

Atmospheric emissions

The Group's greenhouse gas emissions consist almost exclusively of carbon dioxide generated by fossil fuels for heating, transport, power generation and the purchase of electricity from third parties, staff travel (service/maintenance activities, business trips and commuting from home to work).

Fugitive emissions of hydrochlorofluorocarbons, hydrofluorocarbons (HCFCs and HFCs) and other gases from air conditioning systems are also considered and converted into kg of CO₂ equivalent.

For atmospheric emissions as well, use is made of the GHG Protocol approach, distinguishing between direct or Scope1 emissions (use of fossil fuels for transport, heating, power generation and fugitive ozone depleting emissions), indirect or Scope2 emissions (purchase of electricity for industrial and civil use) and other indirect or Scope3 emissions. Unless otherwise stated, the atmospheric emission figures given here have been calculated based on the updated coefficients made available by the GHG Protocol¹.

Nitrogen oxides (NOx) and sulphur oxides (SOx) are negligible in Group emissions.

[GRI 103-3: Management Approach] [GRI 305] The following table shows the Group's total CO₂ emissions.

| | | Group breakdown by Business Unit (%) and % variation compared to the previous 2 years | | |
|--|-----------|---|------------|------------|
| | | Group | Domestic | Brazil |
| CO ₂ emissions from transport | kg | 47,076,451 | 95% | 5% |
| CO ₂ emissions from heating | kg | 18,341,623 | 100% | 0% |
| Emissions of CO ₂ equivalents for ozone depleting gases* | kg | 24,668,762 | 21% | 79% |
| CO ₂ emissions from electricity generation by cogeneration | kg | 66,831,106 | 100% | 0% |
| CO ₂ emissions from electricity generation using diesel | kg | 9,002,922 | 93% | 7% |
| Total direct emissions of CO₂ - under Scope1 GRI** | kg | 165,920,864 | 87% | 13% |
| 2018 v. 2017 | | 14% | 4% | 168% |
| 2018 v. 2016 | | 9% | 1% | 129% |
| CO ₂ emissions from purchases of electricity generated from mixed sources | kg | 685,178,250 | 94% | 6% |
| Total indirect emissions of CO₂ - under Scope2 GRI | kg | 685,178,250 | 94% | 6% |
| 2018 v. 2017 | | (6)% | (3)% | (36)% |
| 2018 v. 2016 | | (11)% | (10)% | (21)% |
| CO ₂ emissions from work-home commuting*** | kg | 60,780,511 | 92% | 8% |
| CO ₂ emissions from air travel**** | kg | 5,200,007 | 56% | 44% |
| Emissions of CO ₂ from hotel stays***** | kg | 479,348 | 100% | NC |
| Total other indirect emissions of CO₂- under Scope3 GRI | kg | 66,459,866 | 89% | 11% |
| 2018 v. 2017 | | (4)% | (5)% | 9% |
| 2018 v. 2016 | | (5)% | (5)% | (4)% |
| Total CO₂ emissions | kg | 917,558,980 | 92% | 8% |

¹ Emissions relating to the consumption of electricity purchased from mixed sources in the Italian market have been calculated by using the coefficient published by the GHG Protocol (2009) which considers the national energy mix, and is equal to 386 grams of CO₂/kWh. For **Brazil**, the average coefficients for 2016, 2017 and 2018 have been used, as calculated and published by the Ministério da Ciência, Tecnologia, Inovações e Comunicações (Ministry of Science, Technology, Innovations and Communications), of approximately 81.7, 92.7, 74.0 grams respectively of CO₂/kWh.

| | | | |
|--------------|------|------|-------|
| 2018 v. 2017 | (3)% | (2)% | (11)% |
| 2018 v. 2016 | (8)% | (8)% | 2% |

* The equivalent CO₂ emissions of the hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs) and other refrigerant gases are determined by reference to specific Global Warming Potential (GWP) coefficients for the various gas types: the index is based on a relative scale that compares the gas considered with an equal mass of carbon dioxide with a GWP of 1. In Italy the index is calculated as the average of the GWP of the various gases used: 1,780 for HCFC and 1,300 for HFC.

** The comparison was made with 2017 methane consumption data, which was updated from that reported in the last Sustainability Report received after its publication. The updated 2017 figure is equal to 27,860,685 m³ of methane for cogeneration.

*** In determining the impact of home-work commuting, reference is made to statistical data produced on the company's personnel.

**** Emissions due to air travel were calculated by the study and research centre of American Express (the Travel Agency used by TIM) supported by DEFRA (Department of Environment, Food and Rural Affairs of the United Kingdom) based on the number of journeys actually made, subdivided by the duration of each individual journey (short, medium or long).

***** Emissions from stays in hotels were calculated only in relation to Italy and only take the Domestic BU into account. The emission factors were calculated using the characterisation factors issued by the Intergovernmental Panel on Climate Change (IPCC) in 2007.

The emissions produced have decreased compared to previous years thanks to greater use of energy from renewable sources and a rational use of energy resources.