Advanced CO2 capture technologies

The objective is the validation and pilot demonstration of advanced CO2 capture technologies that have shown a high potential for reduction of the energy penalty and a significant overall improvement of cost-efficiency of the whole capture process, but that are not yet commercial. Projects will test operating conditions and operational flexibility, and provide proof of the reliability and cost-effectiveness of these concepts, whilst at the same time evaluating the cost, technical requirements and operational and safety impacts on the associated transportation infrastructure, storage or utilisation of CO2, as part of their integration in a CCS cluster based on a whole system approach. The proposal should state credible and clearly defined targets and key performance indicators (KPIs) for the energy penalty reduction, the capture rate and the relative incremental operating costs of the capture process. Environmentally benign technologies have to be pursued and their environmental impact addressed in the project also in view of future scaling up.

Proposals are expected to bring technologies to TRL 5-7 (please see part G of the General Annexes). Technology development should be balanced by an assessment of the societal readiness towards the proposed innovations, including by identifying and involving relevant end users and societal stakeholders and analysing their concerns and needs using appropriate techniques and methods from the social sciences and humanities.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 5 to 10 million (depending on the degree of demonstration) would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Commercial deployment of CCS requires a significant reduction of the energy intensity of the CO2 capture process for power plants or other energy-intensive industries, and a substantial decrease of the cost of capture. A continuous effort is needed to develop and demonstrate new and advanced capture technologies.
needed to develop and demonstrate new and advanced capture technologies, including new materials.

Significant, step-change advances in reductions in energy penalty and thus in the fuel-dependent cost of CO2 capture, facilitating safe and economic integration into industrial clusters - which will lower the barriers to the wider uptake of CCS, in particular for those sectors vulnerable to carbon leakage.

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