# Study on the monitoring data on ERDF and Cohesion Fund operations, and on the monitoring systems operated in the 2014-2020 period

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Final Report

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## ABSTRACT

*Keywords: operations monitoring system, indicators, common output indicators, programme specific output indicators, quality and plausibility of data*

The European Commission awarded CSIL, in partnership with Prognos AG and PPMI, a contract to carry out the "Study on the monitoring data on ERDF and Cohesion Fund operations, and on the monitoring systems operated in the 2014-2020 period".

The study resulted in the preparation of a Single Database covering 215 OPs co-financed by the ERDF and/or CF and 73 cooperation programmes co-financed during the 2014-2020 period, across the 12 thematic objectives. The Single Database includes three interlinked datasets on operations, beneficiaries, and on common and programme-specific output indicators. Moreover, the study provided an in-depth and comparative assessment of all ERDF operations monitoring systems, including 28 country sheets by Member State level and on the UK. It was found that those systems are diverse in their set-up, reflecting national/regional specificities. The assessment of operations monitoring systems and their data showed that data is of high quality across the EU. Only smaller observations were made concerning the working of operations monitoring systems and the plausibility of operations monitoring data.

Providing high quality monitoring data at more frequent reporting cycles on ERDF/CF operations will remain important for future operations monitoring systems. This study provided nine strategic directions along these lines, which can help to optimise ERDF/CF operations monitoring systems (especially concerning efficiency) and improve data coherence in the future.

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# Glossary

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| **AIR** | Annual implementation report |
| **CF** | Cohesion Fund |
| **CO** | Common Output [Indicator] |
| **CP** | Cooperation Programme |
| **CPR** | Common Provisions Regulation |
| **EC** | European Commission |
| **ECA** | European Court of Auditors |
| **ERDF** | European Regional Development Fund |
| **FoI** | Field of Intervention |
| **FTE** | Full-time equivalent |
| **IB** | Intermediate body |
| **IP** | Investment Priority |
| **JTF** | Just Transition Fund |
| **MA** | Managing authority |
| **MS** | Member State |
| **OP** | Operational programme |
| **TO** | Thematic objective |

# Executive Summary

**Background**

The European Commission (EC) awarded CSIL – Centre for Industrial Studies, in partnership with Prognos AG and PPMI, a contract to carry out the "Study on the monitoring data on ERDF and Cohesion Fund operations, and on the monitoring systems operated in the 2014-2020 period".

Under the scope of the study, the **operations monitoring systems[1] and the corresponding data of all 27 EU Member States (MS)** and the UK were explored. **The study's primary objective was to deliver detailed monitoring data** on the co-financed operations, which represent the basis for future ex-post evaluations. In this context, the study was the first attempt to collect, harmonise and aggregate – at an EU level for all thematic objectives - the data produced by the ERDF/CF operations monitoring systems based on monitoring data for each operation. A **second objective of the study was to provide knowledge and insights about operations monitoring systems and arrangements**[2], The examination of the operational programme (OP) level systems also included the analysis of specific functionalities, including the electronic data exchange to SCF2014 according to Art. 74(4) (all official exchanges of information between the Member State and the Commission).

**Scope and main deliverables**

The study resulted in the preparation of a Single Database covering 215 OPs co-financed by the ERDF and/or CF and 73 cooperation programmes (CPs) co-financed during the 2014-2020 period, across the 12 thematic objectives (TOs)[3] (i.e., 96% of the total number of ERDF/CF programmes in scope). The Single Database is a relational database including three interlinked datasets, covering **584,828 operations** *(dataset on operations)*, **1,168,711 beneficiaries** *(dataset on beneficiaries)* as well as common and programme-specific output indicators that could be collected at the operation level (**713,638 common output indicators and 491,498 programme-specific output indicators** *(dataset on indicators))*. This rich set of data encompasses a unique data source on ERDF and CF programmes funded during the 2014-2020 period. Both in terms of granularity and coverage, it expands beyond what is available in public lists of operations, public open data platforms at national level as well as in annual implementation reports (AIRs).

Moreover, the study provided an in-depth and comparative assessment of all ERDF operations monitoring systems, including 28 country sheets by Member State level and on the UK. The analysis was based on an in-depth assessment of the content and structure of operations monitoring systems, as well as intensive interactions with managing authorities (MAs) to gather information about the set-up, overall functioning, and logic of their operations monitoring systems. Some conclusions emerged about these systems, particularly as it relates to the production of a relevant evidence basis for monitoring ERDF and Cohesion Fund programmes at the EU level.

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[1] Here, the term operations monitoring systems is used instead of project monitoring systems. Our study showed that projects refer to operations in most of the cases, but not in every case (see chapter 4.1).

[2] Operations monitoring systems relate to Art. 122(3), comprising electronic exchange of information with beneficiaries, and Art. 72(d) + 125(2)(d), comprising computerized system for accounting, monitoring, and reporting, of the CPR1303/2013.

[3] The scope of the study was defined in the ToRs and includes 220 Operational Programmes (OPs) co-financed by ERDF and/or CF and 76 Cooperation Programmes (CPs) co-financed by ERDF. Operations supported under REACT-EU after 2021 were not captured as data collection under this contract took place before REACT-EU programming was implemented.

**Summary of main deliverables of the study**

The main deliverables under the study are the following:

- **Single database**, integrating all the lists of operations of cohesion policy programmes 2014-2020 co-financed by the ERDF and the Cohesion Fund (WP2 Deliverable 1), complemented with a cluster exercise from deliverable 3 (WP2 Deliverable 4)
    - Dataset: 2014-2020 operations (private) - (filtered public sample)
    - Dataset: 2014-2020 beneficiaries (private) - (filtered public sample)
    - Dataset: 2014-2020 common and specific indicators by operation (private) - (filtered public sample)

- **Report on the construction** of project and beneficiary databases (WP2 Deliverable 2)

- **List of clusters** for typologies of operations (WP2 Deliverable 3)

- **Report on the methodology** to assign a typology of clusters to operations and beneficiary types (WP2 Deliverable 5)

- **Common output indicator excel file,** by programme and MS (WP2 Deliverable 6**)**

- **Report on the indicator database** (WP2 Deliverable 7)

- **List of selected programme specific indicators** by MS (Deliverable 8)

- **Database of selected programme specific indicators** with aggregate values by MS and investment priorities that express significant achievements (Deliverable 9)

- **Country sheets** for all MS (Deliverable 10)

- **Draft report** on main strengths/weaknesses, causes, good practices and proposed solutions (Deliverable 11)

- **Workshop organization** (Deliverable 12)

- **Final Report** (Deliverable 13)

## Structure of operations monitoring systems

The design of **the operations monitoring systems in the MS was found to be very diverse** – especially in terms of the governance set-up, while respecting a minimum set of common features stipulated in the regulations (e.g. CPR Articles 72(d), 112, 122(3), 125(2)(a),(b),(d),(e), 125(4)(d), (8) and 140, Annex XI/Part II/7).[4] The MA is required to have a monitoring system set up in accordance with Article 125(2)(d) CPR. The information on data to be recorded and stored in computerised form for each operation is set out in Annex III of Regulation (EU) No 480/2014.

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[4] CPR Article 72 (d): Management and control systems should provide for "computerised systems for accounting, for the storage and transmission of financial data and data on indicators, for monitoring and reporting"; Article 112: electronic transmission of financial data to fixed dates for each OP; Article 122 (3): all information exchange between beneficiaries and MA, IB, CA, AA electronically by December 2015; Article 125 (2 a, b, d, e): MA should provide MC with data on OP, submit AIRs and final implementation report to EC, establish a computerized system to store relevant monitoring data, ensure that data is collected and stored in this system; Article 125 (4d): MA should set up procedures to ensure documents related to audit trail lead to adequate audit trail; Article 125 (8): empowerment of the EC to further specify the information to be stored in the monitoring system and the technical specifications of the monitoring systems; Article 140: specifying the availability of documents by the MA; Annex XI, Part II, 7: laying down the necessity of a statistical system for evaluation purposes.

There are multiple requirements that need to be fulfilled by monitoring systems (amongst others, specified in GExAC7[5] and in designation procedure[6] to be fulfilled ex ante). Management and control system, including the key requirement 6 on the reliable system for collecting, recording, and storing data for monitoring, evaluation, financial management, verification, and audit purposes, including links with electronic data exchange systems with beneficiaries, is subject to assessment[7] by national and EU audits. Additionally, national obligations and internal information needs, as well as MS institutional, legal, and financial frameworks, are decisive for the specific design and thus lead to varying set-ups of operations monitoring systems.

### 1. Types of (operations) monitoring systems

Three classifications have been introduced in this study to characterise these structures:

- centralised (set-up at the national level where all monitoring data is centrally collected by a central coordination body),

- decentralised (every OP has its own operations monitoring system),

- and hybrid operations monitoring systems (with regional operations monitoring systems but also a central/national operations monitoring system)

A centralised set-up clearly prevails among the MS (19 out of 28 countries). In those countries, the operations monitoring system is set-up at national level and monitoring data is centrally collected. In decentralised systems – only used in three MS (BE, DE, FI) and the UK – every OP has its own operations monitoring system and data is not aggregated at national level by a central coordination body

In the remaining five MS (ES, FR, IT, PL, PT), mostly large countries with multiple regional OPs, there are so-called hybrid systems. Here, each OP has its own operations monitoring system in place, but in addition they provide data to a national system with differing submission frequencies.

### 2. Control mechanisms (i.e., data quality checks) by the MS

In all MS, various control mechanisms are used to check the data for completeness and quality. **In all MS, several types of checks are used to different degrees,** including manual follow-ups, automatic plausibility checks, statistical checks for data anomalies or the four-eye principle. Those checks are used by 70-95% of all OPs.

Among the data checks applied by MAs, automatic and manual checks can be underscored. Whereas automatic plausibility checks (e.g., for data anomalies) are integral in IT-systems, manual checks need to be actively performed by monitoring staff. In the 2014-2020 period, manual follow-ups still dominated (e.g., searching through excel files), despite being more labour intensive compared to automatic plausibility checks and also more prone to human errors. However, as discussions with MAs show, the subject-matter expertise of monitoring staff is still difficult to replace with automatic checks and consequently it is not expected that manual follow-ups can entirely be replaced by automatic checks.

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[5] European Commission (2014) Guidance on Ex ante Conditionalities for the European Structural and Investment Funds, PART II.
[6] European Commission (2014) Guidance for Member States on Designation Procedure.
[7] European Commission (2014) Guidance for the Commission and Member States on a common methodology for the assessment of management and control systems in the Member States.

It was observed that operation monitoring practices differ between different data (i.e. financial data[8], data on categories of interventions, indicator data). Concerning i*ndicator data*, there are certain indicators that are more prone to specific types of errors. This applies especially to Common Output (CO) indicators counting supported enterprises and those counting the population benefitting from support, for both of which the risk of double counting exists. For indicators on the population benefiting from support, the values are calculated in particular ways to avoid double counting (e.g., reconciliation of monitoring data with official statistics (EE) or calculation on the level of an action (DE)). Our analysis shows that quality and consistency of indicator data reported in AIRs is ensured by the internal control procedures and plausibility checks conducted by the MAs and IBs during the process of annual reporting. However, in the 2021-2027 programming period the MAs will transmit the monitoring data to the EC more frequently, while there will be no more AIRs (for the ERDF, the ESF+, the CF, the JTF and the EMFAF) to reduce the administrative burden linked to monitoring and reporting.

### 3. Reporting to the EC

Data included in operations monitoring systems require aggregation and cleaning before being able to be entered into the system at EU level since operation level data should be reported at a more aggregated level. For the purpose of data reporting to the EC, the activity of data aggregation, carried out before the reporting, is done independently by each MA according to its own procedures (with possibly some national coordination). Reporting procedures are mainly influenced by the preparation of data for reporting. Data storage is sometimes done in more than one system, which often has a direct influence on reporting procedures. In some cases, manual cleaning and filtering is needed but in most of the cases standard reports are used. The analysis has shown that 92% of OPs are using standard reports (i.e. reports that can be automatically generated from the system) whereas a large share of those OPs is additionally using manual procedures for data collection, filtering, cleaning, and consolidation (88% of all OPs).

In most of the cases, data are entered in the SFC manually. The possibility of the SFC2014 interface connection was used by only a limited number of OPs. Only 6 MS implemented web-services for SFC2014 (CZ, DE, ES, FR, EL, IT). Three of those MS actively used their web-service for AIRs. The use of automatic data transmission procedures can increase the data plausibility and quality, as it reduces manual reporting errors and inconsistencies.

Concerning the stronger focus on reporting, especially the more frequent reporting intervals in the 2021-2027 programming period, it should be noted that some adjustments of the systems might (still) be necessary. In particular, greater interoperability and standardisation of procedures for data reporting are necessary to minimise errors and inconsistencies when data are reported to the EC.

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[8] Financial data relates to Article 24 of the Commission Delegated Regulation (EU) N. 480/2014 and the related Annex III, more specifically data fields 41, 42, 43 "Financial data on each operation".

## Key findings

Altogether **seven key findings** were elaborated in three categories, which are described in more detail below:

I. Quality and plausibility of operations monitoring data.

II. Relevance of data at EU level.

## I. Quality and plausibility of operations monitoring data

**1. Despite complexity, all operations monitoring systems fulfil the purpose of providing quality data to monitor ERDF and Cohesion Fund implementation.**

The analyses carried out in this study have shown that the operations monitoring systems operated in the MS are **highly complex systems,** collecting data generated by over one million beneficiaries for more than 500,000 operations in total. They include huge amounts of descriptive, categorical, and financial information about operations and beneficiaries, which are structured in a combination of various modules and sub-systems. As a result of the data extractions for the purpose of data collection, an average of four to five different datasets were generally submitted by MAs for each OP/CP. Despite complexities and differences, the **data produced by the operations monitoring systems is, to a large extent, plausible. Particularly the accuracy of financial data on the total and eligible public costs allocated and paid[9] by operations is very high**. The analysis of the financial data revealed only minor data quality issues, which stem from the different designs of the operations monitoring systems or the timing of updates.

*Eligible costs and paid amount under each operation*

The **high level of accuracy relating to financial data** on each operation is mainly due to the regulatory requirement for an adequate audit trail in respect to the accounting records maintained and the supporting documents to be held at the level of the certifying authority, managing authority, intermediate bodies, and beneficiaries. This is vital for performing financial management, verification, and audit functions. For all these reasons, financial data are subject to high scrutiny in MAs and data checks are performed thoroughly in each step of programme implementation.

Although financial data fields are generally highly plausible and accurate, the analysis of collected data shows that the cost data fields[10] relating to selected operations (in particular data on the public support) are used with slightly differing definitions across the Member States. The differing practices in defining data fields can be acceptable and are not necessarily a major quality issue for individual OPs if clarified upfront. Yet, this may reduce the robustness of aggregation of this type of data at the EU level or at national level (see below for a further discussion of this point).

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[9] The purpose of the study was to collect data on the allocated eligible costs of operations and, when possible, on the amount paid at operation level up to 31/12/2020. The data request made to the MAs referred to Article 24 of the Commission Delegated Regulation (EU) N. 480/2014 and the related Annex III, more specifically data fields 41, 42, 43 "Financial data on each operation". As regards allocated eligible costs, this data should in principle be in line with those reported to the Commission via SFC as per Art. 112, although this may not always the case.

[10] Specifically, data fields 41 (total eligible cost allocated), 42 (total eligible cost allocated constituting public expenditure) and 43 (public support allocated) of Annex III of Reg. EU 480/2014

## 2. Data on categories of intervention is slightly less accurate than financial data.

*Attribution of the operations to the categories of intervention*

In the extracted data provided from the operations monitoring systems data on categories of intervention, meaning the attribution to operations of categories indicated in fields 22-30 in the Annex III No 480/2014[11], Field of Intervention (FoI), is not always complete and consistently applied by MAs. In a few cases, the data extractions provided for the study did not include the corresponding TOs or IPs under which the operations were classified, or the information was incorrect for some operations.[12] This discrepancy could due to limitations in extracted data from MS shared.

Another notable issue is the attribution of **unique vs multiple categories of intervention**. Complex operations with many components and broad strategic scope would suggest involving several categories, especially different codes of FoI. Indications by the European Commission[13] allows two alternatives: MAs may use the most prominent part of the operation as the only FoI code or they can use several codes with pro-rata divisions of expenditures. While most MAs generally assign a unique FoI, other MAs tend to attribute more than one FoI to the same operation in order to fully reflect the different components and strategic ambitions. While, in principle, the attribution of multiple FoIs adds richness to the information pool, it also complicates aggregation requiring particular attention to avoid double-counting. It should be noted however that , the use of categories of intervention for monitoring or strategic reporting is extremely limited in MAs, beyond regulatory requirements of reporting to the EU.

## 3. The availability of information on all (financially) involved beneficiaries and final recipients is sometimes limited.

The availability of information on all (financially) involved beneficiaries and final recipients is sometimes limited, meaning that this information is not always stored in the ERDF/CF operations monitoring systems of the MA. In these cases, the financial involvement in operations and their nature (e.g., if they are a public or private entity, their location, etc.) cannot be traced for all beneficiaries. For collaborative projects, for example, if payment is done through the lead partner, some of the systems collect only the data (e.g. name, nature, location, etc.) related to the lead partner and not of the other project partners. Moreover, information on final recipients of financial instruments is usually not included in the operations monitoring systems by the MAs but stored separately by the institution responsible for the financial instrument, which is the direct beneficiary of the EU funds. While MAs can easily direct access beneficiary data, access to this data may be more difficult as it is not stored within the MA's own systems. Although this has no direct consequences for data quality and correct use of funds (for the audit trail this is not requested), transparency concerning the

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[11] The possible EU Investment Priority(ies) are listed in Art.5 of the Regulation (EU) No 1301/2013 for operations funded under the ERDF OPs, in Art.7 of Regulation (EU) NO 1299/2013 for operations funded under ERDF CPs and in Art.4 of the Regulation (EU) No 1300/2013 for operations funded under Cohesion Fund OPs

[12] Following the cleaning and enrichment procedures, in the database at operation level, data on TOs and IPs are missing respectively for 0.3% and 8.2% of operation.

[13] European Commission (2016). Guidance Note on Nomenclature of Categories of Intervention and the Methodology for Tracking of Climate Change Related Expenditure under Cohesion Policy. EGESIF_15_0019-02 final.

involved beneficiaries and final recipients is limited in these cases, with important implications for accountability and evaluation.

**4. Differing interpretations and double counting can undermine comparability of achievements at operation level.**

**Common Output indicators** have specific codes, names and measurement units centrally provided by the European Commission. However, some of them are perceived as having ambiguous definitions (CO18-CO21, CO28-CO34) or foresee the calculation methodologies to be set up by the MAs (CO08-09, CO20-21, CO28-29, CO34). Therefore, the use of common indicators at programme and intervention level raises challenges due to slightly differing calculation methods, risk of double counting that needs to be tackled or issues related to their generation process. On the one hand, in case the main source of indicator data is at operation level, multiple beneficiaries report on the implemented values by manually entering the data using e-cohesion systems. Although e-cohesion allows for simplified transmission procedures, it should be kept in mind that, especially when there is a high number of beneficiaries for the same operation or call, this can increase the risk of errors and misinterpretations that must be addressed by the MAs during the annual reporting cycle. On the other hand, our analysis showed that indicators measuring the population covered by funded operations (CO20, CO21, CO36 and CO37) are not monitored at the operation level in some programmes. To avoid double counting for overlapping operations, CO values are reported in AIRs based on national registers or data provided by statistical offices and cannot be retrieved directly from the operations monitoring systems at operation level. Finally, the lower share of robust values of common indicators measuring support to enterprises (CO01-CO08) can be explained by the fact that data at operation level often lack information on financial instruments and do not eliminate double-counting of supported enterprises.

With a view to the 2021-27 period, important steps towards a more homogeneous interpretation of (common) indicators and increased data quality were undertaken, amongst others the Commission Staff Working Document on Performance, monitoring and evaluation of the ERDF, the CF and the Just Transition Fund (JTF) in 2021-2027[14] and the requirement in the 2021-27 period for the preparation of a performance methodology document for each programme (with information on all indicators as well as calculation of targets).

**5. Aggregates reported in the AIRs are by and large plausible, meaning that they represent correctly what is included in the MS operations monitoring systems.**

*Data reported to the Commission*

To assess the plausibility of collected data, aggregated and harmonised financial and indicator data at operation level available in the national/regional operations monitoring system (i.e. collected in the Single Database) was compared and reconciled with the data reported in annual implementation reports (AIRs) for 2020.[15] Analytical tests, and quantitative and qualitative cross-checks were conducted to identify deviations and potential cases of under- and over-reporting. Although this comparison was not possible in some cases for reasons of data gaps, it provided a relatively good approximation for a plausibility check.

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[14] SWD(2021) 198 final
https://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/performance2127/performance2127_swd.pdf

[15] The data from AIRs was retrieved from the SFC reported data on categories of interventions for ERDF/CF as of 31/12/2020: https://cohesiondata.ec.europa.eu/2014-2020-Categorisation/ESIF-2014-2020-categorisation-ERDF-ESF-CF-planned-/3kkx-ekfq/

The comparison between the financial data (operations) and the data on the number of ERDF and CF operations showed that there are only minor discrepancies.

The overall assessment is that **data on indicator implemented values reported in AIRs are of high quality and consistency level**, ensured by the internal quality checks conducted by MAs and other actors of management and control systems (as revealed by the metadata collected). An in-depth analysis of indicator data showed that for the values of CO indicators reported in AIRs 2020, **89% of selected (i.e. contracted) values and 78% of implemented values were assessed as plausible**.[16] Comparisons between operation level and AIR data revealed that potential over-reporting of selected values in AIRs can be identified in only 1% of COs. However, some of these COs compose a significant part of selected values at the EU level (e.g., for CO16, which compose 10% of the EU total). Similar results were detected for the potential under-reported values that also comprise 1% of COs.

Another key observation on indicator data is related to **higher implemented values than selected values in AIRs**. Higher implemented values than selected values were observed for 6% of all CO indicators at the IP level in AIRs for 2020. These cases of mismatch were detected mainly for COs on enterprises, private investments or number of employees / researchers / persons. The underlying reason for the discrepancy between selected and achieved values often lies in the practice to estimate the selected values at operation level based on previous experience without updating the selected values during project implementation. In case that several operations under the IP overachieve their initially estimated selected values, the achieved values exceed the selected values towards the end of a programming period (i.e., they essentially still reflect outdated expectations about outputs). Not updating the originally recorded selected values at operation level, as stated in the commitment documents, is a common practice. The selected values from the commitment documents constitute a sort of minimum benchmark value at operation level that hold informational value for the MAs. Although these observations do not impede data quality for monitoring purposes at OP level, they have a direct influence on the possibility to aggregate data across MS (especially when selected values would be used) and mirror the complexity of the systems.

## II. Relevance of data at EU level

This aspect refers to the extent to which operation data aggregated at EU level can provide meaningful insights and useful representation about what is implemented in the field.

For the MAs the operations monitoring systems primarily serve accounting purposes and ensure the proper monitoring of payments for a high number of transactions and documentation for the audit trail. The design and functionalities of the individual set-up of the operations monitoring systems reflect the specificities of the legal, institutional, and strategic contexts in which each OP operates. In addition to this, there is the need of the EC to monitor what is implemented on the ground with ERDF/CF funding across all MS at an aggregate level.

> **6. Different understandings or interpretations of definitions of operations influences level of detail and consistency of data at EU level.**

Although data is generated in similar ways and there are some specifications centrally provided by the EC (e.g., list of data fields for which information is to be collected, list of

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[16] Plausible values include those common indicators for which values reported in AIRs and on project level matched within 10% discrepancy, or their values are likely to be higher or lower and can be estimated based on project level data, or their values are likely to be higher, but cannot be estimated.

common output indicators), there is still room for a greater harmonisation in order to fully exploit the possibilities of aggregation at EU level.

A notable example is the definition of operations. In line with the broad definition of operations adopted by Regulation (EU) No 1303/2013, data at the operation level provided by MAs may refer to a project, a project component, a group of projects (i.e., Action Plans, investment strategies, voucher schemes, State aid schemes, etc.) or a financial instrument. Although data quality is not impaired, the use of the 2014-2020 monitoring data faces the challenge that aggregability and comparability at EU level is in some cases limited. The meaningfulness of the aggregation of the number of operations at EU level (with uncleansed data) is compromised. A comparison based on figures "per operation" needs some caution. For financial instruments, for example, the number of beneficiaries mainly corresponds to the number of intermediary bodies and not the final recipient of FIs.

**7. Greater harmonisation at EU level could lead to improved data relevance for pan-EU assessments yet at the same time may increase administrative burden.**

In collecting, aggregating, and harmonising the data produced across all OPs in this study, we observed several **challenges and limitations concerning the degree of harmonisation of ERDF/CF monitoring data at EU level** that need to be born in mind in the interpretation of data. Our direct experience highlights that national and regional authorities interpret elements of the regulatory framework in different ways, which leads to a certain level of data fragmentation and incoherence (see also examples in prior sections of this summary). Several data cleaning, harmonisation and enrichment activities were hence necessary to cope with the fragmentation related to data structure, content, and format. Data has been cleaned and harmonised to allow for better aggregation at MS and EU levels as well as insightful comparative analysis. However, some inconsistencies remain.

The use of programme-specific indicators reflects the variety of operations monitoring systems, as they are individually developed by OPs for the actions in which they are needed. While there is the need for flexibility in defining what the programme needs to deliver, there is also room for harmonisation as demonstrated by the pilot exercise of aggregation. Through the analysis of programme-specific indicators across MS a total of 6.871 unique programme-specific indicators were identified. In further analysis on programme-specific indicators, our main aim was to identify and analyse significant programme specific indicators[17] across EU MS and determine to what degree programme-specific indicators could be merged (or aggregated) both within MS and at the EU-level. As to be expected, only a limited set of programme-specific output indicators are suitable for such an aggregation, resulting in 157 merged indicators across 15 MS (out of close to 7.000 unique programme-specific indicators).

Despite these findings, it should be noted that increased harmonisation would require detailed descriptions and definitions, which in turn may lead to an increase of administrative burden.

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[17] The significance check included a thematic and financial check. With the financial check, indicators of financial significant IPs were selected. In a next step, a thematic significance check was pursued, to ensure that key thematic areas (i.e., green, digital, innovation and health) were included in the selection.

# 1. Introduction

With the strategic goals of reducing economic, social and territorial disparities between EU Member States (MS) and regions, as well as promoting economic growth and competitiveness, Cohesion Policy was allocated 352 billion Euro from the multiannual financial framework for 2014-2020, about one-third of the EU budget. About 75% of these resources are made available through the European Regional Development Fund (ERDF) and the Cohesion Fund (CF), which invest in multiple policy areas and sought to contribute to the Europe 2020 Strategy for smart, sustainable, and inclusive growth.

To appropriately account for the investments made, the European Commission (EC) has promoted and supported the development of a detailed system for data reporting of operations implemented on the field – or "**operations monitoring systems**". Until 2000-2006, the approach to monitoring was primarily characterised by experimentation and affected by organisational problems, but during those years methodological insights on monitoring could be gathered. Especially since the 2007-2013 programming period, result orientation and the consolidation of operations monitoring systems have become a part of the rules governing structural funds, acknowledging the fact that a focus on financial accounting, although of paramount importance, needs to be complemented by a monitoring of the effects of the interventions. The strengthening of the programming framework led to a system of common indicators, with more precise rules in terms of the development of monitoring (and IT) systems for collecting and storing information. Such operations monitoring systems, in principle, laid the groundwork for an information basis, allowing for data aggregation of indicators at national and at EU level.

Operations monitoring systems relate to Art. 122(3), electronic exchange of information with beneficiaries, and Art. 72(d) + 125(2)(d), computerized system for accounting, monitoring and reporting, of CPR1303/2013. The in-depth examination of the systems operated at OP level also included the analysis of further system's functionalities of the programme level such as the electronic data exchange to SCF2014 according to Art. 74(4) (all official exchanges of information between the Member State and the Commission).

In the 2014-2020 programming period, the Common Provisions Regulation (CPR, ),[18] required MAs to maintain and publish lists of operations by programme and by Fund. These lists provide a comprehensive overview of all financed operations, offering insights on beneficiaries and operations. While ensuring transparency, it was not required that these datasets were notified to the Commission to be integrated into a unified database at EU level. The potential to use this data for the purposes of in-depth analysis and evaluation had still to be fully exploited. Moreover, while data on financial implementation and the lists of operations constitute a first pillar of operations monitoring and data reporting, a crucial second pillar is represented by monitoring indicators, i.e. output and result indicators, which are at the core of monitoring activities. In 2014-2020 ERDF/CF common and programme-specific output indicators are collected based on the type of interventions financed under each programme and programme-specific result indicators are collected based on each programme's specific objectives, by measuring change brought about in different policy areas. Both programme-specific indicators are defined by the MA responsible. On the other hand, common output indicators were established at EU level and apply across all MS and regions, providing

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[18] REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013, laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006.

information that can be aggregated.[19] The EC has sought to develop a consistent data landscape at EU level in order to provide a comparable basis for analysis across MS and programming periods, for the purposes of transparency, accountability, communication and evaluation. The introduction of mandatory common indicators in 2014-2020 followed this line of reasoning, attempting to address the need for data coherence and consistency.

## 1.1    Purpose and scope of the study

In view of the above, this "Study on the monitoring data on ERDF and Cohesion Fund operations, and on the operations monitoring systems operated in the 2014-2020 period" aimed at producing a solid and rigorous information basis that would **provide future thematic evaluations with a consistent and validated "single dataset" of operations for analysis**. Under the scope of the study, the operations monitoring systems and the corresponding data of all EU MS (EU27 + UK) were explored. The study was the first attempt to collect, harmonise and aggregate - at an EU level - the data produced by the ERDF/CF operations monitoring systems for all thematic objectives on the basis of monitoring data as opposed to available public lists.[20] Specifically, this study sought to develop robust operations financial data, achievement indicators, data on categories of interventions and information on beneficiaries that could inform the EC's ex-post evaluation of Cohesion Policy programmes in the 2014-2020 programming period. Data at operation level for evaluation purposes was not available before at this level of disaggregation.

The study, by analysing and synthesising the vast amount of monitoring data available in the network of national and regional operations monitoring systems, provides input to the ex-post evaluation by 1) providing a unified database of ERDF and CF supported operations and classifying them according to their scope of intervention, form of finance and type of beneficiary and 2) gathering, analysing and assessing the quality of output indicator data collected by programme authorities in relation to their operations. This included both common output indicators and programme-specific output indicators. A further central purpose of the study was to analyse and assess the setup, design and functioning of operations monitoring systems in the past programming period, provide insight on MS's systems and experiences and discuss the recurrent strengths and weaknesses. This sought to provide a better understanding of good practices as well as challenges faced and thereby improve the future development of these operations monitoring systems.

To this end, a vast majority of 220 operational programmes (OPs) and 76 Cooperation Programmes (CPs) across the 12 TOs were analysed),[21] as well as an in-depth analysis of MS operations monitoring systems, generating several outputs with high representativeness:

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[19] Common result indicators: only relevant for European Social Fund/Youth Employment Initiative (ESF/YEI), not for ERDF and CF

[20] The ex-post evaluation of investment in Research and Technological Development (RTD) infrastructures and activities supported by the ERDF 2007-2013 piloted this approach

https://ec.europa.eu/regional_policy/en/information/publications/evaluations/2021/evaluation-of-investments-in-research-and-technological-development-rtd-infrastructures-and-activities-supported-by-the-european-regional-development-funds-erdf-in-the-period-2007-2013

[21] The scope of the study was defined in the ToRs and includes 220 Operational Programmes (OPs) co-financed by ERDF and/or CF and 76 Cooperation Programmes (CPs) co-financed by ERDF. Operations supported under REACT-EU after 2021 were not captured as data collection under this contract took place before REACT-EU programming was implemented.

- **Single database**: database on operations, database on beneficiaries (covering 584,828 operations and 1,168,711 beneficiaries) and database on indicators (containing both COs and programme-specific indicators)[22]

- The **database on common output indicators** covers 713,638 common output indicators

- **Dataset** on selected, relevant, **programme specific indicators** (derived from in total 491,498 programme-specific output indicators)

- **28 Country Sheets** on operations monitoring systems' functioning

This rich set of data makes available to evaluators and researchers a unique data source on ERDF and CF programmes funded during the 2014-2020 time-period. Both in terms of granularity and coverage, it expands beyond what is available in public lists of operation, public open data platforms at national level as well as in annual implementation reports (AIRs). In developing the outputs detailed above, certain conclusions have emerged and will be discussed in this report, specifically as it relates to the potential and limitations of operations monitoring systems and their contribution to the generation of a relevant evidence basis for monitoring ERDF and Cohesion Fund programmes at the EU level.

## 1.2 Methodological approach

The key findings discussed in the following three chapters emerged from the development of the outputs of this study, namely the construction of the databases on operations and beneficiaries, the critical analysis of common and programme-specific output indicators and the detailed assessment of MS operations monitoring systems. These outputs were each developed with dedicated methodological approaches, which can be examined in detail in their respective documentation and is briefly reviewed below.

From the outset, this study was pursued in close collaboration with Member States and their respective managing authorities (MAs). As a preliminary step to inform the data collection from MAs, the lists of operations available on national or regional websites were screened and collected. However, it was deemed necessary to collect more extensive data at the operation level and thus a network of 28 country experts submitted a request for data on operations, beneficiaries and output indicators (following the regulatory requirement of Annex III of Del. Reg. 480/2014) to all relevant MAs across the 28 Member States, providing a unified data collection framework. Data on operations and beneficiaries were collected for 273 out of a total of 293 programmes. Several rounds of interactions with the MA were necessary, either to clarify the nature of some datasets and variables or to request additional key missing information. This additional request was prepared on the basis of the results of a preliminary screening of the data submitted.

Upon receipt of the data, further data cleaning, harmonisation and processing activities were necessary to cope with different types of data, i.e. data structure (different files, level of granularity etc.), data formats, data content, in order to provide the data to future contractors for the purpose of ex-post evaluations.

As a result of this data collection and processing exercise, data for a total of 561,970 operations and 1,146,415 beneficiaries were collected. In a next step, a clustering analysis of

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[22] For more information on the Single Database, including its variables and the covered data, please see: https://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/expost2020/wp2_report_single_database_final.pdf

the collected operations and beneficiaries took place, which sought to classify operations and beneficiaries into a manageable number of groups. The clustering of operations was carried out through a dedicated automated clustering process, which involved the use of twelve different clustering algorithms (one per Thematic Objective). This automated process was validated through manual verification and re-classification steps. Beneficiaries were clustered according to their core mission and nature more so than according to their legal status or economic classification, which was pursued through a keyword-analysis procedure.

In a dedicated exercise, the assessment of the plausibility of common indicators as well as a targeted analysis of significant programme-specific indicators took place. The plausibility of common output indicators was pursued through desk research of previous studies on operations monitoring systems, the review of AIR data, the collection of operation level data on output indicators and the collection of metadata on CO calculation methodologies as well as quality checks at national level. Based on operation level data collected, we constructed database of indicators which allowed the project team to conduct quantitative assessments. The programme specific indicators first underwent a thematic (i.e., green, digital, innovation and health) and financial significance check, which resulted in a selection of significant IPs. All unique programme specific indicators associated to the selected IPs were identified and, in a next step, assessed as to whether or not they could me merged (aggregated) at both a national (across OPs) and then EU (across MS) level.

Finally, in order to gain more insight into the functioning of operations monitoring systems across MS in the 2014-2020 programming period, rigorous desk research was complemented by comprehensive interviews with managing authorities, which were performed by dedicated country experts. In addition, country experts provided insights based on their own experiences with the respective operations monitoring systems. In total, 195 interviews were conducted, which covered 201 OPs across the EU. Most of the interviews were conducted with MAs, however, in some cases, interviews were combined for a MS (e.g., in the case of the Netherlands where all four OPs use the same operations monitoring system). Furthermore, external IT-providers were consulted for more information on specific IT-aspects and national coordination units were also consulted for additional information on centralised vs. hybrid operations monitoring systems. Based on this, 28 country fiches were developed, which provide an in-depth view of the current functioning of operations monitoring systems. The fiches also serve to provide a Member State perspective, since findings at OP-level were aggregated to the country-level.[23]

Upon the backdrop of all the exercises pursued for this study, whose methodologies are briefly reviewed above, insights from the various steps were collected and analysed in a dedicated observation repository (see figure below). The repository was structured according to the following six dimensions, which were associated to forty-five individual elements.

1. **General Information (5 elements)**: overview of the size of the ERDF-programme in the MS, including the number of operations, beneficiaries, final recipients and allocated amounts.

2. **Organisation (2)**: describing features of the set-up and structure of the respective operations monitoring systems, including the type (i.e., national, decentralized, hybrid) and number of monitoring institutions per MS.

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[23] Consequently no ETC-programmes were included as they cannot be properly assigned to the MS logic.

3. **Process (12)**: data management capacities and processes (e.g., frequency and cause of reporting errors, use of standard reports and manual procedures, data management)

4. **Technology (9)**: central technological aspects that could influence data quality

5. **Data findings (12)**: key findings on data plausibility

6. **System assessment (5)**: overall analysis of system performance based on consolidation of study results

## Figure 1: Extract from the observation repository

| Member state | No of OPs | Number of operations (T1) | Number of beneficiaries (T1) - Only direct beneficiaries | Number of final recipients (T1) | Allocated amount (T1) | Type of monitoring system | Monitoring institutions (T4) | Use of standard reports (T4) | Use of manual procedures for data reporting (T4) |
|---|---|---|---|---|---|---|---|---|---|
| Austria | 1 | 1368 | 1476 | N/A | 2477339392 | National | ≥4 | Very intensely used | Not used at all |
| Belgium | 3 | 1117 | 1170 | 2753 | 2781704800 | Decentralized | 1-3 | Very intensely used | Very intensely used |
| Bulgaria | 6 | 30619 | 30703 | 4646 | 8229475360 | National | 1-3 | Intensely used | Neutral |
| Croatia | 1 | 7575 | 7565 | 5788 | 11522295808 | National | ≥4 | Not used at all | Neutral |
| Cyprus | 1 | 1146 | 90 | 1056 | 1098017920 | National | ≥4 | Very intensely used | Intensely used |
| Czechia | 7 | 33467 | 115720 | N/A | 25.305.784.960 € | National | 1-3 | Neutral to intensely | Neutral |

Source: CSIL/Prognos/PPMI (2022)

The repository considered each MS, aggregating all insights from the different national OPs gathered during the study. The different dimensions of the repository sought to, on the one hand, cover all relevant aspects that could provide insights on central requirements for a well-functioning operations monitoring system and, on the other, highlight central issues that were observed that could lead to less plausible data. The different tasks of the study contributed equally to the development of the repository in order to gain as comprehensive an overview as possible about the ERDF/CF operations monitoring systems and their monitoring data.

The first dimension (General information) and the second (Organisation) covered background information on the operations monitoring systems used in the MS and thereby provided helpful classifications of the systems. The dimensions Process and Technology gave detailed information on data management capacities, processes and related technological aspects, stemming from a detailed assessment of MS operations monitoring systems. The Data findings dimension was mainly based on observations from the single database and the database on common output indicators as well as the dataset on programme-specific indicators. In the last element, Systems assessment, an overall analysis of the systems' functioning was included, based on all prior information. Additionally, findings from audit reports were included throughout all dimensions in order to gain more context information and, where possible, confirm the evidence gathered by the project team.

After compiling all information, the project team analysed each dimension and via cross-comparison with other MS discerned whether any patterns were observable. This exercise assisted in determining whether certain systems' features were associated to specific outcomes and/or if the data generated by the systems could be considered plausible. Through this exercise, certain patterns and associations were observed. In a second step, these findings were presented and validated in a seminar with more than 200 relevant stakeholders from MAs, Coordination Authorities, the EC and further ERDF/CF-monitoring stakeholders from across the EU. In the seminar, the opportunity was given to reflect on the findings and their relevance, to share some concrete MS-examples (e.g., on specific processes or good practice approaches) and to discuss new issues of relevance across MS. At a more general level, the seminar illustrated the different approaches used in MS to collect and store operations monitoring data and provided insights that contextualised the findings.

The observations from the repository, and validated by the stakeholder seminar, can be classified according to three main categories, which this final report is structured by and will discuss in the sections that follow: (1) structure and efficiency of operations monitoring systems, (2) quality of operations monitoring data at MS level, (3) data usability and relevance at EU level. By compiling all findings that were gathered during working with the monitoring data and systems' assessment the study team gained extensive knowledge how monitoring data is generated, checked and stored which put the team in position to draw certain conclusions about the plausibility of the data, especially in relation to what is reported to the EC. However, it should be noted that the team did not perform any audit, nor did it explore the regulatory requirements defined with CPR, Art. 112 or other provisions related to reporting, monitoring, payment, audit of expenditures. Those aspects are consequently left out of the analysis.

# 2. Structure of operations monitoring systems

Monitoring systems are highly adapted to the national and regional needs, which is reflected by diverging organisational structures. Therefore, the operations monitoring systems in the MS are very diverse, especially in terms of the governance set-up, while respecting a minimum set of common features stipulated in the regulations (e.g. CPR Articles 72(d), 112, 122(3), 125(2)(a),(b),(d),(e), 125(4)(d), (8) and 140, Annex XI/Part II/7).[24] The MA is required to have a monitoring system set up in accordance with Article 125(2)(d) CPR. The information on data to be recorded and stored in computerised form for each operation is set out in Annex III to Regulation (EU) No 480/2014. Additionally, national obligations or audits, internal needs and evolutionary aspects are decisive for the specific design and lead to varying set-ups of operations monitoring systems.

Despite these common EU requirements, the actual design of the systems was found to be very differentiated between OPs and MS – especially in terms of the **governance set-up**. The following figure shows the general set-up of ERDF/CF operations monitoring systems under the shared management model.

**Figure 2: Overview of operational set-up (institutions) of ERDF governance structure in 2014-2020 programming period**
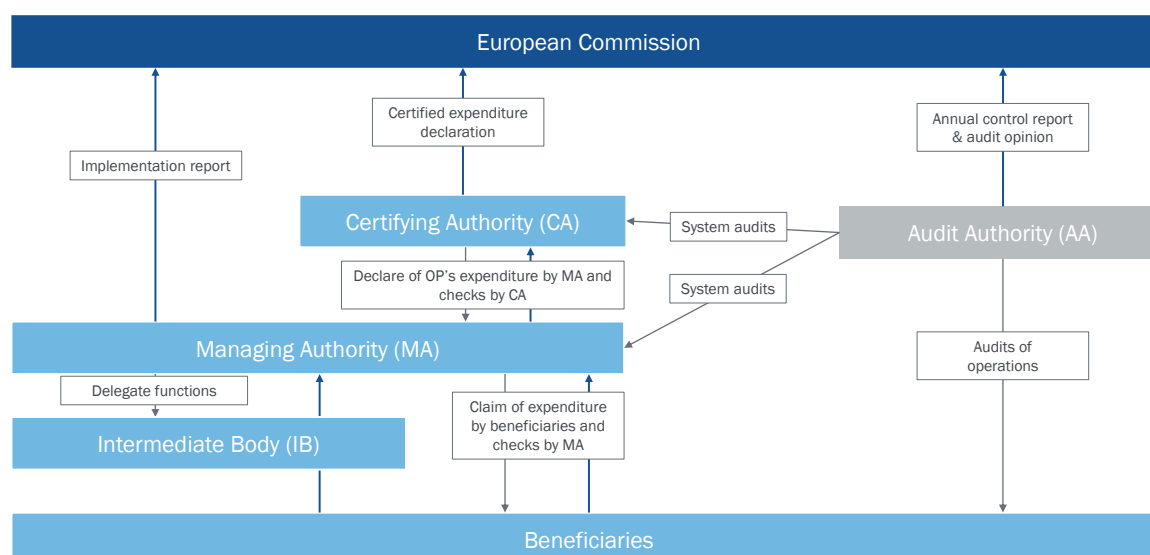


Source: CSIL/Prognos/ PPMI (2022) based on OECD (2020).[25]

The figure exemplifies the general structure and processes of the ERDF governance structures. Despite this common approach the actual set-up might differ, e.g., in the number of responsibilities transferred to IBs. Moreover, the actual use or set-up of operations monitoring systems is not reflected by the figure. In some cases, IBs have their own operations

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[24] CPR Article 72 (d): Management and control systems should provide for "computerised systems for accounting, for the storage and transmission of financial data and data on indicators, for monitoring and reporting"; Article 112: electronic transmission of financial data to fixed dates for each OP; Article 122 (3): all information exchange between beneficiaries and MA, IB, CA, AA electronically by December 2015; Article 125 (2 a, b, d, e): MA should provide MC with data on OP, submit AIRs and final implementation report to EC, establish a computerized system to store relevant monitoring data, ensure that data is collected and stored in this system; Article 125 (4d): MA should set up procedures to ensure documents related to audit trail lead to adequate audit trail; Article 125 (8): empowerment of the EC to further specify the information to be stored in the monitoring system and the technical specifications of the monitoring systems; Article 140: specifying the availability of documents by the MA; Annex XI, Part II, 7: laying down the necessity of a statistical system for evaluation purposes.

[25] OECD (2020): Strengthening Governance of EU Funds under Cohesion Policy. Administrative capacity building roadmaps, as part of the OECD Multi-level Governance Studies.

monitoring systems (e.g., in Austria) and in other cases, the MA must send data to a second, higher-level operations monitoring system, as it is the case for hybrid operations monitoring systems (more on hybrid systems below).

According to Common Provisions Regulation 1303/2013 Art. 125,[26] MAs are the responsible actor for collecting and processing monitoring data. MAs can delegate some of their activities to intermediate bodies (IBs) while still remaining responsible for overall governance. For around 65% of consulted OPs in this study both MAs and IBs played a central part in the data collection process. A programme might be managed and/or implemented at a central/national level and/or regional level. Overall, the distribution of responsibilities varies for each MS and no uniform approach can be identified. In some cases, all responsibilities are centralized at the national level. This is the case for instance in Spain where all Spanish OPs are managed by the Spanish Ministry of Finance. Findings from the German ERDF OPs show that in Germany implementing bodies were often located across different regional ministries.

In addition to the two main types of entities (MAs and IBs), other bodies such as ministries (other than MA/IB), statistical offices, development banks, municipalities, research institutes and other entities contributed to a large extent for the collection and processing of monitoring data. For instance, statistical offices have been involved in 35% of the ERDF OPs. This is the case in Spain, Poland, Portugal, Greece and eight smaller Member States (e.g., Estonia, Ireland, Belgium). For the OPs of Wallonia and Brussels, statistical offices support the MAs in processing monitoring data. In some cases, the values of indicators referring to data on population and enterprises are generated outside of the operations monitoring system by official statistical offices (see chapter 3.4 for more information). Development banks are responsible entities in 17% of the OPs like in most of the German OPs, and some OPs in Poland, Romania, Greece, the United Kingdom, and Czechia. Other entities that are responsible for collecting and processing monitoring data are financial intermediaries for Polish OPs and district governments for the Bavarian OP in Germany and NGOs for the Estonian OP.

The organisational set-up of monitoring is influenced to a large extent by the degree of centralisation of operations monitoring systems and correspondingly, the number and type of involved actors and the available expert staff for monitoring purposes (which has a direct impact on performing key monitoring tasks, e.g., data checks). The number of involved institutions is fluctuating across OPs: in 40 % more than five institutions are involved, whereas in 23% of OPs there are only two involved. Concerning monitoring expert staff some shortcomings have been identified in the sense that for several MAs (54 OPs in 12 MS) staff insufficiencies throughout the 2014-2020 period led to some difficulties in performing monitoring activities (see chapter 3 for more details).

Besides the differentiation of involved institutions, a more meaningful differentiation can be made that classifies the operations monitoring systems' structures. Three classifications have been introduced in this study to characterise these structures: **centralised, hybrid and decentralised operations monitoring systems**. Centralised operations monitoring systems are set-up at the national level and all monitoring data is centrally collected. So-called hybrid systems provide a national system, but the individual OPs also have their own operations monitoring systems in place that are linked to the national system or periodically deliver data to a national system. Under decentralised systems in a MS every OP has its own operations monitoring system and data is not aggregated at national level by a central coordination body.

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[26] European Commission (2013): CPR - EU 1303/2013 - Article 125 - Functions of the managing authority.

Decentralised systems are the least common approach among the three different types of systems.

Centralized, meaning national operations monitoring systems, are the most common approach across MS. This approach is not only applied by MS with one national OP but also middle-range ERDF-programmes in MS use this approach. This is valid for Sweden, with ten OPs or Czechia with seven OPs. Greece poses an exception with 17 OPs. A total of 19 MS used a national operations monitoring system in the 2014-2020 programming period (see figure below). Most of those countries have a unitarian self-governance which can certainly be seen as an important contextual factor.[27] The MS with large ERDF programmes tend to use hybrid operations monitoring systems. This is the case for Spain (22 OPs), Italy (30 OPs), France (34 OPs) and Poland (21 OPs). Portugal is an exception with 10 OPs. While Poland and Portugal have centralised self-government, Spain, Italy and France also have decentralised elements. The least common approach are decentralised systems which are used by MS with rather a lower number of OPs (UK with six OPs, Belgium with three OPs, Finland with one OP). Germany with 16 OPs stands out, however, this finding can be explained by the decentralised governance system with the German "Länder". MS with decentralised systems share the common feature of a high autonomy of the regions in the MS institutional set-up.[28]

**Figure 3: Type of operations monitoring systems and number of OPs in the 2014-2020 funding period**
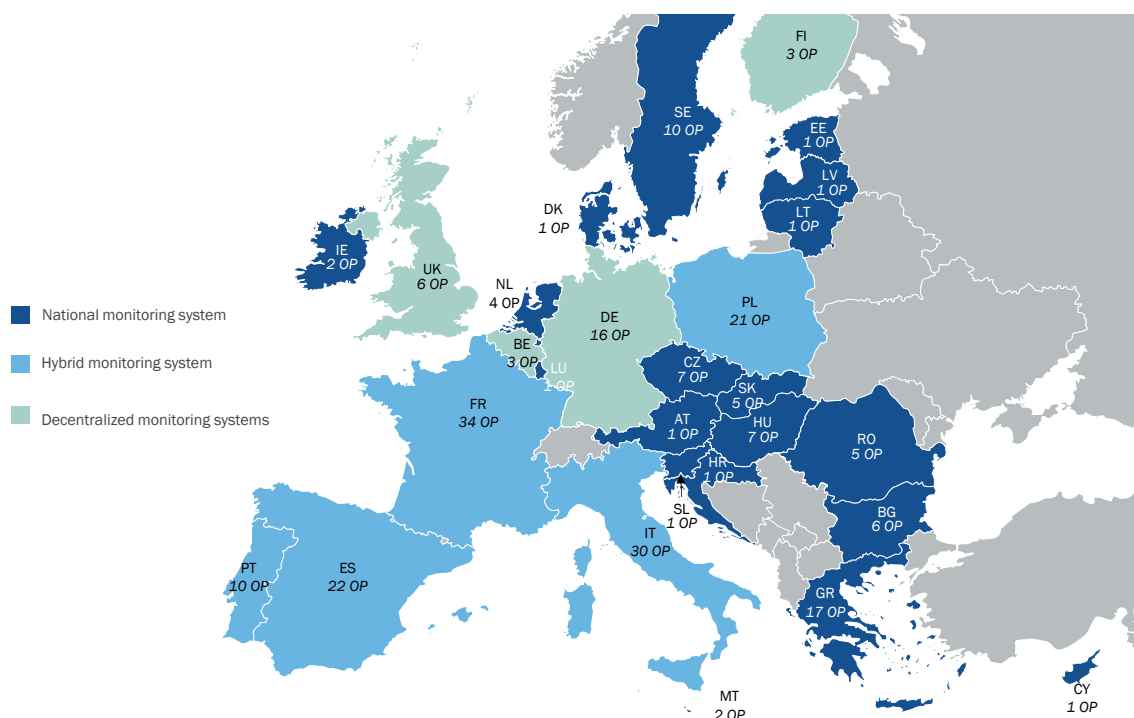


Source: CSIL/ Prognos/PPMI (2022). ETC Programmes are not included in the number of OPs per MS.

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[27] Only Denmark, Austria and the Netherlands are federally organised. However, Denmark and Austria only have one national OP and in the Netherlands, the regional specificities are accounted for in the four different OPs.

[28] Finland is per se not as decentralised as the other three MS, however, its decentralised structure in the ERDF set-up stems from the nature of the three OPs: one is the SME Initiative OP, one for the autonomous region Åland and the third has no specific thematic or regional focus.

The number of OPs in a MS or the number of operations under an OP are important context variables that generate certain system requirements. The number of OPs or operations alone, however, does not lead to a concise indication how to organize the operations monitoring system. Whereas Germany and Poland e.g., operate in a similar range regarding the number of OPs[29] (DE: 16; PL: 21) and operations (DE: 46,930; PL: 54,117), Germany implements fully decentralized operations monitoring systems for each OP and Poland choses a hybrid operations monitoring system including also a national layer. Also the Netherlands and Belgium show similar ranges regarding the number of OPs (NL: 4; BE: 3) and operations (NL: 927; BE: 1,117) but implement differing types of operations monitoring system with a decentralized system in Belgium and a centralized or national operations monitoring system in the Netherlands. Nonetheless, it seems that the decision on a certain kind of (de)centralisation of operations monitoring systems is to some extent linked to the self-government structure in the MS.

Against the background of these general contextual observations on the structure of ERDF/CF operations monitoring systems, three key findings emerged from the research, which are outlined below.

## 2.1 Different types of operations monitoring systems

Hybrid operations monitoring systems provide a national system, where the individual OPs also have their own operations monitoring systems in place that are linked to the national system or periodically deliver data to a national system (as outlined above). In countries with hybrid systems, mostly in large countries with multiple regional OPs (e.g., PL, IT), the source for AIR data is typically the OP operations monitoring system (based on an extraction from the OP operations monitoring system, the MA manually inputs data into SFC)[30], while the data submitted for this study was extracted from the centralised operations monitoring systems at the national level. In some cases (e.g., IT, PT), the national system and the OP operations monitoring systems were not aligned with each other, leading to different data pools used for analytical purposes on the same territory.[31] This conclusion results from comparing financial data submitted through SCF and data transmitted for the study from the central operations monitoring system. OP operations monitoring systems are more updated than the national system, as data transmission to the national level takes place on an ex-ante defined schedule (e.g., every 2 months in Italy). Before validating the data received from OP systems, the coordinating body conducts checks on the transmitted data. The national operations monitoring system can provisionally exclude some operations from the centralised database in case the data received does not appear correct or complete. Although helpful for avoiding data errors, this approach generates temporary misalignments between the central and local systems. In addition, the OP level operations monitoring systems include data that is sometimes not included in the national operations monitoring system. This is the case e.g., for Italy where the entire list of beneficiaries is kept at OP level whereas at national level only lead beneficiaries are included. This is also the case for Poland where final recipients of financial instruments and umbrella State aid schemes were not included in the central operations monitoring system but at OP level. In Portugal the information on the categories of intervention was overall available even though the information on the Field of Intervention collected at central level is different from that collected at regional level: at regional level, the detailed

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[29] ETC OPs not included.

[30] This finding does not apply to the French system. Most of the French OPs use the national monitoring system. The regions that have their own monitoring systems (i.e., Bretagne, Normandie, Nouvelle-Aquitaine) rely on the OP monitoring system for data transmission to SFC, but for the study no data extractions from the central monitoring systems were received.

[31] This conclusion stems from the comparison between the financial data submitted through SFC and the data transmitted to the study team from the central monitoring systems.

information on the Field of Intervention is provided, while at the central level operations linked to multiple FoI similar between them are aggregated under a macro-category of Field of Intervention (e.g., "I. Productive investment" under which the fields 001, 002, 003 & 004 fall). These examples illustrate that **hybrid systems need to be handled with care as they add a layer of possible discrepancies.**

Hybrid systems also show **advantages**. The case of Poland illustrates that the organisation on two levels can bring advantages concerning the plausibility of monitoring data. Concerning definitions and understandings of indicators within MS, centrally provided information further contributed to (more) coherent data entries, as it is done with the centrally provided lists of indicators in Poland. The so-called Common Key Indicators List 2014-2020 (WLWK) is particular useful for the implementation of cohesion policy evaluation process as this list contains a set of several hundred indicators collected consistently in all Polish OPs, allowing for data comparisons and their aggregation. The list of WLWK includes indicators from the list of Common Indicators established at the level of the entire EU. Similar in Spain, a specific performance indicator list is defined, that is common to all OPs in Spain for the 2014-2020 period. This system is similar to the one implemented by the European Commission for the programming period 2021-2027. In France, the hybrid information system yields some interesting benefits for the operations monitoring system. This includes a network of information system staff across the regions that are in regular contact with the national authorities, leading to a common harmonised culture and a reactive adaptation to emerging issues and problems. Moreover, this system also allows a joint consideration of technical and operational (daily management) aspects. All in all, processes and capabilities tend to benefit from a relatively high level of harmonisation across regions, through national guides, networks and contacts between the MAs – though there are some noticeable regional variations in actual practices.

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**Example: Synergie – the hybrid operations monitoring system of France**

France has a hybrid operations monitoring system that has both features of centralisation and decentralisation. The primary system called Synergie is the heir of the previous Information System that ran during the 2007-2013 period, namely PRESAGE. The French operations monitoring system entails the existence of specificities depending on the MA. The national information system (Synergie) comprises different modules to perform ERDF management and monitoring tasks. Most regions in France use Synergie as their sole Information System for ERDF monitoring. In contrast, a few "scenario 2" regions (Normandie, Bretagne, Nouvelle-Aquitaine) use a combination of regional information systems (e.g., for the core functionalities linked to ERDF management) and rely on Synergie only for the financial aspects (through the SIFA module, focusing on calls for funds, audits, etc.). The ETC- Programmes are covered by a specific module called Synergie-CTE, with distinctive features. An exchange system ensures that data flows can circulate between the different modules of Synergie and between Synergie and other regional Information Systems when it is the case. Moreover, regions are involved in the governance of Synergie. In practice, it takes the form of specific networks and working groups of IT/Cohesion Policy staff, which ensure that there are discussions between the national and regional levels on the system. The following figure shows the structure of the French system:

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**Figure 4: Overview of the ERDF operations monitoring system(s) in France**
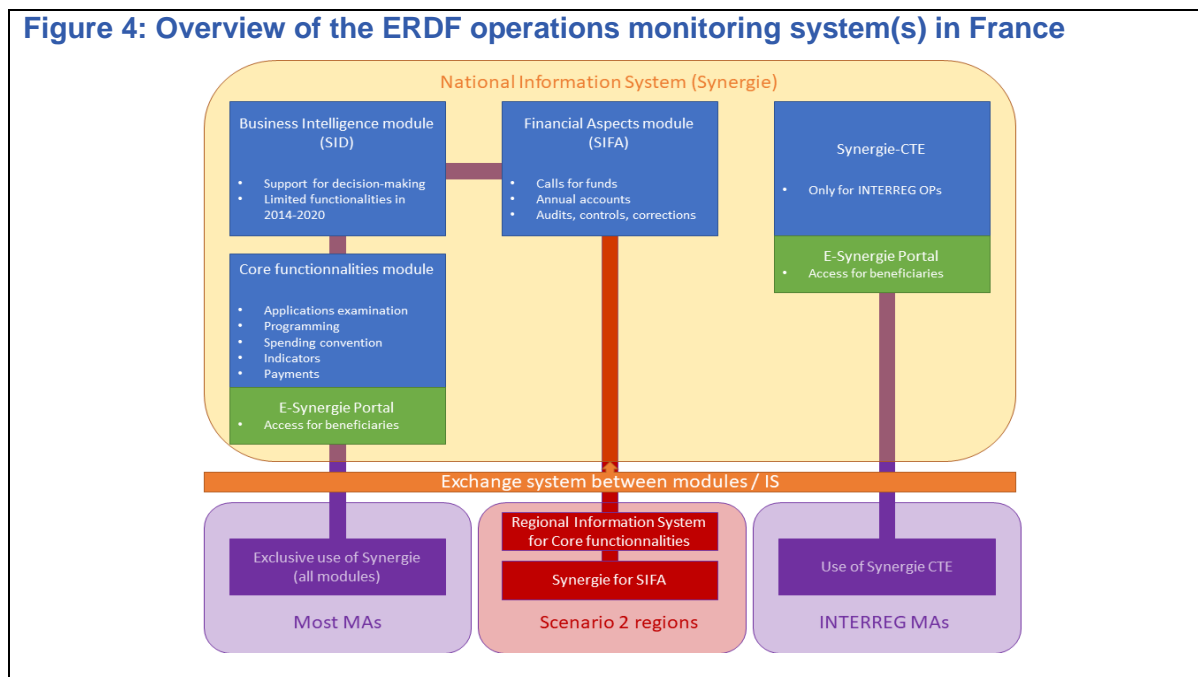


Source: Country Sheet France, created by country expert based on interviews and ANCT (2021)[32]

In the case of Italy, the existence of the national operations monitoring system allowed for the launch of OpenCoesione in 2012. It is an open data initiative that makes available, through an online platform, all interventions under Cohesion Policy, including information at operation level such as, for instance, data on the resources allocated and disbursed, the thematic objectives, location, promoters, and implementation schedule. OpenCoesione represents a crucial source of information allowing civil society to monitor the policy. This function is amplified by efforts to engage the citizenship in active monitoring, demonstrating a positive and wide use of monitoring data beyond the administrative compliance purposes. Similar in Portugal, there exists an open data portal, Mais Transparência, based on the treatment of the collected and processed financial and physical information, where it is possible to verify and consult all the subcategories of information and indicators available on this portal regarding the European Funds applied in the country, in an interactive, practical, and accessible way to all citizens. The portal is powered by SMPT2020, the Portuguese national operations monitoring system.

These examples show that there are **some advantages of hybrid systems as they can improve harmonisation across OPs**. However, hybrid systems need to be designed with care if one does not want to introduce a fully centralised system. At the same time, in those countries that only rely on decentralised structures, there seems to be a lack of overarching oversight which could benefit from some elements of hybrid structures. Despite possible discrepancies hybrid systems can also promote a more homogenous approach among the OPs covered and wider use of data at the national level.

**Coordination efforts in decentralised operations monitoring systems – The case of Germany**

In Germany as a federal state the organisation of the operations monitoring system is completely regionalized. However, for the 2014-20 period four Bundesländer (Sachsen-Anhalt, Mecklenburg-Vorpommern, Brandenburg, and Berlin) teamed up to develop and

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[32] ANCT (2021): Synergie : l'outil partagé de suivi et de gestion des fonds européens. Available online: https://www.europe-en-france.gouv.fr/fr/synergie-loutil-partage-de-suivi-et-de-gestion-des-fonds-europeens (last accessed 08/10/2021).

implement a joint monitoring module called efREporter. The cooperation between the Länder led to fruitful exchanges on the content and technical aspects of efREporter. On the one hand, this represented additional effort. On the other hand, it was perceived as leading to improvements.

There has also been an exchange between the development banks of different Länder that use ABAKUS as their main system, although there was no joint development of IT-systems. It seems that although each Bundesland prefers to run its own operations monitoring system, a certain degree of exchange is appreciated.

Source: CSIL/Prognos/PPMI (2022): Extract from German country sheet

## 2.2 Control mechanisms (i.e., data quality checks) by the MS

As required by CPR – EU 1303/2013 – Article 72, operations monitoring systems shall provide the means to ensure an adequate audit trail and management verification functions. Consequently, in all MS, various control mechanisms are used to check the data for completeness and quality.

**Challenges concerning the audit trails in MS as indicated by audit reports in the beginning of the funding period 2014-2020**

As outlined above, operations monitoring systems shall provide the means to ensure an adequate audit trail. The audits of the functioning of the management and control systems[33] of the 2014-2020 funding period, from 2018/2019, show that this requirement was not always implemented satisfactorily. There have been several remarks on the adequacy of audit trails in the MS. Those range from general remarks on the lack of the audit trail (Belgian OP[34] or Latvian OP[35]) to more specific remarks, e.g., on unclear methodologies for the determination of sample sizes for on-spot controls in Poland or the lack of adequately documented procedures for data quality checks on the accuracy of indicator data in Romania. Difficulties with detecting inconsistencies and/or inadequate verifications were also remarked in some MS (in RO, IT, PL, LV).[36]

Figure 5 shows the most commonly used control mechanism to check data quality and completeness. In all MS several types of checks are used, including manual follow-ups, automatic plausibility checks, statistical checks for data anomalies or the four-eye principle, although the intensity of use differs. Those data checks are used by 70-95% of all OPs.

In the 2014-2020 programming period, the most common control mechanism were manual follow-ups which were used by 94% of the OPs in all Member States. Other control mechanisms, like automatic plausibility checks (75%) and checks according to the four-eye principle (70%), were implemented by a major number of responsible institutions. According to surveyed MAs, the four-eye principle was highlighted as an essential element of fraud

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[33] As required by Article 75 (1) and (2) of Regulation (EU) N° 1303/2013

[34] Audit nº REGC214BE0127

[35] Audit No REGC214LV0117

[36] Audit No REGC214RO0107; Audit No REGC314IT0110; Audit mission n REGC414PL0096; Audit No REGC214LV0117.

prevention that at the same time delivers checks of data quality and completeness as a secondary benefit or by-product.

**Figure 5: Use of control mechanisms in ERDF-OPs**
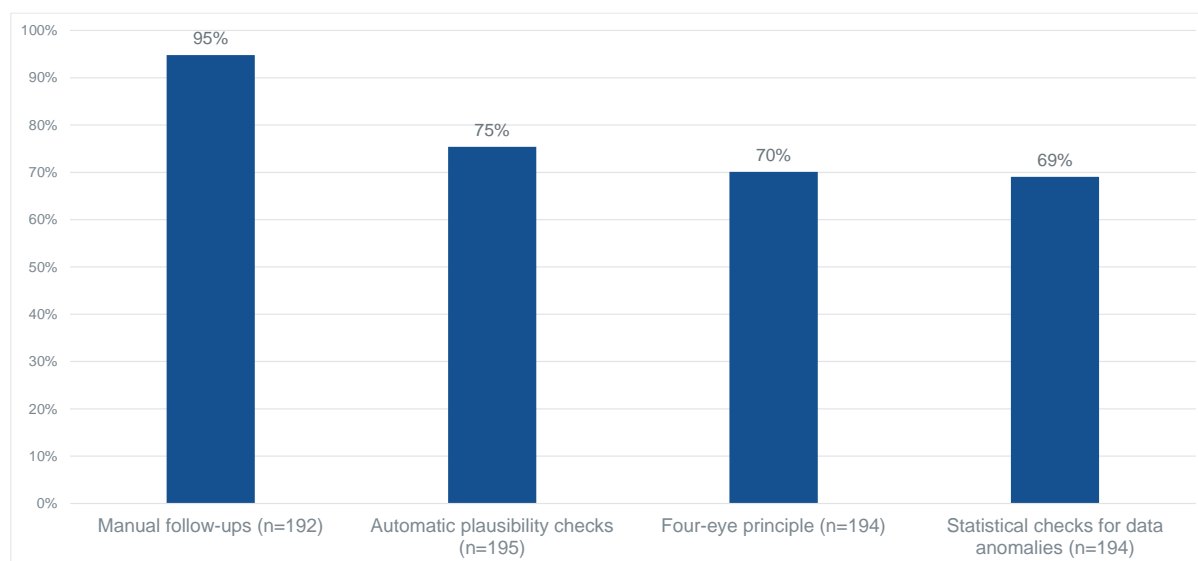


Source: CSIL/Prognos/PPMI (2022): Information is based on interviews with MAs, desk research and experts' assessment, n=192-195. *Question text: Which control mechanisms were in place to check data quality and completeness […]?*

70% of all OPs used additional (other) control mechanisms in the 2014-2020 programming period. Overall, additional control mechanisms varied depending on the responsible institution and the functionalities of the individual operations monitoring systems. For instance, the Latvian operations monitoring system allowed interoperability with other state administration systems including standardized cross-checks of certain data (e.g., information on beneficiaries). Spanish managing authorities emphasized the interoperability of their "Fondos 2020" information system across different responsible institutions. The system allowed cascade checks during the whole management cycle meaning that the Spanish IB could check at each stage the information entered by the beneficiary. At a second step, the managing authority could check at its stage the Article 125 verification reports uploaded by the IB, as well as the information uploaded by the beneficiary. Finally, the Certifying Authority could check at its stage all of the above plus the consistency and conformity checks carried out by the managing authority.

Another control mechanism that was applied by managing authorities were regular or unregular on-spot-visits. According to findings from the online repository, those visits often took place for operations with a high volume of financial support or for operations for which financial or other irregularities have been spotted. In addition to on-spot visits, the French managing authority responsible for the "Guyana OP" has indicated that qualitative interviews with project officers were performed in cases of abnormal values.

MAs are mostly responsible for checking data, however, there is a variety of actors involved that frequently contributes to the checks or performs own checks. These actors include Certifying Authorities, IBs or beneficiaries themselves. Some checks are already done when data is entered into the system (e.g., by beneficiaries or IBs). Other checks are applied at later stages, e.g., when preparing data for AIRs. In this context, findings from an OECD study (2020) show that some operations monitoring systems of the larger ERDF OPs include up to

eight control steps performed by different actors for one data set.[37] The OECD raises the point that an increased number of checks might also increase the number of different control results. The more controllers involved in the control process, the higher the possibility that data are interpreted differently, or checks are performed differently.

Among the data checks applied by MAs, automatic and manual checks can be distinguished. Whereas automatic plausibility checks (e.g., for data anomalies) are integral in IT-systems, manual checks need to be actively performed by monitoring staff. In the 2014-2020 period, manual follow-ups still dominated (e.g., searching through excel files), despite being more labour intensive compared to automatic plausibility checks and also more prone to human errors. However, as discussions with MAs show, the subject-matter expertise of monitoring staff is still difficult to replace with automatic checks and consequently it is not expected (and not desired) that manual follow-ups can entirely be replaced by automatic checks.

Highly relevant for manual checks are consequently the availability of a sufficient number of monitoring experts. Findings from the analysis of the ERDF/CF operations monitoring systems show that in 56% of all ERDF OPs more than six full-time equivalents (FTE) are available to set up and maintain the operations monitoring system in the 2014-2020 programming period. In 12% of ERDF OPs, two FTE are available for setting up and maintaining the operations monitoring system while in 10% of ERDF OPs three FTE are available. Linking the number of expert staff with the number of institutions, one can observe that the higher the number of expert staff is, the more institutions are involved in collecting and processing monitoring data (e.g., for 52% of all OPs with more than six FTE for monitoring purposes, more than five institutions are involved in monitoring).

In most of the cases, the number of available staff is deemed sufficient for monitoring purposes. However, 56 OPs, located in 12 MS, stressed that expert staff was not always sufficient. The reasons for the insufficiency are different for each OP. The most common are related to challenges at peak-times or special circumstances:

- **Challenge due to high staff turnover**: Insufficient resources due to high staff turnover were reported in the case of two German OPs leading to difficulties especially in the development phase of the operations monitoring systems.

- **Challenges in filling open vacancies**: Restrictions concerning the availability of expert staff on the labour market and time-consuming recruiting processes for expert staff for different Spanish and German entities (e.g., managing authority, Budgetary Informatics Office, IT units) hampered the implementation of the operations monitoring system. In Latvia, it was also considered difficult to attract and maintain high quality experts.

- **Budgetary constraints to employ expert staff (e.g., data scientists, IT-experts)**: Findings from the online repository show that some Member States (e.g., Spain, Slovenia, Italy) point out that budgetary constraints have led to difficulties to increase the number of team members even though more staff members were needed due to increased complexity of requirements for the IT systems in the 2014-2020 programming period. In Slovenia, this especially applied to project management and preparation of necessary upgrades of the system. In Spain, the issues were mainly related to contracting law leading to litigation and loss of human capital. Outsourcing to external suppliers was necessary to fulfill all monitoring requirements.

- **Challenges in performing specific tasks**: Findings from the online repository point out that the number of staff was not always enough in the case of some Romanian OPs

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[37] OECD (2020): Strengthening Governance of EU Funds under Cohesion Policy. Administrative capacity building roadmaps, as part of the OECD Multi-level Governance Studies.

compared to the relatively high number of operations. This led to challenges in performing time-consuming tasks like on the spot visits of project sites. In the case of a French OP, challenges were indicated due to restricted time allocation for performing monitoring activities. This led to problems e.g., in case technical bugs appeared in the IT system. Moreover, several French OPs in total reported that the number of staff was below the actual needs.

- **External service providers as bottlenecks**: In the case of one German OP, the findings from the online repository show that support of the operations monitoring system was perceived as time-consuming and IT specialists were poorly available. Especially the external IT service provider contracted by the regional development bank was often perceived to be a bottleneck and tasks were delayed.

- **Expected administrative challenges**: Most OPs see administrative challenges due to the changed reporting phases for the 2021-2027 period. Half of the OPs which already identified issues with staff resources expect an increased workload for the 2021-2027 period and an increased need for further staff. An exception is the Spanish case, although 18 OPs reported staff insufficiencies, those OPs see only minor challenges due to changed reporting phases.

Bearing in mind the staff shortages that were reported by several OPs (which will likely further increase due to increasingly competitive labour markets in many MS), the more intensive use of automated checks should be considered. Only automatic checks provide the opportunity to check data fields automatically for accuracy or consider dependencies between multiple fields with calculations or algorithms – checks that would otherwise be labour intensive with increasing amounts of data. With increasing possibilities of AI-based solutions (i.e., AI or machine learning algorithms) the use of automated checks can even provide more opportunities in the future, leading to more automatic data quality assurance by semantic classifications and discovery of data within monitoring data sets.

As experiences from past programming periods show, the technical programming of the checks in the IT-systems requires time and expertise and therefore should be planned carefully. The precise use of IT systems could also be another source of increased data plausibility: the interoperability of IT systems with internal (e.g., regional accounting systems) or external (e.g., statistical offices, company register) systems (or the direct use of those) can also improve plausibility of data, efficiency in data population and checking and foster better programme management beyond monitoring. This approach is already pursued in several MS. For example, in Italy, the Data Analysis System is a business intelligence and visual analytics system put in place to support MAs and administrations at central level in performing analysis on all validated data. Updated on a daily basis, the system gathers information from external databases that are interoperable with the National Monitoring System, among which the Fiscal Database and the Anti-corruption Database. As a result, the set of information related to each operation is larger and the burden on beneficiaries for data entry is reduced. Additionally, the Latvian operations monitoring system allowed interoperability with other state administration systems including standardized cross-checks of certain data (e.g., information on beneficiaries). As mentioned above, the Spanish operations monitoring system "Fondos 2020" is also interoperable across different responsible institutions. The Hungarian operations monitoring system is also compatible with state-owned databases and the direct retrieval facilities from state-owned databases enable the use of pre-filled data.

The main purpose of control mechanisms and data checks is to detect and avoid reporting errors. Based on the survey of self-perceptions of MAs and IBs consulted in the study concerning which common reporting errors were detected with their control mechanisms, reporting errors were overall rather rarely detected for the majority of OPs. However, Figure 6 shows that the areas, in which reporting errors were most commonly detected, were misinterpretation of data or information (21% of OPs), other miscalculations (20% of OPs) and

duplications of information (15% of OPs), as indicated by MAs. The areas, in which reporting errors were detected by control mechanisms to the least extent, were the wrong use of decimal separator and the reporting of annual instead of cumulative values. In these areas around 90% of OPs indicated that reporting errors were detected rather rarely or not at all.

These figures can hint at the more problematic areas when it comes to reporting errors. However, the survey results should not lead to the conclusion that those errors are the most frequent ones present in the monitoring data. MAs can only name the errors that have been successfully detected by their control mechanisms and that they are consequently aware of. Moreover, it cannot be differentiated if a lower percentage of detected reporting errors means that the control mechanisms used are not working properly or if the respective reporting errors did not appear in the data and could therefore not be detected.

**Figure 6: Interview results on reporting errors commonly <u>detected</u> by control mechanisms**
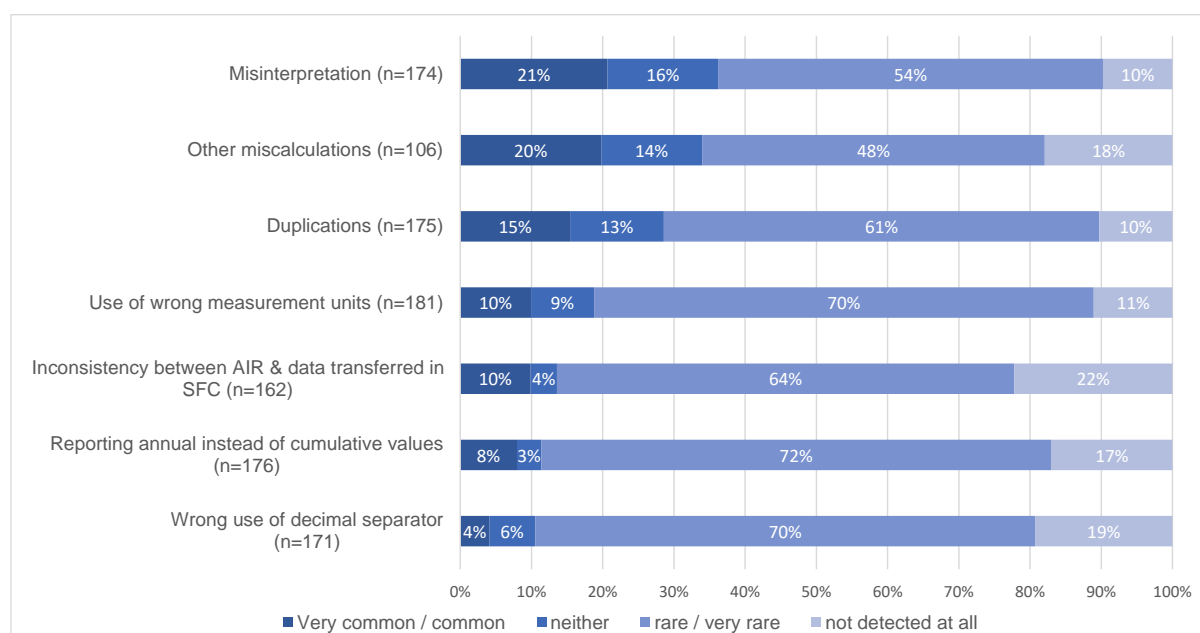


Source: CSIL/Prognos/PPMI (2022); information is based on interviews with MAs, desk research and experts' assessment, n = 106-181. *Question text: What were common reporting errors that were detected through the control mechanisms?*

As explained above, the most frequent source of errors that have been detected in the data by control mechanisms of MAs are misinterpretations (e.g., different understandings of data fields), implying that the current systems seem to be able to detect these types of errors in the data. Despite this overarching finding, it was observed that operation monitoring practices differ between different kinds of monitoring data. For example, the check for consistency of *financial data* (i.e. data fields 41, 42, 43 of Annex III of Delegated Regulation N. 480/2014) appears to be more difficult when different data flows are used, i.e. from different operations monitoring systems. In some MS (e.g., France), *data on categories of interventions* is checked for completeness only in the closure phase of OPs as it is not obligatory for project managers to include this information and therefore it may be missing. Indicator data is to some extent treated more cautiously than data on categories of interventions since there are certain indicators that are more prone to specific types of errors. This applies especially to Common Output (CO) indicators counting supported enterprises and those counting population benefitting from support, for both of which the risk of double counting exists. Interviews with MAs show that duplication is a possible reporting error that MAs are aware of and which they aim to detect through the control mechanism in place. In Belgium, Bulgaria, Cyprus, Denmark, Greece, Ireland, Slovenia, Sweden this error was commonly or very commonly detected.

There are special approaches in the MS in place to avoid and / or detect double counting of indicator values. However, the analysis of CO indicators in this study showed that indicators counting supported enterprises (CO01-CO08) tend to be slightly less robust than the remaining CO indicators, possibly due to double counting (see chapter 3.3 for more information on indicator robustness). For indicators on population benefiting from support, the values are calculated in particular ways to avoid double counting (e.g., reconciliation of monitoring data with official statistics (EE) or calculation on the level of an action (DE)).

Our analysis shows that quality and consistency of indicator data reported in AIRs is ensured by the internal control procedures and plausibility checks conducted by the MAs and IBs during the process of annual reporting. However, in the 2021-2027 programming period the MAs will transmit the monitoring data to the EC without the requirement of a formal submission of an AIR. This potentially increases the risk of less attention being paid to the indicator values and their plausibility by the MS.

## 2.3 Reporting to the EC

Data included in operations monitoring systems require several cleaning and aggregation exercises before being able to be entered into the system at EU level since operation level data should be reported at a more aggregated level (IP/TO). For this study, this activity was done centrally by the team with a consistent approach throughout all OPs. Upon sending the data request, metadata or accompanying notes were provided only in limited cases, and, in most cases, several rounds of interactions with the MA were necessary either to clarify the nature of some datasets or variables before aggregation or to request additional key missing information. Requests for additional data/clarifications were sent to all MAs transmitting the data and, in some cases, up to three rounds were also necessary. Thanks to the additional information and/or data provided by the MAs, the team has been able to carry out several data cleaning, harmonisation and enrichment activities that allowed aggregation at MS and EU levels as well as insightful comparative analysis. For the purpose of data reporting to the EC, this activity of data aggregation before reporting is carried out independently by each MA according to its own procedures (with possibly some national coordination). Reporting procedures are mainly influenced by the preparation of data for reporting. Data storage is sometimes done in more than one system, which often has a direct influence on reporting procedures. In some cases, manual cleaning and filtering is needed but in most of the cases standard reports (i.e. predefined reports that can be generated by the IT system) are used.

In the 2014-2020 programming period, MAs reported monitoring data through AIRs at least once per year to the EC.[38] The AIRs consisted of aggregated monitoring information and evaluation results. In this context, the EC used the SFC2014 system as a tool to electronically exchange information between MAs and the European Commission.

The reporting of information to the EC covers several activities related to collecting, filtering, cleansing, consolidating, combining, and transferring relevant data. Figure 7 shows that the processing of relevant information for EC-reporting purposes still relied on manual activities in many cases. Only 12% of OPs did not use manual activities for collecting, filtering, cleaning, and consolidating while 44% used it intensely or very intensely. The elaboration of respective reports was mostly realized using standard reporting tools, 92% of all OPs, while the use of ad hoc reporting tools was less frequent (78% of consulted OPs). Standard reports are rather predefined. They are optimised for print and might also cover a higher level of detail – as they are not limited to the size of the screen. The content of reports can often be exported to excel for further elaboration and analysis. Standard reports address the requirements of information

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[38] Polverari L (2015) The Monitoring and Evaluation of 2014-20 EU Cohesion Policy Programmes, (IQ-Net Thematic Paper 36(2)).

consumers that merely want to click a button and receive needed information in a known structure and combination.

**Figure 7: Use of types of activities related to reporting**
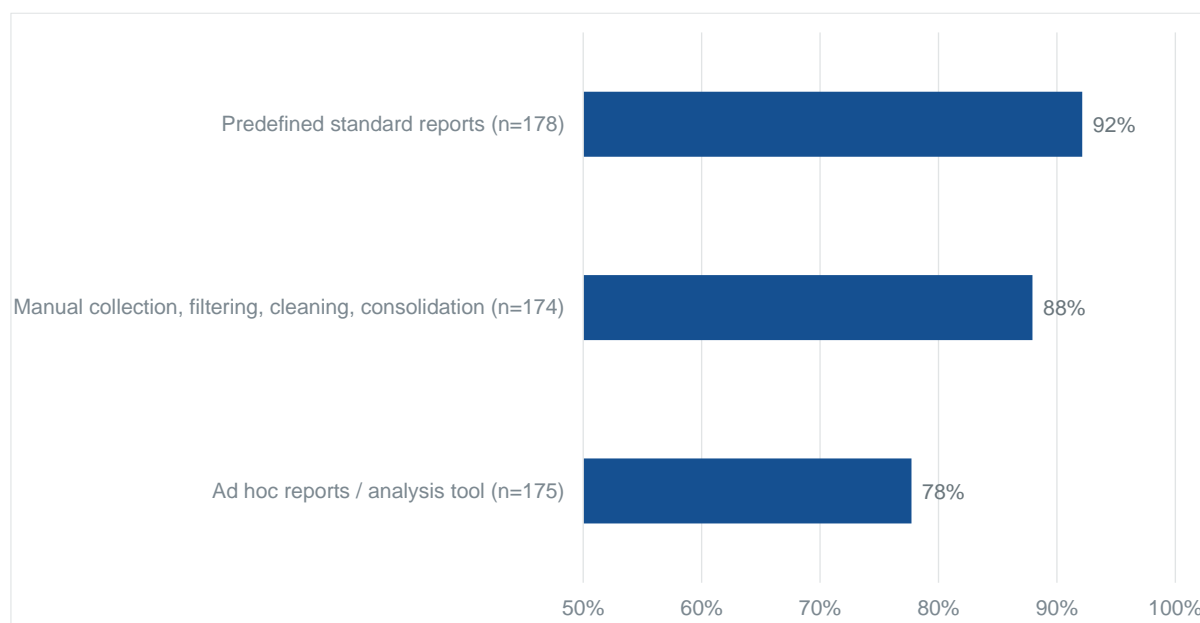


Source: CSIL/Prognos/PPMI (2022); information is based on interviews with MAs, desk research and experts' assessment. n = 174-178. *Question text: What kind of procedures were in place to report monitoring data to the EC?*

Only 6 MS implemented web-services for SFC2014 (CZ, DE, ES, FR, EL, IT). Three of those MS used actively their web-service for AIRs. The SFC2014 interface connection allows an automated data transfer from the IT operations monitoring system to SFC2014. Except for Germany, where only two OPs established web-services, those MS are using a national operations monitoring system or a hybrid system. This finding suggests that the majority of OPs uploaded manually data to the SFC2014 instead of the SFC2014 interface solution for exchanging data with the EC.

One main reason of not using the SFC2014 interface connection is that the development and maintenance of an automatic interface is perceived as demanding. Additional requirements for data security need to be met and development effort, changes of the operations monitoring system would be necessary adaptations. For OPs with only a small number of operations monitored the establishment of the interface connection was therefore seen as resource-intense (e.g., Luxembourg OP, Maltese OPs). However, some OPs express their wish for a more automatized procedure which could reduce the risk of reporting errors (e.g., some Italian OPs). For some OPs (e.g., in Germany) the use of the interface connection to SFC2014 was discarded at the beginning of the programming period because the MAs considered the technological specifications to be not yet fully defined at the time the monitoring IT-systems were set up.

The use of automatic data transmission procedures can increase data plausibility and quality, as it reduces manual reporting errors and inconsistencies. Concerning the stronger focus on reporting, especially the more frequent reporting intervals in the current 2021-2027 programming period, it should be noted that some adjustments of the systems might (still) be necessary. In particular, greater interoperability and standardisation of procedures for data reporting are necessary to minimise errors and inconsistencies when data are reported to the

EC. This assumption is especially relevant since a large share of OPs is expecting impacts on data quality and administrative challenges due to the shortened reporting intervals.

In this context, Figure 8 shows the expected implication of the new reporting phases for the OPs. 58% of the OPs expect administrative challenges while 48% indicate that the more regular reporting phases might have an impact on the quality of data.

**Figure 8: Expected implications by changed reporting phases in the 2021-2027 period**
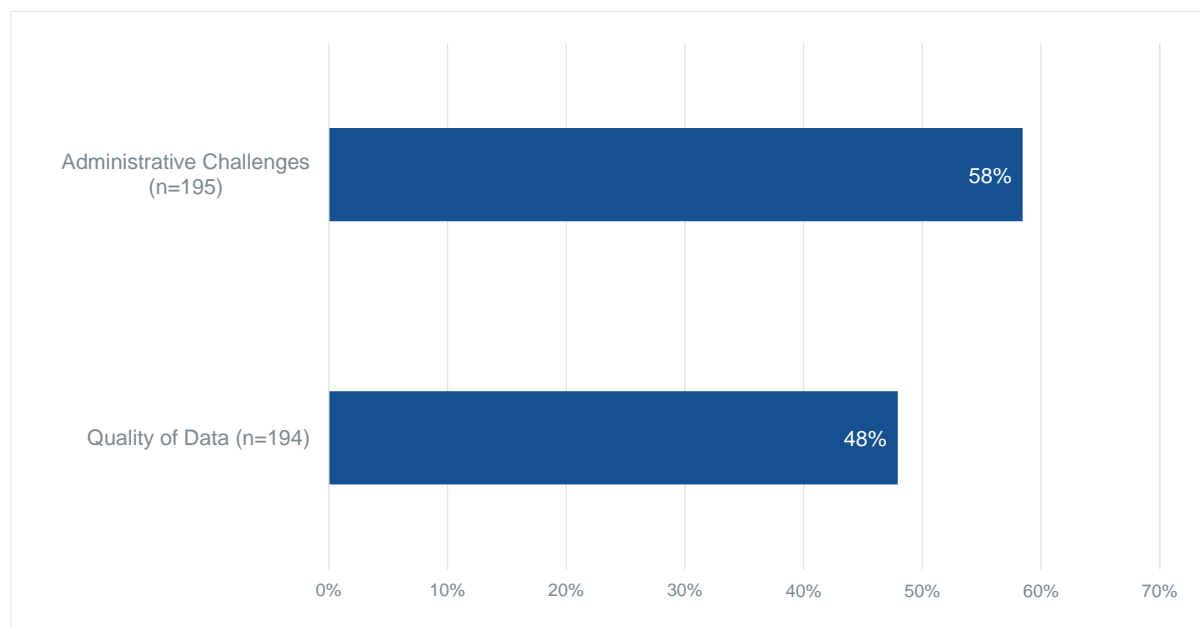


Source: CSIL/Prognos/PPMI (2022); information is based on interviews with MAs, desk research and experts' assessment. n = 194-195. *Question text: Concerning the changes for the 2021-2027 period, what are the main implications resulting from changing the reporting phases to the EC to every three months?*

Administrative challenges are mainly expected from MAs because the new reporting cycle requires tighter monitoring and data cleaning and validation processes that need to be finished in a shorter time frame. This might lead to increased workload and staff shortages for some OPs. Some OPs indicate that simplified and clearer formats would be helpful to lower the anticipated increased administrated challenges. Findings also show that OPs with highly developed IT systems do often not expect high administrative challenges, while OPs with less developed IT systems often point out that substantial human and financial resources are needed to develop and implement the modified operations monitoring system to meet the new requirements. More automated data reporting processes might therefore be key to lower the administrative burden.

The quality of data might be also positively and negatively impacted by the new reporting phases. According to some OPs, the frequent delivery of data might give a more granular insight into the progress of operations, but MAs fear that the new reporting cycle may be too frequent, especially in the case of programmes supporting transport and environmental infrastructure where new data might not be available five times per year. Findings from this study show that this can have an impact on data plausibility during the project implementation phase as implemented values reported in AIRs can be lower due to the reason that for large infrastructure operations, the implemented values are reported in AIRs only when the operation is completed and approved by the external audit, though in the operations monitoring systems values are reported by the beneficiaries together with the submission of the applications for payments.

# 3.  Quality and plausibility of operations monitoring data

The managing authority (MA) is required to have an operations monitoring system set up in accordance with Article 125(2)(d) CPR. The information on data to be recorded and stored in computerised form for each operation is set out in Annex III to Regulation (EU) No 480/2014. The main purpose of operations monitoring systems is to provide data of high quality. The data should enable the MAs to monitor and assess the financial and physical progress of programmes and operations and to report on their achievements. In this context, good quality of monitoring data refers to the accurate, comprehensive, and timely description of individual ERDF and Cohesion programme implementation in administrative, physical, and financial terms.

Moreover, the Certifying Authority (CA) is required, under Article 126(d) CPR to "ensure that there is a system which records and stores, in computerised form, accounting records for each operation, and which supports all the data required for drawing up payment applications and accounts, including records of amounts recoverable, amounts recovered and amounts withdrawn following cancellation of all or part of the contribution for an operation or operational programme; and under Article 126(g) CPR to maintain "in a computerised form, accounting records of expenditure declared to the Commission and of the corresponding public contribution paid to beneficiaries". Hence, also for this purpose, the CA needs to ensure that it receives the required information from the MA, on the basis of the mentioned operations monitoring system.

## 3.1  Key finding 1: Provision of plausible data by operations monitoring systems

The analyses carried out in this study have shown that the operations monitoring systems operated in the MS are highly complex systems, collecting data generated by over one million beneficiaries for more than 500,000 operations in total. They include huge amounts of descriptive, categorical, and financial information about operations and beneficiaries, which are structured in a combination of various modules and sub-systems. As a result of the data extractions for the purpose of data collection, an average of four to five different files/datasets, sometimes even of different formats, were generally submitted by MAs for each OP/CP. **Despite complexities and differences, the data produced by the operations monitoring systems is, to a large extent, plausible.** Particularly the accuracy of financial data (costs and expenditure/paid amount) is very high. The analysis of the financial data revealed only minor data quality issues (few inconsistencies among data fields or between operations and beneficiary data), which stem from the different designs of the operations monitoring systems or the timing of updates.

The high level of accuracy relating to costs and expenditure data is an important finding since, as clearly indicated by the MAs themselves, one of the main purposes of the operations monitoring systems is to ensure the adequate procedure for aggregation of data for payment applications and accounts. An accurate representation of administrative procedures and expenditure tracking is vital for the financial management, verification and audit procedures. For this reason, cost and expenditure data are subject to high scrutiny in MAs and data checks are performed thoroughly in each step of programme implementation.

Although cost and expenditure data is generally plausible and accurate, the analysis of collected data shows that a few data fields relating to financial operation level data, especially on costs (data fields 41 to 43 required by Annex III of delegated regulation (EU) No 480/2014, see Figure 9), may be used with slightly differing definitions across the programmes/MS, depending on the financial strategy on financing of projects chosen by each MS (including ratio of EU funding, matching funds from national budget, own contributions of the beneficiary -public or private- and so on). There may be cases where, correctly, the same amount is

reported under all 3 fields, while other cases where the amount differ. An accurate use of such data would require knowing case by case the specific financing strategy adopted by the MS and the MA for specific operations.

**Figure 9: Data fields 41-43 according to Annex III of Commission Delegated Regulation (EU) No 480/2014**

**41.**
Amount of the total eligible cost of the operation approved in the document setting out the conditions for support

**42.**
Amount of the total eligible costs constituting public expenditure as defined in Article 2(15) of Regulation (EU) No 1303/2013

**43.**
Amount of public support, as set out in the document setting out the conditions for support

Source: Illustration by CSIL/Prognos/PPMI (2022).

During a stakeholder seminar it was confirmed by the participants that data field 41 (and 42) is of particular interest to the stakeholders as it corresponds to the Art. 112 data reporting to the Commission and to the basis for calculating the EU contribution. Therefore, more attention is paid to the correct recording of data for the allocated total/public eligible cost. In contrast data field 43 is perceived to be of lesser importance as recorded data is not actively used by stakeholders.

## 3.2 Key finding 2: Lower accuracy in assigning the category of intervention

Data on categories of intervention, meaning the attribution of data to IPs, TOs or categories of intervention (most prominently for the Field of Intervention (FoI)), is not always complete and consistently applied by MAs. In a few cases, the data extractions provided for the study did not include the corresponding TOs or IPs under which the operations were classified, or the information was incorrect for some operations.

The analysis of operation level data shows, that in few MS the **attribution of TOs and IPs** at operation level in the extracts provided was not entirely correct. In Italy some inconsistencies between the reported Investment Priority and Thematic Objective were found. The national authority considers the information on the IP to be the correct attribution, while some clerical errors can occur regarding the attribution of operations to a TO. In Germany a few cases of clerical errors in the reporting of IPs have been detected, e.g., consisting in a mix-up of IP 4b and 9b. Additionally, in Bulgaria the attribution of IPs at operation level is not available from the IT system.

In contrast the data on the categories of intervention (data fields 23 to 30 in Annex III of of delegated regulation (EU) No 480/2014) are a required part of data reporting to the EC one time a year for the 2014-2020 period but are rarely used to address the intrinsic informational needs of the MAs, despite their high information potential for programme management, monitoring and reprogramming.

In some MS some data of the **categories of interventions (data fields 23 to 30)** at operation level and/or are not included in the IT operations monitoring system. That means that the information was not readily extractable from the system at operation level for the purpose of this study. In Estonia e.g., information on the operation's location is not stored in the IT operations monitoring system. For Germany e.g., for individual OPs data for territorial delivery mechanisms, territory type, Field of Intervention or economic activity have not been provided as part of the data extraction requested. In Germany also for some OPs codes for the form of finance, the territory type or territorial delivery systems are deliberately not included at operational level in the IT operations monitoring systems, if the same code applies to all operations. That is the case e.g., if all operations are supported by grants as the only form of finance under the respective OP. For France, in Synergie (the central operations monitoring system), information on categories is often available at the operation level. However, it is not systematically uploaded and therefore it may be missing in some cases. The information will be checked in the closure phase of OPs and the information will be included for all operations for which it is missing. For transmitting data via SFC the MA uses the information available at Priority Axis or Specific Objective level. Also, for Malta the information on the categories of intervention was overall available, but it was missing for some operations. When possible, the MA asked project managers to up-date and include the missing information in the operations monitoring system. This suggests that the information on categories of intervention is not always documented in the IT system as soon as the project dossier is opened. For Spain in a few cases, the information on the Field of Intervention, form of finance and territory type was missing: this means that the IB has not provided the information to the central operations monitoring system. In addition to challenges with data that could not be readily extracted for this study, also a few clerical errors were detected in data on categories of interventions on data fields 23 to 30. For Italy e.g., the variable "form of finance" was subject to clerical errors.

A special challenge for data aggregation under this study posed the categorisation of operations according to a **Field of Intervention** (data field 23). There is the possibility to classify an operation under a unique FoI or under multiple FoI codes and both options have been used among the MS. Complex operations with many components and broad strategic scope would suggest involving several codes for the FoI. Indications by the European Commission[39] do not specify if MAs are to use the most prominent part of the operation as the only FoI code or if they are to use several codes with pro-rata divisions of expenditures. While most MAs generally assign a unique FoI, other MAs tend to attribute more than one FoI to the same operation without indicating a prevalent one in order to fully reflect the different components and strategic ambitions. Others distinguish between a predominant field and a list of secondary fields.

In Bulgaria e.g., the attribution of FoIs was not possible in case of operations with multiple codes because no shares were available. For Poland e.g., in the operations monitoring system the information on the Field of Intervention is split between "Dominant FoI" and "Scope of intervention (supplementary)". However, in general, only the former is compiled in the operations monitoring system and is used for aggregations. For Italy the share of each FoI was not available in the central operations monitoring system for those operations classified under multiple fields, while it is possible that this information is available in the regional operations monitoring systems. In Portugal the information on the Field of Intervention collected at central level is different from that collected at regional level: at regional level, the detailed information on the Field of Intervention is provided, while at the central level

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[39] European Commission (2016). Guidance Note on Nomenclature of Categories of Intervention and the Methodology for Tracking of Climate Change Related Expenditure under Cohesion Policy. EGESIF_15_0019-02 final.

operations linked to multiple Fields of Interventions similar between them are aggregated under a macro-category of Field of Intervention.

While, in principle, the attribution of multiple FoIs adds richness to the information pool, it also complicates aggregation. These inconsistencies, attributable to only a minority of cases (only 2.4% of operations have multiple FoIs), may be due to the observation that the use of data on categories of interventions for monitoring or strategic reporting is extremely limited in MAs. For this reason, **MAs also assign lower importance or have less incentives to ensure high quality data for data on categories of interventions**. This impression was confirmed by individual participants of a stakeholder seminar to discuss the preliminary findings of the study. One participant highlighted that there need to be incentives for the provision of data on categories of interventions and that a better integration of data on categories of interventions into the IT systems for the 2021-2027 period will be an improvement concerning the production of high-quality data.

While implications of less accurate data on categories of interventions at the level of individual programmes are not as grave, the aggregates for financial values and output indicators by TO and IP might be incorrect or incomplete for SFC reporting. For example, operations split into several TO/IP/FoI may end up in double counting of operations when aggregating data. The discretional choices made by MAs for classifying according to FoI may also influence the plausibility of the categorisation of operations when harmonising data at EU level: Similar operations may be classified under different fields depending on the approach adopted by the MA in the attribution of the categories. Efficiency gains for MAs are possible, if the completeness and extractability of data on categories of interventions at operation level within the IT systems can be improved. Especially considering higher reporting intervals of data on categories of interventions in the 2021-2027 period, improvements of this aspect could still be very beneficial.

### 3.3   Key finding 3: Only small and limited gaps in beneficiary data

The **availability of information on all (financially) involved beneficiaries and final recipients is sometimes limited**, meaning that this information is not always stored in the ERDF/CF operations monitoring systems. In these cases, the financial involvement in operations and their nature (e.g., if they are a public or private entity, their location, etc.) cannot be traced for all beneficiaries but only for the lead beneficiaries (in case of collaborative projects) or direct beneficiaries (for intermediated or financial instruments).

For **collaborative projects**, for example, if payment is done through the lead partner, some of the systems collect only the data related to the lead partner. The analysis of operation level data shows that in eleven MS financial information in the (IT) operations monitoring systems related only to the lead beneficiaries, without the split to eventual additional partner beneficiaries. Partners that might also receive financial support passed on by the lead beneficiary are not documented in the same way and is not readily available for data extraction and analysis. For some MS (e.g., Latvia, Lithuania, France) in the operations monitoring system the full list of beneficiaries is available and can be extracted; however, financial data is reported only at the level of lead beneficiary. For other MS (Denmark, Cyprus, Bulgaria) operations monitoring systems report on the lead beneficiary only. General as well as financial information on possible partners is not directly extractable from the operations monitoring system and needs specific queries and manual extraction work. For some Bulgarian OPs e.g., for this study, the complete list of beneficiaries (including partners) was provided from other records and not via extraction from the IT operations monitoring system. The operations monitoring systems prioritize the collection of information on the beneficiaries entering into contractual relations with the MAs or IBs. For Sweden e.g., this is also reflected by the project application form, in which technically only one beneficiary can be registered with full information as only one organization can submit the application. For Swedish collaboration

projects other partners are listed by name in a "text box" in the application form without further information. Also, for umbrella projects constituting state aid schemes often the final recipients are not included in the operations monitoring systems. In Poland e.g., data on final recipients of umbrella projects are not included in the central operations monitoring system, but in the operations monitoring system of MAs, although not in all cases.

Moreover, **information on final recipients of financial instruments is usually not included in the operations monitoring systems but stored separately** by the institution responsible for the financial instrument, which is the direct beneficiary of the EU funds. Therefore, information on individual final recipients cannot be retrieved from the IT operations monitoring systems of most MAs. Due to the special structure of intermediated instruments and requirements of financial instruments the documentation of their final recipients is often decentralized.[40] Final recipient data for financial instruments is usually not integrated in the same way in IT operations monitoring systems as the more common type of operation data of grant beneficiaries. In Poland e.g., data on final recipients of financial instruments is not included in the central operations monitoring system but is made available to the national authority. While MAs can usually access beneficiary data from intermediary bodies (usually public authorities or regional agencies), access to this data may be more difficult when it comes to fund managers of financial instruments, since banks and other financial institutions have their own, typically rather restrictive, internal policies for data handling (including ensuring compliance with GDPR). In Germany e.g., the information on final recipients of financial instruments is usually not stored in the IT operations monitoring systems. The information is recorded in a decentralized structure by the bodies managing the financial instruments, which are usually regional development banks. Information on final recipients can be requested by the MAs but is made public only in a limited and aggregate form due to data privacy concerns. In contrast, in Croatia final recipients are not included in the IT operations monitoring system, but information is published on the websites of the bodies implementing financial instruments.

The gaps in information on non-lead beneficiaries and final recipients of intermediated and financial instruments have no direct consequences for data quality and the correct use of funds as for the audit trail this is not requested. However, transparency concerning the involved beneficiaries and final recipients is limited in these cases, with important implications for accountability and evaluation. It is therefore advisable to systematically collect the information and financial data of all funded beneficiaries, including final beneficiaries of intermediated instruments.

## 3.4 Key finding 4: Differing interpretations and double counting can undermine comparability of achievements at operation level

For monitoring programme achievements during the 2014-2020 period each OP developed a set of output indicators measuring the outputs of the actions supported under the OP. For the purpose of higher standardisation and better possibilities of aggregation the EC proposed a set of Common indicators (CO) and encouraged the OPs to use as many CO indicators as relevant for the actions supported under the respective OP. The EC provided guidance materials covering a standard code, the name, measurement unit and short definition and comments for each CO.[41] The OPs complemented their output indicator sets by programme-specific output indicators developed by the national and regional stakeholders to cover the

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[40] Out of 568 financial instruments, the list of final recipients in the database of beneficiaries could be collected for 275 financial instruments (i.e., 48% of the total).

[41] The Programming Period 2014-2020. GUIDANCE DOCUMENT ON MONITORING AND EVALUATION − EUROPEAN REGIONAL DEVELOPMENT FUND AND COHESION FUND – Concepts and Recommendations, Annex I.

achievements of actions that cannot be covered by CO indicators. Whereas the CO indicators were explicitly introduced to enable aggregation across OPs at EU level, the nature of programme-specific output indicators limits their aggregability across OPs. For this study both types of indicators were analysed.

The audit reports from the beginning of the programming period highlighted several challenges regarding the use of indicators These challenges at OP level have been addressed by the MAs. Nevertheless, challenges remain especially when CO data is to be used at aggregate levels.

The study assessed the plausibility of COs by performing qualitative, quantitative and cross-check analysis. Overall, the COs were assessed as largely plausible and there was a good match between data reported in AIRs and operation level data collected for this study. (For further details please see the section on Cos data under chapter 3.5.) However, the results of the match were lower for several groups of indicators. The lower share of robust values of common indicators measuring **support to enterprises (CO01-CO08)** can be explained by the fact that data at operation level often lack information on financial instruments and do not eliminate double-counting of supported enterprises. Due to the risk of double-counting (in case enterprises receive the same support twice, or two different forms of supports), some MS do not monitor some of these indicators at operation level. Also, a high number of operations and limited availability of data on financial instruments affects the accuracy and plausibility of project-level data. Our analysis showed that values reported at the operation level are subject to multiple quality checks by the implementing bodies and managing authorities before the aggregated values are reported in AIRs. Though data is correct at the operation level, aggregation of project-level data does not lead to AIR data. Procedures aimed at the elimination of double counting were established to ensure that the risk of double counting is reduced or eliminated. In Germany e.g., MAs, IBs or external service providers check lists of supported enterprises to remove double counting for each OP in the preparation phase of the AIR. Usually this involves resource-intensive manual cleansing procedures. Whereas this mechanism leads to a removal of double counting at OP level, double counting is not removed from across OPs in Germany as the operations' monitoring systems are completely decentralized. In France e.g., the national operations monitoring system had a planned feature to avoid double counting of supported enterprises using SIRET numbers. However, this feature was not fully operational during the period and most MAs relied on external excel files to manually track double counting of supported enterprises. Reported good practices to avoid double counting include registering a unique identifier for each enterprise and/or a verification based on external registers and statistics (best practice being a unique identifier based on external registers, e.g., listings from Chambers of Commerce or equivalent and using them for automatic checks). In Lithuania, e.g., to report on CO01 achievements in AIRs, the values of CO02-CO05 are automatically summed-up and duplicates are removed at the specific objective, investment priority and OP level.

The analysis also showed that the use of some indicators measuring the **population covered by funded operations (CO20, CO21, CO36 and CO37)** was particularly affected by double counting and these indicators are often not reported based on values monitored at operation level. To avoid double counting for overlapping operations, CO values are sometimes reported in AIRs based on national registers or data provided by statistical offices and cannot be retrieved and aggregated directly from the operations monitoring systems at operation level. In Estonia, e.g., the data on the population living in areas with integrated urban development strategies is reported once a year based on data from Estonian Statistics. It is a statistical indicator illustrating the urban population covered by the strategy. Also, in Germany, double counting of population is avoided by looking at the areas concerned at the level of the action/measure. For the OP Berlin e.g., the population covered by urban development strategies is calculated by the IB at the level of the action counting each deprived neighbourhood only once (independent from the number of operations addressing each

neighbourhood). For German OPs challenges might arise, if actions or IPs target the municipal and county level at the same time as a municipality might be part of a county. In Greece double counting of population benefitting from improved health services at different level is counteracted by reporting the population only once at the highest level of health unit. For example, if under a regional OP a hospital and a health centre are included in the same regional unit, then the reference population corresponds to the regional unit related to the hospital. The cumulative value of the indicator at OP level can also not exceed the total population of the specific region.

**Table 1: Common Output Indicators prone to double counting**

| Indicators measuring support to enterprises | | Indicators measuring population benefitting from support | |
|---|---|---|---|
| CO01 | Number of enterprises receiving support | CO20 | Population benefiting from flood protection measures |
| CO02 | Number of enterprises receiving grants | CO21 | Population benefiting from forest fire protection measures |
| CO03 | Number of enterprises receiving financial support other than grants | CO36 | Population covered by improved health services |
| CO04 | Number of enterprises receiving non-financial support | CO37 | Population living in areas with integrated urban development strategies |
| CO05 | Number of new enterprises supported | | |
| CO06 | Private investment matching public support to enterprises (grants) | | |
| CO07 | Private investment matching public support to enterprises (non-grants) | | |
| CO08 | Employment increase in supported enterprises | | |

Source: CSIL/Prognos/PPMI (2022)

In addition, some COs are perceived as having **broad definitions** (CO18-CO21, CO28-CO34) or foresee the **calculation methodologies to be set up by the MAs** (CO08-09, CO20-21, CO28-29, CO34). For instance, in Greece, CO18 is used only for new houses connections to the water supply network and not for simple reconstruction operations, while in Poland, it includes reconstruction operations but excludes operations aiming to create or improve irrigation systems. Also, different methods for identifying the selected values are used, e.g., in Spain and Slovenia these values are defined based on the number of inhabitants living within the areas (i.e. potential users), while in Lithuania selected values are derived from the preliminary agreements with service users. If in practice the interpretation of the values to be reported for COs differs between beneficiaries and/or OPs due to broad definitions and differing calculation methods, the **consistency of aggregate figures on COs monitoring programme achievements at national or EU level can be compromised**.

**Table 2: COs having ambiguous definitions and/or calculation methodologies set-up by the MAs**

| COs with ambiguous definitions | | COs with calculation methodologies to be set up by the MAs | |
|---|---|---|---|
| CO18 | Additional population served by improved water supply | CO08 | Employment increase in supported enterprises |
| CO19 | Additional population served by improved wastewater treatment | CO09 | Increase in the expected number of visits to supported sites of cultural or natural heritage and attractions |
| CO20 | Population benefiting from flood protection measures | CO20 | Population benefiting from flood protection measures |
| CO21 | Population benefiting from forest fire protection measures | CO21 | Population benefiting from forest fire protection measures |
| CO28 | Number of enterprises supported to introduce new to the market products | CO28 | Number of enterprises supported to introduce new to the market products |
| CO29 | Number of enterprises supported to introduce new to the firm products | CO29 | Number of enterprises supported to introduce new to the firm products |
| CO30 | Additional capacity of renewable energy production | CO34 | Estimated annual decrease of GHG |
| CO31 | Number of households with improved energy consumption classification | | |
| CO32 | Decrease of annual primary energy consumption of public buildings | | |
| CO33 | Number of additional energy users connected to smart grids | | |
| CO34 | Estimated annual decrease of GHG | | |

Source: CSIL//Prognos/PPMI (2022)

A general challenge creating a risk for double counting and misinterpretations also arises, if **multiple beneficiaries report** on the implemented values by manually entering the data using e-cohesion systems. Especially when there is a high number of beneficiaries for the same project or call, this can significantly increase the risk of errors and misinterpretations that must be addressed by the MAs during the annual reporting cycle.

## 3.5 Key finding 5: Aggregates reported in the AIRs are by and large plausible, meaning that they represent correctly what is included in the MS operations monitoring systems

To assess the plausibility of collected data, aggregated, and harmonised financial and indicator data at operation level available in the national/regional operations monitoring system (i.e. collected in the Single Database) was compared and reconciled with the data reported in AIRs for 2020.[42] Analytical tests, and quantitative and qualitative cross-checks were conducted to identify deviations and potential cases of under- and overreporting. Although this comparison was not possible in all cases for reasons of data gaps, it provided a relatively good approximation for a plausibility check. The overall result is that **data on implemented values reported in AIRs are of high quality and consistency level**, ensured by the internal quality checks conducted by MAs and other actors of management and control systems (as revealed by the metadata collected). The comparison between the financial data (i.e. total amount of eligible costs of selected operations) and the data on the number of ERDF and CF operations showed that there is no discrepancy for 31% of OPs; for 34 OPs (16%) the discrepancy is of the order of 2% at most; for 59 OPs (27%) the discrepancy is between 3% and 6% and for the remaining 55 OPs (26%) the discrepancy is over 7%.

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[42] The data from AIRs was retrieved from the SFC reported data on categories of interventions for ERDF/CF as of 31/12/2020: https://cohesiondata.ec.europa.eu/2014-2020-Categorisation/ESIF-2014-2020-categorisation-ERDF-ESF-CF-planned-/3kkx-ekfq/

**Financial allocations and number of operations**

When assessing the causes of potential discrepancies in terms of financial allocations, several plausible explanations were identified. The main one is linked to the different cut-off dates between the two datasets (Single Database and SFC data). Monitoring systems are living systems that are updated and revised daily, so a snapshot of a certain moment in time is providing only a partial picture. Other causes were a difference in the date of data extraction (even given the same cut-off dates the date of data extraction can modify the dataset due to the evolutionary nature of operations monitoring systems), differences in the exchange rates, or special functionalities of national systems (this applies especially when national systems were the source of data as compared to regional systems which are the source for SFC). Moreover, as AIRs are filled in mostly manually by MAs, errors may occur in the process, and manual reviews of data is conducted to clear them. However, due to internal quality control and data checks implemented by MAs, including automatic SFC 2014 checks, this only leads to minor discrepancies. The following table provides an overview of the deviations identified in the comparison between the data recorded in SFC and in the Single Database of this study:

**Table 3: Comparison SFC and Single Database data at MS level**

| MS | Number of operations reported in SFC | Number of operations reported in the Single Database | Delta operations SINGLE DB – SFC | Difference in the n° operations SINGLE DB – SFC | Total amount of eligible costs of selected operations (SFC) | Total amount of eligible costs of selected operations (Single database) | Delta allocations SINGLE DB – SFC | Difference in the amount of allocations SINGLE DB – SFC |
|---|---|---|---|---|---|---|---|---|
| AT | 1,398 | 1,368 | -2% | -30 | 2,481,822,617.00 € | 2,477,339,392.00 € | 0% | -4,483,225.00 € |
| BE | 1,158 | 1,117 | -4% | -41 | 2,351,101,892.00 € | 2,781,704,800.00 € | 18% | 430,602,908.00 € |
| BG | 26,010 | 30,619 | 18% | 4,609 | 7,895,108,764.00 € | 8,331,475,360.00 € | 6% | 436,366,596.00 € |
| CY | 1,195 | 1,146 | -4% | -49 | 763,125,375.00 € | 821,488,325.01 € | 8% | 58,362,950.01 € |
| CZ | 35,788 | 33,467 | -6% | -2,321 | 24,506,470,544.00 € | 25,305,784,960.00 € | 3% | 799,314,416.00 € |
| DE | 46,808 | 46,930 | 0% | 122 | 18,799,501,015.00 € | 19,136,713,296.00 € | 2% | 337,212,281.00 € |
| DK | 647 | 148 | -77% | -499 | 428,268,810.00 € | 405,856,448.00 € | -5% | -22,412,362.00 € |
| EE | 9,697 | 9,495 | -2% | -202 | 3,910,847,736.00 € | 3,896,860,672.00 € | 0% | -13,987,064.00 € |
| ES | 82,717 | 86,029 | 4% | 3,312 | 26,940,896,608.00 € | 29,013,884,256.00 € | 8% | 2,072,987,648.00 € |
| FI | 9,784 | 6,819 | -30% | -2,965 | 1,600,149,874.00 € | 2,985,207,229.00 € | 87% | 1,385,057,355.00 € |
| FR | 17,728 | 17,808 | 0% | 80 | 19,799,001,790.00 € | 19,625,128,784.00 € | -1% | -173,873,006.00 € |
| GR | 38,195 | 39,612 | 4% | 1,417 | 21,724,785,378.00 € | 22,104,658,112.00 € | 2% | 379,872,734.00 € |
| HR | 8,214 | 7,575 | -8% | -639 | 11,409,006,929.00 € | 11,522,295,808.00 € | 1% | 113,288,879.00 € |
| HU | 40,754 | 23,754 | -42% | -17,000 | 21,566,562,352.00 € | 24,700,136,480.00 € | 15% | 3,133,574,128.00 € |
| IE | 1,316 | 1,349 | 3% | 33 | 624,368,187.00 € | 756,793,632.00 € | 21% | 132,425,445.00 € |
| IT | 176,276 | 104,626 | -41% | -71,650 | 33,923,465,353.00 € | 28,901,074,472.00 € | -15% | -5,022,390,881.00 € |
| LT | 13,566 | 13,825 | 2% | 259 | 7,633,122,961.00 € | 7,640,101,376.00 € | 0% | 6,978,415.00 € |
| LU | 30 | 26 | -13% | -4 | 54,570,264.00 € | 51,230,540.00 € | -6% | -3,339,724.00 € |
| LV | 1,812 | 1,642 | -9% | -170 | 4,244,819,808.00 € | 4,265,511,168.00 € | 0% | 20,691,360.00 € |
| MT | 101 | 449 | 345% | 348 | 724,749,941.00 € | 712,477,056.00 € | -2% | -12,272,885.00 € |
| NL | 920 | 927 | 1% | 7 | 1,767,070,077.00 € | 1,767,772,416.00 € | 0% | 702,339.00 € |
| PL | 55,427 | 54,117 | -2% | -1,310 | 75,797,430,479.00 € | 80,723,787,392.00 € | 6% | 4,926,356,913.00 € |
| PT | 60,623 | 70,065 | 16% | 9,442 | 26,977,862,306.00 € | 28,917,417,936.00 € | 7% | 1,939,555,630.00 € |
| RO | 9,156 | 7,441 | -19% | -1,715 | 33,700,667,134.00 € | 33,608,700,416.00 € | 0% | -91,966,718.00 € |
| SE | 1,389 | 1,338 | -4% | -51 | 1,891,875,539.00 € | 1,807,044,987.00 € | -4% | -84,830,552.00 € |

| MS | Number of operations reported in SFC | Number of operations reported in the Single Database | Delta operations SINGLE DB – SFC | Difference in the n° operations SINGLE DB – SFC | Total amount of eligible costs of selected operations (SFC) | Total amount of eligible costs of selected operations (Single database) | Delta allocations SINGLE DB – SFC | Difference in the amount of allocations SINGLE DB – SFC |
|---|---|---|---|---|---|---|---|---|
| SI | 5,055 | 5,018 | -1% | -37 | 3,199,551,813.00 € | 2,923,896,064.00 € | -9% | -275,655,749.00 € |
| SK | 16,715 | 6,770 | -59% | -9,945 | 13,548,358,682.00 € | 10,646,364,768.00 € | -21% | -2,901,993,914.00 € |
| TC | 12,558 | 9,585 | -24% | -2,973 | 12,547,314,148.00 € | 12,213,350,678.00 € | -3% | -333,963,470.00 € |
| UK | 2,479 | 1,764 | -29% | -715 | 7,516,481,190.00 € | 7,208,477,067.00 € | -4% | -308,004,123.00 € |
| **Total** | **677,516** | **584,829** | **-14%** | **-92,687** | **388,328,357,566.00 €** | **395,252,533,890.01 €** | **2%** | **6,924,176,324.01 €** |

Source: CSIL/Prognos/PPMI (2022), based on SFC reported categorization data for ERDF/CF as of 31/12/2020 and data included in the Single database

As mentioned above, the **difference in the cut-off dates** is the main potential explanation for discrepancies between financial and operations data reported in SFC and in the Single Database. Excluding Cooperation Programmes, there are a total of 70 OPs in 17 Member States whose cut-off date in the Single Database is not 31/12/2020 out of the total of 215 OPs, as shown in the table below. In the case of Bulgaria, for instance, in the first months of 2021, a significant number of COVID-19 related operations were selected under the Innovations and Competitiveness OP and the Regions in Growth OP, which explains why the total amount of allocations is significantly higher in the Single Database compared to SFC reported data.

Although the cut-off dates might be the same, the **different dates of data extractions** from operations monitoring systems may explain potential differences, as it is in the case of some German OPs. Indeed, data as of 31/12/2020 were extracted and transmitted through the SFC before 31/01/2021, while the data for the construction of the Single Database was in general extracted in the period from January to June 2021, depending on the OP. As the systems are usually "living systems", these differences in dates of extraction lead to slightly differing datasets. As an example, operations might have been revoked or removed from the data set due to more recent knowledge about the operation (e.g., bankruptcy of an enterprise, which is in some cases checked for five years following project completion). This was the case for instance of the OP Baden-Württemberg; compared to the financial data in the SFC, the data set is reduced by one project. This is because, at the time of the decision to remove the project from co-financing in March 2021, the financial data for 2020 had already been sent to the EC through the SFC and could no longer be changed (deadline 31/01/2021). At the same time, it might be that financial corrections are made for instance following audits or checks performed directly by the MA. This was the case for instance of the OPs Auvergne and Rhone-Alpes in France, the Maltese and Luxembourg OP.

Another potential explanation for discrepancies in financial data may be due to the **use of a different exchange rate to convert national currencies into EUR**. This was the case for instance of Poland. While the conversion from PLN to EUR for the data extracted from operations monitoring system was made based on the average exchange rate over the period 2014-2020 (i.e., 4.28 PLN for 1 EUR), the conversion in the SFC database is made according to Art. 133 of the Regulation EU 1303/2013. Amounts are indeed converted using the monthly accounting exchange rate of the Commission in the month during which the expenditure was registered in the accounts of the certifying authority of the operational programme concerned. When using the latest available exchange rate after 31/12/2020, that of January 2021 (i.e., 4.55 PLN for 1 EUR), the discrepancies in most cases disappear. The same line of reasoning applies to the Northern Ireland OP in the UK.

Some specificities related to the **functioning of operations monitoring systems and how data is collected and reported** may explains potential discrepancies. For instance, the presence of a hybrid operations monitoring system consisting of both decentralised operations monitoring systems at the level of OP and regions and of a centralised operations monitoring system at national level may be the explanation itself, as it is in the Italian case. Indeed, the data extracted for the Single Database was provided by the national coordination authority IGRUE, while data is transmitted to the EC through the SFC by the different MAs, which might explain potential discrepancies between the two data sources. Reasons for misalignment between data in SFC and in the National Monitoring System are manifold. The two data flows (to the national and the EU level) do not differ only in their frequency: while the transmission of data to IGRUE takes place at operation level and in an automated form, thanks to the interoperable nature of local and national systems, MAs manually fill in data aggregated by Axis into SFC. In addition, the nature and name of the variables required by the two systems do not necessarily coincide, triggering uncertainty among MAs. Validation checks carried out by IGRUE also contribute to misalignment: operation data transmitted to IGRUE that fail to pass the validation checks are provisionally excluded from the National Monitoring System

(until the MA corrects or completes them) but are typically included in the aggregated figures entered by MAs into SFC.

**Systematic errors in the interfaces for interoperability between SFC and the operations monitoring system** were highlighted as a potential explanation by the Greek national authority. The latter explained that the interfaces for interoperability are already in place but there seem to be some systematic errors.

The **difference in the nature of the operations considered** can explain differences both in financial data and in the number of operations. In some cases, the data extracted for the construction of the Single Database did not include operations under Technical Assistance, while they are reported through SFC. This was the case in Denmark. Another potential explanation is related to the inclusion of ESF operations in the Single Database. This was the case of the French Technical Assistance OP. The data for this OP was retrieved from the public list of operations, but it was not possible to distinguish ERDF from ESF operations and exclude the latter.

Regarding the differences in the number of operations only, another potential explanation behind the differences in the number of operations reported may be due to **the double counting of operations falling under multiple categories of interventions in the SFC**, such as for instance multiple categories of regions. This might explain, for instance, the higher number of operations reported in the SFC for the national OPs in Poland, the Sachsen OP in Germany and in some Romanian OP, i.e., Large Infrastructure and Technical Assistance OPs. Another potential explanation consists of different definitions of operations considered for counting the number of operations. For instance, in Malta, under the national OP, State Aid schemes are reported differently to the EC through the SFC. The managing authority does not report individual operations financed through the Aid Schemes in the SFC, but just report the Aid Scheme itself. Another example is the Aland OP in Finland; under this OP there is one financial instrument that in SFC is counted as twelve operations according to the number of final recipients, while in the Single Database it is counted as only one operation.

**Output indicator values**

As part of the study the plausibility of CO was assessed by performing qualitative, quantitative and cross-check analysis. For the quantitative analysis the CO values reported in AIRs 2020 were compared to aggregated CO values in project-level data extracted by the Managing authorities from their national and/or regional operations monitoring systems. Despite some limitations[43], an overall matching of AIRs data and PLD showed a **good match for a substantial part of indicators** (see Table 4). Within 10% discrepancy, the selected values of 67% of COs and the implemented values of 65% of COs matched. The range of matching for selected indicators varied from 40% (CO45) to 100% for indicators in the transport sector. For implemented values, this match varied from 34% to 83%. The results of the match were lower for several groups of indicators e.g., due to risks of double-counting or calculation outside the operations monitoring system (see also chapter 3.4).

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[43] 1) Four MS (AT, HU, PT, UK) did not submit project-level data on COs; 2) Some managing authorities did not submit data on indicators for particular OPs or groups of operations (data on indicators covered 72.1% of operations and 85.06% % of operational programmes included in the database of operations); 3) Project-level data on indicators and/or operations in some cases did not contain IP variables, and it was not possible to assign the values of CO to specific IPs.

**Table 4: Match of CO values reported in AIRs 2020 and at operation level (by CO)**

| CO | Short name | CO type | Perfect match | | | Within 5% discrepancy | | | Within 10% discrepancy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Selected | Implemented | Both | Selected | Implemented | Both | Selected | Implemented | Both |
| CO01 | FIRMS: All firms | Process | 25% | 20% | 15% | 65% | 65% | 59% | 65% | 65% | 60% |
| CO02 | FIRMS: grant aided | Process | 25% | 16% | 12% | 63% | 63% | 56% | 63% | 63% | 57% |
| CO03 | FIRMS: non-grant aided | Process | 32% | 21% | 14% | 61% | 48% | 42% | 61% | 48% | 42% |
| CO04 | FIRMS: advised | Process | 39% | 30% | 24% | 67% | 68% | 60% | 67% | 68% | 60% |
| CO05 | FIRMS: New Enterprises | Process | 30% | 29% | 20% | 66% | 67% | 60% | 66% | 67% | 60% |
| CO06 | FIRMS: Private match grant aid | Input | 6% | 5% | 2% | 50% | 48% | 47% | 50% | 48% | 47% |
| CO07 | FIRMS: Private match non-grant | Input | 14% | 17% | 9% | 55% | 52% | 46% | 55% | 52% | 46% |
| CO08 | FIRMS: New direct jobs | Result | 28% | 30% | 17% | 63% | 60% | 47% | 63% | 60% | 47% |
| CO09 | Tourism: New visitors | Result | 28% | 28% | 12% | 63% | 55% | 45% | 63% | 55% | 45% |
| CO10 | Broadband access | Result | 47% | 53% | 32% | 71% | 63% | 42% | 71% | 63% | 42% |
| CO11 | RAIL: new | Output | 100% | 83% | 83% | 100% | 83% | 67% | 100% | 83% | 67% |
| CO11a | RAIL: TEN-T new | Output | 100% | 50% | 50% | 100% | 50% | 50% | 100% | 50% | 50% |
| CO12 | RAIL: Reconstructed | Output | 70% | 65% | 59% | 83% | 59% | 52% | 83% | 59% | 52% |
| CO12a | RAIL: TENT-T Reconstructed | Output | 71% | 52% | 52% | 86% | 81% | 67% | 86% | 81% | 67% |
| CO13 | ROAD: New | Output | 32% | 41% | 29% | 56% | 34% | 47% | 56% | 34% | 47% |
| CO13a | ROAD: TEN-T new | Output | 47% | 53% | 37% | 79% | 79% | 68% | 79% | 79% | 68% |
| CO14 | ROAD: reconstructed | Output | 31% | 35% | 26% | 61% | 57% | 42% | 61% | 57% | 42% |
| CO14a | ROAD: TEN-T reconstructed | Output | 50% | 69% | 44% | 81% | 81% | 75% | 81% | 81% | 75% |
| CO15 | Tram or metro (new / improved) | Output | 61% | 61% | 44% | 83% | 83% | 61% | 83% | 83% | 61% |
| CO16 | Inland waterway | Output | 20% | 60% | 20% | 100% | 60% | 40% | 100% | 60% | 40% |
| CO17 | ENV: Waste Recycling | Output | 44% | 35% | 26% | 74% | 53% | 40% | 74% | 53% | 40% |
| CO18 | ENV: Improved water supply | Result | 38% | 38% | 20% | 86% | 77% | 71% | 86% | 77% | 71% |
| CO19 | ENV: Waste water treatment | Result | 50% | 35% | 24% | 81% | 71% | 61% | 81% | 71% | 61% |
| CO20 | ENV: Flood protection | Result | 37% | 56% | 29% | 79% | 80% | 59% | 79% | 80% | 59% |
| CO21 | ENV: Forest fire protection | Result | 32% | 55% | 23% | 77% | 55% | 45% | 77% | 55% | 45% |
| CO22 | ENV: Rehabilitated land | Output | 23% | 29% | 8% | 71% | 67% | 60% | 71% | 67% | 60% |
| CO23 | ENV: Habitats conserved | Output | 35% | 33% | 20% | 73% | 71% | 55% | 73% | 71% | 55% |
| CO24 | RTDI: New researchers | Result | 20% | 26% | 11% | 70% | 70% | 61% | 70% | 70% | 61% |
| CO25 | RTDI: Researchers with improved infra | Result | 34% | 38% | 25% | 75% | 72% | 52% | 75% | 72% | 52% |
| CO26 | RTDI: Firms working with Ris | Result | 36% | 30% | 21% | 73% | 72% | 63% | 73% | 72% | 63% |
| CO27 | RTDI: Private match investment | Input | 18% | 13% | 6% | 77% | 75% | 66% | 77% | 75% | 66% |
| CO28 | RTDI: New to market products | Process | 24% | 22% | 12% | 67% | 65% | 62% | 67% | 65% | 62% |
| CO29 | RTDI: New to firm products | Process | 21% | 21% | 10% | 66% | 67% | 62% | 66% | 67% | 62% |
| CO30 | ENERGY: RE production | Output | 8% | 19% | 6% | 60% | 58% | 49% | 60% | 58% | 50% |
| CO31 | ENERGY: improved performance in houses | Result | 49% | 33% | 23% | 78% | 77% | 68% | 78% | 77% | 68% |
| CO32 | ENERGY: reduced consumption public buildings | Result | 29% | 27% | 16% | 76% | 69% | 53% | 76% | 69% | 53% |
| CO33 | ENERGY: users on smart grids | Result | 42% | 58% | 37% | 79% | 68% | 42% | 79% | 68% | 42% |
| CO34 | Decrease of GHG | Result | 21% | 23% | 11% | 72% | 68% | 57% | 72% | 68% | 57% |
| CO35 | Schools renovated (capacity) | Result | 45% | 30% | 23% | 80% | 75% | 74% | 80% | 75% | 74% |
| CO36 | Health service improved (population) | Result | 26% | 23% | 7% | 77% | 67% | 62% | 77% | 67% | 62% |
| CO37 | Urban population with integrated strategy | Result | 18% | 18% | 11% | 55% | 55% | 48% | 55% | 55% | 48% |
| CO38 | Urban: open space renovated | Output | 32% | 32% | 20% | 59% | 61% | 48% | 59% | 61% | 48% |
| CO39 | Urban: Building renovated | Output | 28% | 35% | 16% | 60% | 63% | 46% | 60% | 63% | 46% |
| CO40 | Rehabilitated housing | Output | 26% | 26% | 15% | 63% | 59% | 52% | 63% | 59% | 52% |
| CO41 | INTERREG: Firms in RD cooperation | Result | 18% | 12% | 9% | 55% | 58% | 55% | 55% | 58% | 55% |
| CO42 | INTERREG: Research inst. in cooperation actions | Result | 34% | 27% | 23% | 55% | 59% | 45% | 55% | 59% | 48% |
| CO43 | INTERREG: Participants in labour mobility | Output | 29% | 29% | 21% | 64% | 64% | 57% | 64% | 64% | 57% |
| CO44 | INTERREG: Participants in labour & training | Output | 12% | 12% | 0% | 64% | 64% | 64% | 64% | 64% | 64% |
| CO45 | INTERREG: participants in includion actions | Output | 20% | 20% | 20% | 40% | 40% | 40% | 40% | 40% | 40% |
| CO46 | INTERREG: Participants in youth actions | Output | 30% | 30% | 22% | 61% | 65% | 61% | 61% | 65% | 61% |
| Total | | | 28% | 25% | 16% | 67% | 65% | 55% | 67% | 65% | 56% |

Source: CSIL/Prognos/PPMI (2022). Project-level data on AT, HU, PT and UK were not made available for our analysis.

An in-depth analysis of indicator data showed that for the values of CO indicators reported in AIRs 2020, 89% of selected (i.e. contracted) values and 78% of implemented values were assessed as plausible. Comparisons between operation level and AIRs data revealed that potential over-reporting of selected values in AIRs can be identified only in 1% of COs. However, some of these COs compose a significant part of selected values at the EU level (e.g., for CO16 which compose 10% of the EU total). Similar results were detected for the potential under-reported values that also comprise 1% of COs.

Analysis at the Member State level showed that in some countries largely robust values compose more than 60% of selected indicators (as indicated by ("OK" status in Table 5). These are Sweden (82%), Poland (73%), Spain (71%), Croatia (70%), Latvia (66%) and Lithuania (63%). Also, in nine Member States, indicators that are assessed as largely plausible (status OK, or their values are likely to be higher or lower and can be estimated based on PLD, or their values are likely to be higher, but cannot be estimated in Table 5) compose more than 90% of indicators: Czech Republic, Finland, Greece, Ireland, Luxembourg, the Netherlands, Poland, Spain, Sweden. Though implemented values were assessed as largely robust in only 38% of cases across Member States, some countries demonstrated high results for implemented values, e.g., Sweden (84%), Lithuania (61%), Slovenia (59%), Latvia (55%), Greece (52%).

**Table 5: Results of the assessment based on PLD analysis and cross-checks at MS level**

| MS | Selected values | | likely to be higher or lower and can be estimated, and likely to be higher, but cannot be estimated | Implemented values | | likely to be higher or lower and can be estimated, and likely to be higher, but cannot be estimated |
|---|---|---|---|---|---|---|
| | OK | | | OK | | |
| | Count of IND.CD | %of Ind at MS level | | Count of IND.CD | %of Ind at MS level | |
| AT | | | 0% | | 0% | 0% |
| BE | 37 | 47% | 78% | 36 | 46% | 80% |
| BG | 23 | 49% | 88% | 21 | 45% | 100% |
| CY | 4 | 14% | 70% | 9 | 31% | 63% |
| CZ | 30 | 29% | 96% | 21 | 21% | 59% |
| DE | 140 | 39% | 89% | 170 | 47% | 79% |
| DK | 2 | 14% | 40% | 6 | 43% | 90% |
| EE | 5 | 14% | 75% | 6 | 17% | 47% |
| ES | 338 | 71% | 98% | 135 | 29% | 68% |
| FI | 16 | 37% | 100% | 14 | 33% | 88% |
| FR | 319 | 48% | 81% | 292 | 44% | 75% |
| GR | 253 | 51% | 95% | 261 | 52% | 83% |
| HR | 30 | 70% | 88% | 16 | 37% | 58% |
| HU | | | 0% | | 0% | 0% |
| IE | 9 | 30% | 100% | 9 | 30% | 85% |
| IT | 307 | 43% | 82% | 347 | 49% | 79% |
| LT | 35 | 63% | 80% | 34 | 61% | 86% |
| LU | 4 | 50% | 100% | 4 | 50% | 100% |
| LV | 31 | 66% | 87% | 26 | 55% | 74% |
| MT | 11 | 32% | 70% | 13 | 38% | 71% |
| NL | 20 | 30% | 94% | | 0% | 91% |
| PL | 534 | 73% | 96% | 287 | 39% | 81% |
| PT | | | 0% | | 0% | 0% |
| RO | 29 | 40% | 77% | 30 | 42% | 82% |
| SE | 150 | 82% | 99% | 154 | 84% | 92% |
| SK | 17 | 15% | 88% | 17 | 15% | 74% |
| SI | 21 | 54% | 78% | 23 | 59% | 83% |
| TC | 178 | 33% | 90% | 190 | 35% | 79% |
| UK | | | 0% | | 0% | 0% |
| **Total** | **2543** | **45%** | **89%** | **2121** | **38%** | **78%** |

Source: CSIL/Prognos/PPMI (2022)

Analysis of metadata, clarification checks with the MAs and a validation stakeholder seminar with more than 200 MS representatives (MAs, monitoring experts, etc.) confirmed that the discrepancies of data on COs reported in AIRs and those available in the operations monitoring systems at the national and regional level can be caused by the specific features and functionalities of monitoring arrangements (such as the use of a two-level operations monitoring system in which both parts are not aligned with each other), monitoring and reporting rules, and methodologies of calculation of CO indicator values (that can differ between OPs in the same MS). Those observations have only limited impact on the plausibility on reported CO values. The identified main reasons for the discrepancy of the selected and implemented CO values reported in AIRs 2020 and project-level data extracted from the operations monitoring systems are the following:

- **Different sources of data**: in large countries with multiple regional OPs (e.g., PL, IT) the source for AIR data is the OP operations monitoring systems (based on an extraction from the OP operations monitoring system, the MA manually inputs data into SFC) while the data submitted for this study were extracted from the centralised operations monitoring systems at the national level. The national system and the OP operations monitoring systems are not aligned. OP operations monitoring systems are more updated than the national system, as data transmission to the national level takes place only every two months. Before validating the data received from OP systems, the coordinating body conducts checks on the data transmitted from OP operations monitoring systems. The national operations monitoring system can provisionally exclude some operations from the centralised database, in case the data received does not appear correct or complete.

- **Indicator values calculated outside the OP operations monitoring system**, drawing from external sources, e.g., national or regional registers or calculated by statistics offices or based on surveys.

- **Double counting**: some COs may be prone to double counting, as revealed by the desk research. This is mainly relevant to those COs related to enterprises (in case enterprises receive the same support twice, or two supports), health and education infrastructure, the population covered by flood and forest fire protection measures or integrated urban strategies. Though data is correct at the operation level, aggregation of project-level data does not lead to AIR data. Procedures aimed at the elimination of double-counting were established at the national level to ensure that the risk of double counting is reduced or eliminated.

- **Manual errors**: as AIRs are filled in manually, manual errors may occur. However, due to internal quality control and data checks implemented by the MAs, also automatic SFC 2014 checks, this only applies to minor discrepancies, not large discrepancies.

All aforementioned reasons are also relevant for implemented values of COs reported in AIRs 2020. In addition, the implemented values reported in AIRs can be lower due to the reason that for infrastructure operations implemented in ICT, transport, environment or energy sectors, also health and education infrastructure operations, the implemented values are reported in AIRs only when the project is completed and approved by the external audit, though in the operations monitoring systems values are reported by the beneficiaries together with the submission of the applications for payments.

Another key observation on indicator data is related to **higher implemented values than selected values in AIRs**. Higher implemented values than selected values were observed for 6% of all CO indicators at the IP level in AIRs for 2020. These cases of mismatch were detected mainly for COs on enterprises, private investment or number of employees / researchers / persons.

**Figure 10: TOP 10 CO indicators with higher implemented than selected values in AIRs 2020**
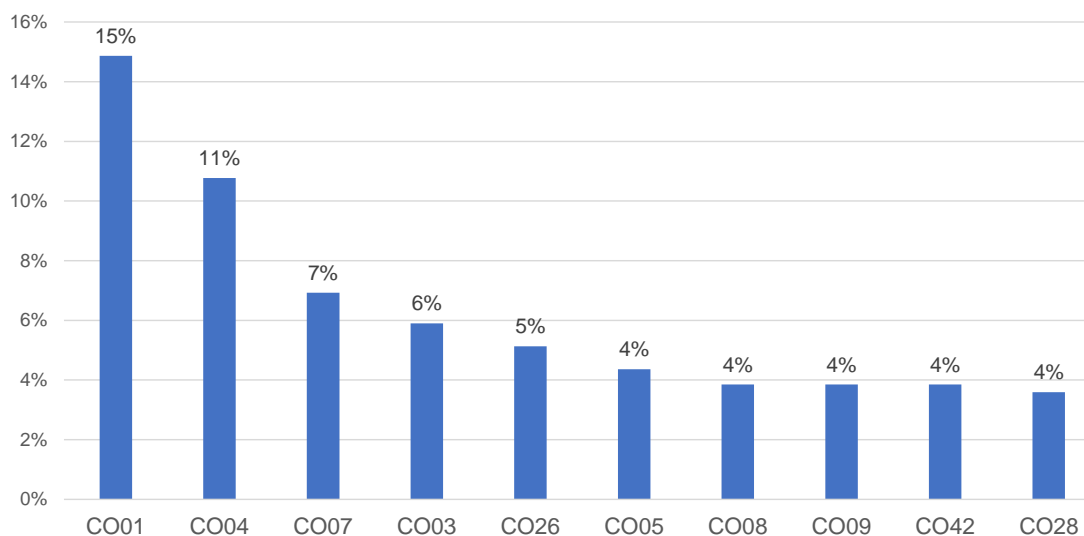


CO01: Productive investment: Number of enterprises receiving support
CO04: Productive investment: Number of enterprises receiving non-financial support
CO07: Productive investment: Private investment matching public support to enterprises (non-grants)
CO03: Productive investment: Number of enterprises receiving financial support other than grants
CO26: Research, Innovation: Number of enterprises cooperating with research institutions
CO05: Productive investment: Number of new enterprises supported
CO08: Productive investment: Employment increase in supported enterprises
CO09: Sustainable Tourism: Increase in expected number of visits to supported sites of cultural and natural heritage and attractions
CO42: Productive investment: Number of research institutions participating in cross-border, transnational or interregional research projects
CO28: Research, Innovation: Number of enterprises supported to introduce new to the market products

Source: CSIL/Prognos/PPMI (2022): The percentage refers to the share of the number of higher implemented than selected values for the respective indicator in relation to the total number of observed higher implemented than selected values.

The underlying reason for the discrepancy between selected and achieved values often lies in the practice to estimate the selected values at operation level based on previous experience without updating the selected values during project implementation. For the initial determination of selected values at operation level usually data from comparable operations or actions from the previous programming period is used to inform the MAs' or IBs' expectation for a reasonable target value for a selected operation. In many cases the informational value of data from the previous programming period is limited by the fact that actions used as a reference are not exactly comparable to the actions or operations of the ongoing period. During a stakeholder seminar as part of this study about half of the participants indicate that better comparability of the current operations/actions with the ones from the previous programming period could lead to more precise estimates of selected values at the beginning of an operation or action. A participant of the stakeholder seminar also outlines that selected operations may undergo modifications during their implementation that may affect their expected outputs. This might have been especially relevant against the context of the COVID 19 pandemic rapidly changing the condition under which operations were implemented.

In case several operations under an IP overachieve their initially estimated selected values and the initially documented values are not changed, the achieved values exceed the selected values in AIRs towards the end of a programming period. The selected values in some cases essentially still reflect outdated expectations about outputs. Not touching the originally recorded selected values at operation level (as stated in the commitment documents) is a

common practice, e.g., in OPs in the German Länder. The selected values from the commitment documents constitute a sort of minimum benchmark value at operation level that hold informational value for the MAs. As discussed at a stakeholder seminar with MS representatives, some OPs e.g., in Italy and France have created additional data fields to record, in addition to the selected values from the commitment documents, also more recent information on selected values at operation level once deviations are to be expected. Although those observations do not impede data quality for monitoring purposes at OP level, they have a **direct influence on the possibility to aggregate data at EU level** (especially when selected values would be used) and mirror the complexity of the systems that were only given little instructions.

# 4.  Relevance of data at EU level

This aspect refers to the extent to which data aggregated at EU level can provide meaningful insights and useful representation about what is implemented on field.

For the MAs the operations monitoring systems must serve primarily accounting purposes and ensure the proper monitoring of payments for a high number of transactions and documentation for the audit trail. The design and functionalities of the individual set-up of the operations monitoring systems reflect the specificities of the legal, institutional, and strategic contexts in which each OP operates. In addition to this, there is the need of the EC to monitor what is implemented on the ground with ERDF/CF funding across all MS at an aggregate level. Therefore, the operations monitoring systems also cater to the need to produce harmonised data at EU level although this was not their primary focus when they were designed. It is therefore not surprising that this is the aspect which shows larger room for improvements.

## 4.1  Key finding 6: Different understandings or interpretations of definitions of operations influences level of detail and consistency of data at EU level

Although data is generated in similar ways and there are some specifications centrally provided by the EC (e.g., list of data fields for which information is to be collected, list of common output indicators), there is still room for a greater harmonisation in order to fully exploit the possibilities of aggregation at EU level. Nonetheless, greater harmonisation might come at the cost of losing longer term definitions that the MS are already acquainted with.

A notable example is the definition of operations. In line with the broad definition of operations adopted by Regulation (EU) No 1303/2013, data at the operation level provided by MAs may refer to a project, a project component, a group of projects (i.e., Action Plans, investment strategies, voucher schemes, State aid schemes, etc.) or a financial instrument. The analysis of operation level data shows that there are several ways in which OPs structure their data into operations catering to their specific information needs addressed by their national/regional data systems. For five MS the data provided contains items (e.g., sub-projects, contracts) that lie below the more broadly understood level of an operation and need to be aggregated to form a more homogenous overview on the number of operations across OPs and MS. In two MS it is technically not feasible to connect the full set of items and convert them into operations for a homogenization of operations across OPs and MS. In addition, there are also cases in which several operations are listed as one single operation, e.g., for financial instruments or (umbrella) grant schemes.

There are several country examples illustrating this finding. For example, in Belgium (OP Wallonia) sub-projects are combined into portfolios (which form one operation). The operations monitoring system reports the portfolio name, which allows aggregation. In Denmark operations in some cases are project components. Projects are divided in sub-projects if the projects consist of e.g., different investment priorities or regional categories. Project codes refer to the different categories. Operations may be aggregated based on the project name. In Finland some projects are "divided" into several operations under the national OP, which means that an operation in some cases is a project component. The rationale behind this is that some projects, according to their nature, may be divided into i) a development and ii) an investment operation. This happens when the value of total investments exceeds 15% of the total eligible costs of the project. The division must also be done in cases where the project includes a significant investment, although the value of the in-vestment does not exceed 15% due to the large size of the project. For France some projects are "divided" into several operations, either for reasons of timing (to avoid operations that are too long) or for partnership reasons (several partners involved in the same operation).

However, there is no higher-level code allowing the potential aggregation of operations being project components into a unique project. In some cases, the operations belonging to the same project may be identified by a common name, though this is not systematic and cannot be automated. In Germany many OPs split joint/collaborative projects by beneficiary. For some OPs there is no technical way to aggregate to the level of operation. The following figure, Figure 11, provides an overview of how which different approaches are used to define operations.

**Figure 11: Heterogenous approaches for defining operations**
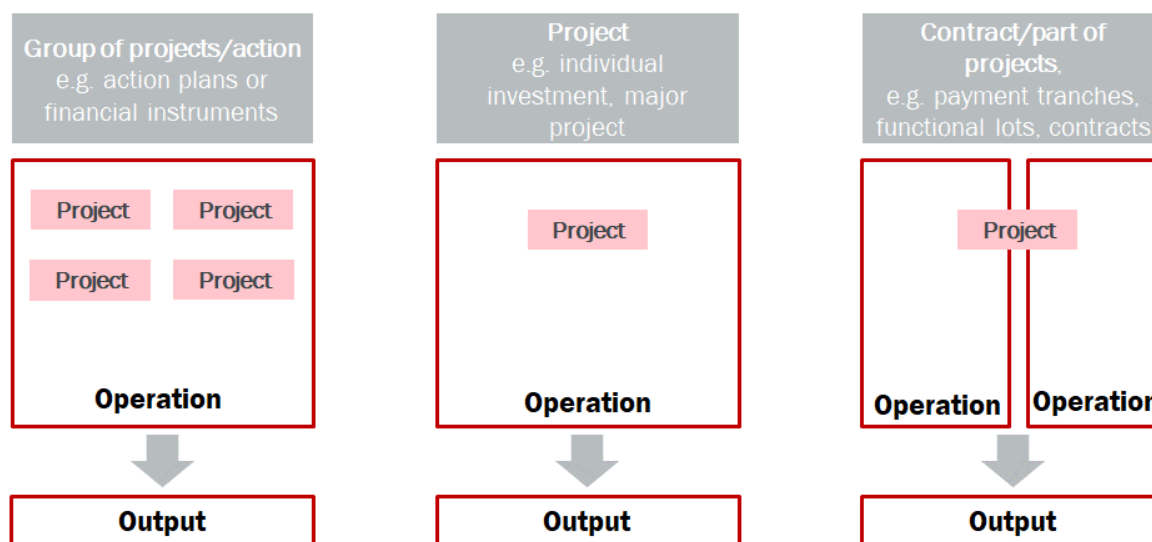


Source: CSIL/Prognos/PPMI (2022)

MS have different reasons for the flexible definition of operations. For example, in Germany, the definition of operation is guided by the number of commitment documents. Although data quality is not impaired, the use of the 2014-2020 monitoring data faces the challenge that aggregability and comparability at EU level is in some cases limited. The simple aggregation and comparison of the number of operations, covering funded projects of different sizes and complexity, needs to be done with caution. For example, without harmonisation, the linkage between financial data and output indicators (therefore also the meaningfulness of some indicators) for evaluation purposes may be hampered since the indicators data are collected at operation level according to the definition adopted by each MA. For intermediated instrument, for example, the number of beneficiaries corresponds to the number of intermediary bodies and not the final recipient of funds.

## 4.2 Key finding 7: Greater harmonisation at EU level could lead to improved data relevance for pan-EU assessments but at the same time may increase administrative burden

By collecting, aggregating, and harmonising the data produced across all OPs in this study, the study team observed several challenges and limitations concerning the degree of harmonisation of ERDF/CF monitoring data at EU level that need to be born in mind in the interpretation of data. Despite the considerable efforts made by the EC to ensure consistent expenditure and achievement data at the EU level through new regulatory requirements and the indisputable progress achieved, the degree of data availability still differs across Member States and, sometimes, even within the same Member State. Moreover, both the literature

(Polverari, 2015; Polverari, 2016; T33, 2017; Nigohosyan & Vutsova, 2017[44]) and Core Team's direct experience highlight that national and regional authorities interpret the regulatory framework in different ways, which leads to a certain level of data fragmentation and incoherence (see also examples in prior sections of this report). Especially relevant are the differing definitions of data fields relating to financial operation level data, especially on eligible and public expenditure and public support (data fields 41 to 43 required by Annex III of delegated regulation (EU) No 480/2014, more information see chapter 3.2). During the data cleaning, harmonisation and enrichment activities exercise presented below, the study team observed these differing approaches which highlights the relevance of this finding for the aggregation of monitoring data at EU level.

In order to cope with the limitations of the data provided, the study team needed to conduct several data cleaning, harmonisation and enrichment activities, relating to:

- **The data structure**. Data provided by MAs on operations and beneficiaries was generally organised in different files, sometimes of different formats (not always in table format), included variables with different names and levels of granularity and operations having different definitions (within and across programmes). Their harmonisation was therefore necessary to ensure comparability. The harmonisation resulted in the following procedures:
  - Standardisation of the files format
  - Harmonisation of the variable names
  - Harmonisation of the unit of analysis

- **The data format**. The same variable was generally provided using different formats, different languages (i.e., text variables), or currencies (i.e., financial variables). In these cases, the data format harmonisation was key to allow the integration of data provided by the different MAs into the Single Database and to then ensure their comparability. The following harmonisation procedures were applied:
  - Translation of text variables into English
  - Conversion of financial amounts in the local currency to Euro
  - Standardisation of the data format of similar variables
  - Standard reporting of multiple sets of information

- **The data content**. Different activities were necessary to cope with the gaps, inconsistencies and errors in the way data was reported by different MAs. To ensure that each variable was as reliable as possible, the following steps were taken:
  - Harmonisation of the content
  - Internal consistency checks
  - Enrichment of the data content

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[44] Polverari, L. (2015), *The monitoring and evaluation of the 2014-20 EU Cohesion Policy programmes;* Polverari, L. (2016), '2014-2020 EU Cohesion Policy: Results-orientation through better Monitoring', *Eur. Struct. Invest. Funds J.* 4, 26–34; Nigohosyan, D. and Vutsova, A. (2018), 'The 2014–2020 European Regional Development Fund Indicators: The Incomplete Evolution', *Social Indicators Research,* vol. 137; T33 (2017), *Development of a system of common indicators for European Regional Development Fund and Cohesion Fund interventions after 2020.*

The different activities performed consisted of a mixed of manual and (semi-)automated procedures performed in MS Excel, STATA17 and Python, depending on the complexity of the procedure implemented. Some procedures were programme-specific and were performed separately for the given OP/CP in light of its specificities. Others were applied directly to the Single Database. On top of these more general procedures, additional variable-specific data cleaning, harmonisation and enrichment procedures were performed. The following Figure 12 gives an overview over the main data cleaning activities. The activities can be clustered into **data cleaning, data harmonisation and data enrichment** (and other) exercises. Some of those are interlinked with each other whereas some other are self-standing.

**Figure 12: Data cleaning and harmonisation activities before aggregation**
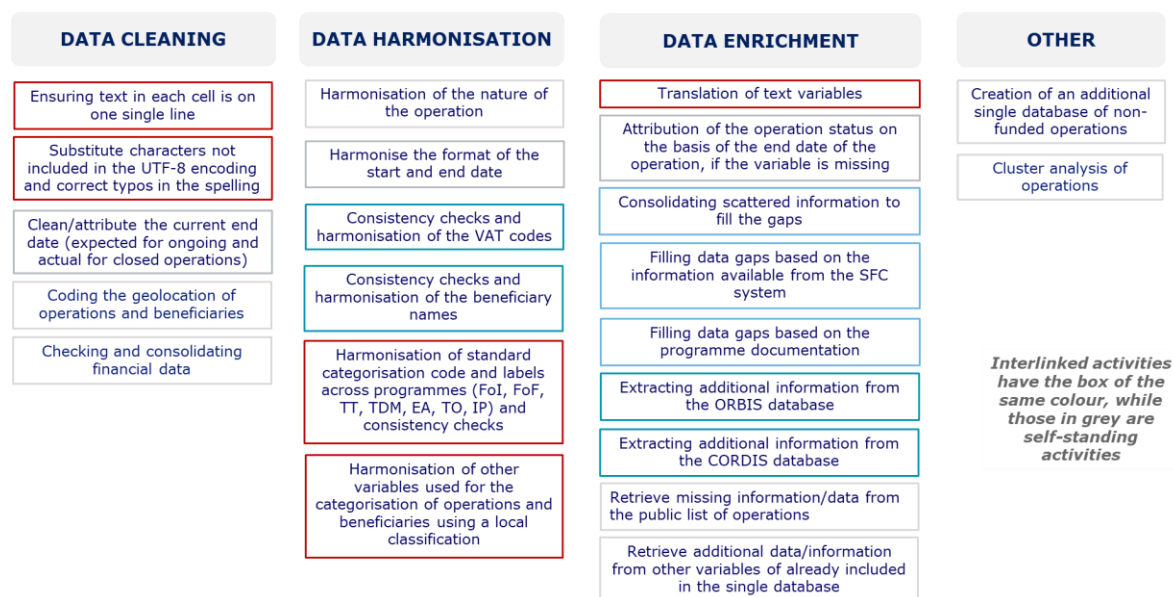
Source: CSIL/Prognos/PPMI (2022)

This illustration shows which data cleaning, harmonisation and enrichment activities were necessary to cope with the fragmentation related to data structure, content, and format. Data has been cleaned and harmonised to allow aggregation at MS and EU levels as well as insightful comparative analysis. However, diverging interpretations remain and hamper the usability of data at EU level. Inconsistencies specific to financial and data on categories of interventions were also discussed above. With more homogenous approaches, the relevance of data at EU level would be increased.

The analysis of **programme-specific output indicators**, specifically as it relates to possible aggregation at MS and EU levels, also provided some insights into data harmonisation possibilities as well as limitations. The use of programme-specific indicators reflects the variety of operations monitoring systems as they are individually developed by OPs for the actions in which they are needed. While there is the need for flexibility in defining what the programme needs to deliver, there is also room for harmonisation as demonstrated by the pilot exercise of aggregation. Through the analysis of programme-specific indicators across MS, a total of 6.871 unique[45] programme-specific indicators were identified. The use of those indicators differs to a large extent between MS and between OPs. There is an observed correlation, although not a linear relationship, between the financial size (and number of operations) of the ERDF programme and the number of programme-specific indicators employed, reflective of

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[45] The term "unique" programme-specific indicator refers to the combination of OP and indicator. Thus, if across different OPs the same indicator is used, this is counted multiple times.

the need to be more context specific (e.g., only two programme-specific indicators in LU, 28 in FI, 37 in MT, 281 in ES and more than 600 in IT). In further analysing programme-specific indicators, our main aim was to identify and analyse significant programme specific indicators across EU MS and determine to what degree programme-specific indicators could be merged (or aggregated) both within MS and at the EU-level.

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**Aggregation of programme-specific indicators at MS- and at EU level**

The database on programme-specific indicators is an extract from the output indicator database, providing information on programme-specific indicators at operation and OP level. For each MS, the use of programme-specific indicators was analysed at MS level. For five MS[46] no information on programme-specific indicators was provided and for six other MS data was not provided for every OP[47].

In order to determine significant programme-specific output indicators, a **significance check** with two steps was applied. This significance check included a thematic and financial check. The financial check selected IPs (and the indicators associated to them) that accounted for 10% of the total expenditure of all IPs[48]. In a next step, a thematic significance check was pursued, to ensure that key thematic areas (i.e., green, digital, innovation and health) were included in the selection. Thus, if the associated IP was not already included in the selection via the financial significance check, the thematic check would include any of the IPs with a financial allocation greater than 5% and if not applicable, at least one IP of each theme. For MS with only a limited number of programme-specific indicators (i.e. below 30) all indicators were selected.

In the second step of the analysis, the selected indicators were analysed for consistency in content (by the respective country experts). This step was applied to indicators in different OPs in a MS but also to indicators from within one OP (applied only in large OPs). If the content was similar and the measurement units could be aggregated, the indicators were considered **suitable for merging**. When merging, the target and implemented values were also aggregated. At EU level, a second aggregation step was applied, meaning that the merged indicators at MS level were checked across MS for possible thematic overlaps, resulting in a list of merged EU-wide indicators.

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As to be expected, only a limited set of programme-specific output indicators were suitable for such an aggregation, resulting in 157 merged indicators across 15 MS (out of more than 6000 unique programme-specific indicators). The IP with the most merged indicators is IP 1b (28 out of 157), which is the area of research, technological development and innovation. At the EU level, those significant, merged indicators could be aggregated to 10 EU-level indicators. This exercise illustrated how heterogeneously programme-specific indicators were used in the 2014-2020 period. The following table shows some characteristics on the use of programme-specific indicators of the MS for which data was provided for the study.

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[46] Austria, Hungary, Ireland, Portugal, Slovenia

[47] Bulgaria, Finland, France, Germany, Poland, United Kingdom

[48] All IPs that were composed of programme-specific indicators.

**Table 6: Overview of the analysis of programme-specific indicators[49]**

| MS | PS Indicators: selected | PS Indicators: total | Share of selected PS indicators | Financial share of selected indicators | Merged indicators |
|---|---|---|---|---|---|
| BE | 28 | 69 | 41% | 77% | 1 |
| BG | 38 | 64 | 59% | N/A | 0 |
| CY | 38 | 49 | 78% | 59% | 0 |
| CZ | 114 | 365 | 31% | 48% | 18 |
| DE | 159 | 329 | 48% | 77% | 13 |
| DK | N/A | N/A | N/A | N/A | 0 |
| EE | 48 | 81 | 59% | 69% | 2 |
| EL | 160 | 690 | 23% | 52% | 10 |
| ES | 105 | 281 | 37% | 59% | 15 |
| FI | 28 | 28 | 100% | 84% | 0 |
| FR | 122 | 406 | 30% | 51% | 10 |
| HR | 321 | 2845 | 11% | 53% | 25 |
| IT | 273 | 621 | 44% | 51% | 21 |
| LT | 37 | 99 | 37% | 68% | 2 |
| LU | 2 | 2 | 100% | 100% | 0 |
| LV | 28 | 64 | 44% | 81% | 3 |
| MT | 27 | 37 | 73% | 63% | 0 |
| NL | 18 | 46 | 39% | N/A | 0 |
| PL | N/A | 155 | N/A | N/A | N/A |
| RO | 40 | 41 | 98% | 64% | 0 |
| SE | 30 | 61 | 49% | 66% | 7 |
| SK | 169 | 460 | 37% | 74% | 17 |
| UK | 44 | 78 | 56% | 81% | 13 |

Source: CSIL/Prognos/PPMI (2022)

Further, the analysis showed that the plausibility of the selected indicators seems to be high with only minor remarks on completeness and consistency. The analysis of indicator data shows that some information on indicators is missing in the data extracts or is incorrect. In five MS the full names or measurement units of indicators were not included in the data extracts provided. In two MS isolated spelling or coding errors have been observed for programme-specific output indicators.

For example, for Belgium (OPs Brussels and Flanders) programme-specific output indicators often lacked names and measurement units. For France, for one OP no indicator names were provided for programme-specific output indicators. For Czechia, no measurement units were provided for programme-specific output indicators. For the Netherlands, for a few programme-specific output indicator no names, measurement units or IPs were provided. For Sweden no measurement units were provided for programme-specific output indicators. The measurement units are indicated in a guidance note for each indicator. It is a technical issue that the measurement units are not indicated in the extracted database. For Croatia, spelling mistakes in the names of programme specific output indicators were detected, leading to a large number of recorded programme-specific indicators in the database (more than 2,000).

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[49] In Poland, a common list of programme-specific indicators, agreed upon at the start of the programming period, existed and was used for the purposes of this study.

For Germany, for one OP a high number of indicator codes were wrongly recorded as programme specific and had to be excluded from the analysis.

With a view to the 2021-27 period, important steps towards a more homogeneous interpretation of (common) indicators and increased data quality were undertaken. The Commission Staff Working Document on Performance, monitoring and evaluation of the ERDF, the CF and the JTF in 2021-2027[50] provides definitions and further information on all common indicators. Additionally, the requirement for the 2021-27 period to submit a document on the performance framework methodology for each programme with detailed information on all indicators (including programme-specific indicators) as well as calculation of targets supports the structured documentation of information relevant for monitoring purposes and increases the attention given to output and result indicator data in the 2021-27 period.

Despite these observations, it should be noted that increased harmonisation would require detailed descriptions and definitions which might lead to an increase of administrative burden as the MAs would have to adapt their operations monitoring system accordingly. Possible guidelines for the MAs' staff but also for beneficiaries how to record and store certain data would need to undergo updates. Increased harmonization, although being advantageous at EU level (especially for evaluators), might have only limited positive effects for the actual work of monitoring staff.

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[50] SWD(2021) 198 final.

# 5.   Main conclusions

Operations monitoring systems are complex and there are diverse system configurations within the EU Member States. Whereas certain features are obligatory and required by the regulation, others are dependent on the governance structures and path dependencies in EU Member States or even regions. Altogether, based on comprehensive data collection and analysis on 215 OPs co-financed by the ERDF and/or CF and 73 Cooperation Programmes co-financed during the 2014-2020 period, our study has identified seven key findings (Sections 2-4 above) on the structure & efficiency of operations monitoring systems, on the quality of monitoring data, and data usability and relevance at EU level.

From an evaluation perspective, the main purpose of operations monitoring systems is to provide good quality data on financing and data on outputs & achievements. This is fulfilled by all the various set-ups of operations monitoring systems across the EU – although with some variations and specificities, as exemplified throughout the report. There have also been different prioritisations of data observed (i.e. expenditure data under the operations is handled by some MAs with higher priority than the attribution of the operation to the categories of intervention) and smaller data gaps (on beneficiaries' data). For common output indicators, our study found slightly differing interpretations from Commission definitions in some cases and double counting risks linked to specific common indicators. Nonetheless, the common indicator data reported in AIRs is found to be largely plausible. At EU level, the aggregability and comparability of monitoring data is limited for some aspects, which reduces the potential use for (automatic) pan-European assessments. This applies especially to the data fields for selected operations (see chapter 3.2) or, more generally, for CPR definitions of an operation that are too broad. Due to their nature, most programme-specific output indicators are suitable for aggregation only at OP level or at MS level – if harmonised centrally in respective MS.

Bearing in mind the different set-ups of operations monitoring systems and the many different requirements they must fulfil, there is not one "best practice" operations monitoring system. Consequently, no operations monitoring system can be used as a blueprint for other systems, also due to the strong regional adaptions for monitoring and the fact that all set-ups lead to plausible and qualitative monitoring data. However, there are several ways to optimise these systems in terms of structures, processes, and efficiency. These include, e.g., the further automation of procedures (e.g., concerning data checks and reporting) or the utilisation of more coherent definitions as they have a direct influence on data quality.

Concerning the stronger focus on reporting, especially the more frequent reporting intervals in the 2021-2027 programming period, it should be noted that some adjustments of the systems might (still) be desirable. Especially for indicators and data on categories of interventions the systems provide more possibilities than those which are currently utilised. Moreover, three overarching challenges can be highlighted, which affect ERDF/CF operations monitoring systems in different ways: First, operations monitoring systems must be able to support more frequent data transmissions (see above, reporting intervals) and also support the transition to more open data (to increase public transparency). Second, as AIR are not required anymore by the regulation, MAs need to adapt their QA processes to ensure data quality. Third, to fulfil the new reporting requirement and reduce inefficiencies in the system, MAs increasingly need to recruit and retain IT skilled staff and data scientists. Given the shortages of such profiles in most EU labour markets and the strong competition from the private sector, this is an enormous challenge.

Against the background of the seven key findings, **several strategic directions for future ERDF/CF operations monitoring systems and monitoring data** have been developed. These possible strategic directions are outlined below, structured along the two main analytical pillars of this study:

**Quality monitoring data**

1. **Increase data plausibility and consistency at EU level by avoiding double counting**: Some COs may be prone to double-counting. These are mainly relevant to those COs related to supported enterprises, health and education infrastructure, the population covered by flood and forest fire protection measures. Though data is correct at the operation level, aggregation of project-level data does not lead to AIR data. Findings show that procedures aimed at the elimination of double-counting were established at OP or the national level to reduce or eliminate the risk of double counting. In the 2021-2027 period the risk of double counting will remain an issue to be addressed. It is recommended that MAs implement procedures and document attributes that allow to identify and remove double counting at different aggregation levels (specific objective, programme, MS, EU).

2. **Efficiency enhancement possibilities:**

   a. Consider the installation of the SFC interface connection: As the reporting requirements have changed for the current programming period – with simplified reporting (only data transmission required, with no AIRs anymore) but with intervals increased, good quality and rapid reporting procedures are a necessity. The use of the SFC interface connection reduces the labour- and time-intensity of reporting procedures and should be therefore carefully considered despite the time and resource investment upfront. The cost and benefits should be kept in mind as implementing new, highly functional IT systems poses difficulties due to limited resources, especially for smaller OPs. However, if the costs are feasible (considering the number of transactions per year and the amount of data transferred by each transaction), the interface connection should be established since errors are more likely when aggregate data are filled in manually.

   b. Consider the increase of automatic control mechanisms: Many OPs are still relying on manual follow-ups as control mechanisms. However, only automatic checks provide the opportunity to check data fields repeatedly for accuracy or consider dependencies between multiple fields with calculations or algorithms – checks that would otherwise be labour intensive with increasing amounts of data. With increasing possibilities of AI-based solutions (i.e., AI or machine learning algorithms) the use of automated checks can provide even more opportunities in the future, leading to more automatic data quality assurance by semantic classifications and discovery of data within monitoring data sets. Although automated control mechanisms often require manual interventions afterwards (by monitoring staff), it is recommended for MAs or the institution responsible for setting-up IT-solutions to consider and preferably introduce more frequent automatic checks in the future.

**Data usability and relevance at EU level**

3. *In the medium-term:* **Clarify the understanding of an operation**: The analysis of operation level data shows that there are several ways in which OPs structure their data into operations, catering to their specific information needs addressed by their national/regional data systems. A possible solution to this inconsistency would be to include a flag in local systems highlighting when an operation corresponds to a project, a group of projects or a project component. If this system is used consistently across all OPs, then the interpretation of data would be more meaningful and direct, without giving up to the necessary flexibility of local systems.

# 6.  Literature

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# 7. Annexes

## 7.1 Seminar Report

### Background and objectives

The European Commission awarded CSIL – Centre for Industrial Studies, in partnership with Prognos and PPMI, a contract to carry out the "Study on the monitoring data on ERDF and Cohesion Fund operations, and on the operations monitoring systems operated in the 2014-2020 period". Under the scope of the study different activities were carried out to gather solid monitoring data and provide knowledge and insights about the operations monitoring systems and their functioning. These objectives resulted in six main tasks: (1) Single database on all operations/projects, (2) Typology clustering the operations, (3a) Validation of common indicator data reported to the Commission, (3b) Identification of programme specific indicators relevant for evaluation, (4) Assessment of operations monitoring systems' data collection and data processing, (5) organisation of a workshop and (6) the final report.

This summary report relates to Task 5, the organisation of the workshop. The aim of the **workshop** was **to discuss, deepen and validate the emerging findings from the previous activities of the study.**

The workshop hosted around 260 participants ranging from the study team, representatives of MA and national coordination units as well as representatives from the EC. The workshop was a moment of a wider reflection and discussion on the challenges in collecting, using and making available quality and reliable data and designing operations monitoring systems in the MS with relevant stakeholders.

Below we provide the results of the seminar. The outcomes of the workshop were considered for the final report.

### Agenda

The workshop took place on March 17th from 09.30 AM to 2.00 PM and was virtually hosted on Microsoft Teams. The following agenda was followed:

| Time | Activity | |
|---|---|---|
| **09:30-10:45h** | *Part 1* | |
| | **Welcome and introduction** | *John Walsh – DG Regio* |
| | **Setting the scene** – Study overview, Q&A | *Silvia Vignetti – CSIL* |
| | **Session 1:** Findings on ERDF/CF operations monitoring systems, Q&A | *Dr. Jan-Philipp Kramer - Prognos* |
| | *5 minutes coffee break* | |
| **10:50-12:00h** | *Part 2* | |
| | **Session 2:** Overview of key issues on the functioning of ERDF/CF operations monitoring systems | *Dr. Jan-Philipp Kramer – Prognos* |

| | | |
|---|---|---|
| | **Session 2a:** Deep dive on findings on financial data | *Silvia Vignetti – CSIL* |
| | **Session 2b:** Deep dive on findings on data on categories of interventions | *Silvia Vignetti – CSIL* |
| | *15 minutes break* | |
| **12:15-14:00h** | *Part 3* | |
| | **Session 2c:** Deep dive on findings on indicator data | *Alina Makarevičienė – PPMI* |
| | **Session 2d:** Deep dive on findings systems' related aspects | *Anja Breuer - Prognos* |
| | **Outlook & concluding remarks** | *David Alba – DG Regio* |

## Insights and Learnings

The following section highlights some of the outputs of the workshop and some key insights. To begin, in the first section '**Setting the scene – Study overview, Q&A'** the background to the study was presented with a focus on the main outputs.

**Short overview of the central findings on the operation of operations monitoring systems**

In the first session in terms of contents, '**Session 1: Findings on ERDF/CF operations monitoring systems, Q&A**' (Jan-Philipp Kramer – Prognos AG), central findings on the operations monitoring systems were presented. The presentation included observations on the governance structure, IT functionalities, control mechanisms or reporting procedures. As the first interactive element, the participants were invited to share their expectations regarding a well-functioning operations monitoring system are. In the form of a **WordCloud,** the responses can be observed in Figure 14. The text size of the response indicates the share of participants that provided that answer (i.e., the larger the size, the more participants provided that response). The results show that for many participants plausibility and usefulness of data are central aspects.

**Figure 13: Wordcloud on expectations regarding a well-functioning operations monitoring system**



Source: Prognos (2022): Wordcloud on Sli.do, n = 58.

**Discussion on financial data**

In the part on financial data 'Session 2a: Deep dive on findings on financial data' two main issues were presented by Silvia Vignetti & Francesca Ardizzon from CSIL.

**Key issue 1.1: Heterogeneous approach for defining operations**

The first issue concerns the different definitions across OPs for operations due to flexibility in the CPR. It became apparent that MS have different reasons for the flexible definition of operations. E.g., in Germany, the definition of operation is guided by the number of commitment documents and in the UK, the definitions are dependent on local circumstances (clustering of operations in larger OPs). Also, in France OPs define operations quite flexibly.

**Key issue 1.2: Heterogeneous understanding/definition of data fields regarding financial data**

In key issue 1.2, a great degree of variability concerning the reporting of financial data was observed (for data fields 41, 42 & 43 of Annex III of Reg. EU 480/2014). For the project team, the difficulty concerning financial data was mainly about harmonisation since different interpretations of data fields are used. The following discussion revealed that in MS the data fields regarding financial data are treated sometimes with diverging priorities according to the relevance the MS assign to them. Another observation is that the use of different operations monitoring systems also contribute to diverging definitions/understandings and require more coordination efforts. Figure 2 shows the main contributions during the discussion.

## Figure 14: Miro board of the discussion of key issue 1.2.
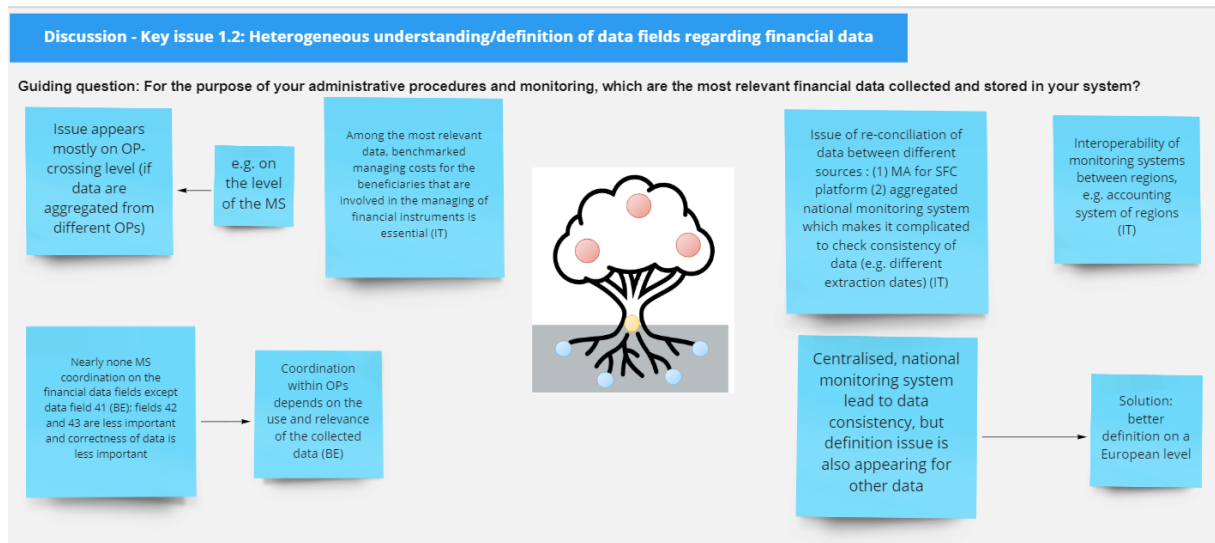


Source: Prognos AG (2022): discussion on Miro board.

### Discussion on data on categories of interventions

In the second part on key issues, 'Session 2b: Deep dive on findings on data on categories of interventions', presented by Silvia Vignetti & Francesca Ardizzon from CSIL, two main findings were discussed. A sli.do voting was included in which the participants could directly contribute.

### Key issue 2.1: Challenges with the connection of TOs or IPs to operation level data within the IT operations monitoring system

The first issue on data on categories of interventions was about missing or incorrect corresponding TOs/IPs in data extractions from the operations monitoring system. In the following discussion, a participant pointed out that they do not see this problem in their operations monitoring systems. Another participant supported this opinion by stating that lists and audits are used and afterwards, improvements are implemented in their systems. However, inconsistencies could result due to the attempt to meet EU regulations, national regulations and at the same time, perform tasks as easy as possible. Figure 3 shows the main points of discussion.

## Figure 15: Miro board of the discussion of key issue 2.1.
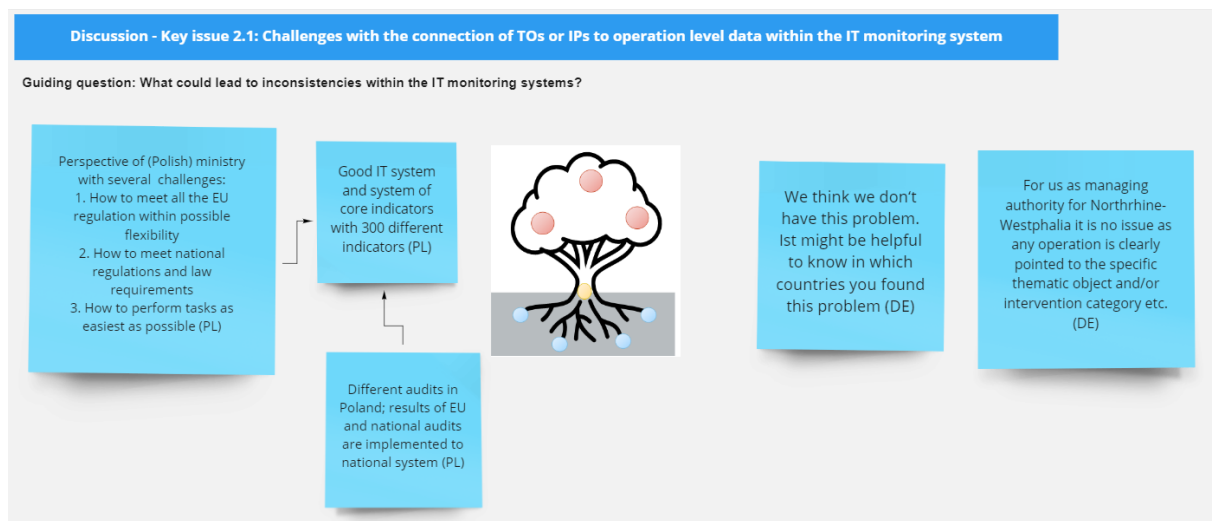
Source: Prognos AG (2022): discussion on Miro board.

**Key issue 2.2.: Incomplete and occasionally inconsistent data on categories of interventions**

The second data on categories of interventions issue concerned the incompleteness of submitted data for the categories of interventions (for specific types of categories). This was discussed more intensely. As a warm-up, the participants were asked to vote on how well they feel their operations monitoring system is prepared for higher reporting intervals of data on categories of interventions. As shown by figure 3, the majority of MS representatives feel that their operations monitoring system is well prepared for the 2021-2027 period. However, 31 % feel that their operations monitoring system is not so well prepared.

**Figure 16: Sli.do voting on the preparedness for higher reporting intervals**
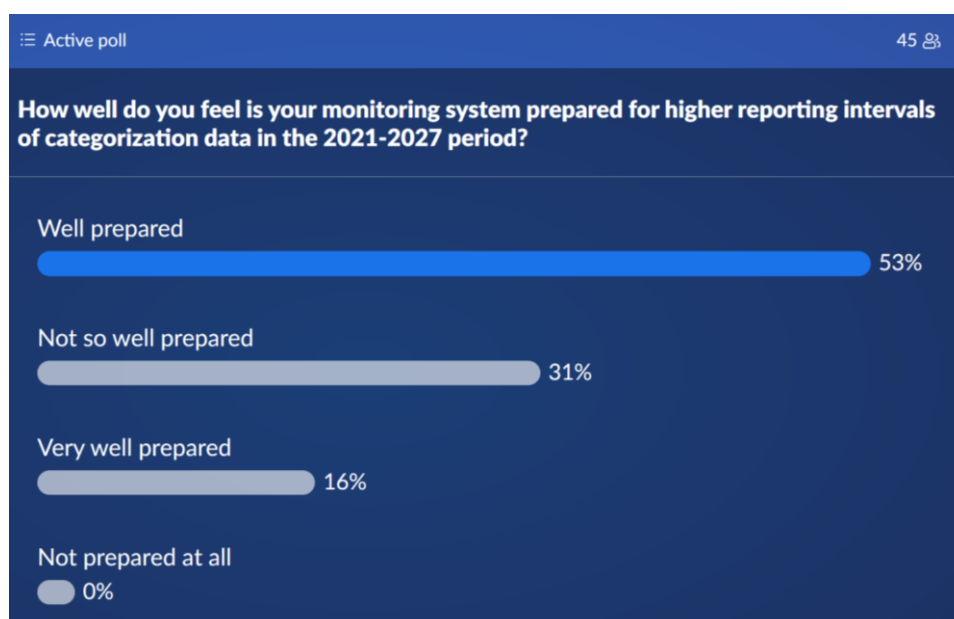


Source: Prognos AG (2022): Voting on sli.do, n = 45.

The following discussion revealed that for some MS the categorisation of data seems to have lower importance and incentives might be a way to ensure the provision of data. Moreover, the categorisation of data needs to be built into the system to ensure the good production of data.

**Discussion on output indicator data**

The discussion on output indicator data consisted of three key issues which have been presented by Alina Makarevičienė (PPMI) and have been followed by sli.do votings and a plenum discussion of the participants.

**Key issue 3.1: Double counting in the aggregation of common output indicator values on supported enterprises**

Before the beginning of the discussion, Alina Makarevičienė (PPMI) explained that indicators counting supported enterprises pose a particular risk for double counting and that MS/OPs have therefore established different strategies to remove double-counting. A sli.do voting revealed that 61% of the MS representatives indicate that most double counting is detected and removed from the data they report to the EC via SFC (n=46).

**Figure 17: Sli.do voting on the detection and removal of double counting**
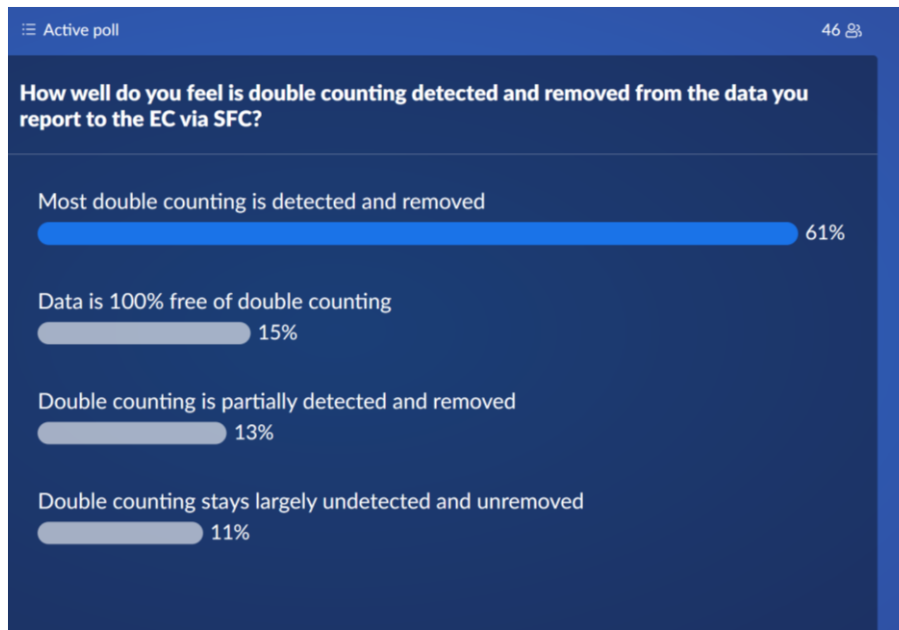


Source: Prognos AG (2022): Voting on sli.do, n = 46.

Findings from the discussion show that the issue of double-counting is handled differently by the managing authorities. In *Germany,* there is no unique identifier yet for enterprises.
One managing authority emphasized that they put a lot of effort into cleaning at OP and IP levels which is considered by them as heavy manual work for which external providers are sometimes used (*Germany*). In *France*, SIRET numbers are used to identify double participation. According to a participant, this exercise was done outside of the IT system and a dedicated methodology has been established to identify and remove double counting. In *Greece* the social security number is used, so they have a tax number for each enterprise and to this counting at manual level.

**Figure 18: Miro board of the discussion of key issue 3.1.**
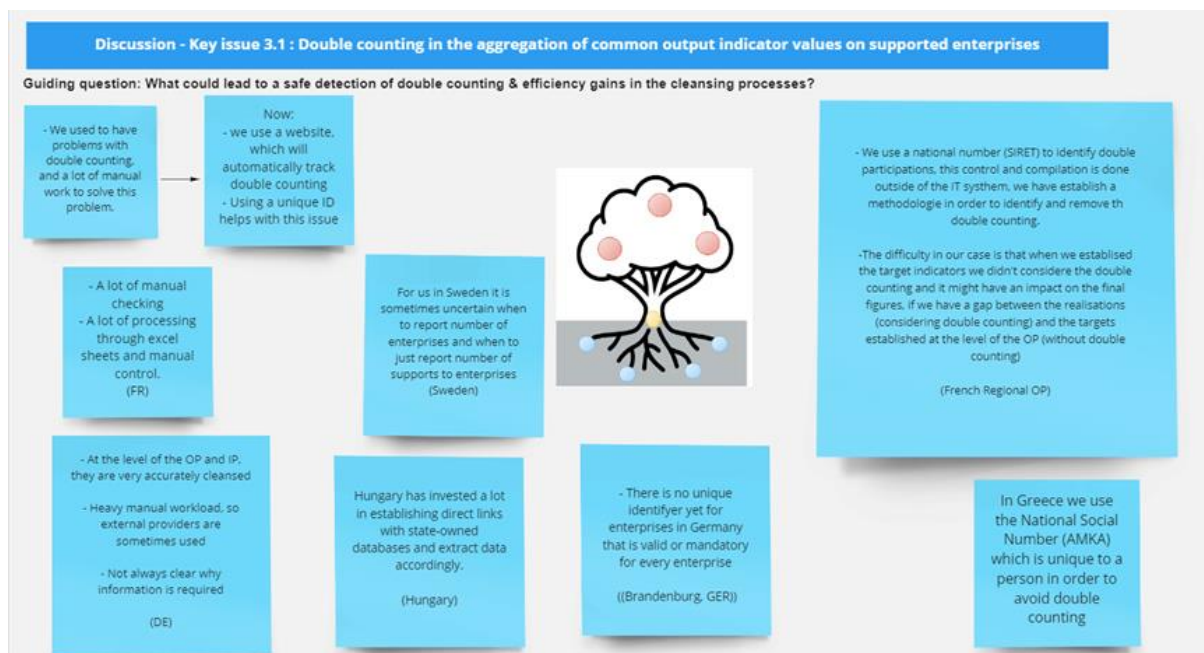


Source: Prognos AG (2022): discussion on Miro board.

**Key issue 3.2: Double counting in the aggregation of common output indicator values based on population benefitting from the support**

Alina Makarevičienė (PPMI) explained that indicators counting population benefitting from support pose a particular risk for double-counting which is increased due to the nature of these interventions which are often subject to "spontaneous change". The sli.do voting showed that 68% of MS representatives indicate that addressing a territory/population with more than one project could lead to undetected double counting. 32% indicate that a source for undetected double-counting might be when territories (and their corresponding population) are not identified/documented at operation level (n=34).

**Figure 19: Sli.do voting on reasons for undetected double counting**
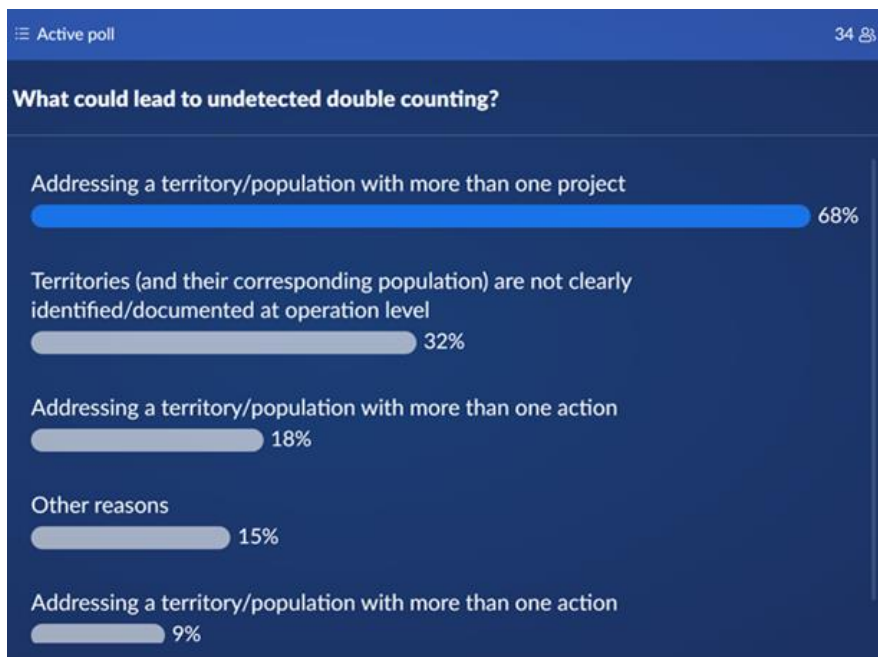


Source: Prognos AG (2022): Voting on sli.do, n = 34.

The plenum discussion showed that double-counting depends highly on regional specificities. Italian participants suggested that increasing numbers of parameters might help to better identify beneficiaries in case of overlapping territorial areas.

**Figure 20: Miro board of plenum discussion of key issue 3.2**
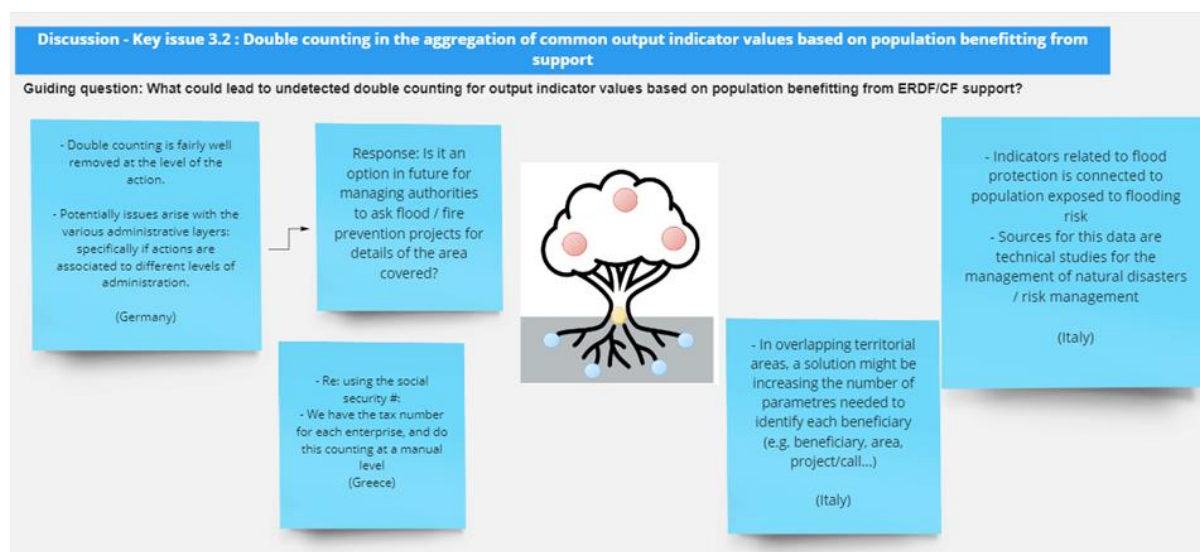


Source: Prognos AG (2022): discussion on Miro board.

**Key issue 3.3: Higher implemented values than selected values in AIR**

At the beginning of the session, Alina Makarevičienė (PPMI) presented the finding that in some cases, implemented values reported in the AIR are higher than selected values reported in the AIR. The sli.do voting showed that 50% of MS representatives indicate that better comparability of the current operations/actions with the ones from the previous programming period could lead to more precise estimates of selected values at the beginning of an operation or action. 34% indicate that taking away concerns of not meeting targets/need for justification might contribute (n=32).

**Figure 21: Sli.do voting on estimations of selected values**
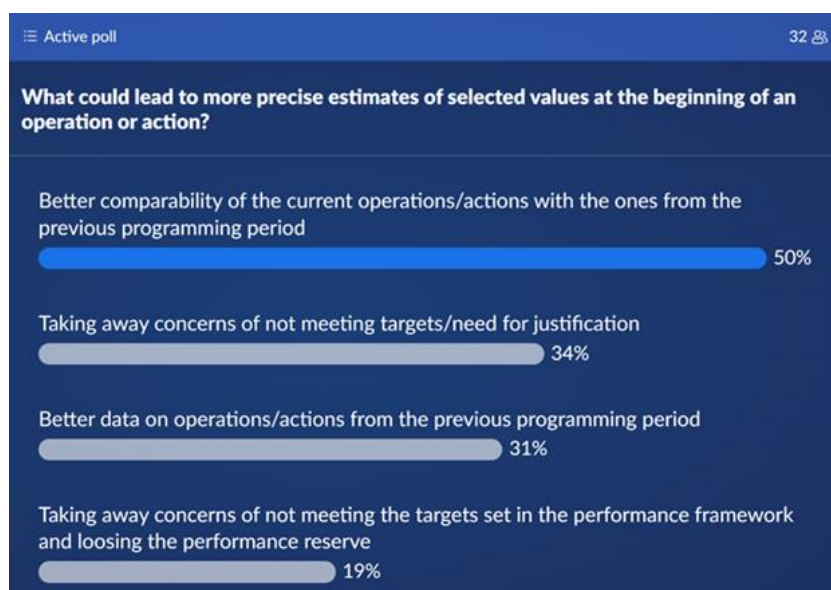


Source: Prognos AG (2022): Voting on sli.do, n = 32.

*Participants* underlined the better compatibility of the current operations/actions with the ones from the previous programming period when a project is selected the managing authority agrees on a forecasted value. This forecasted value may be exceeded by the selected value. Another *participant* outlined that it must be noted that projects may undergo modifications during their implementation duration. This means that they are contracted/selected values or indicators used/applied by the projects and may change as well. Modifications to the project's application form (indicator related or not) are not automatically regarded as amendments to the initial subsidy contracts as the application forms are the main annex to the contract. Because this happens and may affect the aggregated values at the program level for specific indicators. This is an important issue to raise especially in the context of the COVID 19 pandemic.

**Figure 22: Miro board on discussion of key issue 3.3**
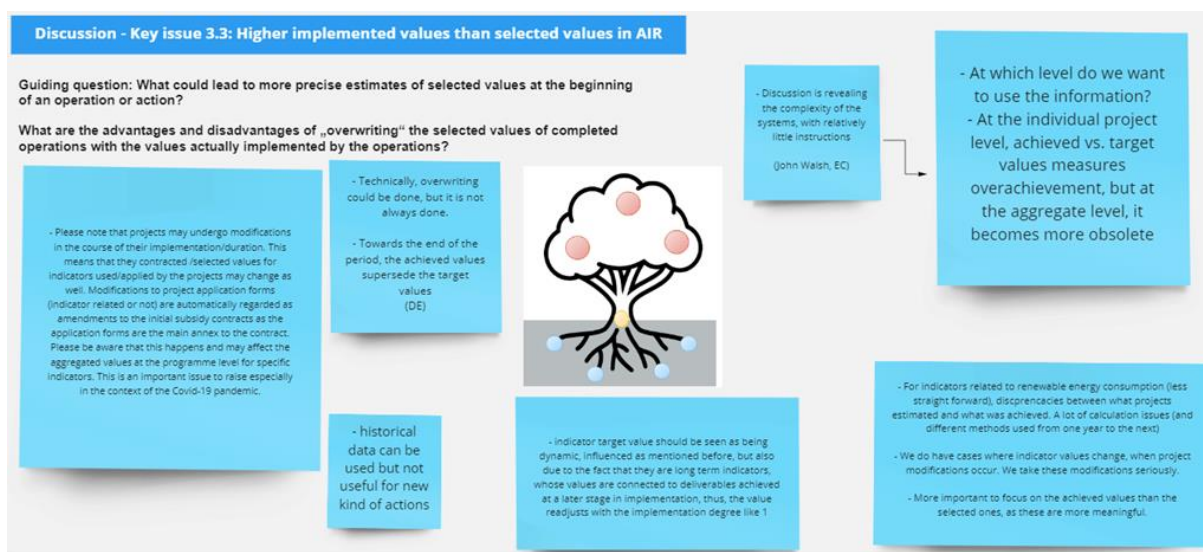


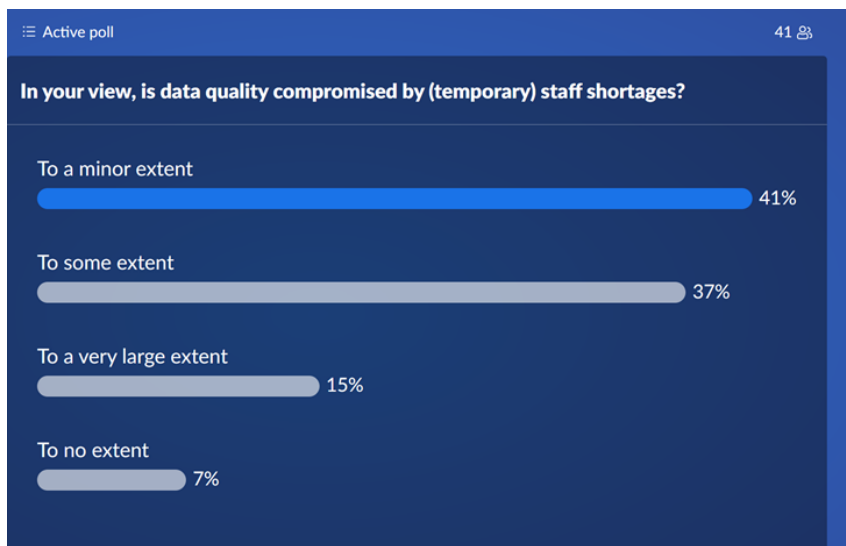Source: Prognos AG (2022): discussion on Miro board.

**Discussion on system' related aspects**

The discussion on system' related aspects consisted of two key issues which have been presented by Anja Breuer (Prognos AG) and have been followed by sli.do votings and plenum discussions of the participants.

**Key issue 4.1: Insufficiency of staff resources at peak times or under special circumstances**

In the first part of the discussion, Anja Breuer pointed out the findings that some MAs reported on challenges at peak times or under special circumstances to fulfil relevant and urgent monitoring tasks due to temporarily insufficient staff resources. The sli.do voting (see Figure 23) revealed that 41% of MS representatives believe that data quality is compromised to a minor extent by (temporary) staff shortages. 37% indicate that data quality is compromised to some extent (n=41). The plenum discussion showed that insufficient staff has been e.g., an issue in Spain in the first part of the programming period. A Polish participant suggested focusing on the importance of ongoing training of staff, while a French participant underlined written manuals with the procedures could be helpful for new staff to acquire knowledge of existing processes.

**Figure 23: Sli.do voting on the implication of staff shortage**



Source: Prognos AG (2022): Voting on sli.do, n = 41.

**Key issue 4.2: Less widespread use of automatic plausibility checks than manual follow-ups**

In the second part of the discussion, Anja Breuer (Prognos AG) explained that across MS manual follow-ups seem to be more frequently used and are rated as more important than automatic plausibility checks. However, stronger use of automatic plausibility checks might lead to improved efficiency, the reduced workload of the monitoring staff and a lower risk of human errors. In this context, an Italian participant explains that the different recorded attitudes demonstrate that both approaches (not mutually exclusive) are needed. A Polish participant explains that the human factor is critical, but some kind of automation is needed. According to a Latvian participant, one should not substitute manual checks. The human factor is critical, but automation is needed. They have initial plausibility checks that screen suspicious results which are then checked by humans.

**Figure 24: Miro board of the discussion of key issue 4.2.**
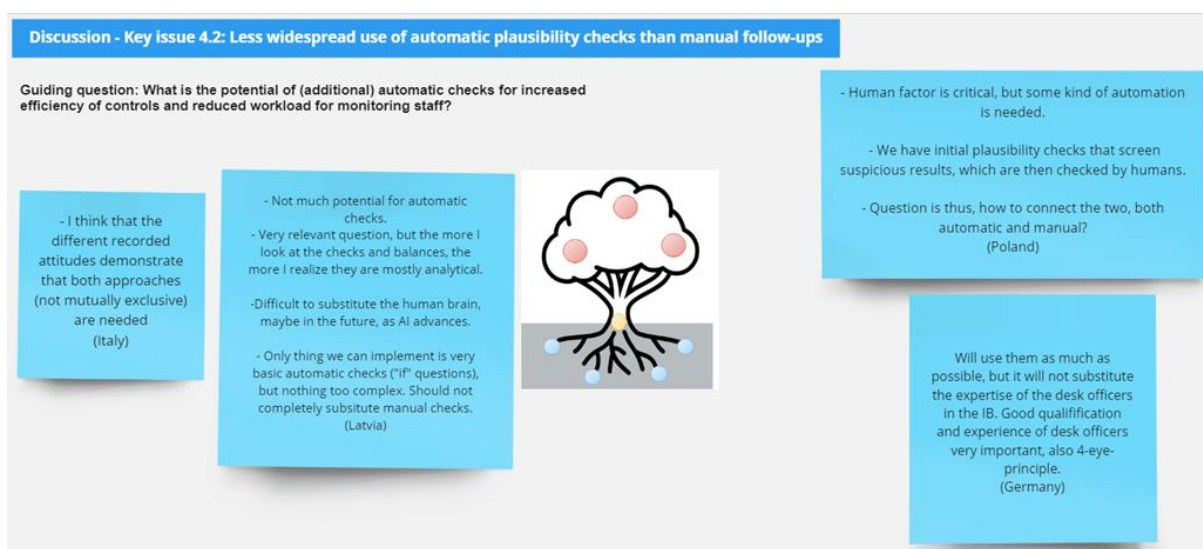


Source: Prognos AG (2022): discussion on Miro board.

After the discussion of the key issues, Jan Kramer (Prognos AG) presented the key takeaways from the discussions. A final sli.do voting reveals that for 45% of MS representatives Key issue 1.2 (different understanding/definition of data fields regarding financial data) is most important for the well-functioning of ERDF/CF-operations monitoring systems (n=40).

**Figure 25: Final sli.do voting on the most important issues on the well-functioning of ERDF/CF operations monitoring systems**
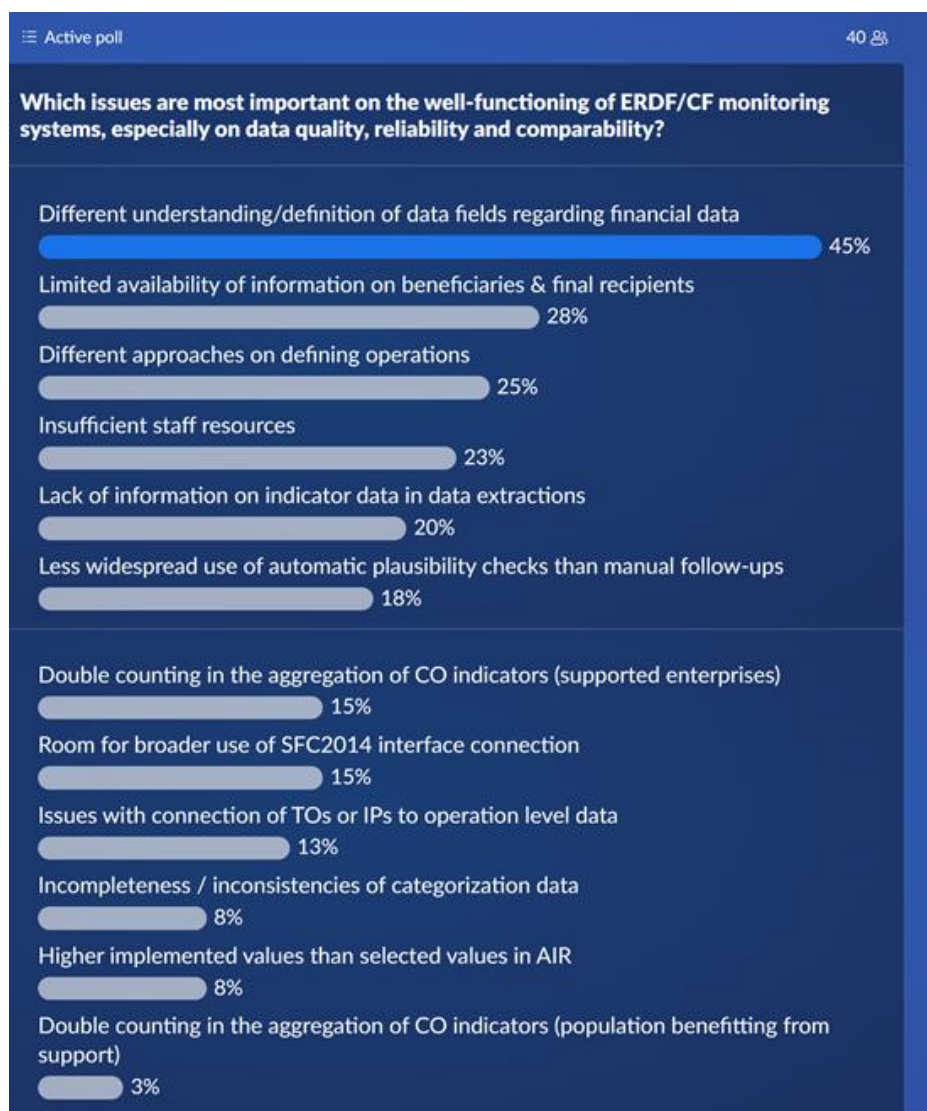


Source: Prognos AG (2022): Voting on sli.do, n = 40.

The workshop was finished with closing words by David Alba (European Commission).

**Impression from the seminar**

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