



Summary report on engagement with policymakers

Deliverable 4.2

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1 About 4C

4C, or **C**limate-**C**arbon Interactions in the **C**urrent **C**entury, is an EU-funded project that aims to fill the crucial knowledge gap on carbon dioxide (CO₂) emissions, by reducing the uncertainties in our quantitative understanding of climate-carbon interactions and feedbacks. The objectives of the 4C project are to:

1. Better understand the processes controlling the global carbon cycle.
2. Develop new tools and methods to predict, for the first time, the evolution of global carbon cycle variability over the coming decade, including atmospheric CO₂, land and ocean carbon sinks, and climate response to track the overall progress towards the goals of the Paris Agreement.
3. Reduce uncertainties in climate projections over the 21st century.
4. Ensure the usability of the knowledge generated by scientific research and engage in bilateral interactions among scientists and policymakers, while also fostering the understanding of the findings for the broad society.

4C will achieve its objectives through the innovative integration of new models and a wide range of observations. It will develop systems for new climate predictions and projections from annual to centennial timescales that are informed by observations, and provide key knowledge to underpin IPCC assessments and support policymakers.

The project originally ran for 48 months, from June 2019 to May 2023, but it got a 6-month project extension until the end of November 2023.

2 Work Package and policy engagement

Work Package 4 (WP4) is titled “Synthesis, dissemination and policy dialogue”. As such, the overall purpose of WP4 is to assess, synthesise, and disseminate the scientific findings of 4C to foster a broader understanding of climate-carbon interactions and accurate interpretation in support of scientific assessments and policymaking. WP4 builds on the findings and knowledge generated in WPs 1, 2 and 3. This information is elaborated to make it easily accessible and transfer it to targeted stakeholders using tailored techniques.

One of the main objectives of WP4 is to enable dialogue between the project and policymakers to ensure that scientific findings are accurately interpreted and utilised in the context of the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement.

In that context, Task 4.2 (“Providing added value to decision and policymakers”) was designed to engage with decision- and policymakers to add value by translating the emerging scientific consensus. This report concerns a summary of task under 4.2. on engagement with policymakers. The engagement strategy aimed to maximise the project impact and knowledge exchange by proactively engaging with groups of interest within and outside the EU and elicit feedback from relevant actors.

The main targeted decision and policymakers were at the European level, covering various Departments of the European Commission (CLIMA, R&I, EASME), Joint Research Centre (JRC), European Parliament, European Scientific Advisory Board, and various other non-governmental groups (e.g., IPCC, WMO, Bruegel, Global Carbon Project, Science Media Centre, Carbon Brief, etc). In addition, through the consortium partners will additionally capture national decision and policy makers through various more informal engagements.

3 Factsheets

4C has produced factsheets (Task 4.2.1) to present the main concepts to understand the outcomes of 4C science. This material addresses decision- and policymakers, as well as fellow scientists. Three factsheets have been published.

1. Near-term predictions (August 2022)
2. Emergent Constraints (September 2022)
3. Carbon Budget (September 2023)

All the factsheets are available here: [Policy publications | Climate-Carbon Interactions in the Current Century \(4C\) \(4c-carbon.eu\)](https://www.4c-carbon.eu/policy-publications)

The fact sheets give a lay description of 4C science and have been 3-6 A4 pages long. Each factsheet is generally based on more accessible graphical material. We have based the topics on areas we believe that are difficult to understand, but highly relevant for decision and policymakers to understand. We have generally promoted the factsheets via our newsletter and social media.

4 Policy briefs and science summaries

To highlight the overall results and adapt the results for use by decision- and policymakers, 4C has produced three science summaries and one policy brief targeting decision- and policymakers as well as intergovernmental organisations (Task 4.2.2). Science summaries highlight relevant results and translate them for use by decision and policy makers. They are based on project publications and public deliverables. The Policy brief present project results, similarly to the science summaries, but combined with an overview of current policies offering a set of policy recommendations.

The three science summaries were:

1. Effect of COVID-19 confinement on daily global CO₂ emissions (July 2020)
2. The increase in CO₂-induced global warming will only stop when humans stop adding CO₂ to the atmosphere (Aug 2021)
3. Summary of findings from 4C (Nov 2023)

The policy brief “Science needs to help reduce persistent uncertainties in climate projections” (Nov 2023) was published to coincide with a policy event in Brussels together with other EU projects funded at the same time (ESM2025, CONSTRAIN, PROVIDE).

The science summaries and policy brief are available on the 4C website:

[Policy publications | Climate-Carbon Interactions in the Current Century \(4C\) \(4c-carbon.eu\)](https://4c-carbon.eu)

The Science Summaries have focused on key publications during the project, giving a lay description of the publication findings. The final science summary will give an overview of the key findings from the project overall. As with the Factsheets, these have primarily been distributed via our newsletter and social media. The Policy Brief was launched alongside a policy event in Brussels (November 2023).

5 Carbon Outlooks

Another output targeted for decision- and policymakers are the carbon outlooks (Task 4.2.3). The carbon outlooks are plain language summaries of the carbon budget for recent years (T1.4) and forecast for coming years (T2.4) and in collaboration with the Global Carbon Budget project. During the project, three Carbon Outlooks were published (Dec 2020, Nov 2021, Feb 2023) alongside with related news articles and social media campaigns.

Each Carbon Outlook focused on a different aspect of the Global Carbon Budget release:

- 2020: We focused on the drop in emissions due to COVID, and explained why this does not necessarily lead to a drop in atmospheric CO₂ concentrations.
- 2021: We focused on the rebound in emissions in 2021, and whether we were back onto pre-COVID emission trends. We also explained the remaining carbon budget and alternative pathways to net zero.
- 2022: We decided to release this in March 2023 to provide a preliminary update of the Global Carbon Budget in 2022, based on updated data for the full year. This Outlook covers mainly fossil CO₂ emissions and included a webinar launch event.

The Carbon Outlooks are available on the 4C website:

[Carbon Outlooks | Climate-Carbon Interactions in the Current Century \(4C\) \(4c-carbon.eu\)](https://4c-carbon.eu)

The Carbon Outlooks were generally released alongside the Global Carbon Budget and could therefore build on the significant media coverage. For the Carbon Outlook 2022, we decided to delay the release to March 2023 when we had more data available and could update our full year release. For that release, we additionally hosted a webinar on the key results. Otherwise, distribution was mainly via our newsletter and social media.

6 Events

4C organized (or co-organize) events to communicate key findings to policymakers and listen to their perspectives (Task 4.2.4). The project coincided with the COVID pandemic, limited the opportunity for some events, but we nevertheless found possibilities for a rich set of events.

Most events were in line with the UNFCCC Conference of the Parties, with 4C present at COP25 (Madrid, 2019), COP26 (Glasgow, 2021), COP27 (Sharm El Sheikh, 2022). At each of these events, several presentations are held and interviews with media given. Presentations include official side-events, events at other pavilions (e.g., WMO/IPCC or EU), or the World Information Dat. Additional, we attended UNFCCC inter-sessional meetings in Bonn (SBSTA, May/June each year). Through the launch of the Global Carbon Budget, 4C researchers are involved in a range of additional events, ranging from press conferences, webinars, and engagement with media.

We held a workshop in Brussels targeting EU policymakers in November 2023, in collaboration with other EU projects (ESM2025, CONSTRAIN, PROVIDE).

The IPCC AR6 process ran in parallel to the 4C project, and many 4C researchers were IPCC authors (Task 4.1). We held a workshop on IPCC AR6 key issues on climate-carbon interactions, and how 4C could contribute (June, 2019). During the COVID pandemic, based on our work on fossil CO₂ emissions during COVID, 4C researchers were involved in a variety of webinars to present the results. The Science Brief tool (Task 4.1) also provided several outputs during the 4C project, which led to several events.



COP26, Glasgow: Launch of the Global Carbon Budget and interviews with Spanish TV3

The following is a list of some of the more significant events during the project:

- COP25 (Madrid, 2019): UN side-event on the Global Carbon Budget release in collaboration with CONSTRAIN project
- UNFCCC SBSTA (Online, June 2020): Presenting the impacts of Covid-19 on CO₂ emissions
- UNFCCC Earth Information Day (Online, 2020): Presentation “Closing the global carbon cycle and closing the emissions gap”
- COP26 (Glasgow, 2021): UN-IPCC Science Pavilion: Launch of the Global Carbon Budget
- COP26 (Glasgow, 2021): UN side-event “1.5°C: where are we now, where are we headed, what are the risks?” In partnerships with CRESCENDO, CONSTRAIN and PROVIDE
- COP26 (Glasgow, 2021): Side-event: “How the latest research on climate change can support the UNFCCC Global Stocktake under the Paris Agreement?”. This event was co-organised with CRESCENDO, CONSTRAIN, PROVIDE, and ESM2025 projects.
- UNFCCC SBSTA (Poster, June 2022): “Current fossil CO₂ emissions trends and road to net-zero”
- COP27 (Sharm el-Sheikh, 2022): CGP Carbon Budget, Scaling Solutions, and the Role of Agriculture (with Stanford, Princeton, Cornell Universities)
- COP27 (Sharm el-Sheikh, 2022): Event: “Global Carbon budget - The numbers that tell the truth about climate action”
- 4C Carbon Outlook (March 2023): Online launch updating the Global Carbon Budget
- EU Policy Workshop (Brussels, November 2023). A co-organised event on the key findings from research projects 4C, ESM2025, CONSTRAIN, PROVIDE

7 Lessons learnt

4C was primarily a science-based project, but we put particular emphasis on dissemination, communication, and exploitation. This deliverable gives an overview of the products we developed to engage with decision and policymakers: three factsheets, three science summaries, a policy brief, and three carbon outlooks. We believe these products were successful and met their goals, though we do have some lessons moving forward. Convincing researchers to contribute to these products, and engage more broadly with decision and policy makers, continually proves to be challenging. Better incentives are needed to ensure and encourage the participation from researchers. Ensuring the products reach the audience is also a challenge. Each EU project needs to reengage decision and policymakers and are essentially required to compete with other projects to get the attention of decision and policymakers. We have collaborated with other EU projects with a similar theme for some events (policy brief and COP activities), but these collaborations could go deeper, covering content, shared events, and shared contact lists. Ideally, new projects should be able to smoothly build on previous projects, without continually recreating new branding, that likely adds to fatigue and confusion on the eyes of decision and policymakers. Mechanisms to facilitate continued scientific collaboration and policy engagement beyond the four-year project structure are needed.