

Memorandum

Updated CO2 footprint calculations

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Updated CO₂ footprint calculations

In autumn 2019 Gassnova calculated the CO₂ footprint of the full value chain of capture from Norcem and Fortum Oslo Varme (FOV) included transport and storage of the captured CO₂. The calculations were carried out based on input data from the Norcem, FOV and Northern Lights' FEED study reports. The footprint results were published in June 2020 and are now available on <https://ccsnorway.com/>.

Based on revised input data from FOV in October 2020, Gassnova has been requested to update the footprint calculations. It is primarily the CO₂ emission factor allocated to the steam generated in the energy recovery unit at Klemetsrud which is recommended to be changed from 44,45 to 0 kg CO₂e/MWh of heat. This is due to steam not seen as the primary product of the incineration plant as well as being balanced with input of electricity consumed by a heat pump delivering the same heat as used by the capture plant. In the former calculation both the electricity consumed by the heat pump and the internal steam flow were included resulting in a double count of footprint due to energy consumption in the capture plant.

Below are the results of the updated calculations:

Results

	Norcem Chain	FOV Chain	Norcem+ FOV Chain
25 years capture + storage 1.5 Mt storage capacity used	0.047	0.061	0.056
10 years capture + storage Only 400/400/800 kt stored	0.087	0.099	0.079
25 years capture + storage 1.5 Mt storage capacity used, BioCCS incl. *	-0.053	-0.439	-0.224

*) Negative numbers indicate CO₂ is extracted from the biocycle/atmosphere

These results will be applied and elaborated further in the upcoming paper to be issued by Gassnova for the GHGT-15 conference in March 2021.

The report "Full chain CO₂ footprint report", document 18/164-4, rev. no. 0, will still be available here since it has been the basis for input to the Gassnova DG3 report, the Gassnova evaluation report and the Atkins and Oslo Economics' KS2 report. These documents are not intended to be updated with new footprint calculations.