CCS Taskforce – Master Thesis (POLIMI)					
WG Name	Hydrogen and Alternative Fuels	**Chair**	Peter Kutne (DLR)	**Co-chair**	Geert Laagland (Vattenfall)
Project lead	Mohammad Mansouri (University of Stavanger)				
Core team	Peter Jansohn (PSI), Emanuele Martelli (POILIMI), Jens Walter (BASF); Peter Kutne (DLR): Han Huynh (Engie); Olaf Brekke (Equinor); Nicolò Cairo (ETN); Rene Vijgen (ETN); Niall Mac Dowell (Imperial Colleg London); Renaud Le Pierres (Meggitt); Peter Breuhaus (NORCE); Mohammad Mansouri (University of Stavanger); Andrea Zelaschi (POLIMI); Simona Calenda (POLIMI); Xiaomian Baxter (SSE); Alexandre Pactat (TotalEnergies); Laurent Mariac (TotalEnergies); David Graham (Uniper)				
ETN officer	Nicolò Cairo (ETN)				

Initiative description

Scope definition

Following discussions at different meetings of the ETN CCS Taskforce and the ETN AGM in London (March 2023), the participants of the CCS Taskforce highlighted the importance of two areas for further evaluation, as part of the taskforce activities. Evaluation of the minimum size of CCS-GT for economically viable CO_2 reduction measures was one of these research areas, while identification of the maximum size of a H_2-fired GT with given constraints on the H_2 supply infrastructure was the second one.

Objective setting

After discussion with POLIMI (Emanuele Martelli), a master thesis was defined to evaluate the performance of both retrofitting and green field options for large scale natural gas combined cycles with CO2 capture especially when operated at part-load conditions.

Expected outcome

The master thesis providing results of evaluations on the part-load performance of natural gas combined cycles with post combustion CO_2 capture. It should be noted that the thesis is built upon validated simulation models of both combined cycle and CO_2 capture unit.

Implementation of the activities

Project execution

The implementation of this project is currently ongoing by the master student Ms. Simona Calendaand by supervision of Dr. Emanuele Martelli and support of PhD student Mr. Andrea Zelaschi at Department of Energy of the Politecnico di Milano – POLIMI in Italy. In the course of project implementation, there have been several discussions within the ETN CCS Taskforce to shape the study and underlying assumptions.

Project finances

Not applicable.

Meeting schedule and dissemination

1-2 month

Deliverables & Milestones			
Deliverable 1	POLIMI Master thesis	**Timing**	03-2024
Explain briefly.			
Milestone 1	Project start	**Start date**	10-2023
The project started in October 2023.			
Milestone 2	Project end	**End date**	03-2024
It is expected that the master thesis is delivered by March 2024.			