



## ORLEN Group emissions for 2019-2021

	2019 [tCO <sub>2</sub> e]	2020 [t CO <sub>2</sub> e]	2021 [t CO <sub>2</sub> e]
<b>Scope 1</b>	<b>18 623 537</b>	<b>17 715 216</b>	<b>18 102 614</b>
Direct emissions	17 215 094	16 301 845	16 738 959
Direct emissions - fugitive	892 060	942 339	860 844
Process emissions	375 307	347 885	360 692
Fuels	128 891	120 435	135 601
Process gas	11 925	2 393	6 518
Refrigerants	260	319	0
<b>Scope 2</b>			
Market-Based	1 666 685	1 259 736	1 134 975
Location-based	1 485 970	1 146 660	1 019 200
<b>Scope 3</b>	<b>86 860 532</b>	<b>81 123 571</b>	<b>82 347 592</b>
Category 11. Use of products sold	67 272 950	63 013 377	65 958 028
Category 1. raw materials and services purchased	13 504 490	12 555 505	12 448 292
Category 3: Emissions related to energy and fuels not covered by Scope 1 and 2	3 643 416	3 312 008	1 905 907
Category 10. processing of products sold	1 586 136	1 588 208	1 259 508
Category 4 Upstream - transport and distribution	562 448	414 513	531 447
Category 9. Downstream - transport and distribution	277 079	229 090	239 567
Category 5. Waste resulting from operations	13 382	10 555	4 265
Category 6 Business travel	631	316	577

### Guidance note

**Calculations were in line with the GHG Protocol** - a standard that establishes a framework for counting and managing greenhouse gas emissions from the private, public sector across the value chain. It is issued in partnership: World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD).

**The base year** is the period adopted for comparison in the size of the carbon footprint over a time horizon. The calculation uses 2019 as the base year.

**Organisational boundaries** - The process of reporting GHG emissions at the organisational level started with a process of establishing so-called organisational boundaries, which in turn require the identification of responsibility for emissions within the structure of the entire organisation with the inclusion of, for example, subsidiaries. An operational control criterion was adopted. Scope 1, 2 and 3 emissions from 110 companies, including PKN ORLEN, were included in the analysis and are components of the carbon footprint for the Group.

**Note:** The emissions of Lotos Group and PGNIG Group are not components of the presented results for 2019-2021. They will be presented in 2022, taking into account the relevant base year recalculations.



Emissions for 2019-2020 have been performed by an independent consultant, while emissions for 2021 have been performed by Orlen and subsequently verified by an independent party, in accordance with PN-EN ISO 14064-3.

### **Scope 1:**

**Scope 1, in accordance with the GHG Protocol, includes direct emissions for ORLEN Group:**

- 1) Covered for reporting under the TIER or EU-ETS emissions trading schemes resulting from the combustion of fuels or process emissions arising from the operation of facilities in segments designated by the schemes or, in the case of TIER (TIER is one of the emissions trading schemes that operates in Canada and applies to direct emissions from our assets in Canada), exceeding the annual emissions samples of 100,000 tCO<sub>2</sub>e,
- 2) Not covered by TIER or EU-ETS reporting (referred to as Non-TIER or Non-ETS in the report and calculations), i.e:
  - a. emissions from fuel combustion in owned and leased fleet vehicles,
  - b. emissions from waste incineration in dedicated installations,
  - c. fugitive emissions -, which in turn include:
    - i. technological emissions,
    - ii. emissions from the occurrence of leaks, attributed to both the nature of the installation (permanent leaks) and intentional maintenance leaks, and from the use of flares,
    - iii. direct emissions from wastewater treatment processes (having in-house treatment plants).

### **Scope 2:**

Indirect emissions related to electricity consumption were calculated according to two methods: Location-Based and Market-Based according to the GHG Protocol methodology. This means that during the calculation, for each item of electricity purchased and consumed at the same time, the same amount of consumption is multiplied by the national average rate - for the Location-Based method, and the energy seller's rate - for the Market-Based method.

We present the results of Scope 2 emissions as two quantities - the sum of the Location-Based and Market-Based indirect energy emissions. This combination allows us to present the impact of Orlen Group's purchasing decisions (in the context of electricity) on emissions.

In the case of the Location-Based method, electricity consumption was multiplied by the average emission factor for the country in which the respective ORLEN Group Company operates.

### **Scope 3:**

#### **Indirect emissions C1 - purchased raw materials and services**

Emissions related to extraction, pre-processing of raw materials, as well as emissions related to production processes of purchased products that are inputs to Orlen Group processes. These emissions are indirectly attributed to the value chain of ORLEN Group; they will be e.g. crude oil purchased from outside the Group structures.

#### **Indirect emissions C3 - emissions related to energy and fuels not included in S1 and S2.**

In Scope 3, Category 3 (C3) includes WTT emissions, i.e. emissions generated at the stage of production of fuels and fuels for generation of energy: electricity, heat, steam, cold, and emissions related to generation of energy: electricity, heat, steam, cold lost during transmission and distribution. These make up part of WTW emissions, i.e. emissions from production to consumption of fuel/energy. The remaining part of WTW emissions are TTW emissions, which arise during the combustion of fuels in the facilities used by the organisation (Scope 1) or during the production of electricity purchased by the organisation (Scope 2).



#### **Indirect emissions C4 - upstream - transport and distribution**

Emissions associated with transport services by road, rail, sea and, if present, air. Emissions resulting from the delivery of raw materials and shipment of finished products, the cost of which is covered by ORLEN Group, are included.

#### **Indirect emissions C5 - waste from operations**

Emissions related to the final management of waste arising from operations.

#### **Indirect emissions C6 - business travel**

Emissions associated with business travel by external (i.e. not owned by the Organisation) means of transport such as taxi, public transport, bus, shuttle bus, train, plane. Travel by own fleet is not included in K6 - emissions from this (fuel combustion) are already included as direct emissions in S1.

#### **Indirect emissions C9 - downstream - transport and distribution**

Emissions associated with transport services by road, rail, sea and, if present, air. Emissions resulting from the shipment of finished products organised at the customer's expense are included.

#### **Indirect emissions C10 - processing of products sold**

Emissions related to the processing of outputs from ORLEN Group processes - intermediate products that take place in organisations outside ORLEN GROUP, e.g. for PVC pellets or PE resin.

#### **Indirect emissions C11 - use of sold products**

Emissions related to the use of products sold by ORLEN Group, e.g. emissions related to the combustion of fuel from retail sales. Category 11 takes into account direct emissions and optionally indirect emissions arising during the expected life of the sold products in the ORLEN value chain, outside the ORLEN Group structure).