



# Environmentally responsible procurement

## General Practices in Environmentally Responsible Procurement

**ENERGY**  
1215 GWh

The Laboratory is committed to limiting rises in electricity consumption to 5% up to the end of Run 3 compared to the 2018 baseline year, which corresponds to a maximum target of 1314 GWh, while delivering significantly increased performance of its facilities. It is also committed to increasing energy reuse.

In 2021 and 2022, CERN consumed 991 GWh and 1215 GWh of electricity respectively.

In addition, the Organization consumed 67 GWh (240 TJ) and 51 GWh (184 TJ) of energy generated from fossil fuels in the two years respectively.

**EMISSIONS**  
184 173 tCO<sub>2</sub>e

CERN's objective is to reduce direct emissions by 28% by the end of Run 3 compared to the 2018 baseline year, which corresponds to a maximum target of 138 300 tCO<sub>2</sub>e.

The scope 1 emissions in 2021 and 2022 were 123 174 and 184 173 tonnes of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e) respectively.

The total amount of scope 2 greenhouse gas emissions due to CERN's electricity consumption was 56 382 and 63 161 tCO<sub>2</sub>e in 2021 and 2022 respectively.

Total scope 3 emissions arising from business travel, personnel commuting, catering, waste treatment and water purification amounted to 7813 and 8911 tCO<sub>2</sub>e respectively.

Scope 3 emissions arising from procurement, including those from the first and second round of the tender process, amounted to 10 000 and 10 000 tCO<sub>2</sub>e respectively.

**WATER AND EFFLUENTS**  
3234 ML

The Laboratory is committed to keeping the increase in its water consumption below 5% up to the end of Run 3 compared to the 2018 baseline year, which corresponds to a maximum target of 3651 ML, despite a growing demand for water cooling at the upgraded facilities.

In 2021 and 2022, CERN used 2661 and 3234 megalitres of water respectively.

**IONISING RADIATION**  
< 0.01 mSv

The European annual dose limit for public exposure to artificial sources is 1 mSv. CERN is committed to keeping its contribution to no more than 0.3 mSv per year.

The actual dose received by any member of the public living near the Laboratory was less than 0.01 mSv in the reporting period, which is more than 100 times lower than the average annual dose received from medical exposure per person in Switzerland.



# Environmentally responsible procurement must be aligned and shall contribute to CERN Environment Priority Objectives

The reporting period saw the completion of the second shutdown and the restart of the accelerator complex (Run 3) with a view to reaching the new collision energy of 13.6 TeV at the Large Hadron Collider (LHC). In some cases, environmental indicators may be very different during shutdown years compared to operation years, so they are shown for both years to highlight this, where relevant. The 22 indicators most prominently shown for those domains where priority objectives have been defined, namely Energy, Emissions, Water and Effluents.



**WASTE**  
69% recycled

CERN's aim has been to increase its recycling rate for non-hazardous waste. The recycling rate rose from 56% in 2018 to 69% in 2022.

In 2021 and 2022 respectively, CERN disposed of 5111 tonnes and 8812 tonnes of non-hazardous waste, and of 1544 tonnes and 1295 tonnes of hazardous waste, including 307 and 519 tonnes of radioactive waste.

**NOISE**  
45 dBA at night

CERN is committed to restricting noise at its site perimeters to 70 dBA during the day and 60 dBA at night.

Over this reporting period, CERN implemented measures to improve its noise management, including the installation of an online real-time monitoring system at Point 2 of the LHC and Point 4 of the SPS. Average noise levels measured on the boundaries of CERN's sites are typically around 50 dBA during the day and 45 dBA at night.

**BIODIVERSITY**  
18 species of orchids

Inventories of flora and fauna were conducted in 2022. A further two species of orchid were identified, bringing the total on the CERN sites to 18, as well as 62 species of Lepidoptera and 32 species of Orthoptera.

**KNOWLEDGE TRANSFER**  
8 environmental projects

In 2022, CERN launched the Innovation Programme on Environmental Applications (CIPEA), which spans four focus areas where CERN's know-how can be of use, namely renewable and low-carbon energy; clean transportation and future mobility; climate change and pollution control; and sustainability and green science.

Eight projects were selected for implementation with the financial support of external partners or the CERN Knowledge Transfer fund.

More details in <https://hse.cern/environment-report-2021-2022>



How could **Procurement** make a difference?

# Embedding Environmental Responsibility in Procurement Process

## Example 1



**Limit rises in  
electricity consumption  
to 5% up to end Run 3  
(baseline year 2018)**

**How? ...→**

- › Applying **instructions** related to **energy consumption costs** for assets exceeding 5GWh/year or power consumption over 500kW.
- › **Prioritising** suppliers:
  - ✓ **Demonstrating efforts** to reduce their energy consumption (ex. an ISO 50001 Certificate.)
  - ✓ Adopting **energy-efficient technologies** (e.g., LED lighting, Smart thermostats, hybrid vehicles, heat recovery systems...).
  - ✓ Which are **compliant** with the **new EU Regulation** on Ecodesign for Sustainable Products Regulation (*ESPR*)



# Embedding Environmental Responsibility in Procurement Process

## Example 2



**Increase recycling rate**  
for non-hazardous waste.  
The recycling rate rose from 56% in  
2018 to 69% in 2022

**How? ...→**

- › **Minimize intake of non-recyclable waste** through provision of recyclable, reduced, and reusable materials and packaging.
- › **Choose suppliers** adopting circular economy practices, (ex. take-backs).



# Embedding Environmental Responsibility in Procurement Process

## Example 3



**Reduce direct emissions by 28% up to end Run 3 (baseline year 2018)**

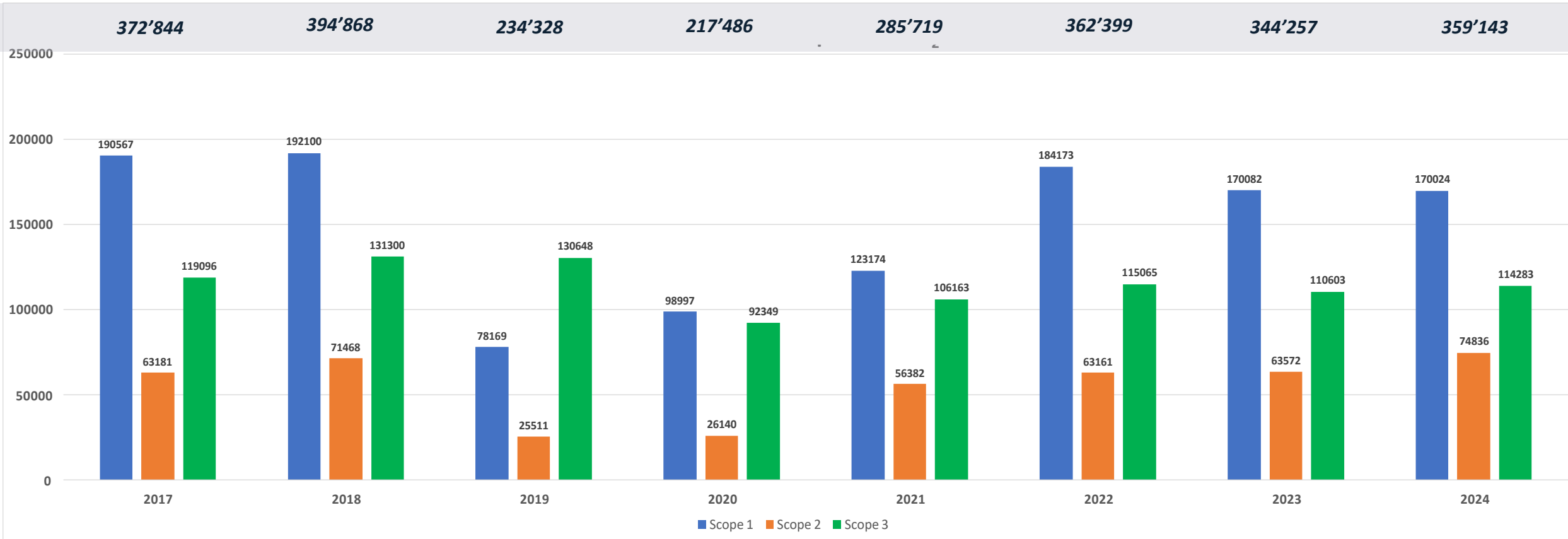
A large, light blue target icon with a white bullseye and a leaf-like shape on the right side, positioned behind the text.

How? ...→

① Support <b>renewable energy</b> adoption	② Support greater <b>energy efficiency</b> and conservation	③ Support better <b>materials stewardship</b> and eliminate waste
④ Decarbonise <b>logistics</b>	⑤ Lower impact bio-based materials and <b>land-use</b>	⑥ Support <b>carbon capture</b>

# 2017-2024 CERN Carbon footprint in tCO2e

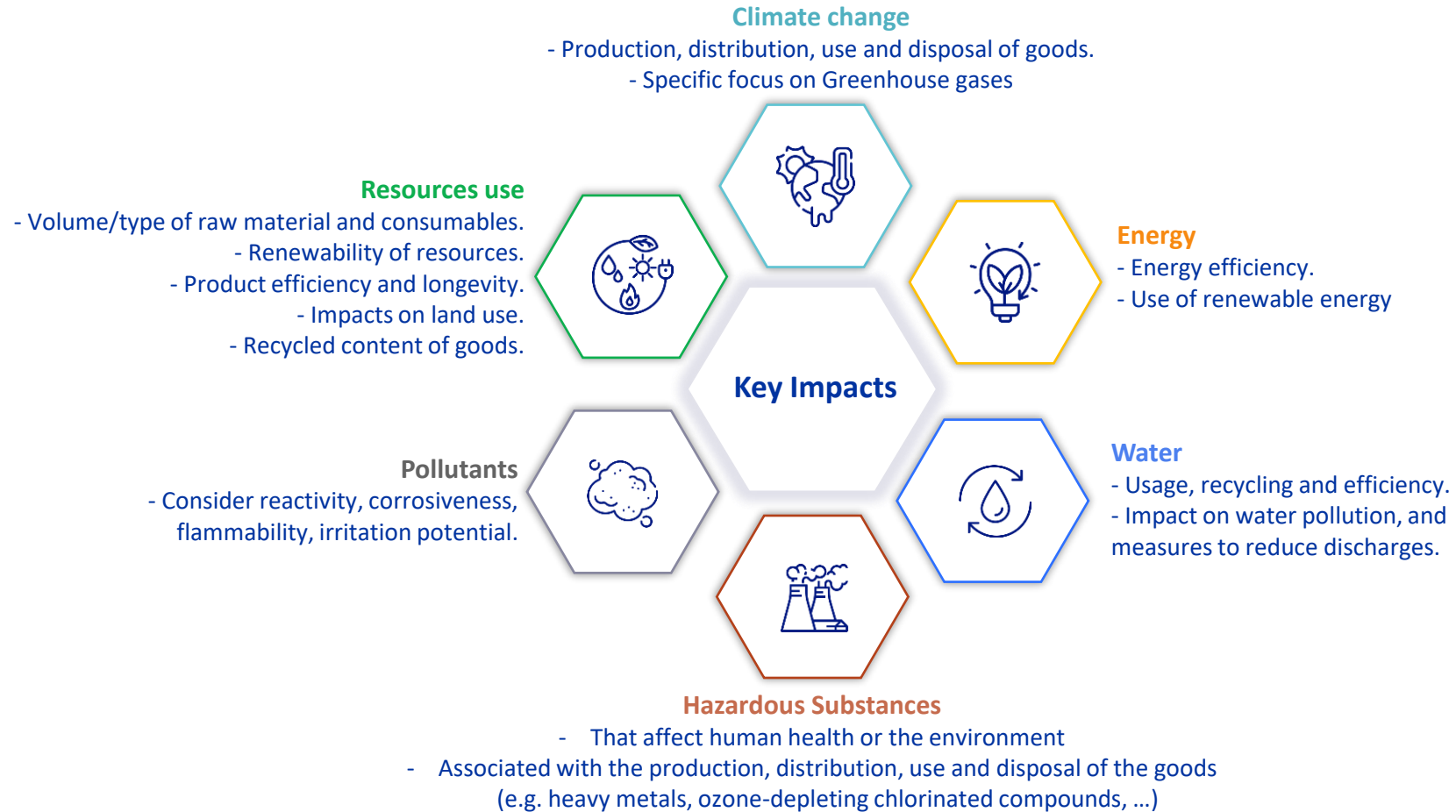
Total/year:



Independently from the shutdowns, **Procurement** still had **constant Scope 3 emissions**.

# Key environmental impacts to consider

It's not just about CO2 emissions



# Embedding Environmental Responsibility in Procurement Process

❖ **Pre-Procurement phase:**  
Need definition, life cycle assessment

❖ **Start-Up Meeting**  
Procurement Strategy Development

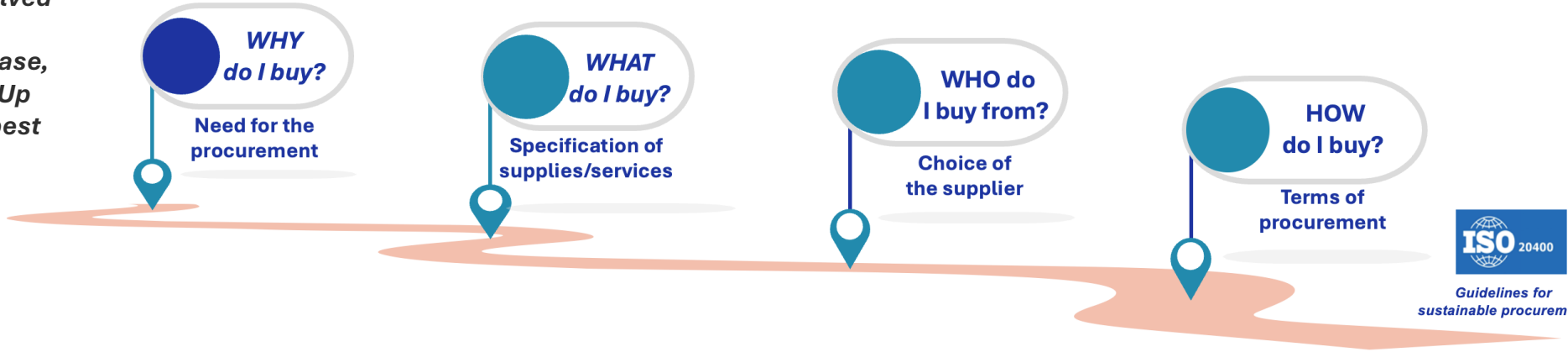
**Identifying environmental criteria**

❖ **Simplified Technical Auditing**   ❖ **Market Survey**   ❖ **Specification Meeting**   ❖ **Invitation To Tender**   ❖ **Evaluation and Clarification**   ❖ **Adjudication (Award)**   ❖ **Contract Management**

**Embedding mandatory/desirable environmental criteria**

*The most impactful time to embed Environmental Responsibility*

*If you're not involved in the pre-procurement phase, then the Start-Up Meeting is the best opportunity.*



Guidelines for sustainable procurement

➤ **Involve the CERP Team at any stage!**