

Review of the reporting of meteorological costs for air navigation services

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1 INTRODUCTION

- 1 This document analyses the reporting of the costs of meteorological (MET) services eligible for inclusion in the air navigation services (ANS) cost bases within the performance plans of the Member States of the Single European Sky (SES).¹
- 2 The comprehension and transparency of the cost bases of air navigation service providers (ANSPs) is a prerequisite for target setting, performance planning, consultation, and monitoring of costs outlined in Commission Implementing Regulation (EU) 2019/317 (hereafter, the “Regulation”).² To date, the Member States have provided varying degrees of detail when reporting the costs of MET services in the ANS cost bases. This report focuses exclusively on the costs of MET services.
- 3 To support the analysis of the costs of MET services, the PRB sent a questionnaire on 12th May 2023 to the Member States. Detailed answers on the way MET costs are reported were provided on 16th June. In addition, a series of meetings with a selected group of national supervisory authorities (NSAs) were held between 19th October and 3rd November 2023 (hereafter, the “follow-up meetings”).
- 4 The scope of this report covers the reporting of costs of MET services attributable to the ANS cost bases within the performance plans of the Member States. The PRB has engaged with the NSAs of the Member States to understand how to improve the reporting of costs of MET services in preparation for future reference periods (RPs).
- 5 The objectives of this report are to:
 - Provide a clear and comprehensive overview of the regulatory background related to reporting requirements;
 - Understand and document the current approaches to MET reporting in different Member States;
 - Identify and highlight potential inconsistencies in the data provided by Member States caused by variations in reporting practices; and
 - Establish recommendations for future reporting to improve data quality and relevance.
- 6 This report is divided in five sections:
 - Section 1 (the current one) provides an introductory overview of the scope and objectives of the analysis regarding current reporting of MET costs for air navigation services;
 - Section 2 outlines the methodology used to conduct the analysis on the reporting of the costs of MET services;
 - Section 3 describes the current regulatory requirements to establish the costs of MET services for air navigation and how they are allocated between en route and terminal services;
 - Section 4 provides an overview of the MET service provision within the Member States; and
 - Section 5 identifies recommendations to improve the future reporting on MET costs included in the ANS cost bases and provides a summary of the conclusions obtained by the PRB in this report.
- 7 The report is complemented by an Annex which summarises the exact responses received to the questionnaire. The PRB would like to thank the NSAs for their collaboration and the information they provided through the questionnaire and follow-up meetings.

¹ EU Member States, Norway, and Switzerland, hereafter referred to as the Member States.

² Implementing Regulation (EU) 2019/317 laying down a performance and charging scheme in the single European sky and repealing Implementing Regulations (EU) No 390/2013 and (EU) No 391/2013, OJ L 56, 25.2.2019, p. 1–67.

2 METHODOLOGY

8 This section outlines the methodology used to conduct the analysis on the reporting of the costs of MET services eligible for inclusion in the ANS cost bases included in the performance plans of the Member States. It sets out the four key activities conducted by the PRB, including:

- A review of the European and international legislative framework and guidance to establish, allocate, and report MET costs for ANS;
- Data collection from the NSAs to understand the organisation of MET service provision and cost reporting;
- Comparison of the data collected with the reporting of MET costs through Member State submissions as part of the performance and charging scheme; and
- A final fact-verification exercise with selected NSAs to corroborate the data and clarify identified gaps.

2.1 Documentation review

9 To better understand the existing requirements on Member States to report MET costs, the PRB conducted a review of the European and international legislative framework and guidance available on the establishment, allocation, and reporting of MET costs.

10 The documentation considered in this review included:

- Regulation (EU) No 549/2004 (hereafter, the “SES Framework Regulation”);³
- Regulation (EU) No 550/2004 (hereafter, the “SES Service Provision Regulation”);⁴
- Performance and Charging Scheme Regulation;

- Convention on the international civil aviation organization (ICAO);⁵
- Annex 3 of the Convention on ICAO;
- ICAO Doc. 9161;⁶
- Eurocontrol 2004 report;⁷
- Eurocontrol 2012 guidance;⁸
- Eurocontrol Doc. 20.60.01;⁹
- World Meteorological Organisation (WMO) Doc. 904;¹⁰ and
- Supporting material on cost bases and unit rates and supporting material for the development of the third reference period (RP3) performance plans.¹¹

2.2 Data collection

11 The PRB designed the questionnaire, titled “Questionnaire for NSAs on the reporting on costs of MET and SAR for ANS”, to better understand how Member States define the share of MET costs allocated to civil aviation and recovered through ANS charges. Out of the 29 NSAs, 28 provided responses, with only Belgium missing.

12 The questionnaire had two parts related to MET costs. Part 1 contained six questions on the arrangements for the provision of MET services for ANS, while Part 2 contained five questions on the availability of information and data to NSAs on the costs of MET service provision. The full list of questions and the exact multiple-choice answers provided by NSAs is provided in the Annex of this report. It should be noted that NSAs were responsible for coordinating the responses with the MET service provider under their supervision.

³ Regulation (EC) No 549/2004 laying down the framework for the creation of the Single European Sky, OJ L 96, 31.3.2004, p.1 - 8.

⁴ Regulation (EC) No 550/2004 on the provision of air navigation services in the Single European Sky, OJ L 96, 31.3.2004, p.10 - 19.

⁵ Convention on International Civil Aviation, Doc 7300/9, Ninth Edition – 2006.

⁶ Doc 9161, ‘Manual on air navigation services economics’, approved by the Secretary General and published under his authority – Fifth Edition, 2013, International Civil Aviation Organization.

⁷ Eurocontrol, report commissioned by the Performance Review Commission, “Report on aeronautical MET costs”, Performance Review Unit, May 2004.

⁸ Eurocontrol, Central Route Charges Office, “Eurocontrol guidance on the route charges system”, edition June 2012 (EN).

⁹ Eurocontrol, Central Route Charges Office, “Principles for establishing the cost-base for en route charges and the calculation of the unit rates”, January 2020 (EN).

¹⁰ World Meteorological Organisation, ‘Guide to Aeronautical Meteorological Services Cost Recovery – Principles and Guidance’, No. 904, second edition, 2007.

¹¹ “Supporting Material on Cost Bases for Charges and Unit Rates for Air Navigation Services” and “Supporting Material for the Development of Draft RP3 Performance Plans”, developed by EY and Egis upon request of the European Commission Directorate-General for Mobility and Transport (DG MOVE), May 2021.

2.3 Comparison with reported data

- 13 In addition to the questionnaire's responses, the study also analysed relevant data from the adopted performance plans and reporting tables submitted on 1st June 2023 by Member States (hereafter, "reporting tables"). By looking at different data sources, the report aims to provide a thorough understanding of the prevailing landscape concerning the establishment, allocation, and reporting of costs related to MET service provision.
- 14 In this report, the figures extracted from the reporting tables encompass both the terminal and en route service areas, unless otherwise stated.
- 15 In Member States where the main ANSP also provides MET services, tables exclusively relating to MET provision are generally unavailable. As a result, although it is a consequence of the Regulation, it has not been possible to calculate real-term values. Hence, all numerical figures in this report are presented in nominal terms.

2.4 Fact-verification

- 16 To clarify and confirm the responses received from the MET questionnaire and the data reviewed in the reporting tables, the PRB conducted follow-up meetings with a pre-selected group of NSAs. The NSAs involved in this step are listed in Section 4 of the Annex. In these meetings, the NSAs could be accompanied by the MET ANSP to help provide further explanation on the data provided. The PRB wrote minutes for each meeting and agreed the record with the Member States concerned. This record was used to insert relevant information into this report. Where a meeting was not able to be arranged in time, certain NSAs provided the PRB with a written response to a series of follow-up questions.

3 CURRENT REGULATORY FRAMEWORK AND GUIDANCE MATERIAL

17 This section describes the current regulatory requirements and existing guidance material on the establishment of the costs of MET services for air navigation and the allocation between en route and terminal services.

3.1 MET service provision

18 The SES Framework Regulation provides a definition of meteorological services, while the SES Service Provision Regulation describes the potential designation of a meteorological service provider and requires MET services to adhere to the same standards of quality and transparency as data related to ATS providers.

19 Article 2, point 29 of the SES Framework Regulation reads:

- *“Meteorological services’ are those facilities and services that provide aircraft with meteorological forecasts, briefs and observations as well as any other meteorological information and data provided by States for aeronautical use.”*

20 Article 9 of the SES Service Provision Regulation reads:

- *“Member States may designate a provider of meteorological services to supply all or part of meteorological data on an exclusive basis in all or part of the airspace under their responsibility, taking into account safety considerations. Member States shall inform the Commission and other Member States without delay of any decision within the framework of this Article regarding the designation of a provider of meteorological services.”*

21 Separately, Annex 3 of the ICAO convention describes the designation of the meteorological authority responsible for providing or arranging the provision of MET services.

22 Point 2.1.4 of Chapter 2 of Annex 3 of the ICAO convention reads:

- *“Each Contracting State shall designate the authority, hereinafter referred to as the*

meteorological authority, to provide or to arrange for the provision of meteorological service for international air navigation on its behalf.”¹²

23 In addition, the Eurocontrol 2004 report and the WMO Doc. 904 have Annex 3 of the ICAO Convention as the regulatory framework reference.

3.2 MET cost allocation to ANS

24 Member States are required to provide details in the performance plans on the breakdown between “MET core costs” and “MET direct costs”, where:

- MET core costs are defined as the costs of supporting meteorological facilities and services that serve civil aviation and other sectors. These include general analysis and forecasting, weather radar and satellite observations, surface and upper-air observation networks, meteorological communication systems or data processing centres and supporting core research, training and administration (Annex VII, 2.1 (d) of the Regulation). The ICAO Doc. 9161 and WMO Doc. 904 guidelines complement this definition where core activities are defined as the fulfilment of a primary system requirement for meteorological information that is jointly used by all service recipients.
- MET direct costs are the costs associated with meteorological facilities and services that exclusively serve aeronautical purposes. These may include MET observations, reports, and forecasts tailored to aeronautical use; briefing and flight documentation; SIGMET and AIR-MET information for aircraft safety; world area forecast system forecasts for computerised flight planning; MET information for broadcasts; data link services; as well as aeronautical MET telecommunications and any other MET data required from States for aeronautical use. This sample of MET services is provided in ICAO Doc. 9161 and the WMO Doc.904. The SES Framework Regulation, the

¹² Annex 3, Chapter 1, Meteorological authority: the authority providing or arranging for the provision of meteorological service for international air navigation on behalf of a Contracting State.

SES Service Provision Regulation and the Regulation do not explicitly define direct costs.

- 25 Specifically, Member States are required to describe the methodology used for allocating these costs between civil aviation and other domains, as well as between charging zones (Annex VII, 2.1 (a), (c), (d) and (e) of the Regulation).
- 26 The regulatory requirement to provide the breakdown between MET core costs and MET direct costs aims to provide transparency to stakeholders on the allocation of MET costs.¹³ While MET core costs should be proportionally distributed between aviation and other industries depending on the nature of the individual MET services involved, MET direct costs are entirely attributed to aviation but should be proportionally distributed between commercial civil aviation and other aviation domains (e.g. general and military aviation).
- 27 Aware that aviation contributes to the MET core system by providing upper-air observations of winds and temperatures, the guidance documents ICAO Doc. 9161 and WMO Doc. 904 have established a procedure to calculate the share of MET core systems in aviation.
- 28 The ICAO Doc. 9161 and WMO Doc. 904 publications also provide guidance on the allocation of total MET aeronautical costs between en route and terminal, including the en route and terminal share of approach and aerodrome control services, based on a methodology aiming to ensure the equitable treatment of different users.

3.3 MET cost reporting

- 29 Member States are required to report MET costs, related information and justifications in the performance plan, reporting tables, annual monitoring reports, and cost risk sharing reports. In particular, Member States are required to provide information on the costs of MET investments in the “investments” section of the performance plan, as well as in the reporting tables.

- 30 MET costs are exempted from the traffic risk sharing mechanism as per Article 27(6), point (b) of the Regulation, i.e. the traffic risk is fully borne by airspace users and leads to adjustments in year n+2 based on the difference between the traffic forecast and actual traffic.
- 31 MET costs are, however, subject to the cost risk sharing mechanism laid down in Article 28 of the Regulation, including with regard to the differences in respect of the cost categories listed in Article 28(3), points (a), (c), (d) and (e).
- 32 It should be noted that Articles 27 and 28 of the Regulation are not applicable when terminal air navigation services (and any MET service therein) are subject to market conditions.
- 33 Article 35 of the Regulation reads:
- *“Subject to the provisions of this Article, Member States may decide, either before or during a reference period, that the provision of some or all of the terminal air navigation services, CNS, MET, AIS services or air traffic management (‘ATM’) data services provided in their charging zones established in accordance with Article 21 is subject to market conditions.”¹⁴*
- 34 As per Article 31(3) of the Regulation, Member States shall exempt certain categories of flights from en route charges (e.g. search and rescue flights, etc.). On the other hand, paragraph 4 of the same article states that Member States may exempt other categories of flights from en route charges (e.g. military, training, testing, VFR flights, etc.). Furthermore, Member States may exempt from terminal charges the categories of flights exposed in both paragraphs.

3.4 Eurocontrol study on MET costs (2004)

- 35 The Eurocontrol 2004 report aimed to examine the cost structure and funding mechanisms associated with MET services for ANS. The study provided important insights into the allocation and recovery of aeronautical MET costs, with the

¹³ Annex VII, 2.1., point (d) reads: “a breakdown of the meteorological costs between direct costs and the costs of supporting meteorological facilities and services that also serve meteorological requirements in general (‘MET core costs’). MET core costs include general analysis and forecasting, surface and upper-air observation networks, meteorological communication systems, data processing centres and supporting core research, training and administration”.

¹⁴ Following Article 35 of the Implementing Regulation (EU) 2019/317, only Spain has provided in its performance plan services under market conditions. Spain has explained that market conditions only affect services provided by FerroNATS (a private Spanish ANSP certified by AESA and designated by the Ministry of Transport) in Alicante - Elche and Ibiza airports for TANS operations (only for aerodrome control service). The MET services for these two airports are still provided by AEMET.

objective of improving efficiency and cost-effectiveness in the cost allocation mechanisms.

- 36 One of the study's main findings was the necessity to implement a transparent and harmonised methodology to determine the share of MET costs attributable to airspace users. Recognising the diverse requirements of airspace users in terms of meteorological data and services, the study highlighted the importance of a more accurate allocation of MET costs among service areas (i.e. en route/terminal) and user groups (i.e. IFR flights vs VFR flights or commercial vs general aviation).
- 37 A key conclusion of the study was the potential to optimise cost recovery through the development of funding mechanisms that better distinguish the users of MET services in any given situation, particularly for costs allocated to terminal services. The study highlighted a lack of harmonisation between Eurocontrol Member States regarding the recovery of these costs, contrary to en route costs for which most Eurocontrol Member States followed the harmonised Eurocontrol cost recovery scheme.
- 38 The study highlighted the importance of collaboration between MET providers, ANSPs, and NSAs and of improving communication channels and data exchange to enhance the accuracy and timeliness of the meteorological information provided to airspace users. The study also underscored the role of technology in optimising the delivery of MET services and reducing operational costs.

4 MET SERVICE ANALYSIS

39 This section summarises the findings on the MET service provision and cost reporting across the Member States, as assessed using information from the questionnaire and reporting tables.

40 Figure 1 illustrates the trend in MET costs in nominal terms (combining en route and terminal service areas). The average annual growth rate from 2017 to 2022 stood at 1.1%. According to the performance plans, MET determined costs will reach 359M€ in 2024.

41 The rise of MET costs in 2021 and 2022 may be partially attributed to the increase of inflation observed during those years. Across the EU Member States, the Harmonised Index of Consumer Prices (HICP) exhibited a growth rate of 2.9% in 2021 and to 9.2% in 2022. In Switzerland, the HICP growth rate was 0.5% in 2021 and increased to 2.7% in 2022. Similarly, Norway recorded a HICP growth rate of 3.9% in 2021, rising to 6.2% in 2022.¹⁵

42 Between 2016 and 2017, MET costs showed a decline of 33M€ (-9%), primarily attributed to Germany where MET costs decreased by 31M€ (-67%). This reduction was a result of a decision by the German government to exclude the core costs of the MET provider (DWD) from the ANS cost base, transferring funding responsibilities to the federal budget. From 2017 to 2020, MET costs within the SES area stabilised, fluctuating between 325M€ and 330M€, with an average annual growth rate of -0.2%. However, there was a rebound from 2020 to 2022, with MET costs increasing to 345M€ at an average annual growth rate of 3.1%. This rise may be partially attributed to the increase of inflation observed during 2021 and 2022.

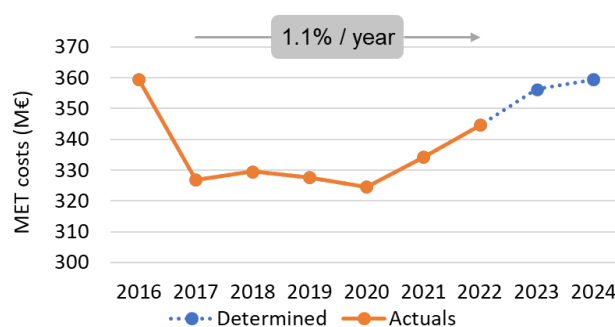


Figure 1 – Evolution of Union-wide MET costs from 2016 to 2024 in nominal terms (source: PRB elaboration on reporting tables), based on the actual costs and determined costs reported by the Member States.

43 Despite this increase, Figure 2 shows that the proportion of MET-related costs in total ANS costs at Union-wide level is expected to stabilise at around 4.3% from 2022 to 2024.¹⁶

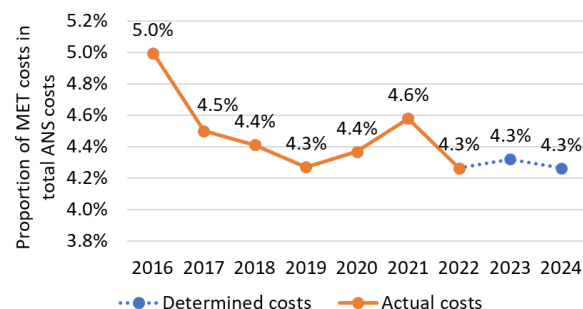


Figure 2 – Union-wide proportion of MET costs in total ANS costs from 2016 to 2024 (source: PRB elaboration on reporting tables).

4.1 Types of MET service providers

44 The local arrangements of MET service provision tend to fall into the following categories (Table 1, next page):

- The main ANSP that provides air traffic services (ATS) also provides MET services;
- A dedicated MET service provider different from the main ANSP (usually a public entity) is the sole provider of MET services; or
- Both the main ANSP and a separate MET entity incur MET costs to provide different kinds of MET services.

¹⁵ Source of data: Eurostat (online data code: PRC_HICP_AIND__custom_2523854).

¹⁶ The evolution of MET costs has been analysed for each service area, both en route and terminal. However, the overall trends and numbers did not significantly differ from the combined results. Therefore, only the combined figures are presented in the analysis.

Member States with MET services provided		
The main ANSP	Both main ANSP and other ANSP(s)	Other ANSP(s)
Austria, Belgium, Bulgaria, Croatia, and Romania	Italy, Latvia, and Sweden	Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary ¹⁷ , Ireland, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, and Switzerland

Table 1 – Configurations in place to provide MET services for ANS (source: PRB elaboration on the questionnaire).

- 45 The local regulatory environments within Member States play an important role in shaping the provision of MET services, with the prevailing situation being the designation by law of the MET provider, often in the form of the national meteorological office which operates independently from the main ANSP.¹⁸
- 46 From a follow-up meeting with an NSA, some challenges related to the MET service arrangement were identified. The local designation of a MET provider by law could hinder future competition, potentially leading to difficulties and delays when attempting to change the provision of MET services. Furthermore, the designation of an external MET provider can result in a lack of control of the service availability making it difficult to manage or address unforeseen disruptions in MET services, as well as require the main ANSP to act as an intermediary between the MET provider and the airspace users. This is particularly relevant, when a MET provider considers that the performance plan and the determined costs are not binding.

4.2 Methodologies to allocate MET costs to ANS and other sectors

- 47 The PRB observes that Member States apply different cost allocation methodologies and

reporting practices related to the costs of MET services. There is not a one-size-fits-all approach to MET service provision, where factors such as the lack of clarity in the SES regulations, local regulations, industry standards, and operational needs play a crucial role in determining the methodology used by each Member State.

- 48 Despite the above, Member States can be categorised based on the type of data the methodologies use to allocate MET costs between ANS and other sectors. Member States tend to implement one of two types of methodology, within which variations occur. These are:
- Sharing key: A single apportionment key is used to reflect the relative efforts required to deliver MET services for ANS; and
 - Actual data: MET costs meteorological services for aviation. are allocated to ANS, for example, on the basis of hours dedicated to providing m
- 49 In response to question 3 of the questionnaire, 18 Member States indicated the use of actual data for allocating direct costs among civil aviation users, while seven employ sharing key methodologies. Concerning MET core costs, 12 Member States employ sharing keys for allocation, four rely on actual data, two assign the full amount of MET core costs to civil aviation and five do not allocate any MET core costs to civil aviation. Additionally, nine Member States reported using alternative methodologies to report MET costs, be it core or direct costs. Table 2 summarises the answers given by the Member States.

Methodology for allocating MET Costs by data type						
MET direct costs		MET core costs				Other
Actual data	Sharing key	Actual data	Sharing key	All core costs	No core costs	
18	7	4	12	2	5	9

Table 2 – Member States categorised by data type used for allocating MET core and direct costs into ANS cost base (source: PRB elaboration on the questionnaire).

¹⁷ Hungary informed in the additional information attached reporting tables submitted on June 2023 that from 2022 onwards the complete meteorological activity is outsourced from HungaroControl to OMSZ.

¹⁸ There are some Member States where MET services are provided on a contractual basis. For example, Malta has an established contract for MET services with Malta International Airport. Similarly, Estonia has an agreement with the Estonian Weather Service for MET services provision. In Norway, the MET provider functions as a subcontractor to the main ANSP Avinor, while in Romania, MET services are obtained through a contractual arrangement between ROMATSA and the National MET Office.

- 50 Only a few Member States presented a detailed account within reporting tables of the methodology for allocating MET core costs to civil aviation. While some Member States do mention the proportion of MET core costs allocated to civil aviation in the reporting tables, specific details about the allocation methods used are often lacking. In other cases, Member States have mentioned adherence to ICAO Doc. 9161 and WMO Doc. 904 guidance but have not provided the precise figures.
- 51 Member States also have the autonomy to determine the method of cost recovery concerning MET core costs, which can be funded by the government, by the airspace user, or a combination of both.
- 52 In Germany and Luxembourg, for instance, only MET direct costs are considered in the ANS cost base, as MET core costs are covered by the government budget. Meanwhile in Latvia, a follow-up meeting clarified that certain costs are also financed by the government, including some staff costs, technical support, IT systems, and technologies used in providing aviation meteorology services and other services. Norway and Switzerland also indicated in the questionnaire that MET core costs are not incorporated into the ANS cost base.
- 53 In Finland, the costs of observations (such as AWOS systems and real-time observations), are financed through the Finnish government budget, which covers approximately 85% of core services allocated to civil aviation. In other words, 15% of MET core costs allocated to civil aviation are included in the cost base.
- 54 Furthermore, the Finnish Meteorological Institute (FMI) serves as the lead member and operational centre of the Pan-European Consortium for Aviation Space Weather User Services (PECASUS). Initially, FMI Space Weather operations received funding from the Finnish State from 2019 to 2021. However, from 2022 onwards, these costs have been integrated into the MET costs of FMI, a portion of which is charged to airspace users in civil aviation, amounting to 0.3M€ out of a total annual cost of 0.8M€. While civil aviation remains the primary beneficiary of this project, there is a growing interest from sectors beyond civil aviation, particularly the military.
- 55 In Malta, MET costs are charged to airspace users through a flat-rate system that was implemented in 2002, coinciding with the privatisation of Malta International Airport (MIA). Under this arrangement, MIA assumed the responsibility of providing MET services not only for civil aviation but also for the military, the general public, and various other sectors. As part of the privatisation process, MIA was granted the authority to recover its MET service costs by charging Malta Air Traffic Services and the airspace users. This flat rate has remained constant over the years, irrespective of factors like air traffic volume, staffing levels, or other variables. Apart from that, MIA is tasked with covering the expenses related to staff training and other operational aspects.
- 56 During a follow-up meeting, Switzerland stated that it has transitioned from an old, inconsistent cost accounting system for MET core costs allocation, which involved a mix of interfaces and methodologies, to a new and fully integrated system. This new system primarily relies on direct costs and is considered to be a significant improvement over the previous approach. It is based on allocation keys, which distribute direct costs and incorporate various keys, including the time spent by employees. MeteoSuisse and Skyguide have invested considerable effort to improve the cost allocation methods, resulting in a documented process.
- 57 France provided written responses to the follow-up questions and reported that the MET core costs allocated to civil aviation follow different sharing keys depending on the type of activity in question. France provided several examples, including that costs related to large logistic sites are allocated between sectors according to a square meter sharing key; general administration costs are allocated according to a full-time equivalent sharing key; and data storage costs are allocated according to a time and data volume sharing key.

Analysis of MET core cost allocation ratios between aviation and other users

- 58 As per question 8 of the questionnaire, 17 Member States provided approximate ratios of MET core costs allocated to civil aviation and those allocated to other parties, as shown in Table 3 (next page).
- 59 The responses from Member States may not accurately reflect the proportion of total MET costs within the ANS cost base. For instance, Germany

indicates that MET core costs are not included in the cost base (as previously mentioned), however, within this, Germany note that the actual allocation of MET core costs to civil aviation stands at 10%, as indicated in Table 3.

60 Croatia and Romania report allocating 100% of MET core costs to civil aviation due to the fact that the main ANSP in these countries serves as the MET provider for civil aviation, leaving no MET provision for other sectors.¹⁹

Member State	MET core costs allocated to civil aviation	MET core costs allocated to other parties
Croatia	100%	0%
Romania	100%	0%
Slovakia	94%	6%
Cyprus	80%	20%
Italy	50%	50%
Luxembourg	50%	50%
Spain	48%	52%
Greece	45%	55%
<i>Average</i> ²⁰	35%	65%
Hungary	33%	67%
Ireland	27%	73%
France	27%	73%
Sweden	20%	80%
Slovenia	18%	82%
Lithuania	14%	86%
Czech Republic	10%	90%
Germany	10%	90%
Finland	6%	94%

Table 3 – Proportion of MET core costs allocated to civil aviation and to other parties outside of civil aviation (source: PRB elaboration on the questionnaire).

61 Excluding cases where the main ANSP is the sole MET provider, the questionnaire results reveal that, on a simple average basis (i.e. without accounting for the varying sizes of MET costs in Member States), 35% of MET core costs are allocated to civil aviation, with the remaining 65%

assigned to other parties.²¹ Among those Member States, there are outliers in the allocation of MET core costs to civil aviation. For example, Slovakia and Cyprus reported that 94% and 80% of MET core costs are allocated to civil aviation, respectively.

62 In the case of Slovakia, this proportion may be misleading as Slovakia’s written response to the follow-up questions indicated that the ratio indicates costs allocated as a whole to non-aviation customers (6%) and aviation customers (94%) using a sharing key calculated according to the proportion of staff and operational costs needed for the sector-specific services and products. Furthermore, Slovakia did not answer question 9 of the questionnaire relating to the relative proportion of direct and core costs due to lack of understanding of the question. This emphasises the need for a clear guidance about the definition and allocation methodology of direct and core costs.

63 In the case of Cyprus, during the follow-up meeting, it has been indicated that in the lead-up to the RP3 performance plan in 2018-2019, Cyprus conducted a detailed analysis of the MET provider's staff composition. The findings revealed that 80% of the staff were engaged in ANS activities. Consequently, Cyprus made the decision to allocate 80% of the MET costs to airspace users. Cyprus does not have terminal charges within the scope of the SES regulation but allocates 20% of MET core costs to aerodrome services. This results in a total of 64% of the MET core costs being charged to airspace users out of the total costs incurred by the MET office.

64 On the other hand, the lowest percentage of MET core costs allocated to civil aviation was reported by Finland at 6%, which can be attributed to the Finnish government's subsidisation of part of the core costs related to MET observation services. During the follow-up meeting, Finland explained that the methodology establishes a ratio between the cost of facilities and services needed to exclusively serve aeronautical requirements, and the

¹⁹ However, even in these scenarios, the internal MET provider may include exempted flights, which should be excluded from the ANS cost base. Furthermore, the internal MET provider might engage in the sale of services or data to another MET organisation, which falls outside the ANS cost base.

²⁰ Excluding the 100% reported by Croatia and Romania from the average.

²¹ When calculating the SES average, by dividing the MET core costs within the cost base by the total national MET core costs of the MET provider, we obtain a value of 20%. However, this figure is significantly skewed by the situation in Germany, where the allocation of MET core costs to civil aviation is relatively small (equal to 10%, as seen in Table 3), while the MET core costs within the overall cost base are relatively large (equal to 67%, as seen in Table 4), thus exerting a substantial influence on the resulting average.

cost of those intended to serve exclusively non-aeronautical requirements. This ratio is subsequently applied to total core costs to estimate the aeronautical proportion.

- 65 While Poland did not provide values in the questionnaire, a written response to a series of follow-up questions clarified that MET core costs are generated by only one of the MET providers, the Institute of Meteorology and Water Management. For this provider, 17% of MET core costs are allocated to civil aviation, calculated based on the ratio of employees working for aeronautical meteorology to those working for the National Hydrological Meteorological Service, and applying that ratio to determine the share of the costs of the core systems.

Exclusion of non-regulated areas from cost base

- 66 Regarding the accounting and exclusion of non-regulated areas from ANS cost base (e.g. exempted flights), the PRB observes that the Member States employ diverse methods. Each Member State's approach is shaped by the specific dynamics of its airspace, regulatory requirements, and financial arrangements with various user groups.
- 67 For example, Spain does not remove VFR costs from daily activities because the marginal costs of VFR flights are considered to be zero. Exempted flights are not separated individually in the cost base, but the final number of exempted flights is obtained from Eurocontrol data, and these costs are covered by the government. Similarly, military flights are not included in the cost base, and the government also covers the associated costs. In France, the exempted flights are financed by a public service subsidy from the French Government. In Slovakia, the MET costs accounted in the cost base include the costs originated by the VFR, exempted, and military flights. Nevertheless, the costs originated by these specific flights are covered by the Slovak government.
- 68 Cyprus does not remove VFR flights from the cost base, while noting that most VFR flights are allocated to the terminal where terminal rates are not charged to airspace users. Cyprus mentioned that the exempted flights account for less than 1% of costs.
- 69 In Latvia, the internal MET costs are integrated into the overall cost base and distributed between en route and terminal services via a sharing key.

These cost allocations are further adjusted for non-regulated areas. The main ANSP, which is one of the MET service providers, has a separate income agreement with military authorities based on the volume of services, and this income is classified separately. Additionally, the MET Office supplies aviation meteorological information for military purposes under a contract with the National Armed Forces.

- 70 Finland use a systematic approach to account for MET costs related to non-regulated areas such as VFR, exempted, and military flights. A specific contract is in place for military services, the MET costs of which are calculated between civil aviation and the military using percentages defined in the contract. Non-operational (general) military flight funding is provided by Fintraffic and is not charged to airspace users. The contract is reviewed annually with no significant changes reported. With respect to VFR costs, Finland highlighted that these are considered negligible.
- 71 In Italy, the MET providers address the question of MET costs associated with non-regulated areas by excluding them based on the proportion of flights, whose cost is covered by the government.

Interpreting MET core costs

- 72 The questionnaire results and the follow-up meetings show the challenges associated with obtaining precise data on the allocation of MET core costs. These challenges arise from the presence of multiple MET providers in certain Member States, the diverse domains that require MET services, and the varied institutional frameworks governing MET service provision at national level. These factors collectively make it a complex task for Member States to gain a comprehensive understanding of total MET costs and to accurately distribute these costs between civil aviation and other stakeholders.
- 73 Figure 3 (next page) details the share of MET core costs allocated to civil aviation on the horizontal axis, while the vertical axis depicts the share of MET total actual costs in relation to the overall ANS costs for the year 2022. When considering the Member States with the highest proportion of MET costs allocated to civil aviation (equal to 100% for Member States where the main ANSP exclusively provides MET services; represented by yellow dots in the figure), it is observable that

these Member States exhibit different outcomes regarding the proportion of MET costs in total actual ANS costs. For example, MET costs in Croatia represent 6.5% of the ANS costs in 2022 (higher than the average of 4.3%), whereas in Belgium or Bulgaria, MET costs represent 3.7% and 4.6% of the ANS cost base, respectively.

74 The figures for Luxembourg and Slovakia also stand out. While Luxembourg, in its response to the questionnaire, states that 50% of MET core costs are allocated to civil aviation (which is

financed by the government), Luxembourg demonstrated the highest proportion of MET total costs relative to the total ANS cost (9.2%). On the other hand, Slovakia reported in the questionnaire that 94% of MET core costs from the external MET provider are allocated to civil aviation. However, the proportion of MET costs relative to the total ANS cost remains at 2.9% in 2022, below the average of 4.3%.

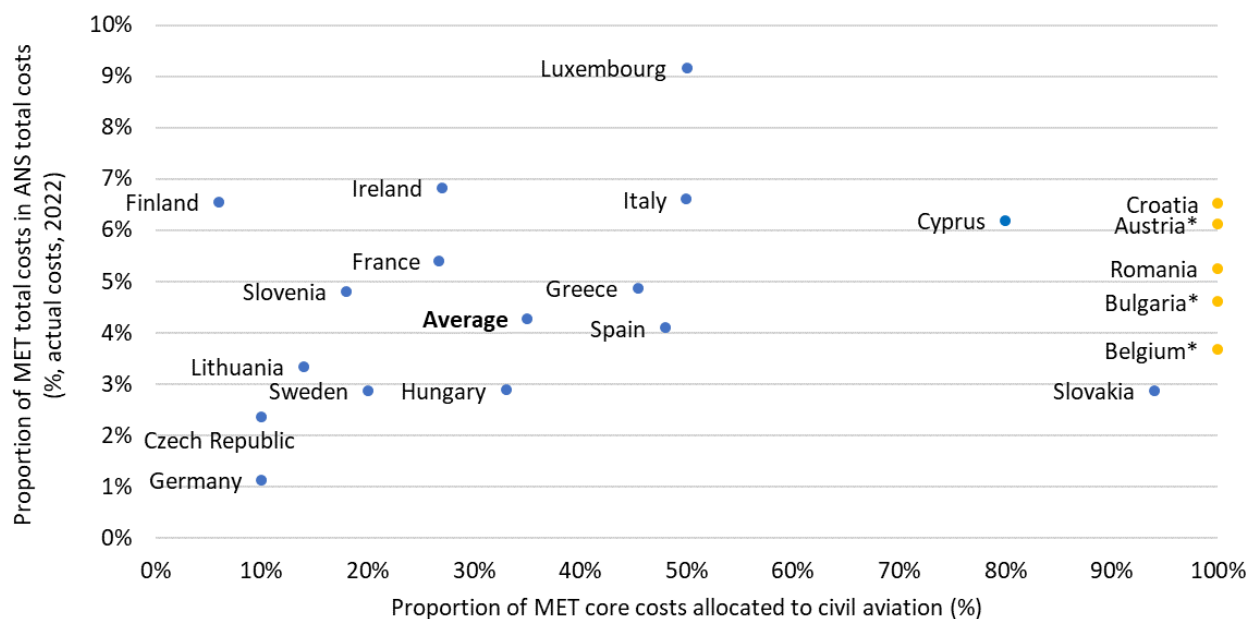


Figure 3 – Scatterplot depicting the proportion of MET total costs in the total ANS costs (Y-axis) against MET core costs allocated to civil aviation (X-axis) (source: PRB elaboration on the questionnaire and the reporting tables of June 2023).

Notes:

- 1) Member States are plotted on the graph with a blue dot. For those Member States where the main ANSP exclusively provides MET services, this is highlighted by a yellow dot;
- 2) For Member States where no allocation figures were reported (Austria, Belgium, Bulgaria, and Luxembourg), indicated by an asterisk in the labels, a 100% allocation share of MET costs to civil aviation has been assumed, as the main ANSP exclusively provides the MET services in those Member States;
- 3) Member States which did not report the displayed data in the questionnaire are omitted from the graph (Estonia, Latvia, Malta, the Netherlands, Norway, Poland, Portugal, and Switzerland); and
- 4) The proportions of MET costs in total ANS costs presented in the figure are based on the values from the reporting tables of June 2023, whereas the proportions of MET core costs allocated to civil aviation are based on the answers provided in the questionnaire.

Proportion of direct costs and core costs within civil aviation cost base

- 75 As per question 9 of the MET questionnaire, 18 Member States provided information on the proportion of direct costs and core costs within the ANS cost base. The results show a weighted average of 58% for MET core costs and 42% for MET direct costs (Table 4).²²
- 76 There are significant differences between Member States when it comes to the proportion of the core costs or direct costs in total MET costs allocated to civil aviation. Hungary has the highest share of core costs in total MET costs for civil aviation (71%), followed by Spain with 68%. Lithuania and Austria have the lowest shares of core costs at 14% and 15%, respectively, apart from those Member States who have reported no core costs.
- 77 Member States' approaches to the questionnaire appear to be different, possibly due to variations in interpretation or data availability. Some Member States have provided proportions for MET core costs even where MET core costs are government-funded or not part of the cost base. This aligns with the understanding that MET services often use shared resources serving multiple sectors. This is the case for Germany and Luxembourg, who have provided shares for core costs. Conversely, Switzerland and Norway, which do not include core costs in the cost base, reported 0% proportions for MET core costs, despite the likelihood that some core costs may be related to civil aviation (though not charged to airspace users).²³

Member State	MET core costs (%)	MET direct costs (%)
Hungary	71%	29%
Spain	68%	32%
Germany	67%	33%
Slovenia	60%	40%
Sweden	60%	40%
France	59%	41%
<i>Average</i>	<i>58%</i>	<i>42%</i>
Cyprus	50%	50%
Italy	50%	50%
Finland	44%	56%
Ireland	42%	58%
Czech Republic	28%	72%
Latvia	25%	75%
Luxembourg	22%	78%
Austria	15%	85%
Lithuania	14%	86%
Norway	0%	100%
Romania	0%	100%
Switzerland	0%	100%

Table 4 – Proportion of MET core costs and MET direct costs (source: PRB elaboration on the questionnaire).

- 78 While Member States are required to provide a breakdown of meteorological costs in the reporting tables, distinguishing between direct and core costs, the PRB observes that the majority of Member States (24) do not include this breakdown. The figures presented here were derived from the questionnaire. In contrast, five Member States did provide allocation shares within the reporting tables.

²² Excluding the cases in Table 4 where MET core costs are not allocated to civil aviation (Norway, Romania, and Switzerland).

²³ Romania's main ANSP functions as the MET provider for civil aviation, leading to the absence of reporting core costs.

4.3 Methodologies to allocate MET costs to en route and terminal services

79 When it comes to the allocation of costs between en route and terminal services, several approaches have been adopted, as indicated in responses to question 5 of the questionnaire. Member States have outlined methodologies that combine aspects from various guidance materials, as outlined in Table 5.

Guidance material(s) consulted for the establishment of MET costs or allocation of MET costs to en route and terminal	Answers (number of Member States)
ICAO Doc. 9161	20
WMO Doc. 904	18
Eurocontrol Doc. 20.60.01	15
Supporting material on cost bases and unit rates and supporting material for the development of the third reference period (RP3) performance plans	12
Internal allocation methodologies developed by the ANSP	5

Table 5 – Methodology applied by the Member States for the establishment or allocation of MET costs (source: PRB elaboration based on the questionnaire).

Allocation between en route and terminal charging zones

80 As per question 10 of the questionnaire, 24 Member States provided the allocation shares of MET costs between en route and terminal charging zones. The replies show significant variations in the distribution of costs between the two service areas.

81 Table 6 (next page) presents the proportions derived from the questionnaire responses and compares them with the figures reported in the reporting tables. Member States are arranged in the table in descending order based on the MET cost share allocated to en route, as outlined in the questionnaire.

82 In the questionnaire, Denmark and Greece had the highest proportion of en route MET costs to total MET costs, both reporting an allocation of 98%. Conversely, Luxembourg reported that 28% of its MET costs are allocated to en route. This relatively low number can be attributed to the fact

that ANA LUX, the ANSP in Luxembourg, only provides the approach services to the Luxembourg airport, while en route services are handled by Skeyes (up to FL245) and MUAC Luxembourg. As per the questionnaire, the average allocation of MET costs stands at 76% for en route charging zones, with the remaining 24% directed towards the terminal service area.

83 Analysing the figures presented in the reporting tables, the average proportion of MET costs allocated to en route services is 82%, while 18% is allocated to terminal services (excluding Member States without terminal services under the SES cost base). It is noteworthy that these percentages align with the allocation ratios found for the remaining ANS services.

84 The difference in allocation proportions for en route and terminal services between the questionnaire and the reporting tables arise from Member States reporting all MET costs allocated to both service areas in the questionnaire, regardless of the charging zones included in their respective performance plans. For example, while terminal costs are excluded from the cost base, Lithuania, Bulgaria, Cyprus, Slovenia, and Slovakia reported the proportion of MET costs allocated to aerodromes. Additionally, during the follow-up meetings, Finland and Italy explained that the entire terminal network was included in the proportions reported in the questionnaire. Conversely, Croatia did not respond to the questionnaire as a terminal charging zone is not included in the performance plan.

85 Overall, the questionnaire results indicate that while there is a general trend towards allocating a higher percentage of MET costs to en route charging zones, the specific allocation ratios vary significantly among the Member States. The potential drivers for these differences may relate to differing traffic patterns, geographical considerations, the number of aerodromes in the covered area, the operational responsibilities of various ANSPs in each country, and the responsibilities of the different MET ANSPs across each Member States.

Member State	Questionnaire		Reporting tables	
	En route	Terminal	En route	Terminal
Croatia	Not provided		100%	0%
Sweden	Not provided		94%	6%
Malta	Not provided		86%	14%
Belgium	Not provided		77%	23%
Estonia	Not provided		57%	43%
Denmark	98%	2%	95%	5%
Greece	98%	2%	98%	2%
Romania	94%	6%	94%	6%
Hungary	94%	6%	93%	7%
Czech Republic	90%	10%	90%	10%
Lithuania	87%	13%	100%	0%
Portugal	85%	15%	80%	20%
The Netherlands	82%	18%	82%	18%
France	80%	20%	80%	20%
Bulgaria	80%	20%	100%	0%
Cyprus	80%	20%	100%	0%
Ireland	80%	20%	80%	20%
Austria	80%	20%	79%	21%
<i>Average</i>	<i>76%</i>	<i>24%</i>	<i>82%</i>	<i>18%</i>
Slovenia	73%	27%	100%	0%
Spain	72%	28%	92%	8%
Italy	70%	30%	87%	13%
Germany	70%	30%	68%	32%
Switzerland	65%	35%	71%	29%
Latvia	65%	35%	68%	32%
Poland	60%	40%	60%	40%
Slovakia	57%	43%	100%	0%
Norway	53%	47%	53%	47%
Finland	50%	50%	67%	33%
Luxembourg	28%	72%	27%	73%

Table 6 – Allocation shares of MET costs between en route and terminal service areas (source: PRB elaboration on reporting tables and questionnaire).

4.4 Analysis of MET total costs

86 The following sub-sections explore the MET data derived from the reporting tables. As this data reflects the outcome of the different methodologies applied, the PRB will assess if the different methodologies and allocation keys used by Member States significantly influence the level of MET costs presented in the reporting tables.

87 Figure 4 provides a view of the MET actual costs in 2022 (combining en route and terminal service areas) for all Member States, both in absolute terms and as a percentage of each Member State's total ANS actual costs. France shows the highest absolute amount of MET costs in 2022 (87M€), followed by Italy (49M€) and Spain (39M€).

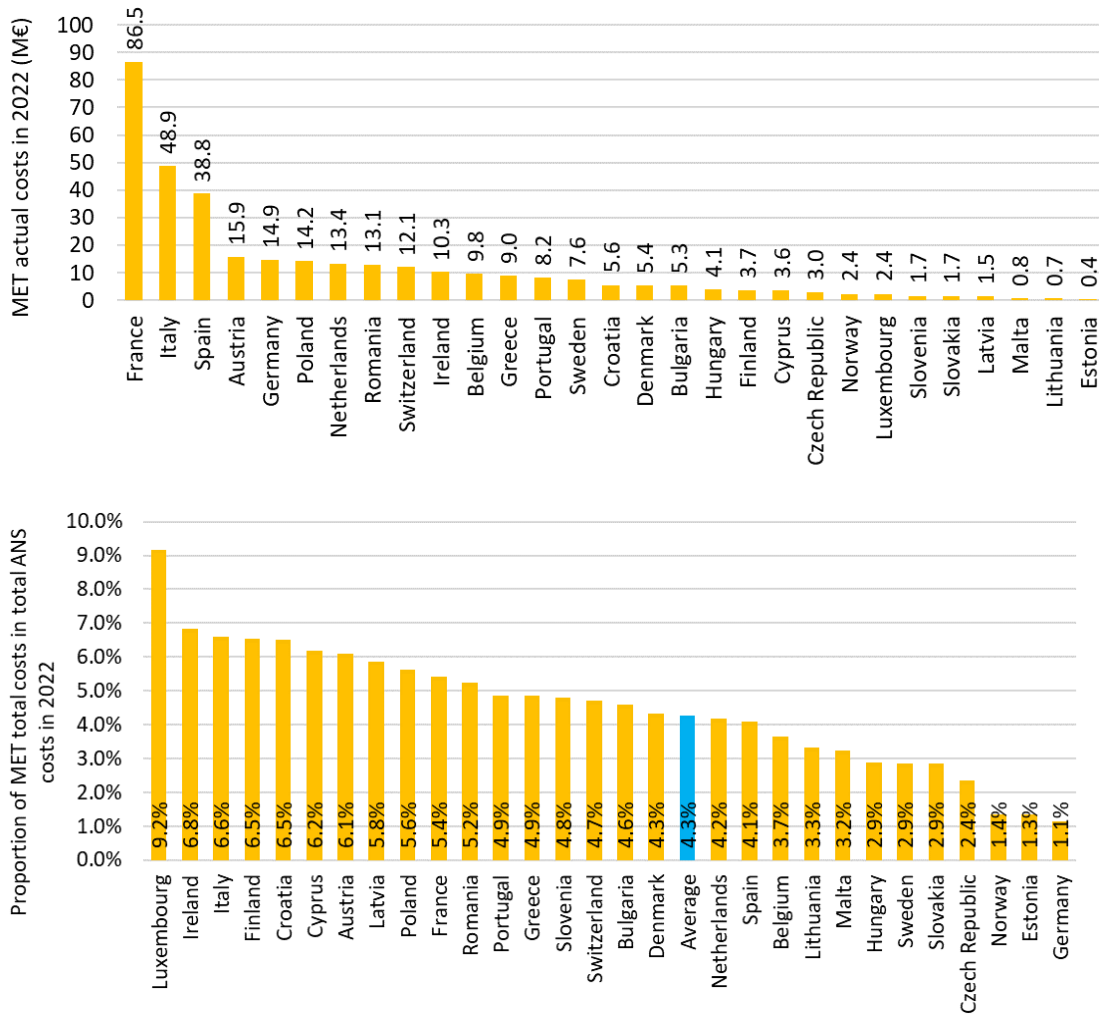


Figure 4 – MET actual costs (combining en route and terminal service areas) in 2022, in million euros and nominal prices (top figure) and as a percentage of total ANS actual costs (bottom figure) (source: PRB elaboration).

- 88 When analysing MET as a percentage of total ANS actual costs, Luxembourg takes the lead with over 9% of its total ANS costs attributable to MET service provision. Ireland, Italy, Finland, and Croatia, follow with some 7% of total actual costs attributed to MET costs. Germany, Estonia, and Norway, on the other hand, report 1% of total actual costs as being MET-related. The average proportion of MET costs in ANS total costs at Union-wide level in 2022 was approximately 4%.
- 89 Table 7 illustrates the annual growth of MET total costs, encompassing both en route and terminal service areas, from 2018 to 2022, as reported by the Member States. While Austria is one of the Member States showing the highest absolute MET costs and MET costs as a percentage of total ANS costs, it also experienced the greatest reduction in costs over the period (c. -4% pa). Conversely, Estonia and Norway, while having lower MET costs relative to other Member States in 2022, demonstrated one of the fastest growth rates in MET costs from 2018 to 2022, with annual increases of around 10% and 8%, respectively.
- 90 The PRB also analysed MET costs per service unit. Figure 5 (next page) shows the 2022 en route costs for MET services per service unit for each Member State. Switzerland has the highest en route MET costs per service unit (5.5€), followed by Italy (4.5€) and the Netherlands and Finland (both at 4.2€). Estonia (0.5€) and Norway (0.6€) show the lowest unit costs for aeronautical en route MET services.
- 91 Figure 6 (next page) shows the results for the terminal costs. Luxembourg has the highest MET unit costs (32€), followed by Poland (25€), Austria (21€), and France (18€). Greece and Denmark (both at 2€) have the lowest terminal MET costs per service unit of the Member States.

Member State	Annual average growth (2018-2022)
Estonia	9.8%
Poland	9.1%
Norway	8.4%
The Netherlands	7.6%
Finland	6.8%
Romania	6.8%
Lithuania	6.3%
Hungary	4.1%
Latvia	4.0%
Slovenia	3.8%
Ireland	3.4%
Denmark	3.4%
Portugal	3.1%
Spain	2.2%
Germany	1.3%
<i>Average</i>	<i>1.1%</i>
Malta	1.0%
Cyprus	1.0%
Bulgaria	0.6%
Greece	0.5%
Sweden	0.4%
Croatia	0.1%
France	0.0%
Slovakia	0.0%
Czech Republic	-0.7%
Italy	-0.8%
Belgium	-1.0%
Switzerland	-1.6%
Luxembourg	-1.9%
Austria	-3.9%

Table 7 – Allocation shares of MET total costs between en route and terminal service areas (actual costs for 2022) (source: PRB elaboration on reporting tables).

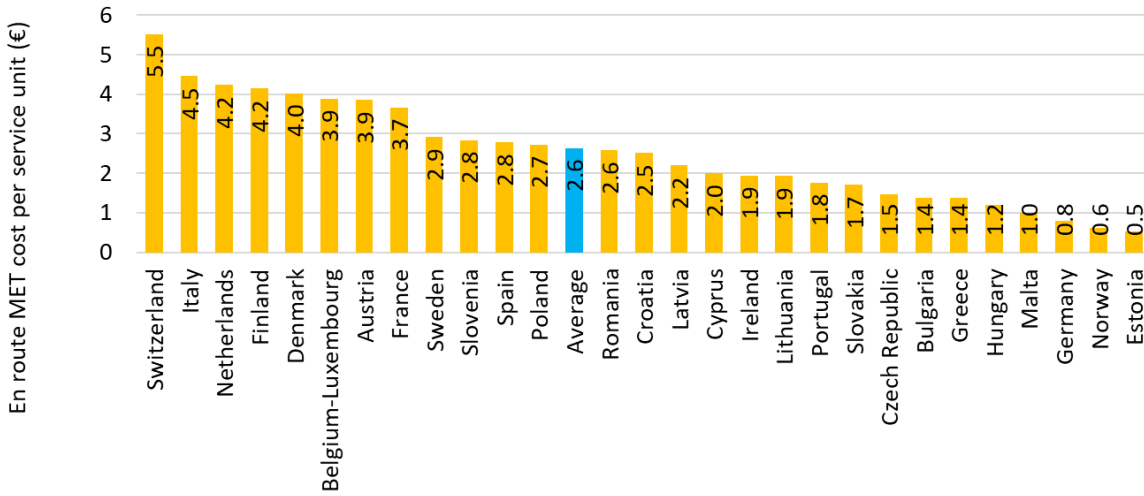


Figure 5 – Aeronautical en route MET costs per service unit for 2022 (source: PRB elaboration).

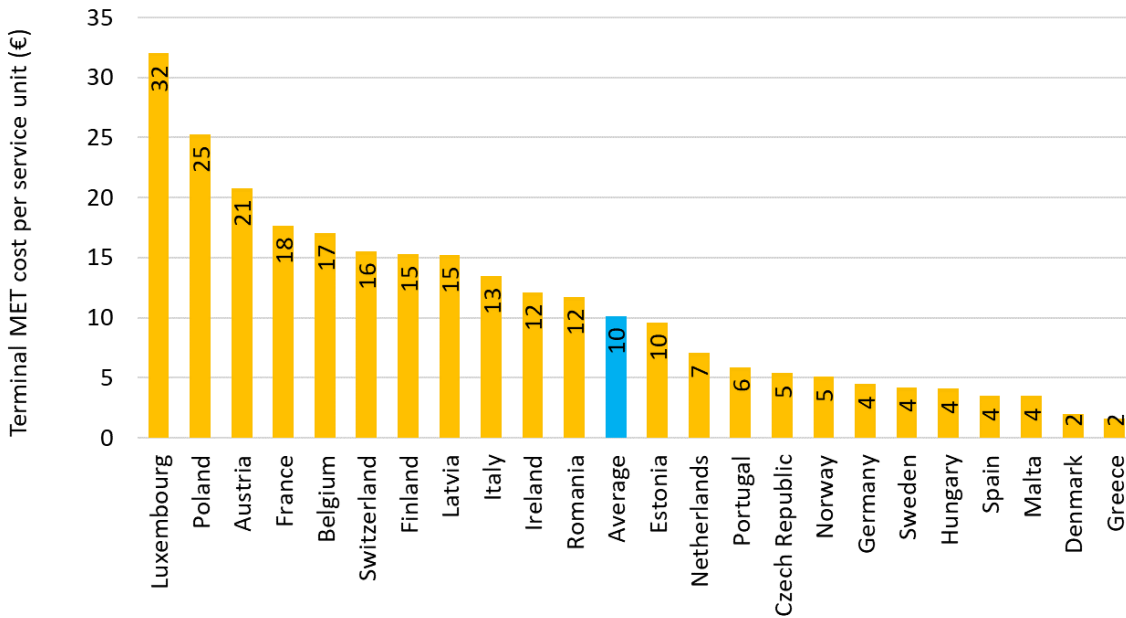


Figure 6 – Aeronautical terminal MET costs per service unit for 2022 (source: PRB elaboration).

92 While it is interesting to examine the MET costs across all Member States, it is important to remember that Member States use different cost allocation methodologies and, in addition, have different arrangements in place for the provision of MET services. These differences make it difficult to draw meaningful conclusions from direct comparisons. Other variations relate to geographic factors, the extent of the areas Member States are responsible for covering, and the level of service

provision required. Disparities also arise from policy decisions, such as national subsidies that some governments choose to provide to support MET services, contributing to differences in overall costs. Additionally, economic disparities play an important role, as some Member States with a high cost of living may allocate a greater proportion of budgets to staff costs, consequently resulting in higher MET costs.

93 In the follow-up meeting, the Swiss NSA explained that several factors led to relatively high MET costs per service unit in Switzerland:

- It is a relatively small country with shorter distances flown, resulting in a lower number of Service Units compared to larger countries with more extensive airspaces.
- The predominant driver of MET costs in Switzerland is staff costs. The country's high cost of living leads to higher staff salaries, which are reflected in the overall MET costs. This aspect is expected to remain a significant cost driver in the future.
- Switzerland's unique geographical situation, characterised by its Alpine terrain, adds complexity to MET forecasting, in comparison to Atlantic MET forecasts.

94 Cyprus explained the relatively high proportion of MET costs to total ANS costs by pointing to two primary factors. Firstly, the country's extensive FIR area requires a comprehensive MET service network, contributing to higher MET costs. Secondly, MET provision involves a significant share of fixed costs, not directly related to the Member State's size, which further elevates the MET costs within the total ANS costs in Cyprus.

95 Italy had a higher proportion of MET costs to total ANS cost base for 2022, in addition to a high level of en route MET costs per service unit. During the follow-up meeting, the Italian Air Force highlighted that human involvement in MET observations and forecasts, as opposed to automation, could be a key factor driving higher costs in Italy.

96 Given the relatively high level of en route MET costs per service unit in 2022, Finland pointed out that high salaries for MET staff in Finland may play a significant role in these higher costs. Finland also mentioned its role as the lead in the PECASUS space weather consortium which had led to additional costs. As an ICAO moratorium on space weather costs ended in 2022, Finland included these costs in the MET cost base while an ICAO cost-recovery mechanism is in development. The Netherlands (the only other European MET provider involved in PECASUS) also indicated that space weather costs were included in the cost base since the moratorium.. France, a member of

the ACFJ consortium, also included space weather costs in the cost base.

4.5 Breakdown of MET cost by nature

97 Some Member States have cited staff costs as a primary reason for higher MET costs in comparison to other Member States. To gain a deeper understanding of this point, the PRB analysed MET costs by specific nature, comprising staff costs, other operating costs, depreciation, cost of capital and exceptional items.

98 Member States whose main ANSP also provides MET services do not report the MET costs by nature, while 21 Member States provided a separate tab of MET services in the reporting tables.²⁴

99 As illustrated in Figure 7, the distribution of actual en route MET costs by nature for the year 2022 shows that staff costs account for 52%, followed by other operating costs and depreciation costs (33% and 13%, respectively). Figure 8 (next page) presents the distribution of cost categories across the 21 Member States with the same data, sorted by the ratio of staff costs to total MET costs.

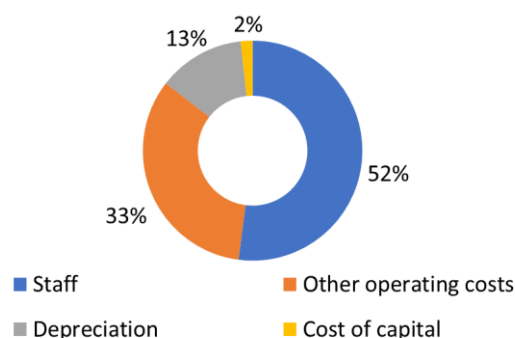


Figure 7 – Distribution of en route MET costs by nature in 2022 (source: PRB elaboration).

100 Norway has the highest proportion of staff costs, amounting to 86% of total MET costs, followed by Austria, with 77%, and Cyprus, with 72%. At the other end of the spectrum, staff costs make up only 30% of total MET costs in Poland, while the Netherlands and Spain follow with 32% and 38%, respectively.

101 On average, staff costs represent 52% of the total MET costs (green line in Figure 8, next page). This aligns with the average proportion of staff costs of total ANS costs. This suggests that MET service

²⁴ The 21 Member States includes Austria, despite the fact that it is the main ANSP that provides MET services, as Austria reported MET costs by nature in the reporting tables.

provision is not more staff intensive than the provision of ANS services as a whole.

- 102 To further assess the impact of staff cost on the overall cost of MET services in any Member State, the PRB investigated whether there was a correlation between the proportion of staff costs in MET costs and the proportion of MET costs in ANS costs. While the PRB observed no direct correlation across Member States, a significant proportion of staff costs associated with MET services, in comparison to other air navigation services, could still impact the overall costs of MET in certain Member States, particularly those with a higher cost of living.
- 103 Regarding other operating costs, the analysis reveals differences between Member States. The Netherlands, Poland, and Sweden showed the highest proportions of other operating costs, accounting for 68%, 64%, and 55% of total MET costs, respectively. In a written response to follow-up questions, Poland clarified that the largest individual cost item within other operating costs was attributed to core MET costs which are not separated into cost-items by nature. At the other

end of the range, Austria, Norway, and France have the lowest proportions of other operating costs.

- 104 With respect to depreciation costs, Spain, France, and Germany show the highest proportions, representing 32%, 21%, and 18%, respectively.
- 105 Among the 11 Member States that reported values, Spain shows the highest cost of capital, at 5.7%. Austria, Cyprus, Greece, Hungary, and Czech Republic, shows values ranging from 1.7% to 3.3%.
- 106 Regarding exceptional items, only two Member States have reported associated costs. In each year, Slovenia reported a proportion of about 23%. However, the type of costs included in this category is unclear. Ireland reported proportions ranging from 18% in 2020 to 13% in 2021 and 2022. Ireland clarified in the “Consultation on Actual Air Navigation Services Costs 2020/2021 and Unit Rates for 2023” that this category encompasses financial contributions to European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).

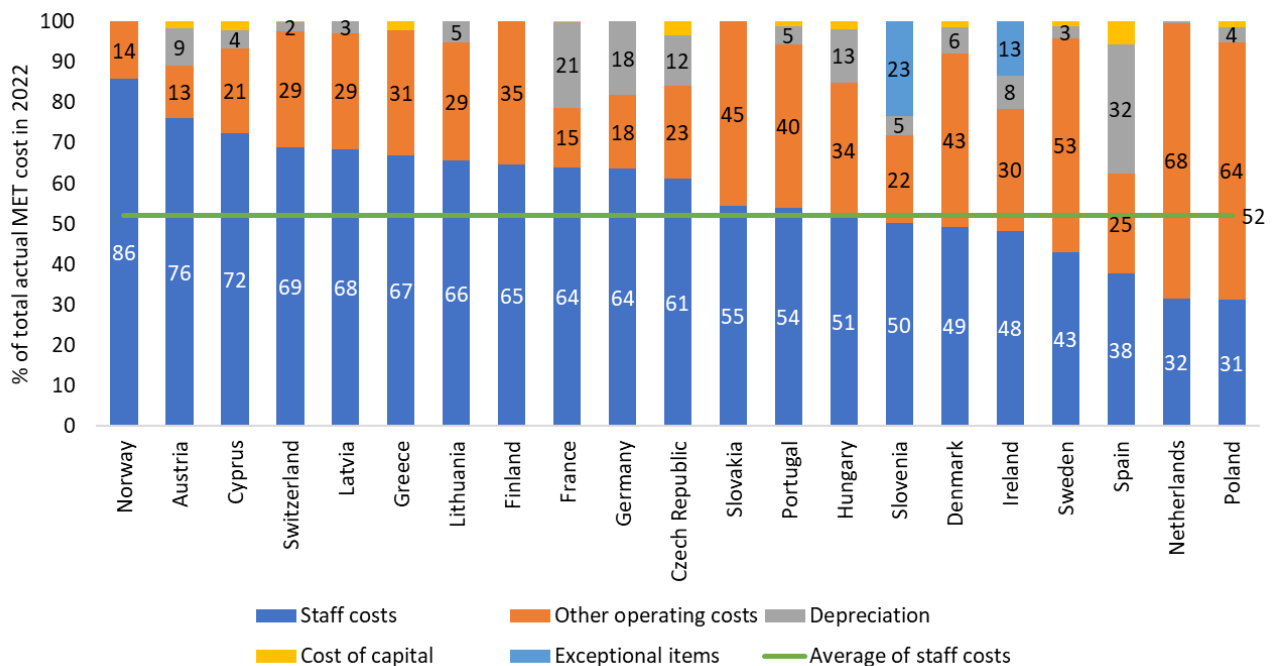


Figure 8 – Breakdown of MET costs by nature per Member State in 2022 (source: PRB elaboration).

4.6 Analysis of MET investments

- 107 During the follow-up meetings, Member States emphasised the point that a substantial portion of fixed assets is associated with MET service provision. As a result, the PRB decided to assess MET investments and the related fixed assets within each Member State.
- 108 Figure 9 shows the share of MET investment costs relative to the overall investment costs. Spain recorded a 12% share of MET investments to the total cost of investment, followed by Greece, with 10%, and France with 8%.
- 109 In the follow-up meeting, AEMET, the exclusive provider for aeronautical MET services in Spain, addressed Spain's relatively high share of fixed assets associated with MET provision (9.4% in 2022). AEMET clarified that they own all the aerodrome

equipment in the 46 civil aerodromes AEMET serve, including the maintenance, renovation and procurement. AEMET stated that this equipment is dedicated solely to civil aviation purposes. The PRB also examined the investment projects included in the performance plans. The majority of the CAPEX of Spain lies in MET satellites, with 43M€ dedicated to EUMETSAT and additional investments planned in the automatisisation of observation systems, upgrade of the ceilometers network, and modernisation of selected airports. Greece and France, ranking second and third among Member States with the highest proportion of MET costs to total ANS investments, did not report any new major investment projects related to MET improvement in the performance plans.

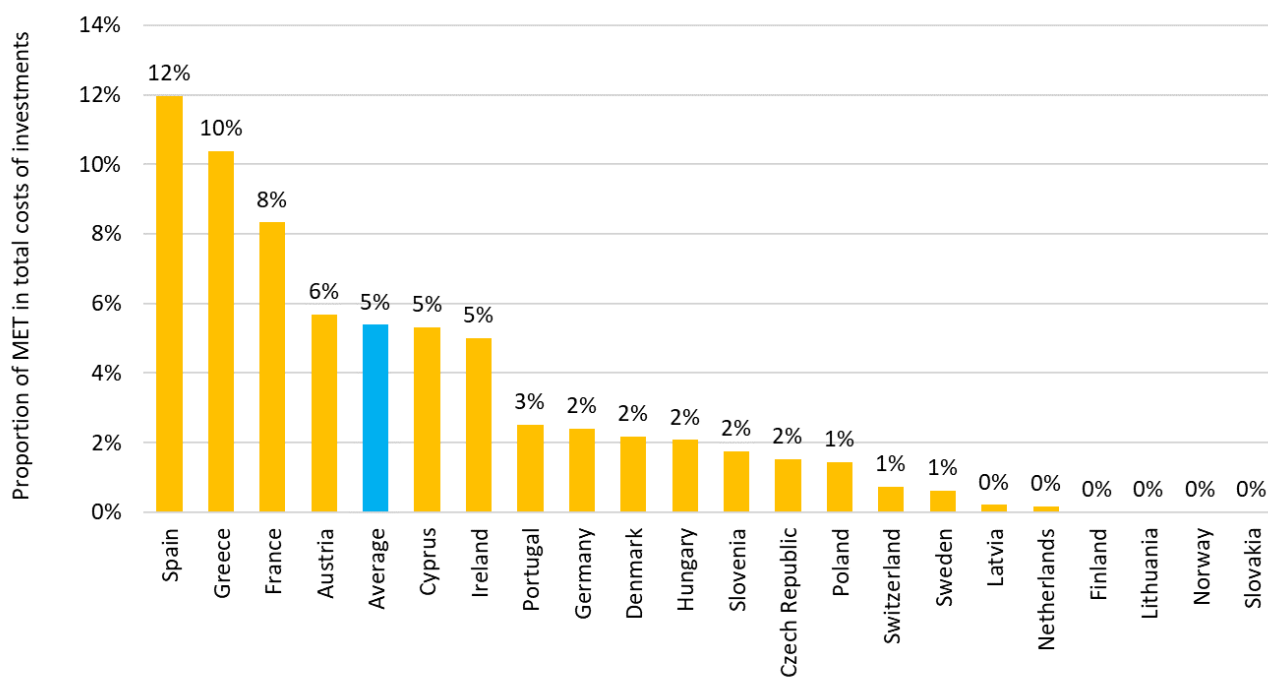


Figure 9 – Proportion of MET-related cost of investments in total ANS cost of investments (source: PRB elaboration).

5 CONCLUSION AND RECOMMENDATIONS

- 110 The questionnaire and follow-up meetings have shown that Member States use different approaches to the reporting of MET costs. The PRB notes that the reporting tables and the performance plans contain general questions relating to MET costs. While this approach provides NSAs with the opportunity to provide responses that reflects the local organisation of MET services, as well as providing data that NSAs consider most useful, it has some drawbacks.
- 111 This flexibility allows Member States to employ a wide range of allocation methodologies to allocate costs between MET core costs and direct costs related to ANS, for en route and terminal charging zones respectively. Some Member States use sharing keys based on historical agreements, while others employ methodologies based on actual data, or use a combination of the two. It also allows for different interpretations about the definition of what is included as a MET core cost. As a result, the data provided can lack harmonisation and can lead to inconsistencies with comparing one Member State to another.
- 112 Specifically in relation to the allocation of core MET costs to civil aviation, a small number of Member States provided comprehensive methodology descriptions. Some Member States reported following ICAO and/or WMO guidelines for cost categorisation, but specific ratios between core and direct MET costs were rarely indicated. Member States were not requested to provide data on national total MET costs given the focus is on civil aviation. However, a greater understanding of the allocation of core costs to civil aviation would be beneficial, especially in cases where the MET service provider caters to multiple industries. The proportion of civil aviation MET costs in relation to total MET costs is rarely available or publicly accessible.
- 113 Finally, there are various degrees of government funding between Member States, predominantly for the provision of core MET services, making cost comparisons between Member States difficult. In view of the above observations, the PRB has the following recommendations:
- 114 **Recommendation 1:** Update the performance plan template to align and enhance the data reported by Member States on the methodologies employed to allocate MET costs among core costs and direct costs, for en route and terminal services respectively, without imposing excessive administrative burden.
- 115 **Recommendation 2:** Develop additional technical guidance material, building on the findings of this report, to clarify how MET cost information should be provided in en route and terminal charging zones. This would address, in particular, the following subjects:
- Clarification of the definitions of MET direct costs and MET core costs;
 - Methodology of cost allocation between civil aviation and other sectors;
 - Methodology of cost allocation among charging zones; and
 - Establishment of transparent reporting procedures.

Review of the reporting of meteorological costs for air navigation services

Annex

December 2023

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1 QUESTIONNAIRE DESCRIPTION

1.1 Selected survey instructions

- 1 The PRB sent a common questionnaire on 12th May 2023 to the Member States, who provided on 16th June 2023 detailed answers on the way they report MET and SAR costs (hereafter, “the questionnaire”).
- 2 The PRB designed the questionnaire, titled “Questionnaire for NSAs on the reporting on costs of MET and SAR for ANS”, to better understand how Member States define the share of MET costs allocated to civil aviation and recovered through ANS charges. Out of the 29 NSAs, 28 provided responses, with only Belgium missing.
- 3 For each question, NSAs were able to upload supporting documents to provide additional information that NSAs deemed helpful.
- 4 NSAs were invited to use comment boxes to provide additional information, or if applicable select the option "Other" to provide any clarifications.

1.2 Survey questions and applicable multiple-choice answers

- 5 Q1. Indicate on behalf of which Member State you are completing this survey (maximum one completed survey per Member State).

Section 1: Arrangements for the provision of MET services

- 6 Purpose: To obtain information on the setup of MET service provision in your Member State.
- 7 Q2. Has the Member State designated a MET service provider to provide meteorological data?
- 8 Q3. Aeronautical MET cost are usually divided into the following categories:
 - Direct costs for aeronautical MET services; and
 - Core cost for MET services (e.g. staff or infrastructure).
- 9 Based on which methodology these two categories are defined in your Member State and reported in the performance plan?
- 10 Q4. Indicate which of the following describes best the methodology of MET costs allocation between en route and terminal charging zones applied by the MET provider(s) under your supervision?

- MET costs are allocated between en route and terminal charging zones on the basis of a general cost allocation methodology (e.g. a methodology that is applied across all air navigation services); and
 - MET costs are allocated between en route and terminal charging zones on the basis of a cost allocation methodology specifically established for MET (e.g. to account for operational variances that are specific to MET).
- 11 Q5. Indicate which guidance material(s) you consult for the purpose of establishment of MET costs, or allocation of MET costs to en route and terminals.
 - “Manual on air navigation services economics” (ICAO);
 - “Guide on aeronautical meteorological services cost recovery” (WMO);
 - “Principles for establishing the cost-base for en route charges and the calculation of the unit rates” (Eurocontrol);
 - “Supporting material on cost bases and unit rates” and/or “Supporting material for the development performance plans” (guidance material available in SES europa.eu website); and
 - Other (e.g. local guidance material).
 - 12 Q6. Indicate whether there are any changes to the cost establishment methodology or allocation methodology for MET services from RP2 to RP3.
 - 13 Q7. To what extent (level of detail) do you consult the MET costs with airspace users?

Section 2: Availability of information/data on the costs of MET service provision to NSAs

- 14 Purpose: To explore the availability of information/data on MET provision to NSAs, which may not be reflected in the current reporting.
- 15 Q8. What is the approximate ratio of MET core costs allocated to civil aviation and MET core costs allocated to other parties?
- 16 Q9. What is the approximate ratio of MET core costs and MET direct costs as part of the total MET costs included in the cost base(s)? The value should be aggregated for RP3. Provide your answer in percentage (%).

- 17 Q10. Provide the approximate ratio of MET costs allocated to the en route and terminal charging zones covered by the performance plan? Provide your answer in percentage (%).
- 18 Q11. Are there specific measures in place to exclusively monitor the cost for the provision of MET services in your Member State?
- 19 Q12. Assess the overall workload related to the monitoring of costs of MET service provision compared to the costs of other air navigation services.

2 INFORMATION ON THE QUESTIONNAIRE AND THE AIR NAVIGATION SERVICES PROVIDERS

Name of responding NSA	Date of submission	Name of civil ANSP	Name of MET ANSP(s)
Austrian NSA	06-07-23	Austro Control	Austro Control
Belgian NSA	Not provided	skeyes/MUAC Belgium	skeyes
Bulgaria NSA	16-06-23	BULATSA	BULATSA
Croatia NSA	16-06-23	Croatia Control	Croatia Control
Cyprus NSA	05-06-23	DCAC Cyprus	Department of Meteorological Services of Cyprus
CAA Czech Republic	16-06-23	ANS CR	Czech Hydro-meteorological Institute (CHMI)
Denmark NSA	19-06-23	NAVIAIR	Danish Meteorological Institute (DMI)
Estonia NSA	30-06-23	EANS	Estonian Weather Service or Finnish Meteorological Institute
Finland NSA	12-06-23	Fintraffic ANS	Finnish Meteorological Institute (FMI)
France NSA	15-06-23	DSNA	Meteo France
BAF (German NSA)	14-06-23	DFS	Deutscher Wetterdienst (DWD)
HCAA (Greece NSA)	15-06-23	HASP	Hellenic National Meteorological Service (HNMS)
Hungarian NSA	15-06-23	HungaroControl	HungaroControl until 2022 and OMSZ afterwards
Ireland NSA	16-06-23	IAA	Met Éireann's Aviation Services Division
Italian NSA	16-06-23	ENAV	ENAV and Italian Air Force (ITAF)
Latvian NSA	12-06-23	LGS	LGS and Latvian Environment, Geology and Meteorology Centre (LVGMC)
Lithuania NSA	16-06-23	Oro Navigacija AB	Lithuanian Hydrometeorological Service (LHMS)
Luxembourg NSA	16-06-23	skeyes/ANA LUX/MUAC Luxembourg	MeteoLux/ANA LUX
Malta NSA	27-04-23	MATS	Malta International Airport

Name of responding NSA	Date of submission	Name of civil ANSP	Name of MET ANSP(s)
Netherlands NSA	14-06-23	LVNL/MUAC	Royal Netherlands Meteorological Institute (KNMI)
Norwegian NSA	06-06-23	Avinor Flysikring AS	Norwegian Meteorological Institute
Polish NSA	06-06-23	PANSA	IMWM, Airport Meteo, WiM and Bydgoszcz Meteo
Portugal NSA	15-06-23	NAV Portugal	Instituto Português do Mar e da Atmosfera (IPMA)
Romania NSA	08-06-23	ROMATSA	ROMATSA
Slovakia NSA	27-06-23	LPS	Slovenský hydrometeorologický ústav (SHMÚ)
Slovenia NSA	12-06-23	Slovenia Control	National Meteorological Service of Slovenia (ARSO)
Spanish Civil NSA – AESA (State Safety and Security Aviation Agency) Spanish Military NSA – Spanish Air and Space Force Spanish Meteorological NSA - MITERD	13-06-23	ENAIRES – AEMET	Agencia Estatal de Meteorología (AEMET)
Sweden NSA	19-06-23	LFV	LFV, Saab Digital Air Traffic Solutions (SDATS) and Swedish Meteorological and Hydrological Institute (SMHI)
Switzerland NSA	23-05-23	Skyguide	MeteoSwiss

Table 1 – Responses from the NSAs to MET questionnaire (source: PRB elaboration on the questionnaire).

3 NSA REPLIES

3.1 Section 1: Arrangements for the provision of MET services

Q2. Has the Member State designated a MET service provider to provide meteorological data?

20 Table 2 presents the responses from Member States categorised into two options.

No designation	Bulgaria ¹
Designation to provide all MET data used for ATM services	Austria, Croatia, Cyprus, Czech Republic, Denmark, Germany, Greece, Hungary, Ireland, Italy, Latvia ² , Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Switzerland
Designation to provide part of the MET data used for ATM services	Estonia ³ , Finland ⁴ , and Sweden

Table 2 – MET service provider designation (source: PRB elaboration on the questionnaire).

Q3. Aeronautical MET cost are usually divided into “direct costs for aeronautical MET services” and “core cost for MET services”. On which methodology are these two categories defined in your Member State and reported on in the performance plan?

21 Responses from each Member State are summarised in Table 3 (on page 8). Instances where “X” is marked in red have been added by the PRB after considering the responses provided by the respective Member State throughout the questionnaire.

22 The majority of the Member States identify direct costs based on actual data while core costs are identified using a sharing key. Some Member

States do not differentiate between direct and core costs where there is a direct contract with a MET ANSP for aeronautical services (Estonia and Malta), or because the main ANSP provides the MET services and considers all costs direct costs to civil aviation (Bulgaria, Croatia, and Romania). Some Member State governments cover certain MET costs for both aviation and non-aviation users (Germany, Finland, and Croatia).

- 23 Some Member States offered more detailed explanations in their response to this question outside of the multiple-choice answer. These explanations are summarised below, where the letter of the paragraph is mapped to the corresponding Member State in Table 3 (on page 8).
- 24 (A) In Bulgaria, direct costs for aeronautical MET services for civil aviation are identified based on actual data. All MET costs for civil aviation are part of BULATSA cost base, and BULATSA does not provide any MET services other than aeronautical MET services.
- 25 (B) Spain noted that direct costs are identified both through actual data and through a sharing key given some costs are allocated 100% to civil aviation where they provide services directly to civil aviation while other costs are allocated to civil aviation based on a sharing key given their contribution to both civil aviation and other users.
- 26 (C) Cyprus did not provide an answer on how they calculate direct costs.
- 27 (D) In Germany, core costs exist and are identified based on actual data and allocated to different areas based on a sharing key but they are covered by the government and not charged to users.
- 28 (E) In the Netherlands, MET core costs are not being allocated to aeronautical meteorological service provision. Since 2015, the revised cost allocation method used by KNMI replaced the “core cost” principle with a general overhead and

¹ Bulgaria claimed no designation as BULATSA provide MET services themselves, however, this means that Bulgaria has designated BULATSA to provide the services, answer should be “designation to provide all MET data used for ATM services”.

² Latvia actually has MET services provided by both the main ANSP and another ANSP, answer should be “designation to provide part of the MET data used for ATM services”.

³ In Estonia, MET services are provided exclusively by other ANSPs, answer should be “designation to provide all MET data used for ATM services”.

⁴ In Finland, MET services are provided exclusively by other ANSPs, answer should be “designation to provide all MET data used for ATM services”.

- surcharge allocation on man hours and indirect costs. With the new cost allocation methodology, the costs for the meteorological aeronautical service provision by MET ANSP KNMI are calculated in line with all other services provided by KNMI.
- 29 (F) As per Norway's answer to Question 8 of the questionnaire, MET core costs are not included in cost bases. MET costs are entirely defined as "other operating costs" as the designated MET provider operates as a subcontractor to Avinor ANS.
- 30 (G) Romania argues that as ROMATSA is designated METSP, all MET costs are direct costs for civil aviation.
- 31 (H) In Croatia, CCL in its capacity as MET service provider delivers MET services only to airspace users within a single en route charging zone. No MET core costs allocation exists in this framework. Furthermore, MET services provided to users exempted from ANS charges are covered yearly by the Ministry of Transport (MoT)/State budget.
- 32 (I) In Estonia, MET services are purchased either from the Estonian Weather Service (EWS) or Finnish Meteorological Institute based on the contract and listed prices for different weather forecasts and weather services. Given this, the distribution of costs into direct costs and "MET core costs" is not applicable. The MET costs incurred by EWS are not material in the context of all costs.
- 33 (J) In Finland, all costs related to observations are covered by the State of Finland.
- 34 (K) In Lithuania, LHMS allocates a share of the MET core costs to aviation. Attributable core costs comprise the cost of upper-air soundings (radio sondes and balloons), the cost of meteorological observations and the cost of satellite information. Total costs of aeronautical services in Lithuania are allocated to products using a single apportionment key that reflects the relative efforts required to deliver them. MET costs are allocated to ANS en route and ANS terminal, among other users, based on ICAO/IMO guidance on aeronautical MET costs. The allocation complies with ICAO Annex 3 "Meteorological Service for International Air Navigation".
- 35 (L) In Malta, the MET service provider charges a flat rate to the main ANSP – no analysis of core and direct costs is provided.
- 36 (M) For Poland, no methodology was chosen. They instead indicated that the situation differs depending on the MET provider.
- 37 (N) In Switzerland, no core costs have been allocated to MET costs for civil aviation for RP3.

Member State	Direct costs are identified based on actual data	Direct costs are identified based on a sharing key	Core costs are identified based on actual data	Core costs are identified based on a sharing key	All core costs are included in the MET costs for civil aviation	No core costs are included in the MET costs for civil aviation	Other
Austria	X			X			
Bulgaria	X (A)				X (A)		X
Croatia							X (H)
Cyprus			X (C)				
Czech Republic	X			X			
Denmark	X			X			
Estonia							X (I)
Finland	X			X			X (J)
France	X			X			
Germany	X					X (D)	X
Greece		X		X			
Hungary	X		X	X			
Ireland	X						
Italy		X		X			
Latvia	X		X				
Lithuania	X						X (K)
Luxembourg		X		X			
Malta							X (L)
Netherlands	X					X (E)	
Norway		X				X (F)	
Poland							X (M)
Portugal	X		X				
Romania	X					X (G)	
Slovakia	X				X		
Slovenia	X			X			
Spain	X	X (B)		X			
Sweden		X		X			
Switzerland	X	X				X (N)	X (N)

Table 3 – Direct and core cost methodologies (source: PRB elaboration on the questionnaire).

Q4. Indicate which of the following describes best the methodology of MET costs allocation between en route and terminal charging zones applied by the MET provider(s) under your supervision?

- 38 Member State responses to this question are summarised in Table 4. Where a Member State chose “other”, the reasoning they provided is given below.
- 39 For Estonia, purchased MET costs are allocated between different charging zones (en route and terminal navigation services) according to ANSP's internal guidance document on Activity Based Costing.
- 40 For Lithuania, the total costs of aeronautical services are allocated to products using a single apportionment key that reflects the relative efforts required to deliver them. Products are allocated to five different users, namely ANS en route, ANS terminal, aerodromes, military and interior (custom and police aircraft) users. Allocation to ANS en route and ANS terminal of MET products made available in accordance with ICAO Annex 3 complies with ICAO/IMO guidance on aeronautical MET costs.
- 41 For Poland, they explain that they use a methodology based on the ICAO document “manual on air navigation services”.

MET costs are allocated between en route and terminal charging zones on the basis of a general cost allocation methodology (e.g. a methodology that is applied across all air navigation services).	Bulgaria, Croatia, France, Italy, Luxembourg, Malta, Portugal, Romania, Slovakia, Slovenia, and Switzerland
MET costs are allocated between en route and terminal charging zones on the basis of a cost allocation methodology specifically established for MET (e.g. to account for operational variances that are specific to MET).	Austria, Cyprus, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Ireland, Latvia, the Netherlands, Norway, Spain, and Sweden
Other	Estonia, Lithuania, and Poland

Table 4 – Methodology for allocating MET costs between en route and terminal (source: PRB elaboration on the questionnaire).

Q5. Indicate which guidance material(s) you consult for the purpose of establishment of MET costs, or allocation of MET costs to en route and terminals.

- 42 Member State responses to this question are summarised in Table 5 (next page). Where a Member State chose “other”, the reasoning they provided is given below.
- 43 Austria, Norway, and Slovenia mentioned they use other guidance material in addition to the ones mentioned but provided no further information.
- 44 Estonia allocates purchased MET costs between different charging zones (en route and terminal navigation services) according to internal EANS's guidance document on Activity Based Costing.
- 45 Lithuania also consult ICAO Annex 3 “Meteorological Service for International Air Navigation”.
- 46 The Netherlands mentions various other sources, including international conventions, regulations, and agreements related to air navigation and meteorology, as well as relevant ICAO documents.
- 47 Sweden also refer to their national regulation (TSFS 2020:44).

“Manual on air navigation services economics” (ICAO)	Bulgaria, Croatia, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Switzerland
“Guide on aeronautical meteorological services cost recovery” (WMO)	Austria, Czech Republic, Denmark, Finland, France, Greece, Hungary, Ireland, Lithuania, the Netherlands, Poland, Portugal, Romania, Slovenia, Spain, and Switzerland
“Principles for establishing the cost-base for en route charges and the calculation of the unit rates” of Euro-control)	Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Poland, Portugal, Romania, Slovenia, and Sweden
“Supporting material on cost bases and unit rates” and/or “Supporting material for the development performance plans” (guidance material available in SES europa.eu website)	Cyprus, Denmark, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Portugal, Romania, Slovenia, Sweden, and Switzerland
Other (e.g. local guidance material)	Austria, Estonia, Lithuania, the Netherlands, Norway, Slovenia, and Sweden

Table 5 – Guidance Material used to allocate MET costs between en route and terminal charging zones (source: PRB elaboration on the questionnaire).

Q6. Indicate whether there are any changes to the cost establishment methodology or allocation methodology for MET services from RP2 to RP3.

48 Member State responses to this question are summarised in Table 6. Where a Member State selected “Yes”, the reasoning provided is given below.

Yes	Germany, Greece, the Netherlands, Norway, Portugal, Slovakia, and Switzerland
No	Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovenia, Spain, and Sweden

Table 6 – Changes to methodology between RP2 and RP3 (source: PRB elaboration on the questionnaire).

- 49 Germany noted that in RP2 the cost base(s) still contained (parts of) core costs of the German Weather Service but that this is not included in RP3.
- 50 For Greece, the NSA referred to the information provided in the performance plan. The PRB did not find any evidence of possible changes to the methodology for MET cost allocation.
- 51 The Netherlands noted that a revised cost allocation method was implemented in 2015, aligning MET costs with other services provided by the MET ANSP KNMI (Royal Netherlands Meteorological Institute).
- 52 Norway mentioned that MET overhead costs (support) have been included since RP3.
- 53 Portugal noted that the distribution of costs between en route and terminal ANS, regarding MET ANSP and NSA, has been adjusted with a new sharing key for RP3 to ensure a more equitable allocation of MET services cost.
- 54 Slovakia mentioned changes to the cost establishment methodology or allocation methodology for MET services from RP2 to RP3, based on stakeholder consultations and requests from airspace users regarding the allocation between en route and terminal charges for the Terminal Area Forecast (TAF) service.
- 55 For Switzerland, the NSA referred to the information provided in the performance plan. The PRB did not find any evidence of possible changes to the methodology for MET cost allocation from RP2 to RP3.
- 56 Where a Member State selected “No” but provided clarifying information, this is given below.
- 57 Luxembourg mentioned that while the overall methodology remains unchanged, the sharing

keys were revised to better allocate overall costs with regard to all service provision.

Q7. To what extent (level of detail) do you consult the MET costs with airspace users?

- 58 The majority of Member States consult on MET costs with airspace users as part of the standard consultations on the total ATM cost base through the reporting tables and performance plans as stipulated in the Implementing Regulation (EU) 2019/317 (Austria, Bulgaria, Cyprus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Spain, and Switzerland). Within this, some Member States mentioned that they provide a breakdown of the MET costs to airspace users (e.g. Ireland), while others noted that they only consult on the total cost (e.g. Malta). Responses have shown that the frequency of consultation can also vary with some Member States consulting on a yearly basis in line with the reporting tables (e.g. Portugal, Spain, Cyprus, Czech Republic, Denmark, and France), while others consult as part of the performance plan ahead of each reference period (e.g. Norway and Poland).
- 59 Some Member States hold additional or specific consultations with airspace users on MET costs (Czech Republic, Finland, France, the Netherlands, Slovakia, and Sweden). For example, in France, the MET provider performs a yearly direct consultation with airspace users presenting the detailed actual costs incurred and updated budget.
- 60 Other Member States did not provide specific details of the consultation process (Hungary and Slovenia).
- 61 Clarification on the frequency and detail of consultation of MET costs for ANSPs would be beneficial for transparency and to support standardisation.

3.2 Section 2: Availability of information/data on the costs of MET service provision to NSAs

Q8. What is the approximate ratio of MET core costs allocated to civil aviation and MET core costs allocated to other parties?

- 62 17 Member States provided information on the allocation of core costs between civil aviation and other parties (Table 7, next page).

- 63 Croatia and Romania allocated 100% core costs to civil aviation as they only provide MET services to civil aviation users. While Bulgaria has a similar arrangement, they did not provide any information as they argued that they do not track core costs as all costs are direct costs to civil aviation users.
- 64 Denmark did not provide this information as part of the questionnaire, but information taken from the reporting tables show that core costs are allocated to civil aviation in proportion to the relative aeronautical and non-aeronautical use made of the facility based on time recordings. This calculation is carried out on a yearly basis.
- 65 For Estonia and Malta, as MET is purchased directly from the designated provider for civil aviation at an agreed rate, they explained that there is no differentiation provided between core costs and direct costs.
- 66 Switzerland, Norway, and the Netherlands did not provide information on core costs as they are not included in the civil aviation cost bases for RP3.
- 67 For Austria and Latvia, only the core costs for civil aviation are known with no detail provided on core costs for other parties. Portugal also claimed that the information they have available is not sufficiently detailed to compare only core costs where the available information combines direct and core MET costs.
- 68 Poland did not provide a response to this question explaining that each MET provider performs different tasks and that economic data is company information.

Member State	Core costs % to civil aviation	Core costs % to other parties
Cyprus	80	20
Croatia	100	0
Czech Republic	10	90
Finland	6	94
France	26.7	73.3
Germany	10 ⁵	90
Greece	45.38	54.62
Hungary	33	67
Ireland	27	73
Italy	50	50
Lithuania	14	86
Luxembourg	50	50
Romania	100	0
Slovakia	94	6
Slovenia	18	82
Spain	48	52
Sweden	20	80

Table 7 – Ratio of MET core costs allocated to civil aviation and other parties (source: PRB elaboration on the questionnaire).

Q9. What is the approximate ratio of MET core costs and MET direct costs as part of the total MET costs included in the cost base(s)? The value should be aggregated for RP3. Provide your answer in percentage (%).

- 69 18 Member States provided an approximate ratio of MET core costs to direct costs (Table 8). Most of the Member States who did not provide data for this question were the same as those who did not provide information for question 8 above and gave the same reasoning. This included Bulgaria, Denmark, Estonia, Malta, the Netherlands, Poland, and Portugal.
- 70 Norway and Switzerland allocated 100% of MET costs to direct costs as core costs are not included in the civil aviation cost base for RP3. Romania also allocated 100% MET costs to direct costs on the basis that they only provide MET services to airspace users. While Croatia is like Romania in only providing MET services to airspace users, they did not provide an answer to this question.
- 71 Greece exposed that the ratio is difficult to define. Slovakia was not able to address this question.

Member State	Core costs % within total MET cost base	Direct costs % within total MET cost base
Austria	15	85
Cyprus	50	50
Czech Republic	28	72
Finland	44	56
France	58.7	41.3
Germany	67 ⁶	33
Hungary	71	29
Ireland	42	58
Italy	50	50
Latvia	25	75
Lithuania	14	86
Luxembourg	22	78
Norway	0	100
Romania	0	100
Slovenia	60	40
Spain	68	32
Sweden	60	40
Switzerland	0	100

Table 8 – Ratio of MET core costs and MET direct costs as part of the total MET costs included in the cost base (source: PRB elaboration on the questionnaire).

Q10. Provide the approximate ratio of MET costs allocated to the en route and terminal charging zones covered by the performance plan? Provide your answer in percentage (%).

- 72 24 Member States provided an approximate ratio of MET costs allocated to en route and terminal (Table 9, next page).
- 73 Estonia and Malta did not provide values given that MET costs are purchased directly by contract from the MET provider and are therefore a flat pre-determined charge in the ANSP cost structure.
- 74 Sweden did not provide a breakdown for en route and terminal and this aligns with the additional information provided to their performance plan which states that MET services are financed 100% by en route. However, the Swedish national regulation TSFS 2020:44 does indicate that eligible MET costs are allocated to both en route and terminal charging zones.

⁵ The 10% of core cost associated with civil aviation is not charged to airspace users but covered by the German government.

⁶ The 67% of MET core cost is not charged to airspace users – it is instead paid for by the German government.

75 Croatia did not provide a breakdown between en route and terminal as they only have an en route MET performance plan.

Member State	% MET costs allocated to en route	% MET costs allocated to terminal
Austria	80	20
Bulgaria	80	20
Cyprus	80	20 ⁷
Czech Republic	90	10
Denmark	98	2
Finland	50	50
France	80.2	19.8
Germany	70	30
Greece	97.5	2.5
Hungary	94	6
Ireland	80	20
Italy	70	30
Latvia	65	35
Lithuania ⁸	87	13
Luxembourg	28	72
Netherlands	82	18
Norway	53	47
Poland	60	40
Portugal	85	15
Romania	94	6
Slovakia	56.7	43.3
Slovenia	73	27 ⁹
Spain	72	28
Switzerland	65	35

Table 9 – Ratio of MET costs allocated to en route and terminal charging zones (source: PRB elaboration on the questionnaire).

Q11. Are there specific measures in place to exclusively monitor the cost for the provision of MET services in your Member State?

76 13 Member States stated that there were specific measures in place to exclusively monitor the cost of the provision of MET services (Table 10). These measures include regular oversight, audits of actual costs incurred and monitoring of investments and cost-sharing mechanisms.

77 The majority of Member States specified that these measures take place on an annual basis as a minimum, with a few mentioning more regular monitoring. For example, the French NSA participates in MET workshop where the MET provider directly consults with airspace users, while Poland mentioned receiving quarterly reports from MET providers. Latvia suggested that additional monitoring is triggered if any cost eligibility or validity risks are identified in the annual monitoring. Some NSAs clarified that the MET service is supervised by the NSA in the same way as for the ANSP (e.g. Austria, Slovakia, and Ireland). Spain mentioned that as their MET provider is a public body, on top of supervision by the NSA, it is also subject to additional financial management by the Spanish General State Controller (IGAE) and the Court of Auditors.

Yes	Austria, Cyprus, Finland, France, Ireland, Latvia, Norway, Poland, Romania, Slovakia, Spain, Sweden, and Switzerland
No	Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, and Slovenia

Table 10 – Special measures for MET cost monitoring (source: PRB elaboration on the questionnaire).

Q12. Assess the overall workload related to the monitoring of costs of MET service provision compared to the costs of other air navigation services.

78 Latvia was the only Member State to note that MET cost reporting requires a higher workload (Table 11, next page). They claimed that justifying the allocation among all services requires additional effort to verify the allocation and ensure no cross-financing in place.

79 Malta made a comment that the NSA is not in a position to monitor MET costs from the data provided by the ANSP which should be investigated.

⁷ Note that Cyprus doesn't have a terminal charging zone under the Regulation.

⁸ Note that the information Latvia provided in the questionnaire does not match that provided in the reporting tables of June 2023 - "MET costs for ANS, i.e. en route and terminal services available to civil aviation, in 2022-2024 year represents 67.3 % of the costs of all MET services provided to civil aviation, en route services amounted 58,1 %, and terminal services for 9.2% MET costs for ANS in 2022-2024 year vs. previous years (was 64.1 %) is higher due to increase of the costs for meteorological services and seeking to ensure provisions of MET services compliance with Commission Implementing Regulation (EU) No. 2017/373."

⁹ Note that for Slovenia the terminal MET costs are not included in the cost base.

Higher workload compared to other ANS	Latvia
Similar workload compared to other ANS	Austria, Bulgaria, Croatia, Greece, Italy, Luxembourg, the Netherlands, Poland, Romania, Slovakia, Sweden, and Switzerland
Lower workload compared to other ANS	Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Lithuania, Malta, Norway, Portugal, Slovenia, and Spain

Table 11 – Workload required to monitor costs of MET service provision (source: PRB elaboration on the Questionnaire).

4 FOLLOW-UP MEETINGS

- 80 To obtain further clarification on the MET service provision in specific Member States, on 16th October, the PRB proposed bilateral online meetings with a selected group of NSAs (hereafter, the “Follow-up meetings”). As part of this approach, the PRB proposed that each NSA invites the relevant ANSP in charge of the MET service. The follow-up meetings were held between 19th October and 3rd November 2023.
- 81 The PRB prepared the questions to be discussed and shared with the NSAs at a minimum of two days before the agreed date of the follow-up meeting. Follow-up meetings were proposed to 13 Member States, out of which seven meetings were organised, with four Member States providing a written response in place of a meeting. Two Member States provided written responses alongside the organised follow-up meeting. The Member States that the PRB reached out to, alongside the responses received, are presented in Table 12.
- 82 For all the meetings that took place, the PRB wrote minutes. The written answers and the information provided during the follow-up meetings were used to insert relevant details into the main report.

Member State	Follow-up meeting	Written answers	Additional documents
Austria	No	Yes	No
Cyprus	Yes, on 30 th October	No	Yes
Estonia	No	No	No
Finland	Yes, on 25 th October	Yes	No
France	No	Yes	No
Ireland	No	No	No
Italy	Yes, 3 rd November	No	Yes
Latvia	Yes, on 18 th October	Yes	Yes
Malta	Yes, on 31 st October	No	No
Poland	No	Yes	No
Slovakia	No	Yes	No
Spain	Yes, on 3 rd November	No	Yes
Switzerland	Yes, on 31 st October	No	Yes

Table 12 – General information for each Member State selected (source: PRB elaboration on the follow-up meetings).