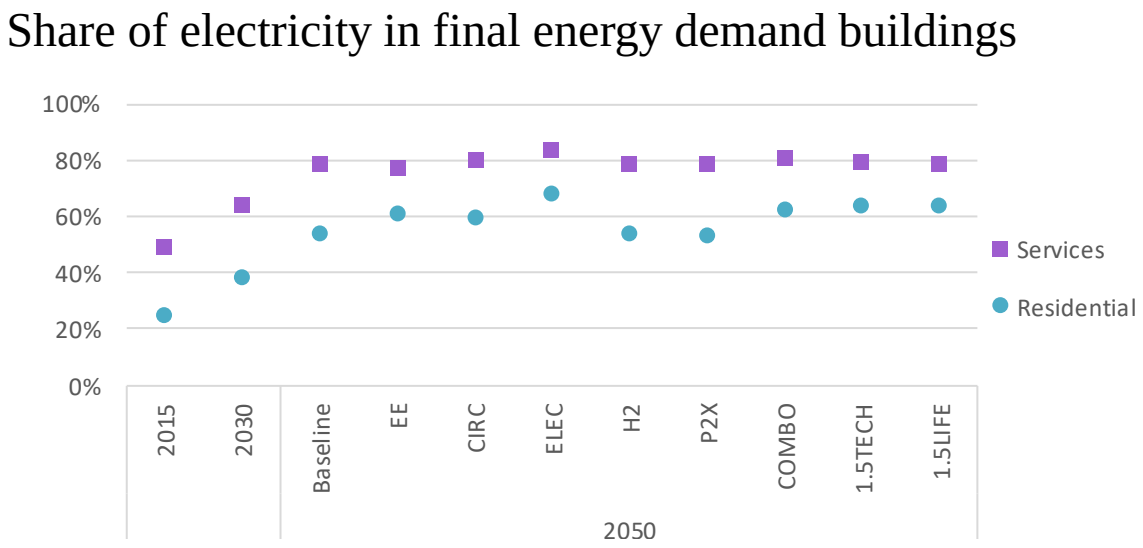
Power generation capacity in 2050



Increase in gross electricity generation compared to 2015



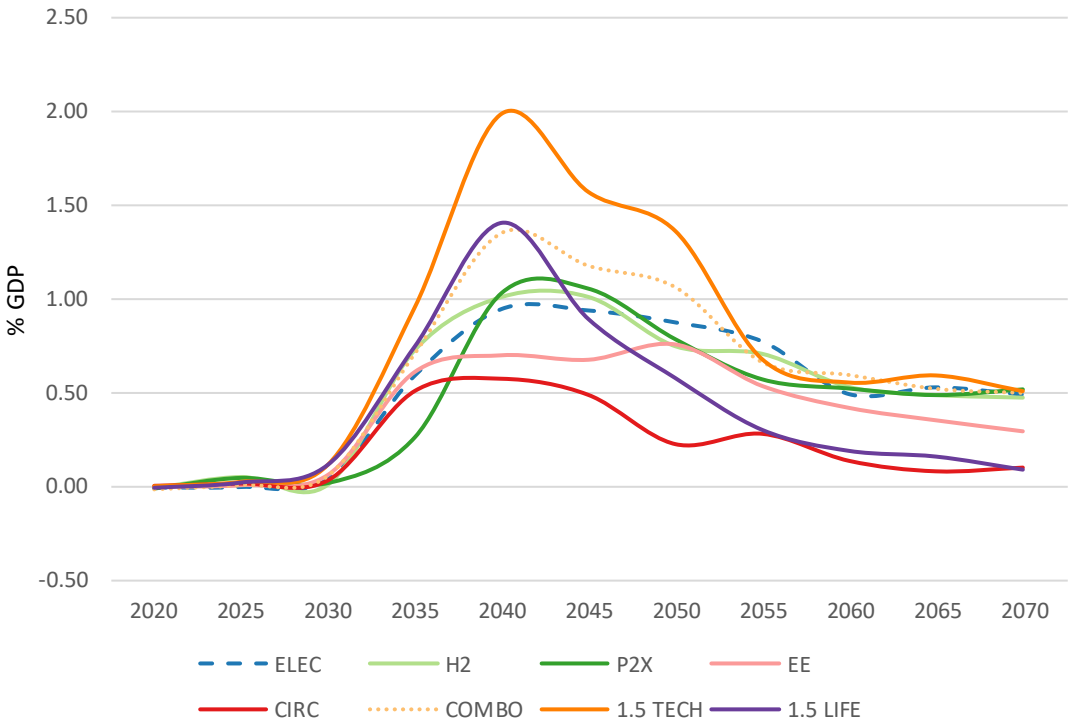
- The share of electricity in final energy demand of services' buildings: from 50% today to ~80% by 2050



Investing in the future of Europe

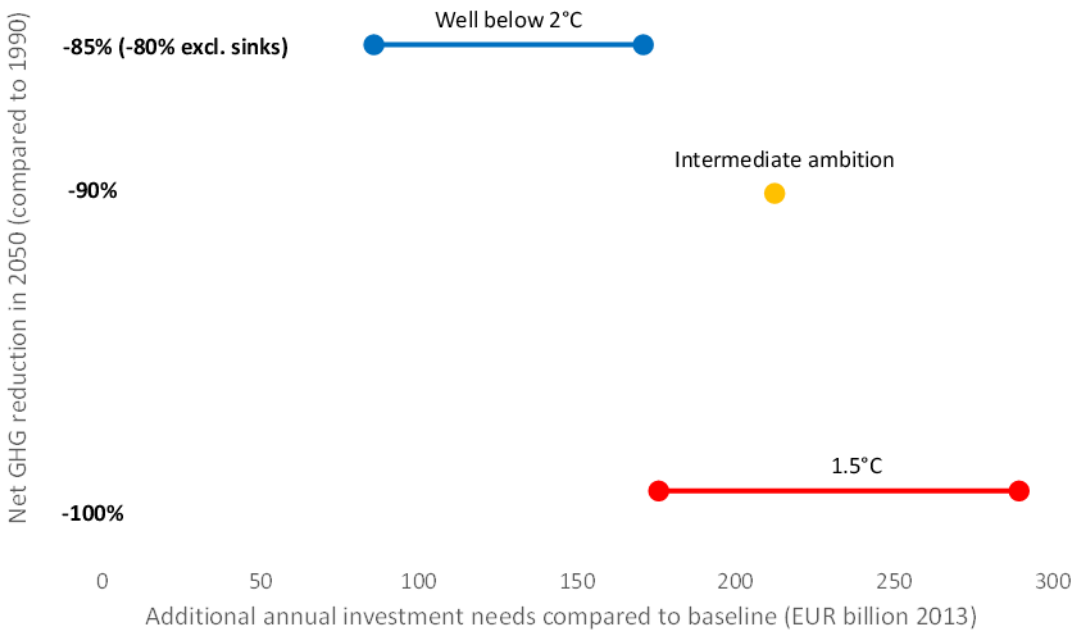
additional investments in % of GDP

- Additional investment: 150-290 billion EUR/year (2030-2050)
- Higher investments for higher ambition
- Behaviors matters!



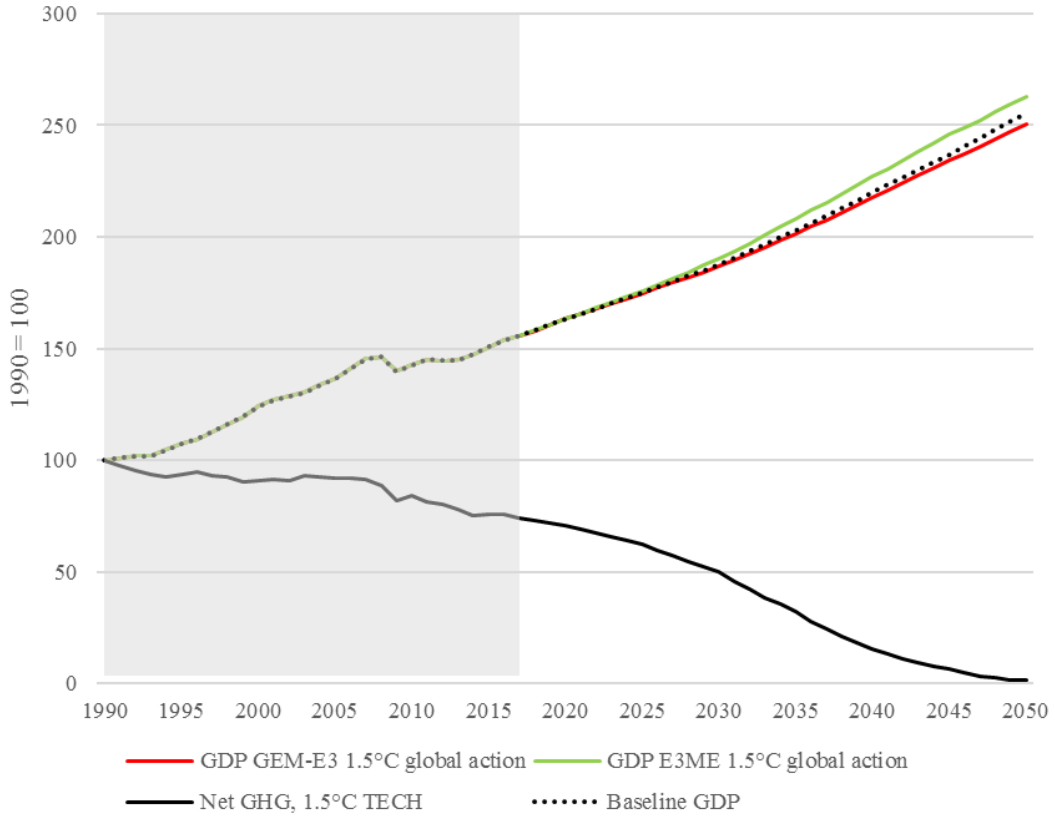
Increased Investment in the EU economy

- Modernising and decarbonising the EU's economy will stimulate significant additional investment
- From 2% of EU GDP invested in the energy system today to 2.8% (up to € 575 bn per annum) to achieve a net-zero greenhouse gas emissions economy
- Positive for growth and jobs, with GDP higher by up to 2% in 2050
- Co-benefits: energy imports down, public health, etc.

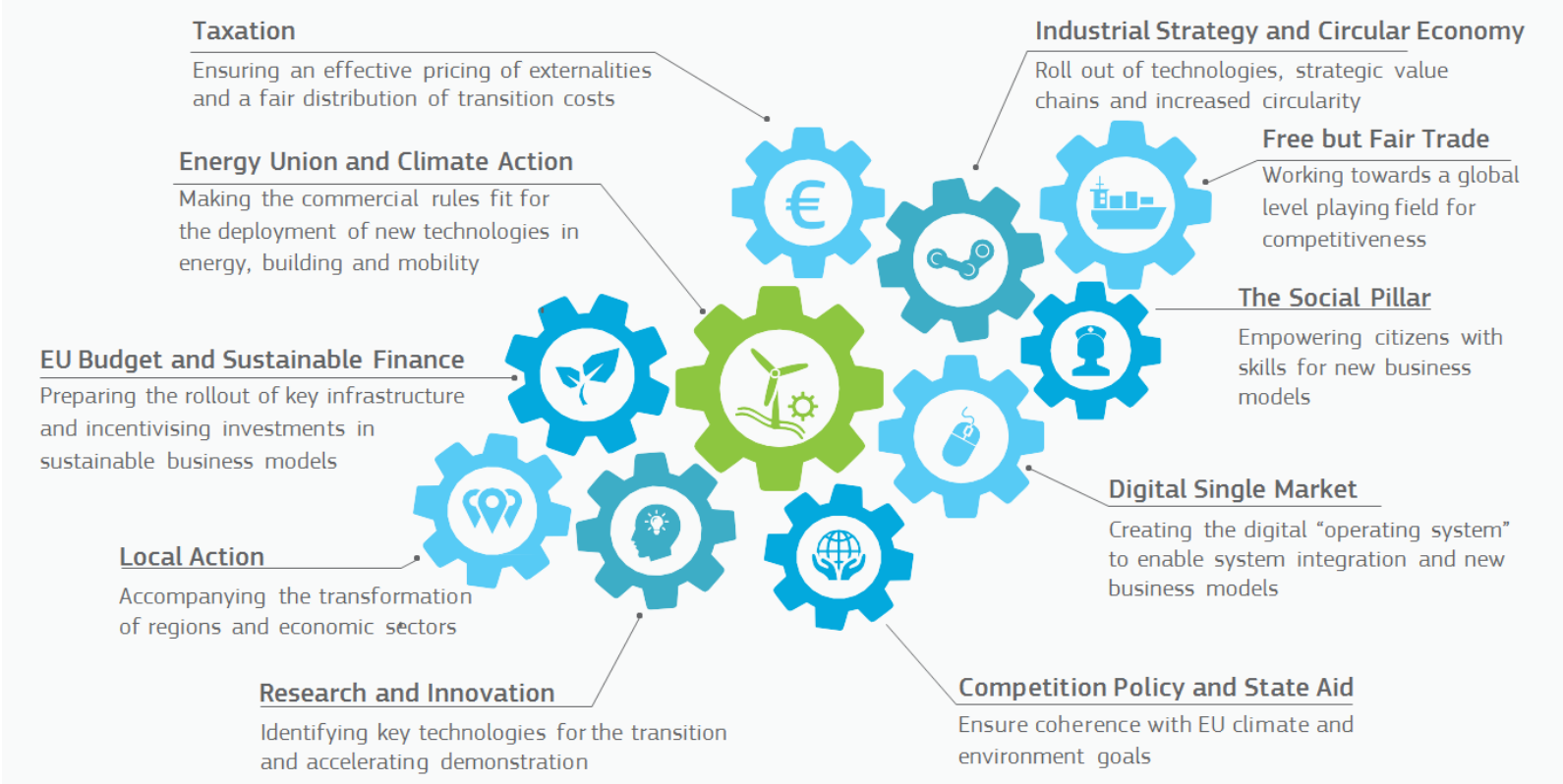


Impact on growth

- Estimated impacts on GDP are negligible
- Decoupling of growth and GHG emissions



Enabling framework crucial to deliver transformation



Next steps

- National Climate and Energy Plans under development. Together with stakeholders vision on 2050 will enrich the debate.
- Invitation to all the EU institutions to consider the EU vision.
- EU leaders to reflect on this in Sibiu summit, all relevant Council formations should hold policy debates in preparation.
- Societal debate in 2019 is key! In an open and inclusive manner with National Parliaments, business, non-governmental organisations, trade unions, cities and communities, as well as citizens and the youth.
- EU to adopt and submit an ambitious strategy by early 2020 to the UNFCCC as requested under the Paris Agreement.
- Show leadership and work with other parties to do the same.