Structures of production and consumption of energy in Europe

The past and the future

PLAN 4 RES webinar
20 May 2021
DG ENER

Impact Assessment of Climate Target Plan

Intervention logic: Problems – Objectives

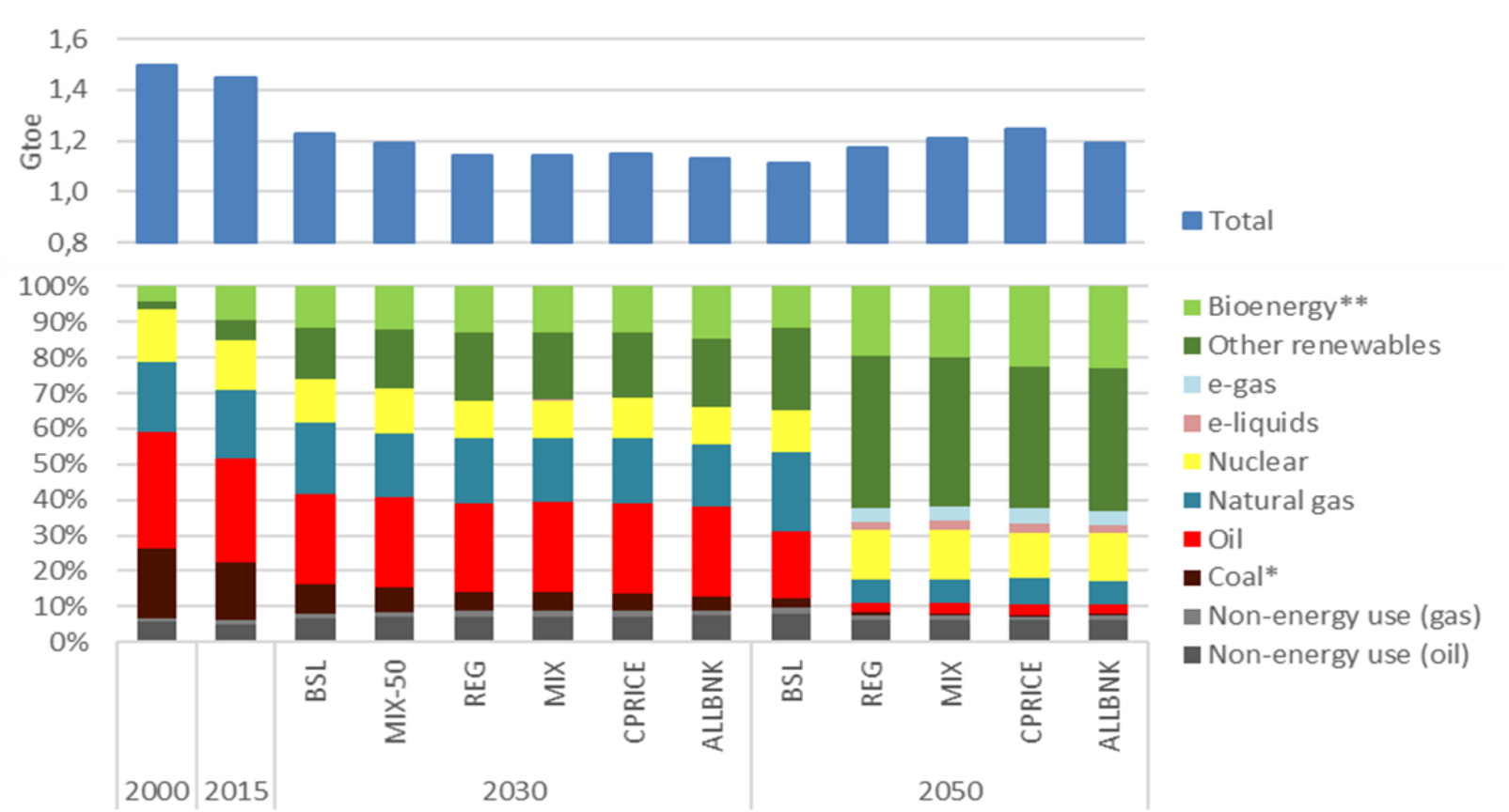
PROBLEM	**EU has set a 2050 climate neutral objective, current 2030 climate target results in back-loading efforts to achieve this**					
Problem drivers	At least 40% climate target is insufficient	Policy framework is inconsistent with climate-neutrality (1.5C) and sectoral ambition is insufficient				
GENERAL OBJECTIVES	**Increase GHG target**	**Adapt policy framework (ETS, ESR, RES, EE, LULUCF)**				
Specific objectives to address the problem drivers	(1) Increase level of economy wide climate target and (2) determine its scope	(3) Determine role of ESR and ETS including role of extending carbon pricing	(4 & 5) Prepare the ground for the review and, where necessary, revision of the energy policies (RES and EE), including insights for possible review/revision of the targets.	(6) Explore contribution of transport policies	(7) Determine role LULUCF policy	(8) Explore contribution of Non-CO2 mitigation

2030 Target Plan Policy Scenarios

	(REG) Policies and measures as main driver for GHG 55% target	(MIX)/ (MIX-50) Policies, measures and carbon pricing combined for GHG 55%/GHG 50% target	(CPRICE) Carbon pricing as main driver for GHG 55% target	(ALLBNK) Inclusion of all bunkers for GHG 55% target
Scope to asses GHG target ambition	All sectors including intra EU bunkers and LULUCF			All sectors including intra and extra EU bunkers and LULUCF
ETS Scope / Carbon Pricing	ETS scope: - Power, Industry, - Intra-EU aviation and navigation*	ETS scope: - Power, Industry, - Intra-EU aviation and navigation*, - Road transport, Buildings		ETS scope: - Power, Industry, - All aviation and navigation, - Road transport, buildings
EE policies	High intensification policies	Medium/low intensification policies	No additional measures compared to Baseline	Medium intensification policies
RES policies	High intensification policies	Medium/low intensification policies	No additional measures compared to Baseline	Medium intensification policies
Transport measures	High intensification policies (CO_2 standards in road transport + RES, aviation and maritime fuel mandates + measures improving transport system efficiency)	Medium/low intensification policies (CO_2 standards in road transport + RES, aviation and maritime fuel mandates + measures improving transport system efficiency)	Low intensification policies (CO_2 standards in road transport + aviation and maritime fuel mandates + measures improving transport system efficiency)	Medium intensification policies (CO_2 standards in road transport + measures improving transport system efficiency) High intensification of RES, aviation and maritime fuel mandates
non-CO_2 policies	Medium intensification policies			High intensification policies
LULUCF policies	Baseline policies			

*Carbon pricing and carbon values are applied on extra EU aviation and navigation to represent ETS or other policy instruments regulating these sector's emissions (which can also stand for other policy instruments like CORSIA for aviation and technical and operational measures for both aviation and maritime).

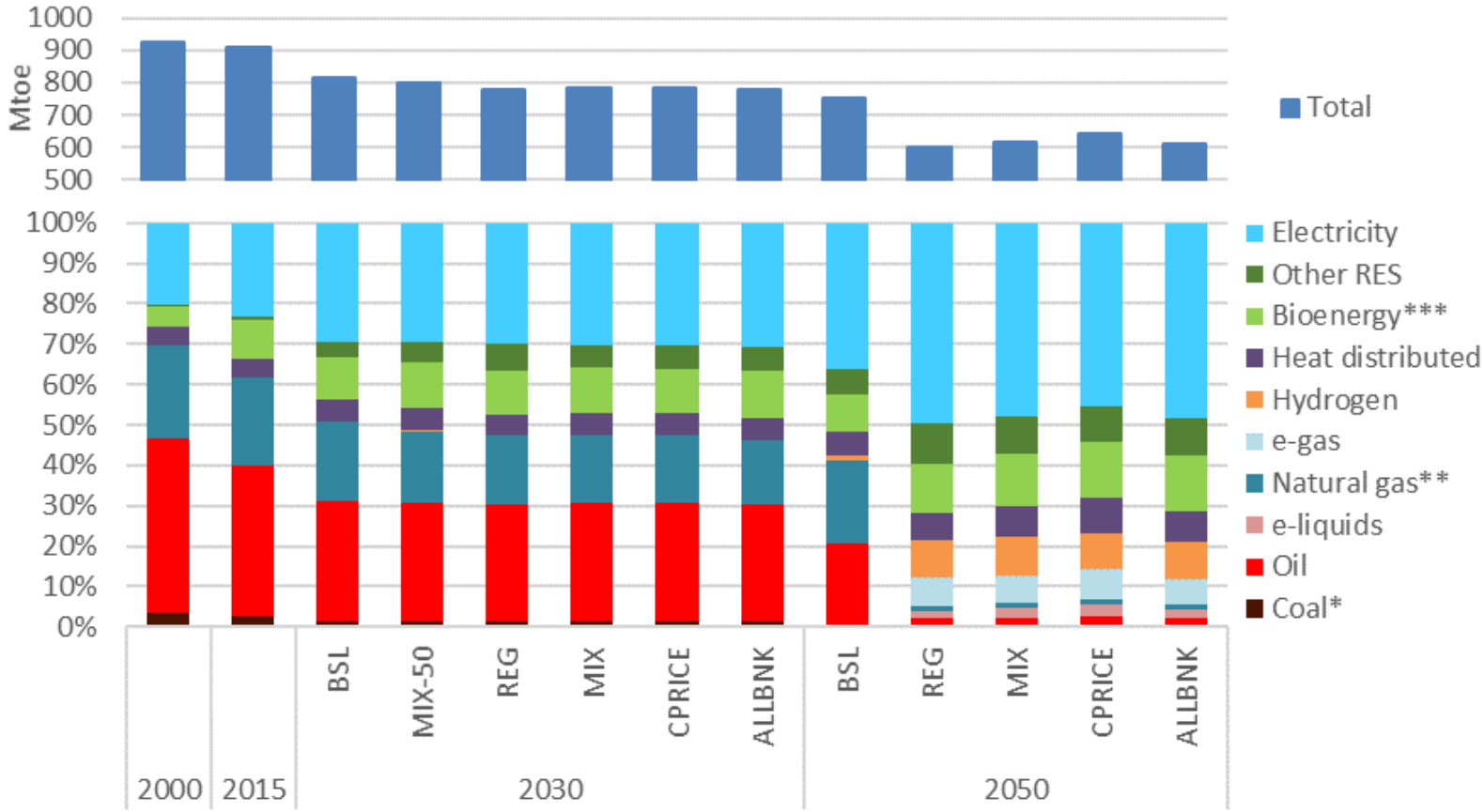
Energy system evolution – Gross Inland Consumption



Note :
* includes peat, oil shale,
** includes waste

Source: 2005, 2015: Eurostat, 2030-2050: PRIMES model

Final energy demand



Note:
* includes peat, oil shale,
** includes manufactured gases,
*** solid biomass, liquid biofuels, biogas, waste

Source: 2000, 2015: Eurostat, 2030-2050: PRIMES model

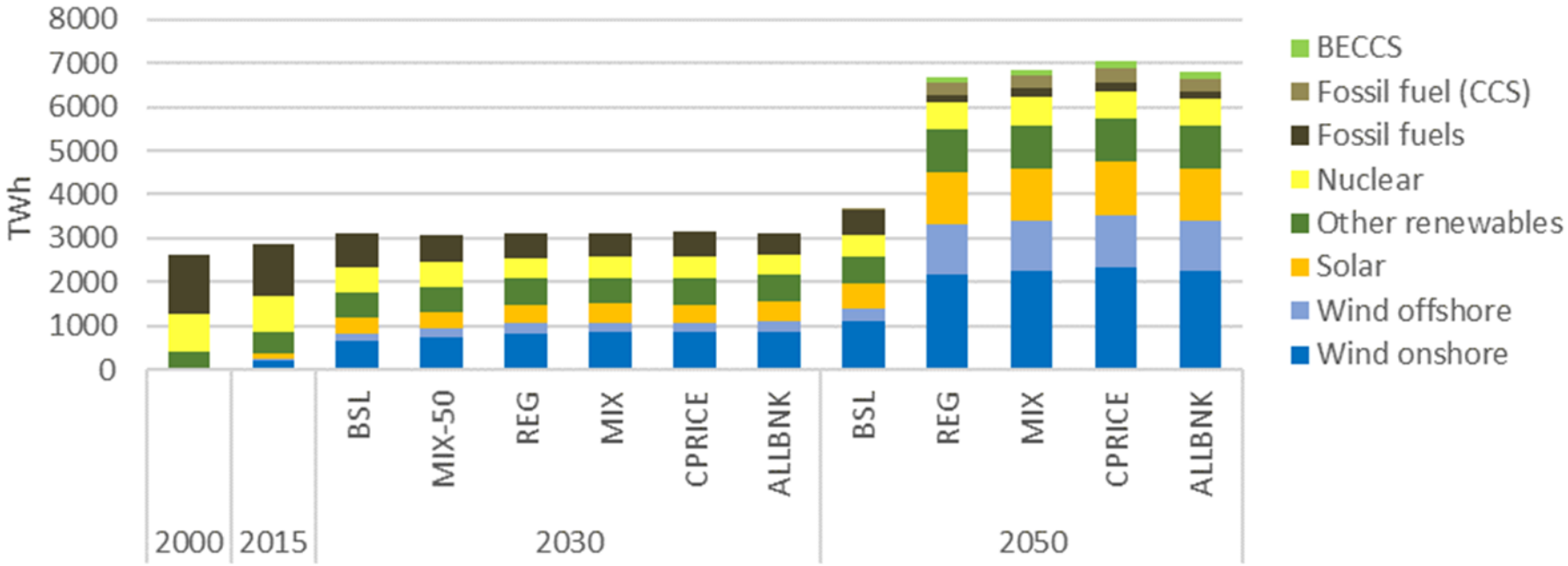
Overall RES and EE ambition by 2030

- Final and primary energy consumption would further reduce in 2030, achieving savings of 36-37% (FEC) and 39-41% (PEC)
- Higher ambition and closure of the collective ambition gap of the national energy efficiency contributions in the NECPs will require actions on a variety of fronts.
- Use of renewable energy would increase to reach 38% to 40% of gross final consumption.

Scenarios	Total GHG vs 1990	Renewables share Overall	Energy savings	
			Primary energy consumption	Final energy consumption
BSL	-46.9%	32.0%	-34.2%	-32.4%
MIX-50	-51.0%	35.1%	-36.8%	-34.4%
REG	-55.0%	38.7%	-40.1%	-36.6%
MIX	-55.0%	38.4%	-39.7%	-35.9%
CPRICE	-55.0%	37.9%	-39.2%	-35.5%
ALLBNK	-57.9%	40.4%	-40.6%	-36.7%
Variant MIX-non-CO_2	-55.1%	37.5%	-39.3%	-35.9%

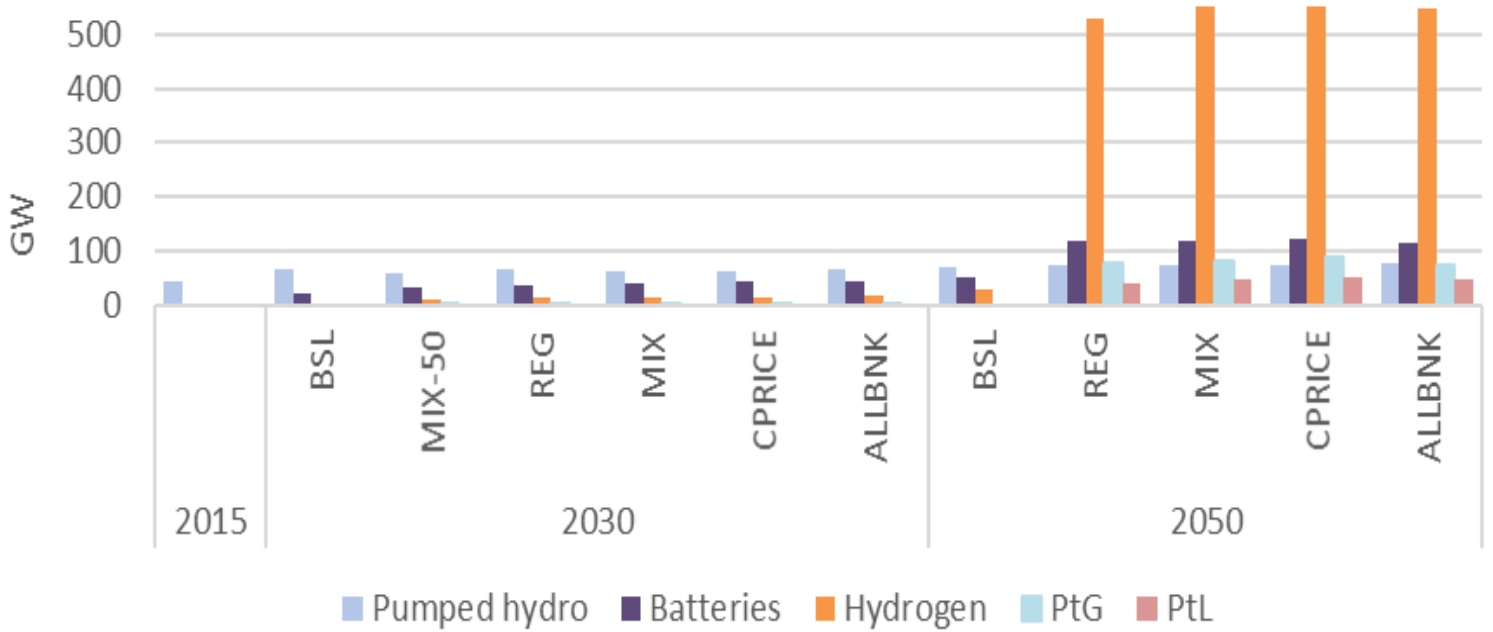
Source: PRIMES model

Power generation output



Source: 2015: Eurostat, 2030-2050: PRIMES model

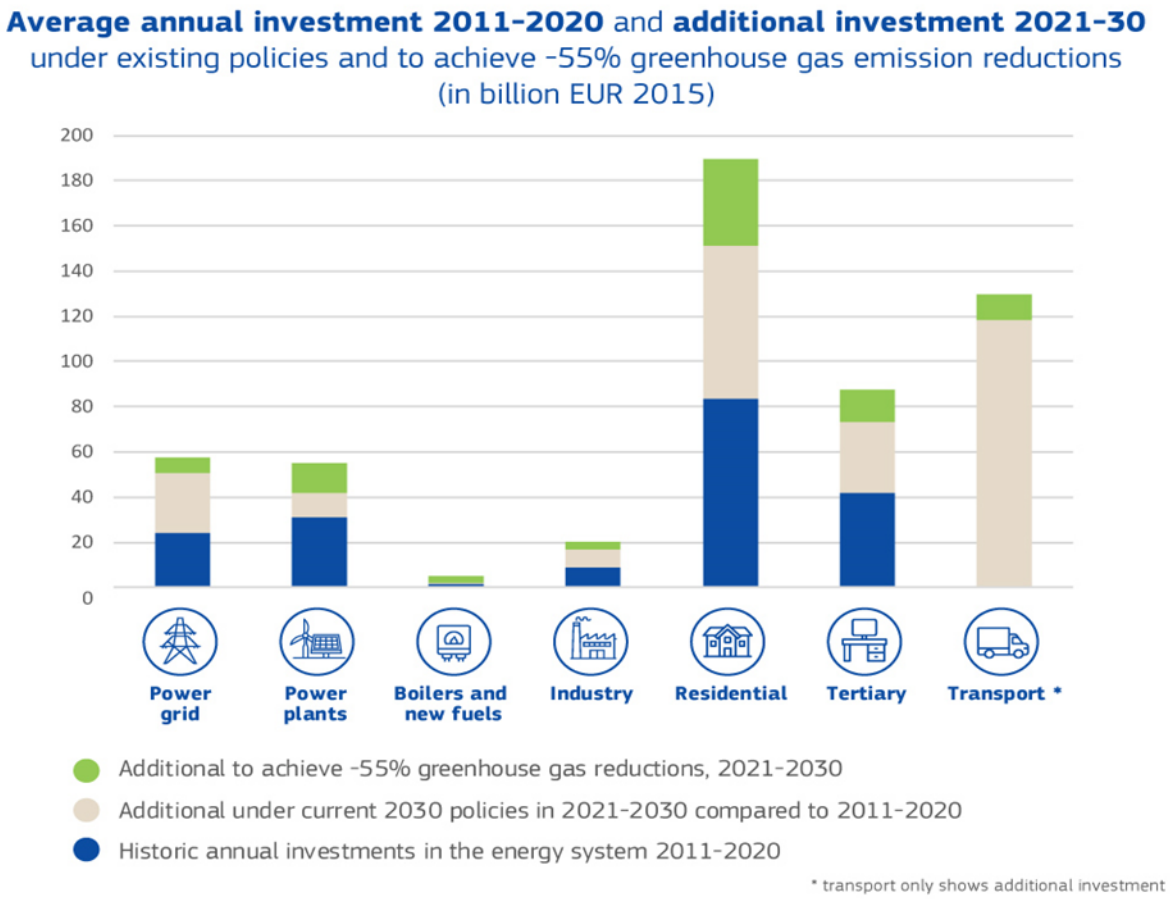
Storage and production of new fuels



Source: PRIMES model

Investments

- Energy sector investment needs set to increase.
- Buildings, power grid, generation, transport.
- Average annual investment in the energy system: ca. EUR 350 billion higher in 2021-30 than in 2011-20.
- Compared to existing policies: increase of EUR 90 billion.



Source: PRIMES model

Social and economic impacts

- Limited increase of energy system costs.
- Moderate (and possibly positive) impacts on GDP and employment, in particular where economy performs below capacity or where revenues can be recycled to lower distortionary taxes.
- Next Generation EU and the MFF, with their combined weight of over 1.8 trillion euros, provide significant firepower to boost investment in sustainable recovery.
- Fuel import bill saving of EUR 100 billion over 2021-30, up to 3 trillion by 2050.
- Air pollution benefits. Reduced health damages.
- Transition more challenging in Member States and regions with a higher share of fossil fuels, higher energy intensity and lower GDP per capita. Higher burden on low-income households without policies.

Key elements of the Climate Target Plan (CTP)

- Presents rationale of an EU-wide, economy-wide GHG target of at least 55% by 2030 in the context of the EU objective of climate-neutrality by 2050

  ➔ *Inform a decision proposing (i) new target (ii) starting point of trajectory for achieving climate neutrality as set in Article 3 of Climate Law proposal*

  - **Previews a set of actions required across sectors of the economy**
  - **Outlines social and economic impacts**
  - **and the revisions of the key legislative instruments, including RED2 and EED**
- Prepares the ground for a public debate in autumn 2020 to increase the EU's contribution to the Paris Agreement and detailed legislative proposals by June 2021

Thank you

More on stepping up EU 2030 climate ambition: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1599

More on EC energy system modelling activities: https://ec.europa.eu/energy/data-analysis/energy-modelling_en?redir=1