Ember NECP data methodology

Data sources

NECPs
Data for the 2019 final NECPs, the 2023 draft updated NECPs and the 2024 final NECPs are taken from the English translation documents available on the EU Commission website. The electricity data is sourced preferentially from projections in the NECP which are modelled with additional measures (WAM). i.e. projections that include all currently implemented policies and measures and options that are under discussion that have a realistic chance of being adopted and implemented after the date of submission of the NECP. Where an NECP does not provide WAM projections, electricity data projected using existing measures (WEM) are used instead. As a result some power sector targets submitted in NECPs may have been superseded by recent policy announcements.

Emissions and demand data from NECPs have been aggregated to best align with the UNFCCC emissions and Eurostat demand definitions described below.

Solar capacity can be expressed in terms of alternating current (AC) or direct current (DC). Capacity stated in AC differs from capacity stated in DC by a factor of 1.25. However, member states do not follow a strict convention when reporting solar capacity and rarely specify whether they are reporting in terms of AC or DC. All care has been taken to ensure that the capacity numbers presented here are in units of direct current (DC, gross output). However, due to the lack of transparency on this issue in national reporting, not all capacity data can be guaranteed to be in units of DC.

Unless stated otherwise in an NECP document, electricity generation data is assumed to be reported in terms of gross output (i.e. including self consumption of generators).

Where values for final energy demand and electricity generation are reported in units of million tonnes of oil equivalent (mtoe) we have converted these values to terawatt hours (TWh) on the assumption that 1 mtoe = 11.63 TWh.

Historic generation and installed capacity
Historic generation and installed capacity data are taken from Ember's *Yearly electricity data*.

Greenhouse gas emissions

Historic greenhouse gas emissions data is taken from the EEA's National emissions reported to the UNFCCC and to the EU Greenhouse Gas Monitoring Mechanism. From the dataset, the pollutant name 'All greenhouse gases (mtCO2eq)' for sectors 1-6 are taken. The sum of all categories in the EEA data (1 to 6) is the same as the sum of all categories in the Eurostat data (CRF1 to CRF 6), and the same as [TOTXMEMO] reported by Eurostat. The resulting sector coverage is all sectors including LULUCF and excluding international aviation and international navigation. This is the same sector scope as applies to the EU's Fit for 55 target to reduce net greenhouse gas emissions by 55% by 2030 compared to 1990 levels.

UNFCCC sectors are mapped to the sectors used in this analysis as follows:

Category mapping	High-level sector (IPCC)	IPCC code			This analysis
Total (excluding memo items)	Industrial processes and product use	2	→		Industry
	Energy	1.A.2	Fuel combustion in manufacturing industries and construction	→	
		1.A.1.a	Fuel combustion in public electricity and heat production	→	Electricity generation
		1.A.3	Fuel combustion in transport	→	Transport
		1.A.4.a	Fuel combustion in commercial and institutional sector	→	Buildings
		1.A.4.b	Fuel combustion by households	→	
		1.A.1.b 1.A.1.c 1.A.4.c 1.A.5 1.B 1.C	Other energy	→	Other
	Agriculture	3	→		
	Other Sector	6	→		
	Waste management	5	→		
	Land use, land use change, and forestry (LULUCF)	4	→		LULUCF

Final energy demand

Historic final energy demand data is taken as 'Complete energy balances' (NRG_BAL_C) from the Eurostat database. Total demand is taken to be 'Final consumption - energy use' (FC_E) and fuel and sectoral breakdowns are the subcategories of this code.

Fuel type and sectoral breakdowns are mapped to this analysis as follows:

	Solid fossil fuels	→	Coal
	Oil and petroleum products (excluding biofuel portion)	→	Oil
	Natural gas	→	Gas
	Electricity	→	Electricity
	Renewables and biofuels	→	Renewables
	Manufactured gases	→	Other non-renewable
	Peat and peat products	→	
	Oil shale and oil sands	→	
	Non-renewables waste	→	
Final consumption - energy use	Heat	→	Heat

Final consumption - industry sector - energy use	→			Industry
Final consumption - transport sector - energy use	→			Transport
Final consumption - other sectors - energy use	→	Final consumption - other sectors - households - energy use	→	Buildings
		Final consumption - other sectors - commercial and public services - energy use	→	
		Final consumption - other sectors - agriculture and forestry - energy use	→	Other
		Final consumption - other sectors - fishing - energy use	→	
		Final consumption - other sectors - not elsewhere specified - energy use	→	