Reference:

A.Vena, *ESA Green Agenda –How to reduce ESA carbon footprint*, 4th ESA REACH Workshop, ESA HQ Daumesnil, Paris, 18th October 2022

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ESA Green Agenda – How to reduce ESA carbon footprint

4th ESA REACH Workshop
18 October 2022
Paris, ESA-HQ

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What is Corporate Social Responsibility (CSR)

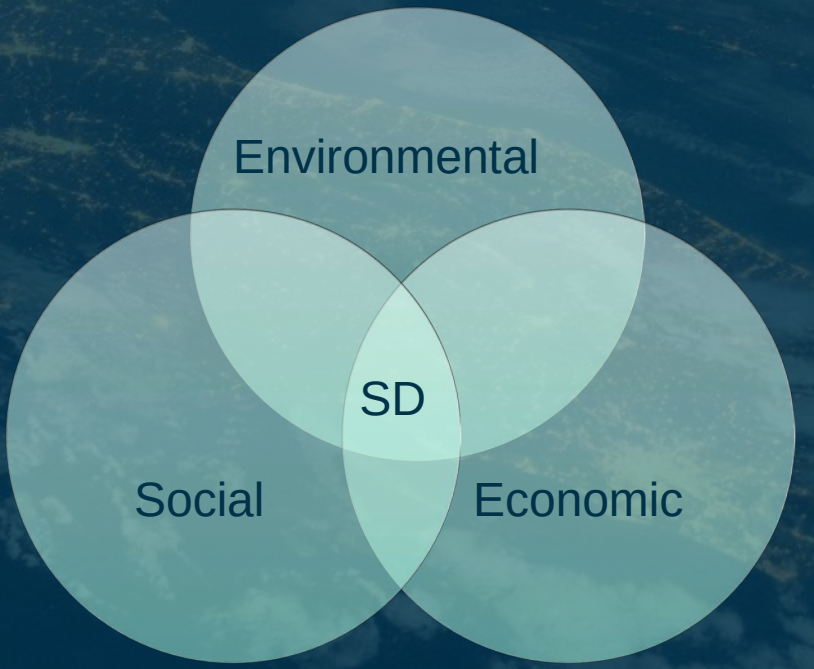
CSR: ISO 26000: 2010

Responsibility of an organisation for the impacts of its decisions and activities on society and the environment, through transparent and ethical behaviour

CSR is a form of corporate self-regulation aiming at enabling the organisation to contribute at best to the sustainable development (SD) of the society through its activities, reinforcing the dialogue with its stakeholders as a fundamental pillar.

Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs

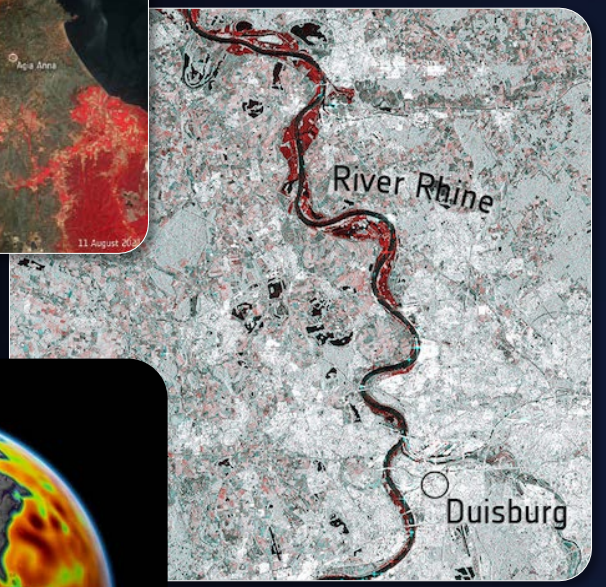
Our Common Future, Brundtland Report, United Nations, 1987

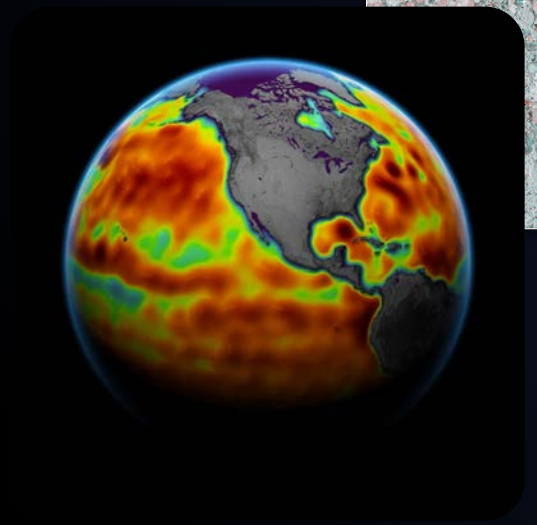


ESA – A role model for the space community

ESA is regularly reporting on its activities in support of sustainable development

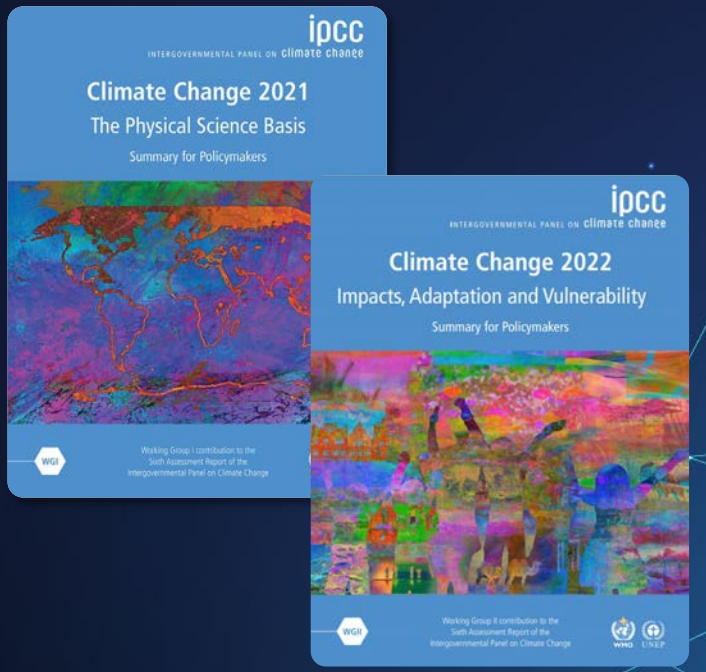
Climate change: we need to act now





"We are on the edge of an abyss, moving in the wrong direction … our world faces the greatest cascade of crises in our lifetimes"

UN Secretary-General António Guterres, 2021



Two lines of action in the ESA Agenda 2025

1 **Increase the contribution of space projects to the sustainable development of society**

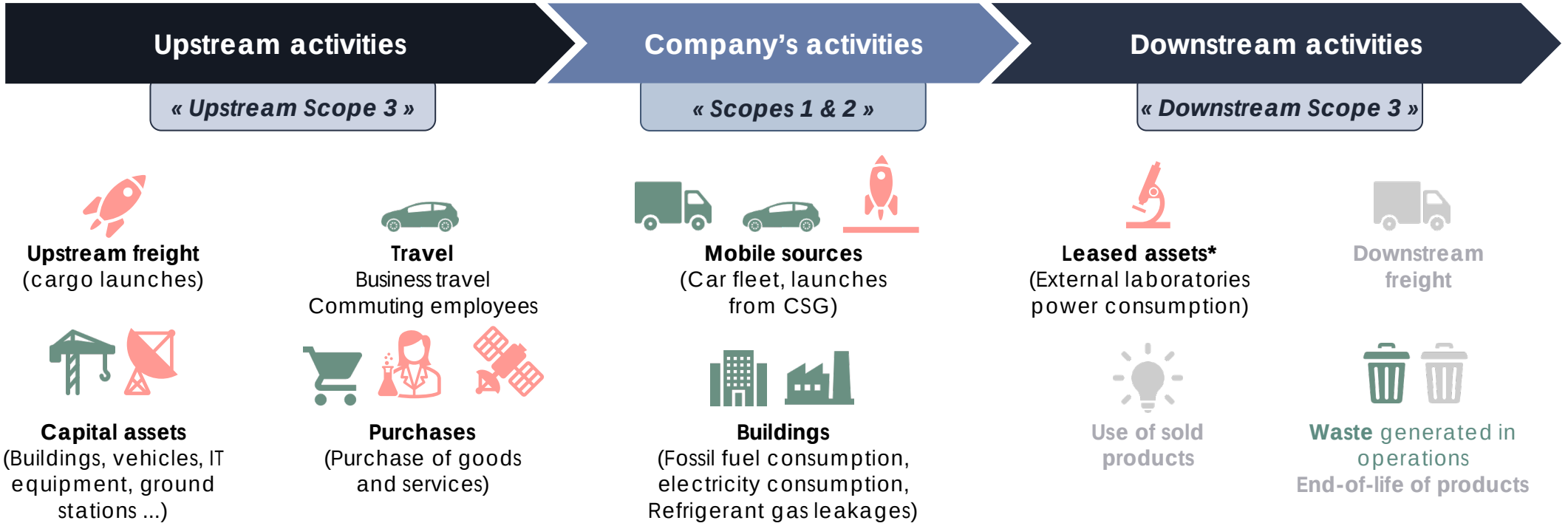
"(...) ensure that ESA and European space programmes can support the implementation of the Paris Agreement and the European Green Deal to the fullest extent."

2 **Improve the socially & environmentally responsible management of space sector activities**

"The Agency will improve its own environmental responsibility, to contribute to the climate neutrality of Europe. By 2030, ESA's greenhouse gas emissions will be decreased by 46.2% compared to 2019."

How do we measure a carbon footprint ?

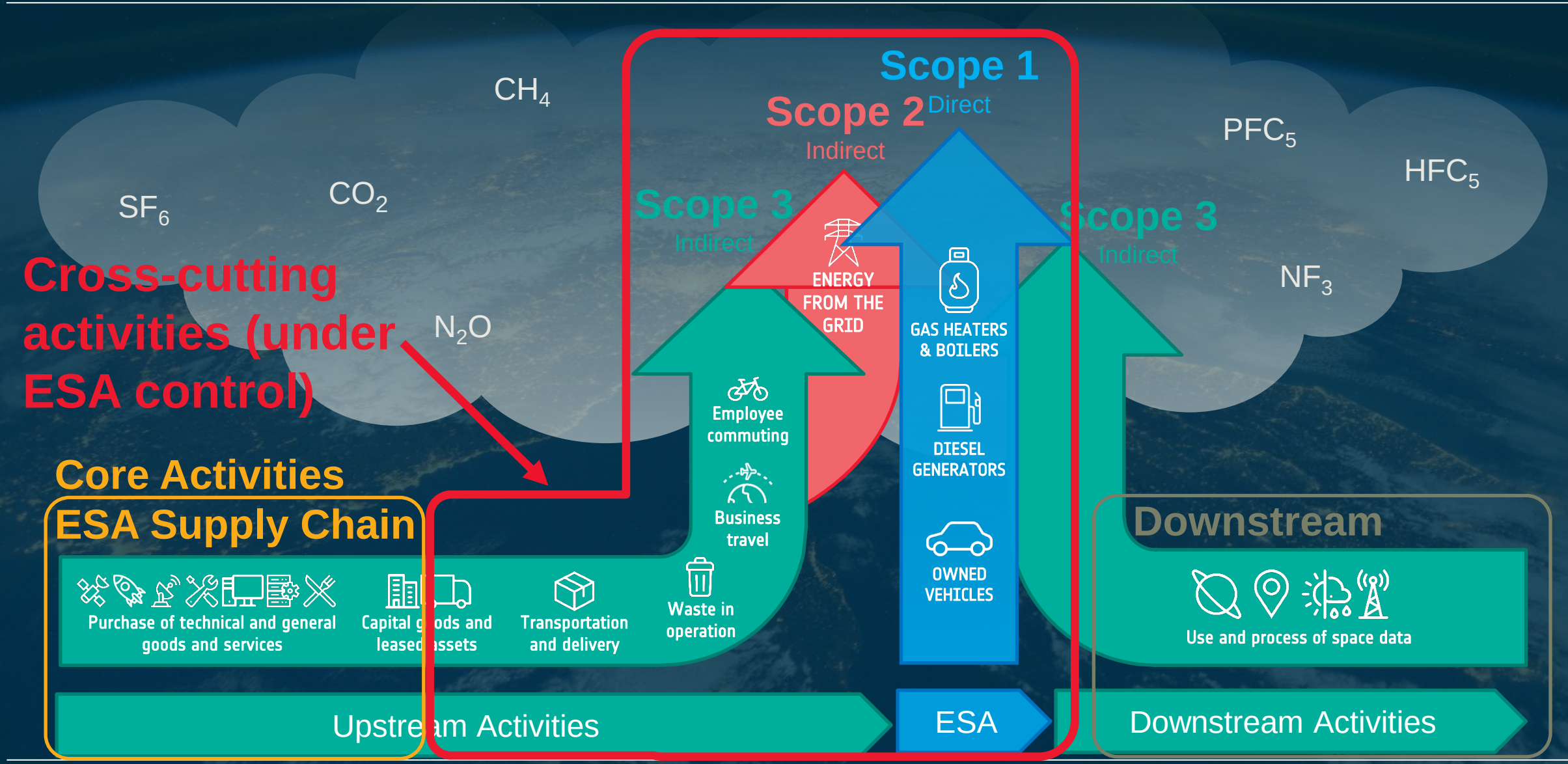
The carbon footprint is divided into three categories of emissions called “scopes”



Carbon footprint is currently the main tool for measuring an organization's GHG emissions.
However, it does not consider other environmental effects than carbon emissions (water, biodiversity, etc.).

*”Downstream leased assets” in the GHG protocol’s terminology, where “downstream” has not the same meaning as in ESA’s vocabulary
Please note that the following sources applying for specific activities are not represented in this illustration: investments, franchises (downstream) and upstream leased assets. The upstream of fossil fuel is not represented either.

ESA GHG emissions evaluation (2019 baseline)



ESA 2019 GHG emission results

1 080 $ktCO_2e$
emitted in 2019
86 %

Identified ‘hot spot’ areas

- Project funding and purchase 80%
- Capital assets 15%

185 600 tCO_2e
emitted in 2019
14 %

Identified ‘hot spot’ areas

- Transporting people 23%
- Energy consumption 63%

ESA core activities

Upstream Activities

ESA cross-cutting activities

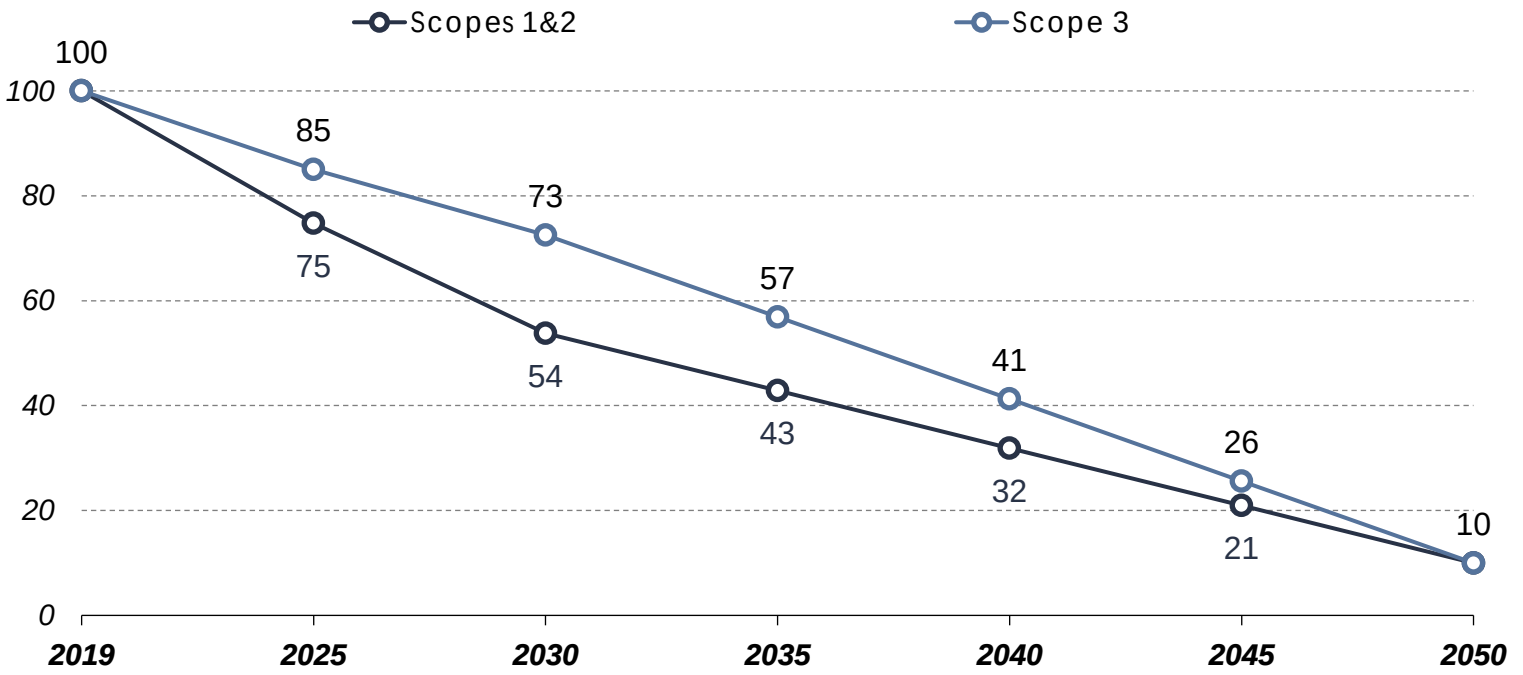
ESA

Phase 3 (end of 2022)

Downstream Activities

Trajectories for ESA with the absolute contraction method | Base 100

SBTi compatible emission trajectories by scope *(base 100)*



Trajectory Scopes 1&2: 1,5°C near term, net zero compatible long term
Trajectory Scope 3: Well below 2 degrees near term, net zero compatible long term

ESA Green Agenda Tasks identified to achieve the Goal

Downstream

Sustainability Strategy for ESA Projects

Core Activities
ESA Supply Chain

Cross-cutting activities
(under ESA control)

LCA, Eco-Design and R&D activities

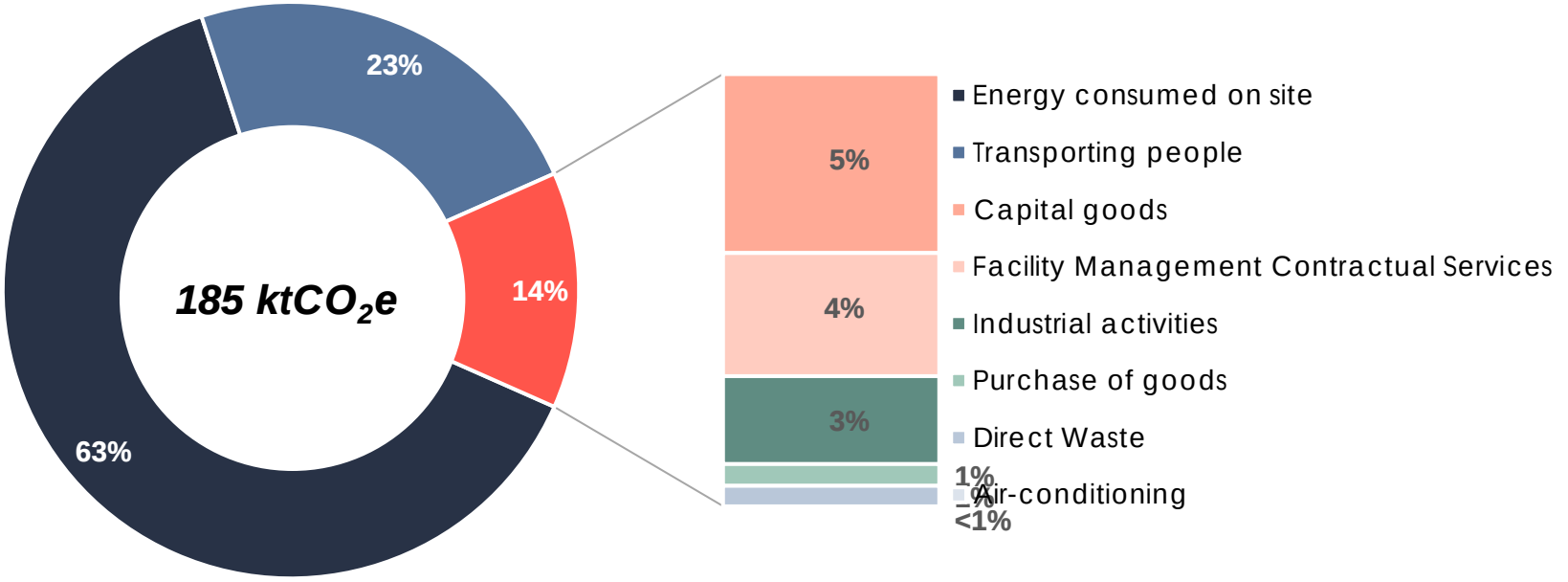
Facility and Asset Management

Procurement and Supply Chain

Culture and ways of working

ESA's carbon footprint | Cross-cutting activities
Energy-related emissions amount to almost 2/3 of emissions

Breakdown of CO_2e emissions by emissions category for cross-cutting activities ($ktCO_2e$, % of total emissions)



Source : ekodev analysis

Addressing ESA cross-cutting activities

Facility and Asset Management

Energy

- Improve office facilities efficiency
- Increase renewable energy on-site production
- Technical centres idle time optimization
- Optimise datacentres
- Digitalization of archives

Air conditioning

- Transition to natural refrigerants

Waste

- Develop a systematic report of waste produced

Culture and ways of working

Developing the eco-worker

- Change management campaign
- Raising awareness
- Responsibility and accountability

Transport of people

- Business travels annual carbon budget
- Travel policy update
- Promote and incentivize soft mobility (commuting)

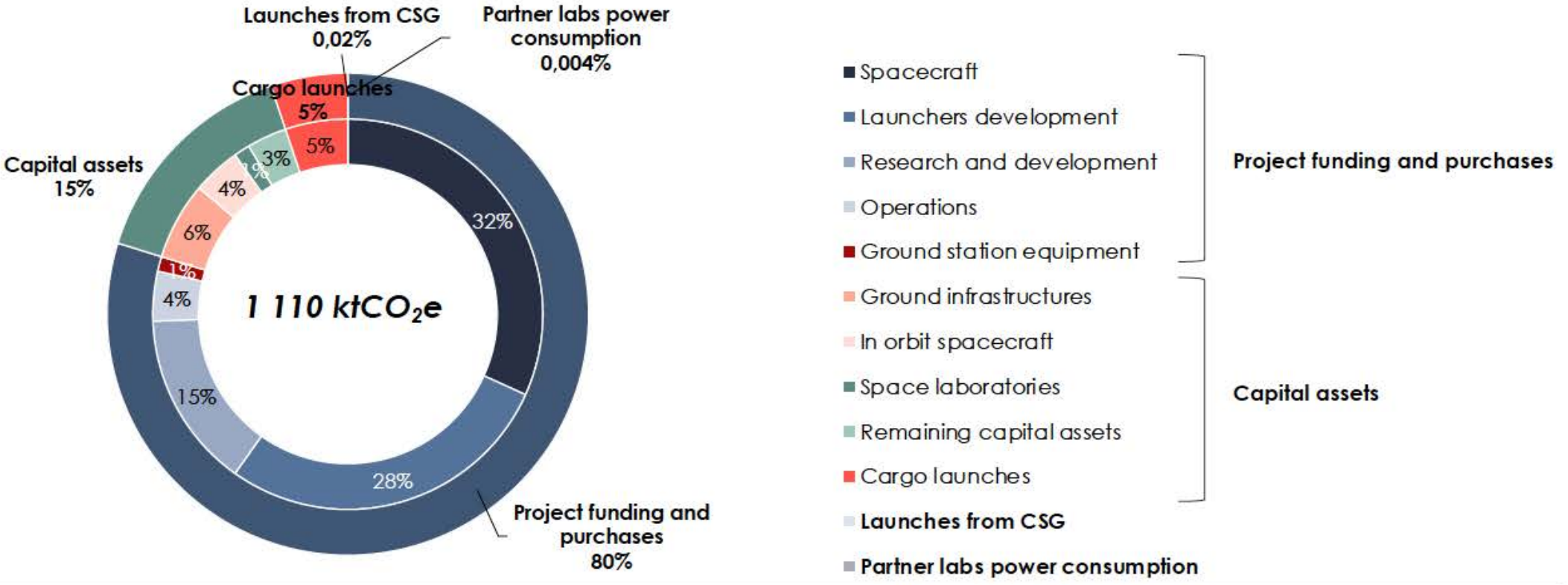
Canteen

- Consider GHG emissions in the selection of meals
- Implement monitoring scheme

Addressing ESA Core Activities – Scope 3

ESA's carbon footprint 2019 | Global view for core activities
Spacecraft account for 35% of emissions, with projects funding, purchases and capital assets

Breakdown of CO_2e emissions by emissions category ($ktCO_2e$, % of total emissions)



ESA core activities – LCA and eco-design

LCA is an ISO-standardised tool to quantitatively assess the potential environmental impacts of product, process or service

"Eco-design considers environmental aspects at all stages of the product development process, striving for products which make the lowest possible environmental impact throughout the product life cycle"

ESA core activities – Towards an action plan

- **Workshop** with ESA programme directorates took place in July to identify promising areas for GHG reduction in the design, development and exploitation of satellites, space infrastructures, launchers and ground segment. Areas to be consolidated by October
- **OSIP call** focussing on the identified areas
- Selected proposals will benefit of initial funding to identify green technologies, processes and materials
- Successful studies will be funded by **technology programmes** at Agency level (GSTP and TDE) and in programme directorates, depending on the relevance in the years 2023-2025

Scope 3 – the importance of collaboration

The largest part of ESA **GHG footprint lies in the supply chain** (86%) for upstream and downstream

A **shared responsibility** for reducing the Agency's Scope 3 GHG emission is fundamental to achieve the targeted reduction

Collaboration across the European value chain will allow to **exploit synergies** and identify **least-cost reduction pathways**

ESA, Large Systems Integrators, national space agencies and SMEs have repeatedly and publicly affirmed their **intention to collaborate**

To date, 23 European organisations are ready to adopt the **Statement for a Responsible Space Sector**. Signature planned for Nov 21 in Paris

Thank you!

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