

GHG emissions calculations – changes from 2018 reporting

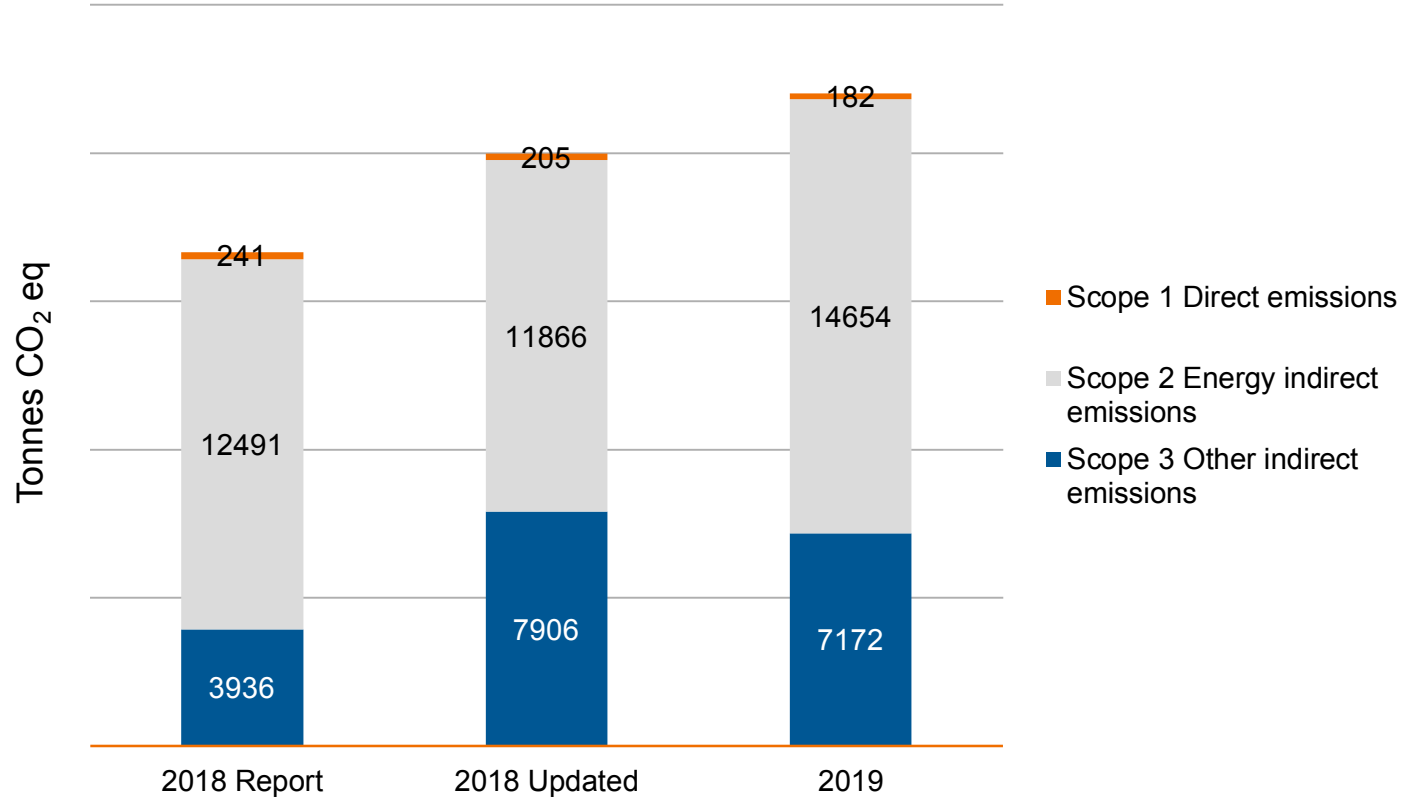
Calculation and reporting of GHG emissions was updated during 2019 according to main principles of ISO14641-1 and the GHG Protocol. Year 2018 was used as a baseline, and emissions for 2018 are presented according to previously reported and new calculation principles. During the update, Scope 3 was extended to include upstream emissions related to production of consumed electricity and fuels, transmission losses related to electricity and heat, and downstream emissions related to water consumption. Emissions related to use of cars and flights were calculated based on estimated or measured fuel use. Previous calculation was based on average CO₂ emissions/km or travel agency data. A calculation error related to emissions from heat consumption in 2018 was corrected, leading to reduced emissions from heating in 2018. Increase in emissions from electricity consumption in 2019 is due to change in the confirmed residual energy mix (increase in created CO₂/kWh), even if the total electricity consumption decreased compared to 2018.

Consumption data is mostly based on measured information, some lacks in data related to furniture, ICT equipment & paper consumption & waste. Chemicals used in research work were not included. Main sources for emission data 2019: Latest confirmed residual mix by Energy authority (2018) (Electricity, 290 g/CO₂/kWh); Motiva 2019 (Heat, 164 g/CO₂/kWh); ecoinvent database (upstream emissions for paper production & ICT equipment manufacturing, upstream emissions for energy & fuel production); VTT Lipasto database (cars, flights, train); WWF Climate calculator (upstream emissions for furniture production & ICT equipment); HSY (waste management, waste water treatment).

Scopes included in the assessment

GRI	ISO 14064-1 2019: Categories	Assessed/purchased emissions
Scope 1 Direct GHG emissions	1) Direct GHG emissions and removals	Use of VTT cars
		Use of rental cars
		Use of own cars at work
Scope 2 Energy indirect GHG emissions	2) Indirect GHG emissions from imported energy	Electricity consumption, VTT's facilities
		Heat consumption, VTT's facilities
Scope 3 Other indirect GHG emissions	3) Indirect GHG emissions from transportation	Travel by train
		Flights (domestic & international flights)
		Upstream emissions from production of used fuels (flights, cars, train)
	4) Indirect GHG emissions from products (goods and services) used by organization;	Paper consumption, upstream emissions
		Furniture, upstream emissions
		ICT equipment, upstream emissions
Upstream emissions, electricity production		
5) Indirect GHG emissions associated with the use of products from the organization;	Waste management, downstream emissions	
	Waste water treatment, downstream emissions	
6) Indirect GHG emissions from other sources.	---	
		Transmission losses, purchased electricity & heat

GHG emissions 2019



GHG emissions from different sources 2019

