

News from SC4RC



Rakhi Mahbubani
Rudjer Boskovic Institute and [Sustainable HECAP+](#)

For the SC4RC 2026 Organisers

Sustainability Conference for



Responsible Research Computing

4-8 May 2026 | Geneva,
Switzerland



Scan the QR code to
see the programme



hecap.eco



EMBL



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cambridge
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and Innovation



Science and
Technology
Facilities Council

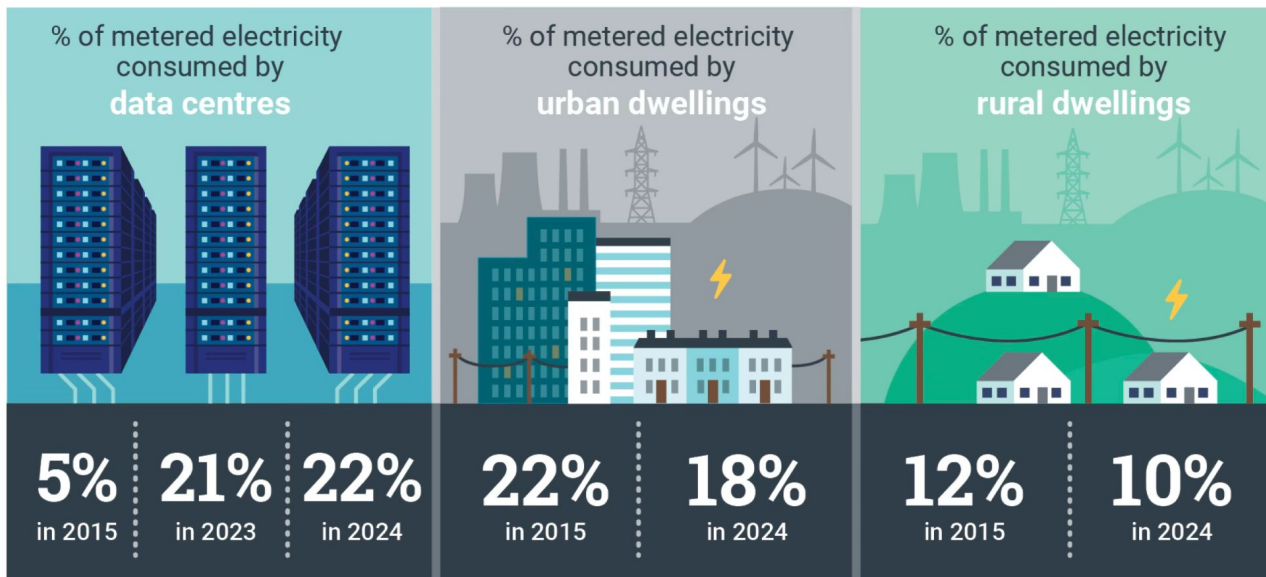
Why SC4RC?



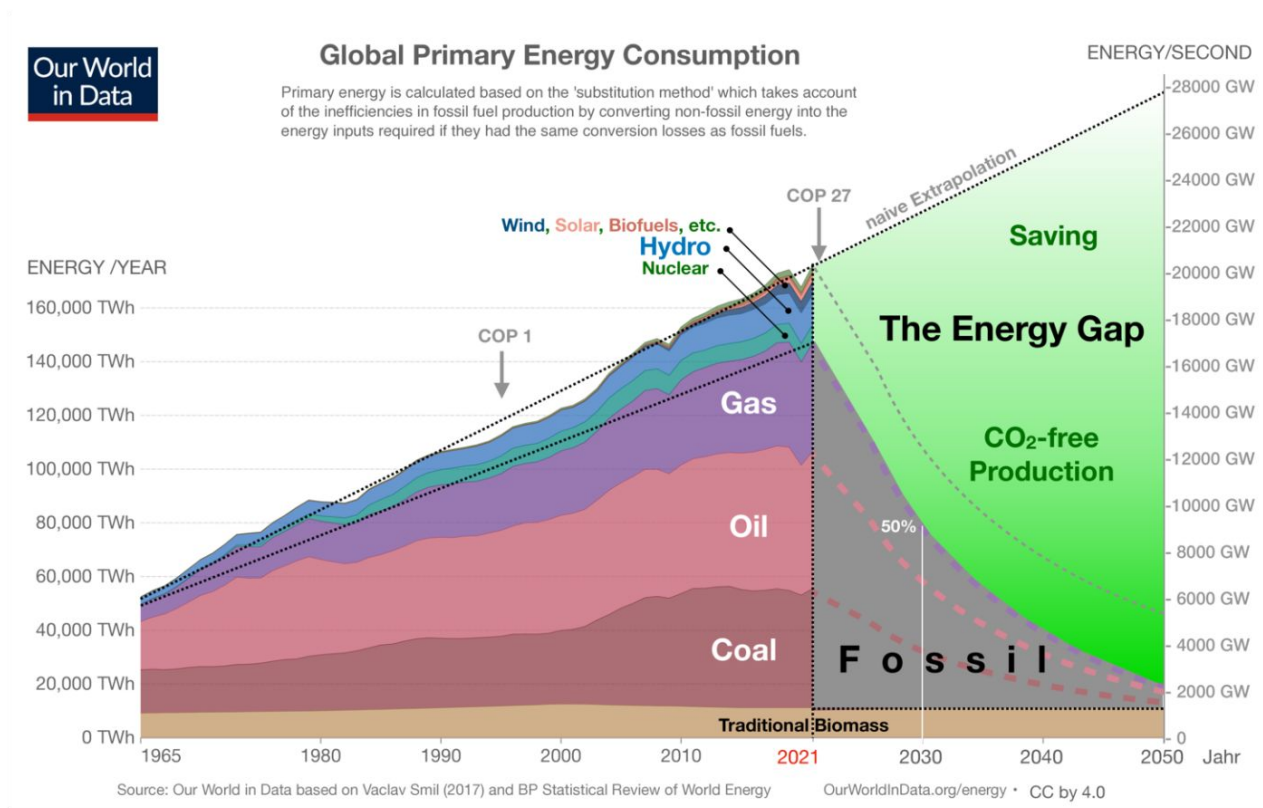
An
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Central
Statistics
Office

Data Centres Metered Electricity Consumption 2024



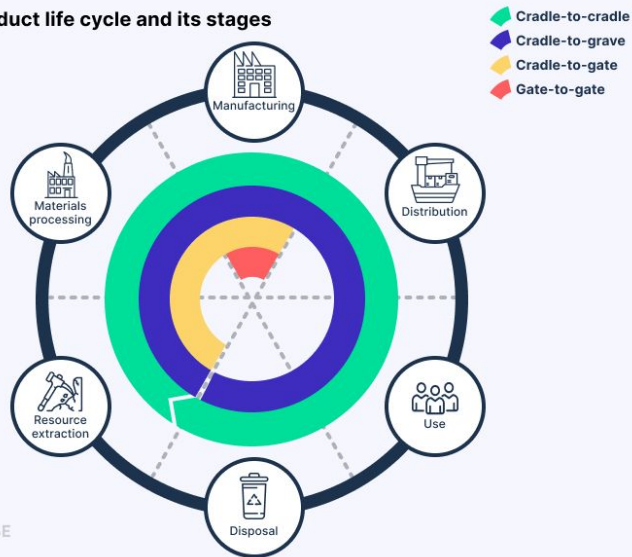
Why SC4RC?



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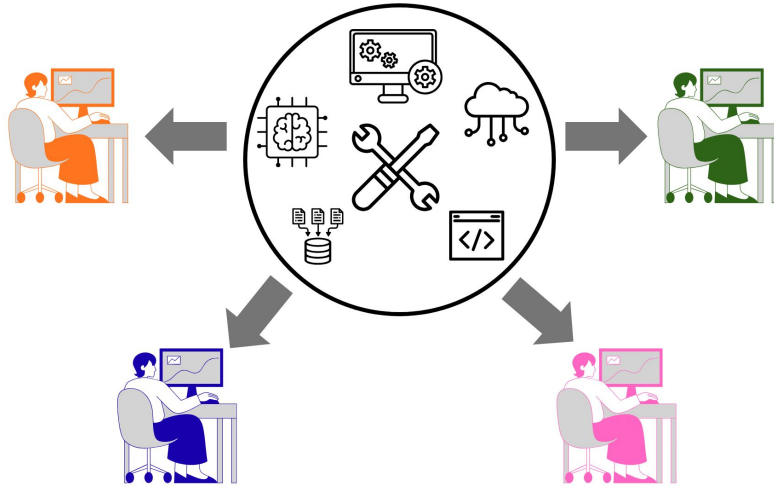
Computing impacts go beyond electricity consumption

Simplified product life cycle and its stages

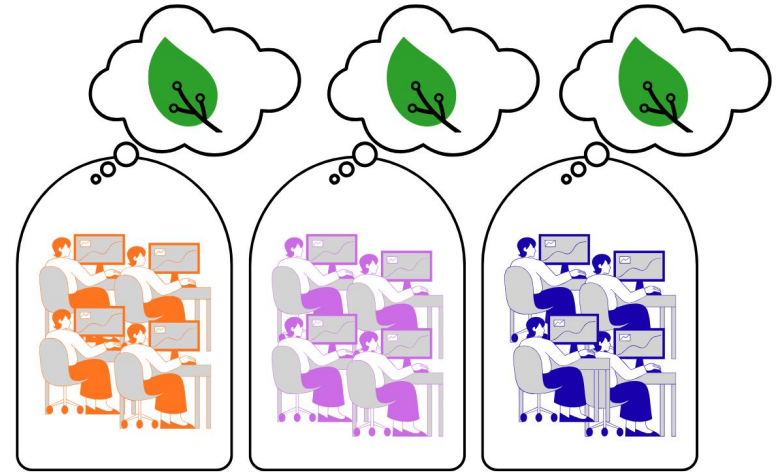


Output	Quantity	Output	Quantity
monocrystalline Si wafer	0.70 kg	Emissions to air	
Impact Assessment		particulates (PM10)	1.71E-2 kg
energy renewable	213 MJ	SO ₂	0.137 kg
energy total	4850 MJ	CFC-11	1.3E-5 kg
GHG emissions	319 kgCO ₂ e	PFC-14	5.17E-6 kg
acidification	0.369 kgSO ₂ e	PFC-116	6.50E-7 kg
Waste		dioxins	1.18E-11 kg
FGD residues (landfill)	2.79 kg	lead	1.51E-5 kg
production waste	2.32 kg	acid (as H ⁺)	4.60E-4 kg
sewage sludge	4.89E-3 kg	nitrogen oxides	0.309 kg
ash	11.0 kg	cadmium	9.8E-7 kg
waste (landfill)	1263 kg	nickel	2.72E-5 kg
nuclear waste	3.97E-4 kg	ammoia	9.66E-4 kg
Emissions to water		nitrous oxides	8.89E-3 kg
lead	3.28E-10 kg	mercury	3.24E-6 kg
phosphorus	9.24E-7 kg	fluorides	8.65E-4 kg
nitrogen total (excluding N ₂)	5.45E-5 kg	polycyclic aromatic hydrocarbons	9.38E-10 kg
mercury	2.51E-11 kg	chlorides	1.47E-2 kg
chromium	3.28E-6 kg	H ₂ S	6.08E-6 kg
chemical oxygen demand	0.352 kg	CO ₂ (fossil)	299 kg
biological oxygen demand	9.87E-3 kg	CO (fossil)	6.27 kg
arsenic	2.06E-11 kg	CH ₄ (fossil)	0.571 kg
adsorbable organic halides	8.68E-8 kg	other volatile organic compounds	1.79E-2 kg
inorganic salts and acids	0.014 kg	arsenic	3.49E-6 kg

Why SC4RC?



Large overlap in computing infrastructure & tools used in different disciplines



yet sustainability discussions are siloed

SC4RC 2026 Organising Committee



Rakhi
Mahbubani
(HEP)



Loïc
Lannelongue
(Sustainable
computing)



Anica Araneta
(Sustainable
Computing)



Pete
Millington
(HET)



Karolos
Potamianos
(ATLAS)



Ayan Paul
(Bioinformatics)



Markus Schulz
(Computing &
Sustainability)



Grant Hill
(Theoretical
Chemistry)



Auroop
Ganguly
(Climate
Science)



Kristina
Gunne
(CERN)



Catharine
Noble
(CERN)

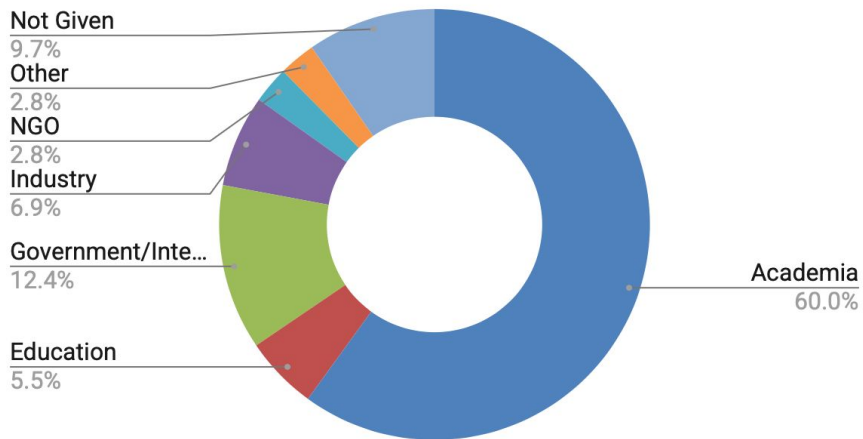


Attendees

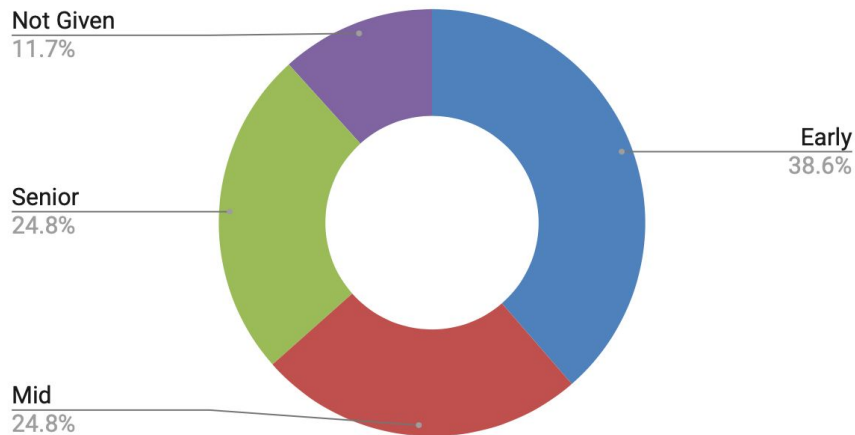


SC4RC 2026 Community – 150 participants

By Sector

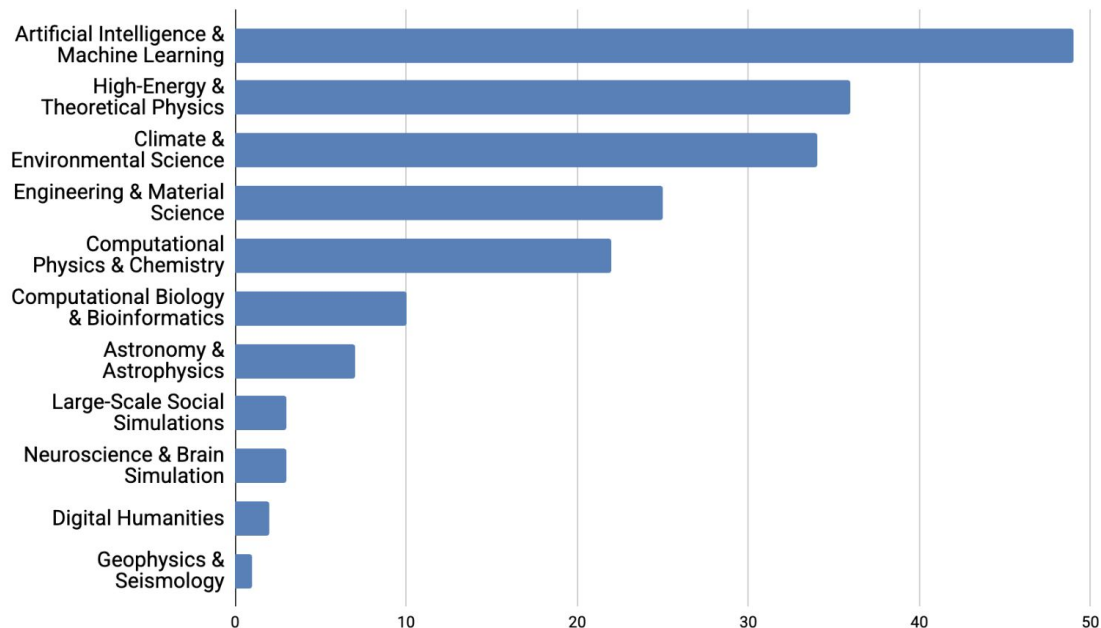


By Career Stage



SC4RC 2026 Community – 150 participants

Areas of Work



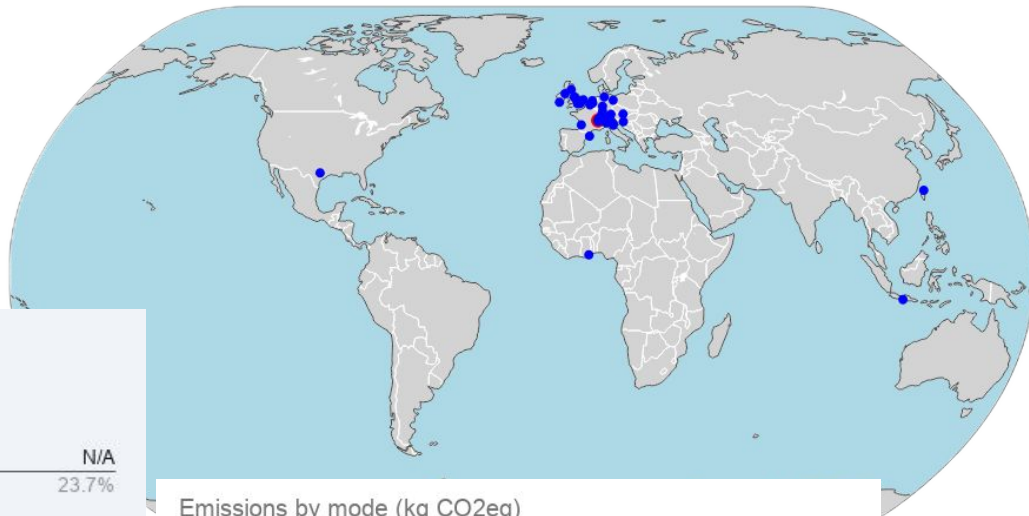
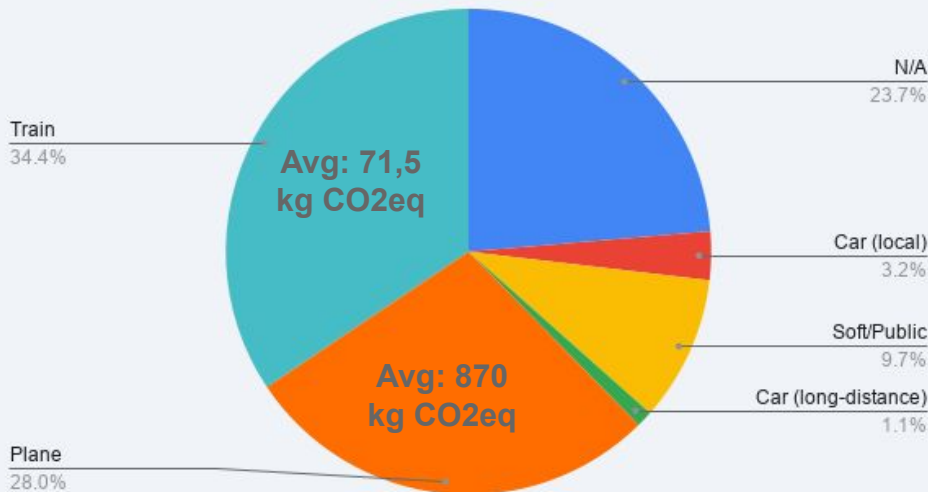
*Individuals were able to select multiple areas



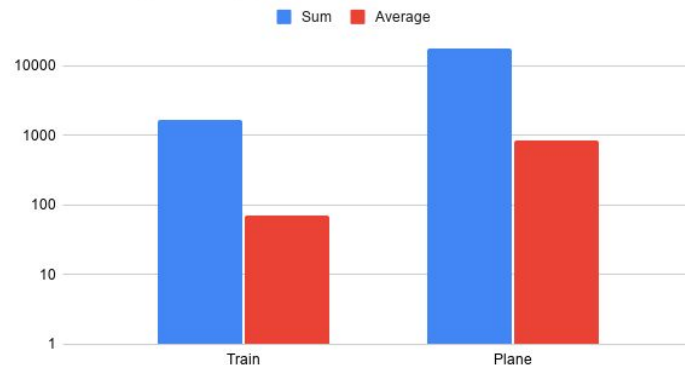
Travel to SC4RC

392 kg CO₂eq avg. per participant
(excl. Online & non-filled)

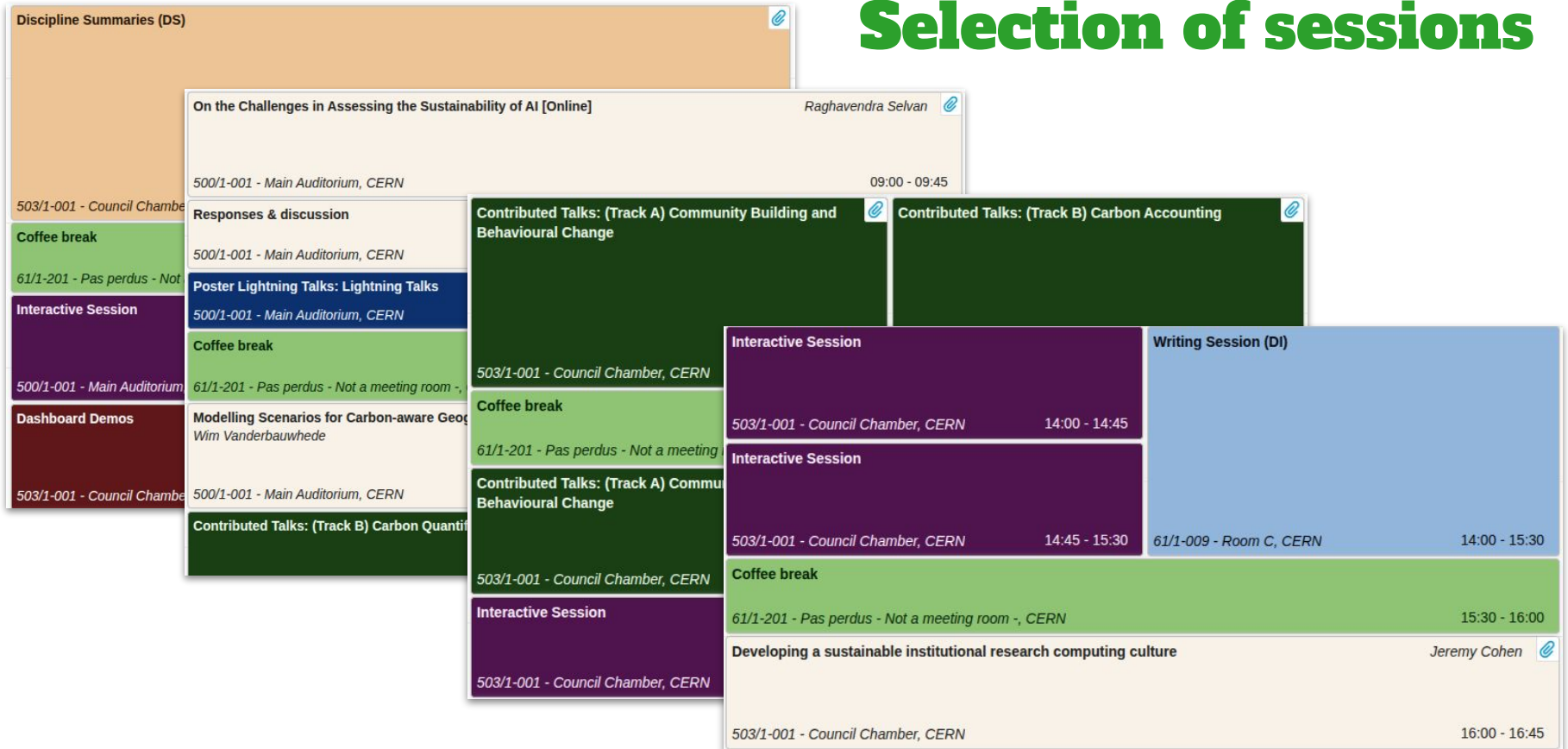
Transport Mode Distribution (Onsite)



Emissions by mode (kg CO₂eq)



Selection of sessions



And prize-winning contributions...

Hannah Scott: “Developing a sustainable institutional research computing culture”

Christina Bremer: “How effective are carbon reporting tools in encouraging sustainable behaviours? Introducing E-SCOUT, a large-scale multi-centre trial”

Pascal Emmenegger: “Estimating the Embodied Impacts of the Internet: Promise and Deception”

Navirah Kamal: “The Green Algorithms Dashboard: Bringing Carbon Visibility to Research Computing”

Andreas Brunnert: “How accurate are current tools and models for estimating software energy consumption?”

Daisy Bradley: “Reducing machine learning model emissions by integrating physics knowledge”

Jaime Iglesias Blanco: “Wattnet: High-Resolution Carbon and Water Intensity Modelling to Enable Impact-Aware Research Computing.”

Deniza Chekrygina: “Towards a Federated Accounting Framework for Sustainable Research Computing: A Landscape Review of the UK's Digital Research Infrastructure”

Laurane Fréour: “Integrating sustainability in the design of the Wide-field Spectroscopic Telescope's data processing and storage”

Going forward...

SC4RC 2026 Summary Paper to come...

Significant enthusiasm among attendees to make SC4RC into a regular conference series: **SC4RC 202X?**

Need to improve dissemination across different disciplines and geographical locations for future iterations - open call for participation?

Other ideas?

Sustainable HECAP+

Grassroots group advocating for sustainability within High Energy Physics, Cosmology, Astroparticle Physics, and beyond, both within and outside our communities.

Authors of reflection document “[Environmental Sustainability in Basic Research](#)”, and other works.

Ongoing projects:

- Community building for LCAs
- ORLCA - Open Research Life Cycle Assessment Database
- SC4RC 202X
- Hybrid seminars

To find out more and get involved, visit www.hecap.eco.

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