

ASCENT consortium



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Newsletter 21st April 2017 – Interim LCA report on the ASCENT technologies

At the periodic general assembly held in Saragossa, the ASCENT consortium presented the methodology and interim LCA results for the different reference and ASCENT technologies studied.

The purpose of the different technologies studied is to produce electricity from fossil fuels (natural gas or coal), generating power, flue gas and water vapour. Various processes and co-products are involved, however, power production is the main goal of the different technologies studied. As a result, the functional unit is:

To provide 1 kWh of electricity

The objectives of this interim report are as follows:

- To calculate the environmental impacts of selected reference power plant technologies generating electricity from coal (IGCC) or natural gas (NGCC);
- To calculate the environmental impacts of power plant technologies equipped with high-temperature

technologies for pre-combustion CO₂ separation and capture developed in the ASCENT project in order to identify the “hot spots” and key parameters contributing to the impacts;

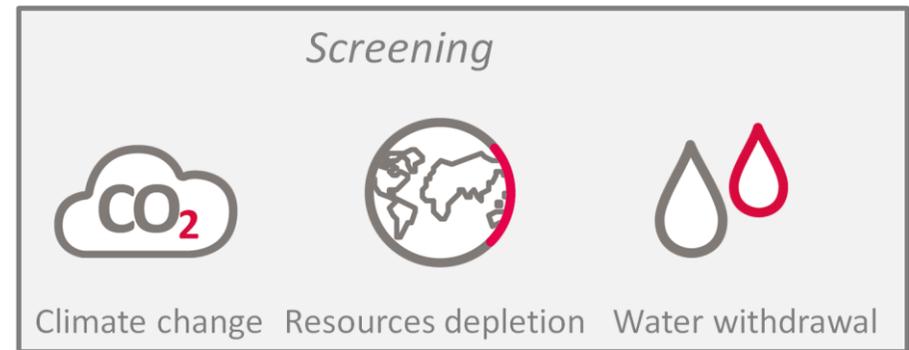
- To compare the impacts of the reference and ASCENT technologies, with and without carbon capture, and determine if the ASCENT technologies present an advantage or not in terms of environmental impacts.

Endpoint indicators description	
Climate Change [kg CO ₂ -eq]	Measures the potential impact on climate change from greenhouse gas emissions.
Resource depletion [MJ]	Measures the potential impact on resources depletion from resource use (e.g. fossil fuels and minerals). This indicator takes into account non-renewable energy and mineral extraction.
Water withdrawal [m ³]	Measures the amount of water withdrawal, whether it is evaporated, consumed or released downstream. It considers drinking water, irrigation water and water used in industrialized processes (including cooling water), fresh water and sea water. This indicator excludes turbinated water (i.e., water flowing through hydropower generation).

A life cycle impact assessment (LCIA) has provided the basis for analysing the potential contributions of resource extractions

and emissions in a life cycle inventory (LCI) mapped to a number of potential impacts.

Within ASCENT, the LCA will focus on the following environmental impact categories over the entire life cycle of the processes



Further, results will be presented for two additional LCA indicators, human health and ecosystem quality impacts

