



Data
Models
Inventories

PARIS

Process Attribution of Regional Emissions

GA 101081430, RIA

Meetings with national inventory teams by PARIS national lead and one other representative - 2nd round

Milestone 35

Delivery due date Annex I	34 31/10/2025
Actual date of submission	20/02/2026
Lead beneficiary: MO	Work package: 2 Nature: R Dissemination level: PU
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Internal reviewers	-
Version: 1	



Horizon Europe Cluster 5: Climate, energy and mobility

"This project has received funding from the European Union's Horizon Europe Research and Innovation programme under HORIZON-CL5-2022-D1-02 Grant Agreement No 101081430 - PARIS".

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1. Changes with respect to the DoA (Description of the Action)

The milestone has been re-installed during the 2nd Amendment of the GA and covers a summary of the 2nd round of meetings with the national inventory teams.

2. Dissemination and uptake

For the 2026 NIDs, verification Annexes will be included in the respective national submissions to the UNFCCC for the UK, Switzerland, the Netherlands and Ireland. Results from PARIS feature directly in the Annexes of the Netherlands, Ireland and the UK and support the existing annex work done in Switzerland. This is a significant step forward in national inventory reporting.

3. Short Summary of results

The PARIS team engaged with each of the inventory compilers from the eight focus countries through in-person or remote meetings. We provided an individual, country-specific, National Inventory Document (NID) annex to each of the eight countries in Oct 2025 and in autumn and winter 2025, held either in-person or virtual meetings with six of the eight national inventory representatives. Each meeting included the national contact from within the PARIS consortium and an experienced PARIS inverse modelling expert. These meetings built upon the introductory meetings held in 2024 and early 2025.

For Norway it was agreed (in October 2025) with the national inventory compiler that the next full meeting would be held in October 2026 after the impact of the Norwegian observations at Birkenes have been fully integrated into the inverse modelling. A detailed meeting with the Italian inventory compilers is being planned for early 2026 after a preliminary meeting was held in October 2025 between the national representative and the national inventory compilers.

The feedback from all of the inventory teams was positive and encouraged continued collaboration in the long-term.

4. Evidence of accomplishment

4.1 Introduction | Background of the milestone

This activity requires active engagement with each of the eight national inventory teams from the target countries, with the aim of demonstrating the benefits of observational verification of their reported inventory and, ultimately, to show the value of including an annex 'verification' chapter within their National Inventory Document (NID).

4.2 Scope of the milestone

To individually meet with the national inventory compilers of the eight target countries of PARIS. Each meeting would involve the national inventory compilers, a national native representative from PARIS and an inverse modelling expert from PARIS.

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In Autumn and Winter 2025, meetings were held with the UK, Switzerland, Netherlands, Germany, Hungary and Ireland. Meetings with Norway and Italy are scheduled for 2026 after discussions with the inventory teams.

4.3 Content of the milestone

This milestone provides a summary of the interactions between the PARIS team and the national inventory contact in each country for which meetings were conducted in mid to late 2025:

4.3.1 UK

Meetings with the UK inventory compilers were held in May and December 2025. Alistair Manning from PARIS attended and presented. He is both the national lead and the inverse modelling expert. The collaboration with the UK inventory compilers is very mature extending back decades. The key outcomes are detailed below:

- The UK will have a NID annex chapter on observational verification.
- PARIS modelling results will be included in the UK 2026 NID for the first time, complementing the InTEM-only inverse model results that are included as standard.
- N₂O seasonal cycle and mis-match was a key focus. It was highlighted as an area for inclusion in the UK inventory improvement programme.
- CH₄ magnitude mis-match in the 1990s was discussed and the inventory improvement work, triggered by the mis-match with the inverse modelling results, on waste emissions in the 1990s is complete and will be included in the 2026 NID.
- NF₃ and PFC-318 are included in the UK inventory but the magnitudes are extremely small compared to the inverse results. The inventory team will investigate further any potential missing sources.

4.3.2 Ireland

Meetings with the Irish inventory team were held in June and November 2025. Alistair Manning and Anita Ganesan from PARIS attended and presented. The PARIS national lead was Damien Martin. The key outcomes are listed below:

- Ireland will, for the first time, include the PARIS Annex in their 2026 submission.
- Ireland is very keen to understand how this effort may continue in the future.
- The inclusion of ICOS Ireland observations are keenly anticipated for the next iteration of the annex in Autumn 2026. Alongside the improved UK observation network, the results for 2025 should have greater spatial clarity, especially along the border between the Republic and Northern Ireland.
- N₂O and CH₄ emissions were key areas of focus.
- Hotspots of emission of specific gases from industrial facilities were noted, e.g. NF₃.

4.3.3 The Netherlands

A meeting with the Dutch inventory team was held in November 2025. Alistair Manning, Stephan Henne and Anita Ganesan from PARIS attended and presented. The PARIS national lead was Wouter Peters. The key outcomes are listed below:

- Like 2025, the Netherlands 2026 NID will include an Annex that contains PARIS results.
- The Dutch continue to remain interested in the discrepancy between inversion and reported CH₄ emissions. We communicated additional tests that we performed and that our results continue to remain higher than reported values. It remains unclear which source or sources are responsible for the discrepancy, but this finding will lead to continued work on this topic from both inventory and inversion teams.

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- The inventory team requested the addition of a Table in next year's PARIS Annexes that lists the main sources for the different F-gas to improve readability.
- We continued to discuss the attribution challenges in the Netherlands and that it is possible that emissions from sources close to borders may be misallocated to the different countries in the inversions.
- We identified a possible SF₆ source in the southern part of the country and the inventory team will investigate.

4.3.4 Switzerland

A meeting with the head of the Swiss inventory team and a representative from the company Carbotech, responsible for the F-gas reporting in the Swiss NID, took place in October 2025 by Stephan Henne from PARIS. The main discussion point was the growing difference in the emissions of HFC-134a as listed in the inventory and as estimated from atmospheric observations. The inventory values currently are almost a factor of two larger than observation-based estimates. Action items were defined for reconciliation of the diverging trends. PARIS results support the observation-based national estimates, but remain uncertain for a small country with complex terrain.

- Clarify together with UK inventory team which adjustments in their F-gas model improve the agreement between inventory and observation-based estimates.
- Further discussion with large research facilities about their use of HFC-134a (timing of emissions).
- Carbotech to re-evaluate emissions from recreational vehicles.

4.3.5 Germany

A meeting with the Germany inventory team (UBA) took place as part of a joint 'User consultation' of the German ITMS program and PARIS at UBA, Dessau, in Sept 2025. Stephan Henne was the lead presenter for PARIS and the meeting was attended by the PARIS national lead Andrea Kaiser-Weiss. Detailed minutes from the meeting are available (in German). Key points are:

- N₂O: The correspondence with the inventory is very good and the seasonal variability is in agreement with the process-understanding. PARIS N₂O results are likely to be featured in future annex to German NID in 2027, together with results from the PARIS sister projects.
- For CH₄ emissions, inverse estimates show a strong seasonal cycle for Germany with a winter maximum. Experts responsible for the reporting of the agricultural sector in the German NID (Thünen Institute and KIT) do not think that natural or agricultural emission can explain this winter-time maximum. Other CH₄ inversions that are part of the ITMS project (MPI Jena) show different seasonality and largely enhanced total levels. There is less agreement between inversion methods (PARIS and ITMS) and UBA does not feel that it is useful to include these opposing results in their NID.
- PARIS F-gas results, which are generally in good agreement with the inventory, received positive feedback from the UBA F-gas experts. PARIS results again highlighted the shift of SF₆ emissions to a hot-spot in south-western Germany, which convinced UBA experts that earlier studies on SF₆ are trustworthy and that action is required. Concerning emissions of PFC-14, where PARIS estimates are much higher than currently reported, it was suggested that abatement technology in the semiconductor industry (waste air treatment) is often run in a non-optimal way and hence, potentially, larger emissions than reported by industry may result. UBA has very little control of these reported emissions but appreciates PARIS findings for additional discussion with industry.

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4.3.6 Hungary

A meeting took place with the head of the Hungarian inventory team and PARIS representatives (Laszlo Haspra, Stephan Henne) in December 2025. Key outcomes are:

- PARIS emission estimates for the Hungary remain uncertain as only a single measurement site at the western end of the country exists. However, the benefit of PARIS-introduced F-gas sampling at this site was demonstrated, underlining the potential of the inversion method, but highlighting at the same time the need for additional observations in eastern Hungary to derive actionable top-down emission estimates for Hungary (i.e., further reduce the uncertainties of the derived emission estimates).
- Next to the discussion of F-gases, N₂O emissions were discussed in more detail as Hungary reports reduced N₂O emissions after 2021 because of reduced fertiliser use as a consequence of the energy crisis. Some signs of this are visible in the inversions as well but connected with large uncertainties. Furthermore, inverse estimates are considerably higher than national reporting.
- The final round of PARIS inversions, which will include additional estimates for 2025, is anticipated to corroborate the current findings and lead to a more concrete uptake of results in the national reporting.

4.3.7 Italy

Meetings with the Italian inventory compilers were held in October 2024 and October 2025. In October 2024, Alistair Manning (inverse modelling expert), Michela Maione and Jgor Arduini (national leads) from PARIS attended and presented. In October 2025, a preliminary meeting was held just between the national leads and the inventory compilers. A follow-on meeting, also including an inverse modelling expert is planned for Spring 2026. The key outcomes are detailed below:

- Before 2024 the observational constraint for Italian emissions was largely limited to the observations from Monte Cimone in Northern Italy, giving little information about the emissions from Southern Italy. As a result, national emission totals were difficult to appropriately capture to a sufficient level of certainty.
- The new station, established through PARIS, at Capo Granitola in Sicily in 2024 will provide substantially improved coverage in the south of the country.
- Particular hotspots of emissions for certain gases were noted and they were discussed in detail.

4.3.8 Norway

A meeting with a Norwegian inventory compiler was held in November 2024. Alistair Manning (inverse modelling expert) and Chris Lunder (national lead) from PARIS attended and presented. The key outcomes are detailed below:

- The observational coverage of Norwegian emissions is limited. Only CH₄ emissions are currently resolved to any degree of certainty.
- The collection of flasks at the existing station in Southern Norway at Birkenes, funded through PARIS (WP3) will substantially help improve this situation. These data, covering 2024 and 2025, will be presented in the 2026 PARIS draft annex.
- Following discussion with the inventory compilers, noting the existing limitations of the measurement network prior to 2024, the next meeting is scheduled for November 2026.

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4.4 Conclusion and possible impact

PARIS results will directly appear in three 2026 NIDs (UK, Ireland and Netherlands) and be mentioned in the verification sections in the Switzerland 2026 NIDs, a significant success of the PARIS consortium. The increased observational coverage, funded through PARIS, may enable greater participation of the remaining four target countries – Germany, Italy, Hungary and Norway.

The feedback from the inventory meetings will be incorporated into the annexes to be produced in Autumn 2026, thereby improving the delivery of information that is most useful to the inventory teams. It is envisioned that by encouraging this within-country engagement between the different communities, long-term interactions will continue after PARIS concludes.

5. History of the document

Version	Author(s)	Date	Changes
1	Alistair Manning	5 Feb 2026	First draft
	Anita Ganesan	6 Feb 2026	Provided revisions and feedback
	Stephan Henne	11 Feb 2026	Revisions and additional inputs on national meetings
	Alistair Manning	16 Feb 2026	Incorporate feedback
	S. Walter	19 Feb 2026	Finalise and upload