Abstract – CO2 Value Europe, Anastasios Perimenis

Numerous sectors and services will still rely on carbon by 2050. The use of captured carbon as feedstock to answer unavoidable demands in fuels, chemicals and materials is crucial to transition to a fossil-free circular economy and reach EU's climate targets.

Over the last years, CO2 Value Europe has carried out thorough modelling exercises to quantify the contribution of Carbon Capture and Utilisation (CCU) to reach climate neutrality in the EU. A first quantitative assessment has been published in 2024 and has been recently updated with new parameters (e.g. costs) and improvements in the modelling of CCU pathways.

These updated results show that CCU technologies are crucial to help the EU reach climate neutrality, but also to reduce fossil fuel dependency and increase energy and feedstock sovereignty.

By 2050, about 20% of GHG reduction from technologies will come from CCU reducing CO2 emissions by about 270Mt in the EU. About a third of the CO2 necessary will need to come from Direct Air Capture (DAC), while the rest will be captured from biogenic sources or other flue gases.

To substitute fossil-based products and ensure a sufficient non-fossil carbon supply in the coming decades, a faster ramp-up of carbon capture in industries with high process emissions and of DAC is crucial, especially to reach the demand for fuels and chemicals in the late 2040s.

More data on the electricity demand and cost of CCU technologies will be presented in this contribution.