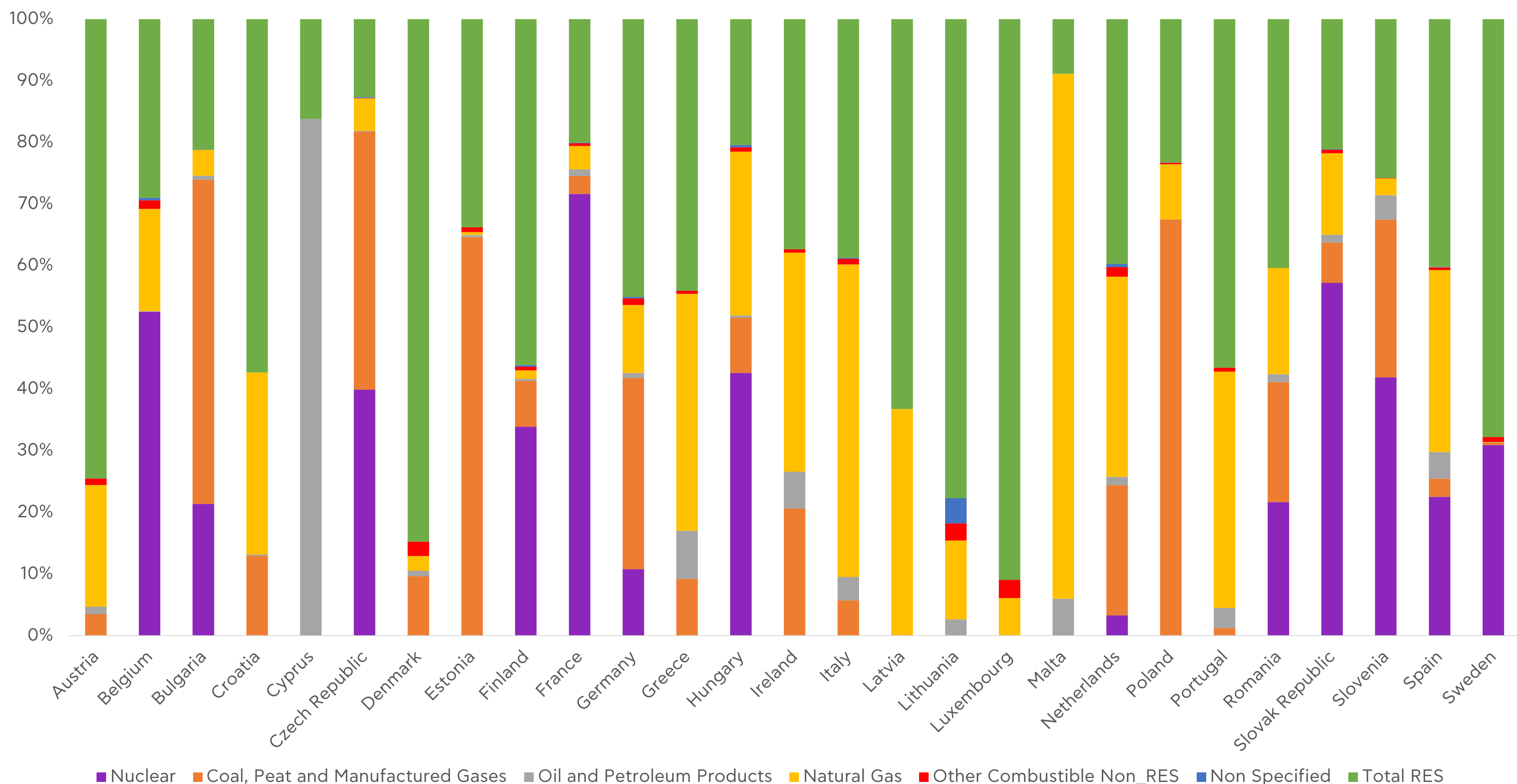


Net Electricity Generation Mix in EU-27



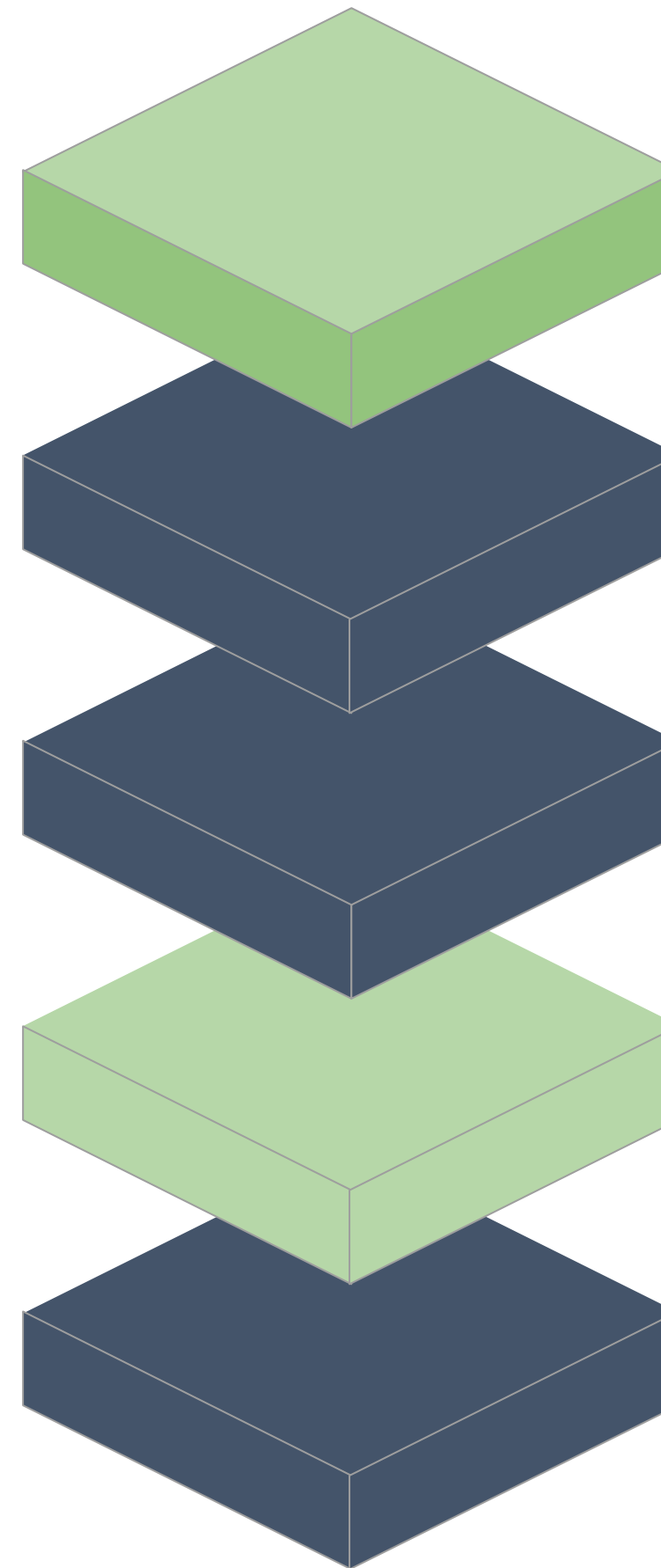
Source: IEA (2021), Data for October 2021 (latest available), IRENA Renewable Energy Statistics 2021, Europe Beyond Coal, Global Energy Monitor, HAEE analysis

Lignite

Poland with 44 plants is the only country in the EU-27 that has not set a target for coal phase-out. In total, in EU27 there are 198 operating plants with a total capacity of 114 GW. It has been announced that 102 plants with a total capacity of 68GW will be phased out in the coming years.

Renewables

Main source of energy at 78-85% in Denmark and Lithuania. Europe has 480 GW of RES (including CHP), of which 177 GW wind power and 139 GW solar power. Germany is the country with the highest RES capacity of 132 GW, of which 62GW and 54GW are wind and solar power respectively.



Nuclear

France has the most active nuclear power plants in the EU-56 plants with an average of 36.1 years of operation. France, Germany, Spain, and Sweden produce more than $\frac{3}{4}$ of the total energy generated by nuclear power plants in the EU-27.

Natural Gas

Southern countries (Italy, Greece, Portugal) use mainly natural gas in their mix at 38-51%. In the EU-27, 549 plants with a capacity of 160 GW are in operation, while 15 plants with a capacity of 5 GW are under construction and 79 plants with a capacity of 39 GW are planned.

Greece. In EU-27 in the electricity generation mix, Greece ranks 5th in oil use, 6th in Natural Gas use, 13th in Lignite and in RES use.



Nuclear and Natural gas represent a significant share of EU's electricity generation mix. EU has committed to become a climate neutral economy by 2050. To reach these goals, there is currently a debate whether the future energy mix will consist mainly of Renewable Energy Sources or nuclear and natural gas could be contributed under certain provisions.

The new proposed Taxonomy stated that certain nuclear and gas projects can be labeled as sustainable transitional activities. The provisions outlined by the Commission include a 2030 deadline to get construction permits for new gas projects that limit their emissions and replace coal. New nuclear plants eligible to qualify as a sustainable investment would need to secure their construction permits by 2045. Additionally, there are strict CO2 emissions limit for the future natural gas power plants and a requirement to switch to low-carbon gases by 2035.

Nowadays, there are controversial strategies around nuclear energy. France plans to build up to 14 new nuclear reactors to meet its climate targets and on the other hand, Germany plans to shut down all nuclear plants by the end of the year. Taking into account the current high energy prices and the threat of energy security due to Ukraine crisis, Europe is at a crossroad to change its electricity mix while keeping a reliable and affordable grid.

The gas crisis created a paradigm shift for the EU's electricity transition. During the last decade, coal power has been declined and replaced by renewable energy sources. In the second half of 2021, due to high energy costs, new renewables replaced mainly natural gas instead of coal power and the trend may be continued as the gas crisis exists.