Advancement of Scope 3 Greenhouse Gas Emission Methodology

■ Advancement of calculation methodology ■ Expansion of scope of calculation ■ Same as before

	Category 1 Purchased Products and Services	Category 2 Purchased Capital Goods	Category 3 Activities Related to Fuel/Energy	Category 4 Upstream Transport and Distribution	Category 5 Waste	Category 6 Business Trip	Category 7 Commute	Category 11 Goods sold	Category 12 Disposal of sold products
Methodology in 2021 (Methodology by SHI)	Actual purchase volume/purchase amount-based calculation method **Actual calculation range** : Approximately 36% of the purchase amount from the primary supplier (Gate) : Calculation of GHG emissions from the primary supplier (Gate)[1] **Basis for Emission Factor** : National LCI DB, Report from primary supplier	Calculation method based on the number of capital goods actually purchased	Fuel-based calculation **Actual calculation range** : 100% level of energy sources used in domestic business sites **Grounds for emission factors** : national LCI DB, environmental performance indicators, Korea Electric Power Statistics, Korea District Heating Corporation statements	Estimation method based on metered vehicle distance **Actual calculation range** : Limited calculation only for vehicles (trucks, tank lorries) weighed at the Geoje shipyard **Grounds for emission factors** : environmental product labeling	Calculation method by waste type **Actual calculation range** : Calculation of greenhouse gases generated in the process of treating all wastes generated at Geoje/Pangyo/Chilseo/Daedeok business sites **Grounds for emission factors** : environmental product labeling	Calculation method based on business trip distance **Actual calculation range** : For all employees **Grounds for emission factors** : National LCI DB, Environmental Product Declaration, Great Circle Mapper	Calculation method based on number of registered two-wheeled vehicles / Number of parking spaces at the workplace (private car) Distance **Actual calculation range** : Based on employees at Geoje/Pangyo/Chilseo/Daedeok business sites **Grounds for emission factors** : comprehensive energy analysis report, national LCI DB, environmental product declaration	EEDI-based methodology (methodology uniquely developed by SHI) **Actual calculation scope** : Calculation of GHG emissions generated by ships specified in IMO[3] over the average life span **Emission factor basis** : classification certificate, Clarksons Research historical data	Calculation method based on waste ship cutting process (waste iron recycling) and calculation method based on LDT[4] **Actual calculation scope** : Calculation of greenhouse gases generated in the process of scrapping delivered ships **Emission factor basis** : Overseas thesis papers
Methodology in 2022 (utilizing methodologies applied by the three(3) Korean shipbuilding companies) ※ Establishment in progress	Calculation method based on actual purchase amount **Actual calculation range** : About 90% of the purchase amount from the primary supplier (Gate) [2] : Calculation of GHG emissions from primary supplier (Gate) and raw materials (Cradle) **Emission factor basis** : national LCI DB, report from primary supplier, National GHG Emission Total Information System (NETIS)	Calculation method based on actual purchase amount of capital goods **Actual calculation range** : 100% of the amount of capital goods purchased by the primary supplier (Gate) : Calculation of GHG emissions from the primary supplier (Gate) **Emission factor basis** : national LCI DB, report by primary supplier, National GHG Emission Total Information System (NETIS)	Power transmission and distribution loss value included in Scope 2	Calculation method based on sea/air/land transport distance **Actual calculation scope** : Calculation of greenhouse gas emissions generated during land/sea/air transportation to Geoje site **Grounds for emission factors** : Environmental Product Declaration, Great Circle Mapper, SEARATES	Same as before	Same as before	Calculation method based on distance for each means of commuting through total enumeration/sampling **Actual calculation range** : Based on employees at Geoje/Pangyo/Chilseo/Daedeok/Pyeongtaek business sites	Same as before	Same as before

※ The scope of calculation in Categories 1 and 2 includes all greenhouse gas emissions generated from the cradle to gate (from raw materials to the finished product) phase.
1) Calculation for products/raw materials of primary suppliers with disclosed emission coefficients   2) Expansion of existing ranges + calculation of products/raw materials with undisclosed emission coefficients using industry emission coefficients
3) IMO MARPOL Annex VI Chapter 4 Regulation 19   4) LDT: Light Dead-weight Ton