6. Description of methodologies, data sources

SCOPE 1	Data, sources of data	Description of the category	Applied methodologies
Category 1.1 – Direct emissions from stationary combustion	Activity data (primary data): volume of fuels – natural gas, diesel oil, process by-products – consumed in the reporting year Emission factors (secondary data): Commission Regulation (EU) No. 601/2012	Emissions from stationary combustion plants and units owned and operated by BorsodChem Zrt. at its sites in Kazincbarcika and Gödöllő, including subsidiaries under operational control of BorsodChem.	Local-based approach, in accordance with regulations for EU-ETS reporting: Emission (tonnes CO_2e) = Σ quantity consumed (gNm^3) x heating value (TJ/tonnes) x emission factor (tonnes CO_2/TJ) x oxidation factor (value: 1)
Category 1.2 – Direct emissions from mobile combustion	Activity data (primary data): fuels used in the reporting year, from BC's internal IT system Emission factors (secondary data): GHG Protocol Emissions Calculating Tool	Fuel consumption of all vehicles owned and leased by BorsodChem that are operated in Hungary.	Emission (tonnes CO_2e) = Σ fuel consumed by fuel types (litre) x emission factor by fuel types ($kgCO_2$/litre)
Category 1.3 – Direct process emissions from industrial processes	Activity data (primary data): quantity of dinitrogen-oxide released in the reporting year Emission factors (secondary data): Commission Regulation (EU) No. 601/2012	N_2O emission arising from nitric acid production; Emissions arising from formalin production (formalin, methanol and formic acid).	CO_2 emission (tonnes CO_2e) = N_2O emission in the reporting year (tonnes) x emission factor (tCO2e/t) CO_2 emission (tonnes CO_2e) = Σ (carbon content of input formalin, methanol, formic acid (tonnes) – carbon content of output formalin, methanol, formic acid (tonnes)) x emission factor (tonnes CO_2e/tonnes))
Category 1.4 – Direct fugitive emissions from the release of GHGs in anthropogenic systems	Activity data: quantity of released refrigerants (primary data) Emission factors (secondary data): Commission Regulation (EU) No. 601/2012	HFC and SF_6 emissions released from cooling equipment and air conditioners operating in BorsodChem's facilities (PFCs are not used at BorsodChem). Maintenance of equipment is carried out by external partners.	Life-cycle approach. Emissions of refrigerants (tonnes CO_2e) = Σ quantity of released refrigerant by types (tonnes) x GWP(100 year) value of refrigerants (tonnes CO_2e/tonnes refrigerant)
SCOPE 2	**Data, sources of data**	**Description of the category**	**Applied methodologies**
Category 2 – Indirect emissions from imported energy	Activity data (primary data): Volume of electricity and steam purchased and consumed by BorsodChem in the reporting year, from BC's internally used business management system (SAP) Emission factors (secondary data): Average emission intensity of power plants producing for grid in Hungary; EEA Commission Regulation (EU) No. 601/2012	This category includes the accounting for purchased steam and electricity purchased and received from the Hungarian grid.	Imported electricity is accounted for using local based method, in accordance with the average emission intensity in Hungary. Electricity consumed by BC (MWh) = purchased electricity (MWh) – electricity purchased and sold not owned or controlled users (MWh) The emissions of the purchased steam were calculated based on an expert estimation method: taking into account the steam generated during the production of CO and hydrogen in a natural gas cracking plant

SCOPE 3	Data, sources of data	Description of the category	Applied methodologies
Category 1 – Purchased goods and services	Activity data (primary data): Quantity of raw materials, precursors and industrial gases purchased in the reporting year, from BC's internally used business management system (SAP) Emission factors (secondary data): Cradle-to-gate emission factors from data basis (Sphera, Plastics Europe, Fertilizers Europe) included in GaBi LCA software and from the EuroChlor Report 2022.	This category includes all upstream (cradle to tier-1 supplier gate) GHG emissions arising from the production of raw and auxiliary materials, and industrial gases purchased by the Company in the reporting year. 100% of raw materials was included in the calculation. Emissions were calculated for 81% of auxiliary materials (by weight) by groups of materials, and then the resulting emissions were extrapolated to 100% of the total purchased volume.	Due to the lack of supplier-specific data, we applied average-data method: Emission (tonnes CO_2e) = Σ (volume of purchased material (tonnes) x average emission factor of the purchased good (tonnes CO_2e/tonnes)) Due to the lack of country-specific emission factors, we applied the EU-28 average emission factors, considering the production process of the given material.
	Activity data (primary data): Quantity of packaging materials purchased in the reporting year, from BC's internally used business management system (SAP) Emission factors (secondary data): Bilan Carbone version 7.4	This category includes all upstream (cradle to tier-1 supplier gate) GHG emissions arising from the production of packaging materials purchased by the Company in the reporting period. Emissions were calculated for 100% of purchased packaging materials item by item.	Due to the lack of supplier-specific data, we applied average-data method: Emission (tonnes CO_2e) = Σ quantity of purchased material (tonnes) x average emission factor of purchased material (tonnes CO_2e/tonnes) Mass of purchased packaging materials were calculated from number of pieces and unit weight of materials: Mass of purchased packaging material (tonnes) = Σ (number of the packaging material (pieces) x unit weight of the packaging material (kg/pc) / 1000)
	Activity data (primary data): Value of technical goods and services purchased in the reporting year, from BC's internally used business management system (SAP) Emission factors (secondary data): DEFRA/DECC 2012, emission factors for economic value exchange rate: Official exchange rates published by the Hungarian National Bank	This category includes all upstream (cradle to tier-1 supplier gate) GHG emissions arising from the production of technical goods and services purchased for maintenance by the Company in the reporting year. Emissions were calculated for 100% of purchased technical goods and services by groups of materials and services.	Spend-based method is applied to calculate emissions: Emission (tonnes CO_2e) = Σ (value of purchased good or service (EUR) x emission factor of purchased good or service per unit of economic value (tonnes CO_2e/EUR))
Data quality of the reported emissions*:			**Good**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**
Category 2 – Capital goods	Activity data (primary data): Value of capital goods (technical goods and services) purchased in the reporting year from BC's internally used business management system (SAP). Emission factors (secondary data): DEFRA/DECC 2012, emission factors for economic value exchange rate: Official exchange rates published by the Hungarian National Bank	This category includes all upstream emissions (cradle to tier 1 Supplier gate) arising from the production of capital goods – technical goods and services – purchased by the Company in the reporting year. Emissions were calculated for 100% of purchased technical goods and services by groups of materials and services.	Spend-based method is applied to calculate emissions: Emission (tonnes CO_2e) = Σ (value of capital good (EUR) x emission factor of capital good per unit of economic value (tonnes CO_2e/EUR))
Data quality of the reported emissions*:			**Fair**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**

SCOPE 3	Data, sources of data	Description of the category	Applied methodologies
Category 3 – Fuel- and energy-related activities	Activity data (primary data): Quantities of energies, fuels purchased, consumed and sold in the reporting year, from BC's internally used business management system (SAP). Emission factors (secondary data): Bilan Carbone version 7.4; Average emission intensity of power plants producing for grid in Hungary; EEA	This category includes upstream (cradle-to-gate) emissions related to the production of fuels, electricity and steam purchased, consumed and sold by BC in the reporting year, including the transmission and distribution (T&D) losses. Emissions from the combustion of fuels, electricity purchased and consumed by the Company are accounted in Scope1 and Scope 2 categories. Emissions were calculated for 100% of fuels and energies consumed by BC.	Emissions were separately calculated for the volume of fuels, electricity and steam purchased and consumed in the reporting year: Electricity: Σ (electricity consumed (MWh) × upstream emission factor of electricity (tonnes CO_2e/MWh) Natural gas: Σ (natural gas consumed (MWh) × upstream emission factor of natural gas (tonnes CO_2e/MWh) Fuels: Σ (fuel consumed (litre) × upstream emission factor (kg CO_2e/litre)
Data quality of the reported emissions*:			**Good**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**
Category 4 – Upstream transportation and distribution	Activity data (primary data): Quantity of raw, auxiliary and packaging materials purchased in the reporting year by place of origin, mode of transport and transport units, from BC's internally used business management system (SAP) and other registers. Emission factors (secondary data): distances: Google map, emission factors by transport vehicles: Bilan Carbone version 7.4	This category includes emissions from transportation and distribution of raw materials, precursors and packaging materials purchased in the reporting year, between the Company's tier 1 suppliers and its own operation in vehicles not owned or controlled by the Company. Emissions were calculated for 100% of raw materials and packaging materials by items. Emissions were calculated for 81% of auxiliary materials (by weight) by groups of materials, and then the resulting emissions were extrapolated to 100% of the total purchased volume.	To calculate emissions, distance-based method was applied: Emission (tonnes CO_2e) = Σ (quantity of goods purchased (tonnes) × distance travelled in transport leg (km) × emission factor of transport mode and vehicle type (kg CO_2e/tonne-km)) In the case of packaging materials, the number of rounds was determined from the number of pieces and transport units, and the emissions were calculated from the total transport distance: Emission (tonnes CO_2e) = Σ (number of turns x distance travelled in transport leg (km) × emission factor of vehicle type (kg CO_2e/km) / 1000) Number of turns = Σ (volume of packaging materials purchased in the reporting year (piece) / transport unit load (piece/turn)) For transport vehicles running empty, the transport distance (round trip) was taken into account twice.
Data quality of the reported emissions*:			**Good**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**

SCOPE 3	Data, sources of data	Description of the category	Applied methodologies
Category 4 – Upstream transportation and distribution	Activity data (primary data): Value of technical goods and capital goods purchased in the reporting year, from BC's internally used business management system (SAP). Emission factors (secondary data): distances were defined from Google map, and vehicle-specific emission factors from Bilan Carbone version 7.4.	This category includes emissions from transportation and distribution of technical goods for maintenance and capital goods purchased in the reporting year between the Company's tier 1 suppliers and its own operation in vehicles not owned or controlled by the Company Emissions were calculated for shipments over EUR 100 thousand (min 80% of technical goods by purchasing value), and the resulting emission was extrapolated to 100%.	Emissions were calculated using distance-based method. Due to diversity of materials, and in the lack of exact weights, number of turns were estimated from the number of purchase order items: Emission (tonnes CO_2e) = Σ (number of turns x distance travelled in transport leg (km) × vehicle specific emission factor (kg CO_2e/km) / 1000)
Data quality of the reported emissions*:			**Fair**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**
Category 5 – Waste generated in operations	Activity data (primary data): Total volume of waste generated in the reporting year by types of waste and waste treatment method, from BC's internally used business management system (SAP). Emission factors (secondary data): Bilan Carbone version 7.4	This category includes emissions from third-party disposal and treatment of waste generated in the Company's owned or controlled operations in the reporting year (including waste generated from disassembly of capital goods). Emissions were calculated for 100% of waste generated in the reporting year by types of wastes and waste treatment methods.	Emissions were calculated for waste using waste treatment specific emission factors. Emission (tonnes CO_2e) = Σ (waste produced by waste types and waste treatment method (tonnes) × waste type and waste treatment specific emission factor (kg CO_2e/tonnes))
Data quality of the reported emissions*:			**Good**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**
Category 6 – Business travel	Activity data (primary data): Distance travelled by each mode of transport for employees Emission factors (secondary data): Bilan Carbone version 7.4	This category includes emissions from the transportation of employees for business related activities by airlines. Emissions related to business travels by vehicles owned and operated by the Company were accounted for in Scope 1 and in Category 3.3 of Scope 3. Emissions were calculated for 100% of business travels by airlines.	Emissions were calculated using distance-based method: Emissions from air travel (tonnes CO_2e) = Σ (distance travelled by vehicle type (passenger-km) x vehicle specific emission factor (kg CO_2e/passenger-km) / 1000)
Data quality of the reported emissions*:			**Good**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**

SCOPE 3	Data, sources of data	Description of the category	Applied methodologies
Category 7 – Employee commuting	Activity data: (primary data): Average statistical headcount; number of non-resident employees by modes of transportation, distance travelled by employees, number of days spent in home office in the reporting year, from BC's internally used business management system (SAP) and registers; (assumptions): types of vehicles used for commuting, number of local employees allocated by the used modes of transportation, and distance travelled. Emission factors (secondary data): Bilan Carbone version 7.4	This category includes emissions from the transportation of employees between their homes and their worksites. Emissions were calculated for 100% of employees based on the average statistical headcount.	Emissions from employee commuting (tonnes CO_2e) = Σ (number of employees x % of employees using mode of transport x one-way commuting distance (vehicle-km) x 2 x working days per year x emission factor of transport mode ($kgCO_2e$/vehicle-km) or ($kgCO_2e$/passenger-km)) Average number of working days does not include weekends, days in business travels and home office. Types of passenger cars used for commuting (50% with patrol, 50% diesel oil), as well as mode of transport used by local employees (50% passenger car, 25% bus, 25% other – bicycling, walking) and the distance travelled by them are based on assumptions.
Data quality of the reported emissions*:			**Fair**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**
Category 9 – Downstream transportation and distribution	Activity data (primary data): Quantity of products sold in the reporting year by destinations and modes of transport, from BC's internally used business management system (SAP). Distances (secondary data): with Google map route planner Emission factors (secondary data): Bilan Carbone version 7.4 emission factors by mode of transport and types of vehicles; transport through pipes: Alan McKinnon 2011 Report Transport and Logistics	This category includes emissions from transportation and distribution (including storage) of products sold by the Company in the reporting year, in vehicles and facilities not owned or controlled by BorsodChem between the Company and the direct consumer (in the case of intermediate products). Emissions were calculated for 100% of sold products by items.	Emission was calculated from transported volumes, distance travelled, mode of transport and emission factors of vehicles. Emission from transportation of products sold (tonnes CO_2e) = Σ volume of the products sold (t) x distance travelled in transport leg (km) x emission factor of transport mode and vehicle type (kg CO_2e/tonne-km) In case of items, when exact place of destination and distance was unknown, average distances of the consignee's country were applied to the calculation.
Data quality of the reported emissions*:			**Good**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**
Category 11 - Use of sold products	Activity data (primary data): Volume of natural gas purchased and sold in the reporting year, from BC's internally used business management system (SAP). Emission factors (secondary data): Commission Regulation (EU) No. 601/2012	This category includes emissions from the combustion of natural gas purchased and sold by BorsodChem Zrt. Chemical products do not have direct use-phase GHG emissions, therefore this category is not relevant for our products.	Emission from the natural gas sold was calculated using local based method: Emission (tonnes CO_2e) = volume of purchased and sold natural gas (TJ) x emission factor (tonnes CO_2e /TJ)
Data quality of the reported emissions*:			**Good**

SCOPE 3	Data, sources of data	Description of the category	Applied methodologies
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**
Category 12 – End-of-life treatment of sold products	Activity data (primary data): Volume of MDI, TDI and PVC products produced at BorsodChem Zrt.'s site in Kazincbarcika in the reporting year, from BC's internally used business management system (SAP). Emission factors (secondary data): Bilan Carbone version 7.4	This category includes emissions expected to arise from the end-of-life treatment of MDI, TDI and PVC products produced and sold by BorsodChem in the reporting year.	Emissions were calculated using end-of-life treatment method: Emission (tonnes CO_2e) = Σ (mass of sold products at the end of life after consumer use (tonnes) x % of total waste being treated by waste treatment method x emission factor of waste treatment method (kg CO_2e/tonnes)/1000)
Data quality of the reported emissions*:			**Good**
Percentage of emissions calculated using data obtained from suppliers or other value chain partners:			**0%**

* Assessment is based on subjective evaluation of data quality of the direct emission data, activity data and emission factors, in accordance with the criteria (Technology, Time, Geography, Completeness and Reliability) specified in Chapter 7.3 of GHG Protocol Scope 3 standard.