Addressing data gaps to evaluate CAP Strategic Plans

Good Practice Workshop

Malmö (Sweden), 8-9 June 2023

Funded by
the European Union

The European Evaluation Helpdesk for the CAP is responsible for providing support for monitoring and evaluation activities at the EU and Member State level. It works under the guidance of DG AGRI's Unit A.3 (Policy Performance Unit) of the European Commission (EC). The European Evaluation Helpdesk for the CAP supports all evaluation stakeholders, in particular DG AGRI, national authorities, Managing Authorities and evaluators, through the development and dissemination of appropriate methodologies and tools; the collection and exchange of good practices; capacity building and communicating with network members on evaluation-related topics.

Additional information about the activities of European Evaluation Helpdesk for the CAP is available on the Internet through the Europa server
https://eu-cap-network.ec.europa.eu/support/evaluation

Table of Content

List of figures

List of acronyms

ANC	Areas facing Natural or other specific Constraints
CAP	Common Agricultural Policy
CIS	Community Innovation Survey
CSP	CAP Strategic Plan
DG AGRI	Directorate-General Agriculture and Rural Development
EEA	European Environmental Agency
EU SILC	EU statistics on income and living conditions
FADN	Farm Accountancy Data Network
FBI	Farm Bird Index
FSDN	Farm Sustainability Data Network
GPW	Good Practice Workshop
HNV	High Nature Value
IACS	Integrated Administration and Control System
IFS	Integrated Farm Statistics
IPCC	Intergovernmental Panel on Climate Change
JRC	Joint Research Centre
LAG	Local Action Group
LIDAR	Light Detection and Ranging
LUCAS	Land Use/Cover Area frame statistical Survey
MA	Managing Authority
NN	National Networks
PA	Paying Agency
PMEF	Performance Monitoring and Evaluation Framework
SAIO	Statistics on Agricultural Input and Output

Executive summary

The fourth Good Practice Workshop (GPW) of the European Evaluation Helpdesk for the CAP took place on 8-9 June in Malmö, Sweden, and was dedicated to the following topic: 'Addressing data gaps to evaluate CAP Strategic Plans'. The objective was to reflect and learn from each other in relation to data issues, addressed mainly in the 'data and information' section of evaluation plans, and enable EU Member States to improve the planning and implementation of evaluations of their CAP Strategic Plans (CSP). It was attended by 82 participants from 25 different EU Member States, including Managing Authorities (MA), evaluators, Commission representatives, Paying Agencies (PA), researchers and network organisations such as National Networks (NN).

The workshop aimed to:

› Exchange practical experiences on how to ensure data availability for evaluation, including useful data sources and institutional arrangements for data provision and quality control.

› Share experience and knowledge on approaches to and methods for the identification of data gaps and ways to address them.

› Provide an opportunity for networking and identification for further support (methodological, capacity building) in relation to identifying and addressing data gaps.

The first day of the workshop provided an overview of issues related to data gaps from the perspective of the Commission and a presentation of the thematic work of the Evaluation Helpdesk on identifying data and attribution gaps. Subsequently, EU Member State experiences on identifying and addressing data gaps were offered by Estonia and Austria. The second day of the workshop included a presentation of EU level experiences about current developments and future responsibilities regarding data gaps for CAP evaluations. This was followed by a presentation of the work of the Commission's Joint Research Centre (JRC) on the use of coefficients for providing estimates on the impact from the implementation of various farm practices.

Key messages stemming from the workshop include:

› Data gaps relate to the absence of data that would allow precise and timely measurement of change, while attribution gaps relate to the absence of data that would allow the application of more robust methods to estimate the net effects of the policy. The timely identification of data and attribution gaps depends on the development of an evaluation framework that consists of key elements to assess, evaluation questions, factors of success, indicators, data sources and methods to measure change and attribute it to interventions.

› EU Member States have a depth of knowledge and experience that they can build on to address data gaps. For instance, they have access to past data, planned data for the current period, good knowledge of eligibility conditions and regulatory requirements, and capacity to use a variety of methods relevant for CAP evaluations.

› Data gaps can be addressed in various ways, including adapting monitoring systems to new requirements, elaborating complementary studies to collect missing data (particularly relevant for environmental data, which was widely considered to be the most difficult to collect) and the development of a coherent data management approach that focuses on necessary and available information.

› EU Member States should be aware of other national and European initiatives that propose approaches for addressing data gaps, such as the use of digital farm books and other farm tools, including digital accounting (including robotic accounting) or meta-analyses and the use of numerical coefficients extracted from them.

1. Setting the scene

1.1 Introduction

The fourth GPW of the European Evaluation Helpdesk for the CAP was dedicated to the following topic: 'Addressing data gaps to evaluate CAP Strategic Plans'. The objective was to reflect and learn from each other in relation to data issues, addressed mainly in the 'data and information' section of evaluation plans, and enable EU Member States to improve the way in which they plan and implement evaluations of their CSP.

The CAP for the 2023-27 programming period will see evaluation data requirements evolve as assessments must consider new evaluation elements and factors of success, as laid out in Annex I of the Implementing Regulation of CSP Regulation (EU) 2022/1475, as well as indicators required for assessing the contribution of CSPs (Article 6).

Evaluation plans aim to tackle this challenge through the dedicated 'data and information' section, which can determine the availability of data needed at the required level of disaggregation (national, regional, local) and in the desired format. However, EU Member States may still face issues in terms of identifying and accessing the data sources needed as well as the management and governance of this information.

The GPW in Malmö (SE) provided an opportunity for participants to gather and share practices about how to identify and overcome data gaps obstructing the evaluation of CSP at the national and EU level. The workshops' specific objectives were to:

› Exchange practical experiences on how to ensure data availability for evaluation, including useful data sources and institutional arrangements for data provision and quality control.

› Share experience and knowledge on approaches and methods for the identification of data gaps and ways to address them.

› Provide an opportunity for networking and identification for further support (methodological, capacity building) in relation to identifying and addressing data gaps.

Eighty two participants from 25 different EU Member States attended the event across the two days, including MAs, evaluators, Commission representatives, PAs, researchers, and network organisations such as NNs.

Figure 1 – Participants of the Good Practice Workshop per role and EU Member State
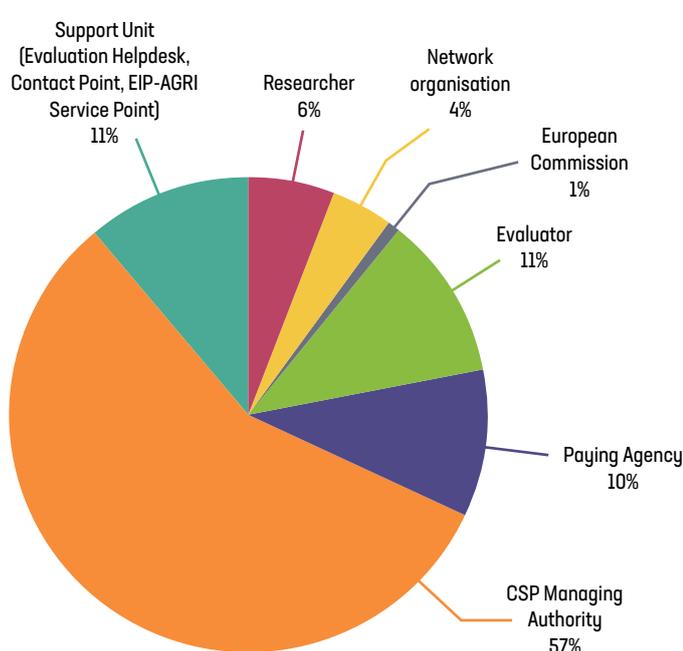
Source: European Evaluation Helpdesk for the CAP (2023)

1.2 Setting the scene for identifying and addressing data gaps

1.2.1 Overview of data gaps

The European Commission's Ms Sophie Helaine (Unit A.3 'Policy Performance', Directorate-General for Agriculture and Rural Development (DG AGRI)) gave a presentation with an overview on data gaps. Ms Helaine stressed the problem of when data is available but cannot be accessed. For instance, despite the importance of the Farm Accountability Data Network (FADN), there are MAs, or their contractors, who do not have access to FADN data. Ms Helaine shared the message with FADN liaison agencies that there is a need for MAs to be granted access to individual FADN data. If MAs still have issues, they need to reach out to DG AGRI. Ms Helaine explained that DG AGRI does not have access to the individual data of Integrated Farm Statistics (IFS).

Ms Helaine presented the main data gaps in relation to impact indicators, which mostly relate to biodiversity and water. For biodiversity, the issues are notably (i) to link the current Performance Monitoring and Evaluation Framework (PMEF) indicators with the farming practices supported with the CAP, such as the Farmland Bird Index (FBI); and (ii) not yet released data on landscape features in the agricultural area. In this regard, Ms Helaine informed participants that the Joint Research Centre (JRC) data on landscape features will arrive soon, the European Environment Agency (EEA) is working on data on small woody features based on Copernicus data[1], and that the pollinator monitoring scheme is in the pipeline. Furthermore, some MAs should have good data on High Nature Value (HNV) farming/farmland, which DG AGRI would encourage them to use. Regarding water quality, instead of measuring the impact on the water, DG AGRI recommends checking the farm practices that will be implemented and relying on the coefficients from the JRC. Water quantity remains difficult, but hopefully the Farm Sustainability Data Network (FSDN) will help.

Concerning the main data gaps for result indicators, Ms Helaine emphasised the difficulty of measuring the number of farmers who changed practices after training, while the result indicator R.1 (Enhancing performance through knowledge and innovation) combines various aspects but does not distinguish between training, knowledge exchange, advice and European Innovation Partnerships (EIP). Furthermore, indicator R.3 (Digitalising agriculture) can only be partially assessed.

For attribution gaps, Ms Helaine emphasised that everyone has to assess the effectiveness and efficiency of green architecture, including enhanced conditionality. Exploiting data on greening from previous programming periods, using FADN for building counterfactuals for agri-environment-climate measures and support to organic farming, or using coefficients on farm practices from the JRC, are all suggestions as to how to assess the green architecture. At the same time, EU Member States should not forget to assess the role of direct payments/investment and 'Areas facing Natural or other specific Constraints' (ANC) support.

When it comes to governance and simplification, Ms Helaine indicated that it would be good to start assessing the new delivery model as soon as possible.

Ms Helaine closed her presentation with some key messages, including how MAs can already do a lot as they have experience, access to data from the previous period and planned data from the current period, good knowledge of eligibility conditions and regulatory requirements (EU and national) and capacity to use other methods when counterfactuals are not possible. MAs may be able to do a better job than the Commission as they have more data, at an earlier stage, sometimes larger samples and more variables, a fine knowledge about eligibility conditions, selection criteria, administrative burden, gold plating, etc. Finally, it was noted that not everything is about effectiveness and that there is also efficiency, relevance and coherence, as well as governance and simplification and that EU Member States should focus on what can already be assessed.

Link to Ms Helaine's presentation: Data gaps

After the presentations, participants asked the presenters the following questions	
Finland was happy to hear that the link between water indicators and the CAP has been raised, as they had been hearing for many years that monitoring data linked to the CAP were not a core element.	N/A
Austria asked if it understood correctly that some specific data sets are needed for evaluations and whether an EU Member State could approach the Commission about this. If so, what are the procedures for this?	Ms Helaine explained that this was only meant for the FADN. Inquiries need to explain what the project is about, why individual data is needed, and how data protection will be ensured.

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[1] The EEA report on mapping and quantification of landscape features (woody features):
ETC DI Report 2023/X: Quantification of landscape features in agricultural areas using Copernicus products: An overview of recent developments – Eionet Portal (europa.eu).

1.2.2 Identifying data and attribution gaps

Mr Costas Apostolopoulos (Evaluation Helpdesk) presented work done by the Evaluation Helpdesk on identifying data and attribution gaps. He stated that data gaps could hinder the robustness and quality of evaluations, and that timely identification of these gaps may help evaluation managers and evaluators towards more accurate and hence useful findings.

The identification of data gaps requires a thorough understanding of the data requirements, which can be reached by developing a detailed intervention logic and building a complete and clear evaluation framework, comprising key elements that must be assessed, evaluation questions, factors of success and indicators and methods for measuring change and attributing it to interventions.

According to Mr Apostolopoulos, once the evaluation framework has been set, the first step would be to define the data sources from where the necessary data will be retrieved for estimating and, where relevant, netting out indicator values. The characteristics of these data sources should be assessed in order to check for potential gaps, which may be either measurement gaps or attribution gaps. Measurement gaps are due to the absence of data that would allow precise and timely measurement of change from the baseline of a specific indicator, during and/or after the implementation of CSPs. These gaps are, in most cases, due to the characteristics of the corresponding data sources, in terms of data definition, collection or reporting. Attribution gaps arise from the absence of data that would allow the application of more robust methods to estimate the net effect of the implementation of CSPs on the observed change from the baseline.

The assessment of the data sources should include checking whether there is an adequate time series of data, allowing for the establishment of a baseline, and checking whether the reporting frequency is in line with the timing of the evaluation or the level of disaggregation is aligned with the required level of analysis. On the attribution side, the ability to establish a counterfactual or apply modelling approaches are among the main criteria of the assessment of data sources.

Moreover, the specific characteristics of indicators may also reveal measurement or attribution gaps. The level of complexity of the indicator or the ability to use data from previous programming periods are among the most important ones.

Indicative measurement gaps for assessing effectiveness may include totally missing data or missing values due to reporting lags and they can be addressed by forecasting, using proxies based on data from previous periods or using coefficients, such as the ones developed by the JRC under the iMAP project.

Indicative attribution gaps for effectiveness may include inadequate indicator data or missing control variables and can be addressed by applying modelling approaches or using data from previous programming periods and coefficients.

Severe data gaps may arise when trying to assess other evaluation criteria, such as:

> efficiency – the lack of data on implementation costs;

> relevance – the lack of variables linking the effectiveness analysis to the corresponding needs;

> coherence – the lack of disaggregated data to carry out specific analysis that can assess trade-offs, complementarities and synergies between evaluated interventions.

Once data gaps have been identified, there might be a need to prioritise them given the limited resources available to address them. This prioritisation can focus on missing data, the level of financial allocations behind the missing data, the feasibility of the concept and the attribution potential of closing the selected data gaps.

Link to Mr Apostolopoulos' presentation: Identifying data and attribution gaps

After the presentations, participants asked the presenters the following questions
Spain expected there to always be attribution gaps and believed that this could be addressed via a global picture. From that perspective, MAs could decrease attribution gaps if they are able to understand what the data is telling them.	Mr Apostolopoulos conceded that this could be true, but MAs were in a good situation as a lot of tools have been developed (i.e. by the Commission) that try and overcome this. The different analyses mentioned before by Ms Helaine (e.g. instead of counterfactual analysis) was a good idea and could help provide the bigger picture.

2. Sharing experiences

2.1 Day 1 – Sharing practical experiences from EU Member States on identifying and addressing data gaps to evaluate the CAP Strategic Plans

2.1.1 Addressing data gaps with a focus on biodiversity

Ms Maris Kruuse (Centre of Estonian Rural Research and Knowledge (METK)) presented an Estonian environmental monitoring tool. Estonia has a well-developed evaluation system for evaluating agri-environmental interventions that combines different data sources. As much as possible, existing data collected by the PA and other relevant institutions is used. However, this data does not satisfy evaluation at the appropriate level.

Thus, the evaluator (METK) has been carrying out additional specific studies for environmental indicators since 2004. There is now a need to critically review the suitability of current data and research for CSPs.

Link to Ms Kruuse's presentation: Addressing data gaps with a focus on biodiversity – Estonia's approach

After the presentations, participants asked the presenters the following questions	
Ms Helaine was happy to hear about METK's continued interaction with the Estonian MA as the evaluation should not be a 'tick-the-box' exercise. Ms Helaine thought that other EU Member States could benefit from similar exchanges. She also indicated that more landscape data would become available in the autumn (Land Use/Cover Area frame statistical Survey (LUCAS) data based on field surveys). Ms Helaine asked the following questions: › Could more information be provided on the digital book on pesticides and fertilisers? › Could a further explanation be given on Light Detection and Ranging (LIDAR) › What were the main messages from the evaluations carried out on biodiversity?	Ms Kruuse explained that the digital farmbook was being developed by the PA and that the aim is to produce a short version by 2024. The use of this farmbook might become mandatory (i.e. all data would have to be covered in the farmbook) for farmers by 2028. It was explained that LIDAR is a combination of laser and radar data and provides a three dimensional image. Furthermore, LIDAR is remote sensing method. The main message from the study on biodiversity was that it should be carried out regularly as it can provide past and continuous data.
Ms Guerrero-Fernandez (JRC) asked if the data on bird species that METK monitors is the same as the one used for the Farmland Bird Index (FBI) or to what extent this data differs from the FBI.	Ms Kruuse indicated that some bird species in Estonia do not live in agricultural land and so METK has worked on a different study to get information on bird species for arable lands. The list present in the FBI in Estonia does not fit, therefore they had a different study.
Poland asked who performs the variety of specific studies that were mentioned (e.g. on water, biodiversity) and how they are financed.	Ms Kruuse explained that most studies are carried out by METK, or at least coordinated by it. For instance, the field study on farm birds was carried out by ornithologists and the bumble bee study was carried out by the Estonian University of Life Sciences. The studies were financed by technical assistance from the Estonian Ministry.

2.1.2 The role of Data Management in the Evaluation Plan of a CAP Strategic Plan

Mr Franz Sinabell (Österreichisches Institut für Wirtschaftsforschung (WIFO)) gave a presentation on data management concepts. He explained that it is necessary to carry out quantitative evaluations to determine the effectiveness and efficiency of interventions in achieving the objectives set out in the CAP Strategic Plans. The extent to which evaluation questions can be answered in

a consistent way depends on the methods used and the data available. The presentation showed how a coherent data management approach can be developed and implemented, using Austria as a case study.

Link to Mr Sinabell's presentation: The role of Data Management in the Evaluation Plan of a CAP Strategic Plan

After the presentations, participants asked the presenters the following questions	
Ms Parissaki (Evaluation Helpdesk) asked whether evaluation questions were adapted when data is missing.	Mr Sinabell stressed that the idea behind the concept is that one cannot control what you cannot measure and some of this philosophy was put into the concept. The importance of measuring indicators and variables was known as there are specific needs in the SWOT analysis. Therefore, all efforts are being made to collect information that is necessary to see whether the needs are adequately addressed or not.
The Netherlands indicated that the technical concept was sound but wondered if the concept of data sharing only works if all stakeholders are on board. Are all stakeholders willing to share? What has been done to convince them to share the data? Are there still challenges in convincing them? What are the organisational challenges for sharing data?	Mr Sinabell explained that a lot of data is already part of a nucleus of micro-data (i.e. Integrated Administration and Control System (IACS), FADN, etc.) and that they had access to other data sets (e.g. social security). They would like to have access to data from EU statistics on income and living conditions (EU SILC) survey, as EU-SILC household data is not (yet) linked to farm enterprise data such as IACS codes. In 10 years, they would be able to link this as well, but this is based on a contract with those that provide the data. Once everything is settled, they hope that everyone would be willing to share the necessary data.
Ms Helaine asked if, when interacting with the PA, they saw openness to share data. Did this result in changing the survey to the farmers? Were changes made to the claim form so that key information could be collected?	Ms Sinabell responded they were not successful in the way they wanted, as the study finished a year too late. There is currently an agreement that, when the projects are finished, those that claimed the final instalment have to provide information. It is likely that, after the mid-term review, there will be changes.
Czechia asked what the main source for counting the accounting data is.	Mr Sinabell answered that they did not only have farmers for income statements, as any business in Austria must publish its income statement. This information was not used before, but they are trying to get information on this for the current period.
Italy asked whether consideration was being given to sharing the data and providing open access and reporting to allow researchers/ evaluators to use this wide range of systematised data from a variety of sources.	Mr Sinabell indicated that an ambition was there to break institutional silos and to define which data was to be used in which format and to provide it via a public-use data system, when an evaluation study is commissioned.
Ms Helaine indicated that some of the data mentioned is not often used for CAP evaluations. Using data from business registers could be useful to assess the durability of investment support (as requested by the European Court of Auditors in one of its last reports). Have some experiments been done already?	Mr Sinabell explained that the researchers involved inspired them on what could be done. For example, how does one identify if farmers that produce wine in a quality scheme perform better than others? There is no data on this, but there are private catalogues that rank all wines. This information can be used to answer an evaluation question. Private data sets are there and should be used.
Malta asked if missing data were identified for each evaluation question and to what extent there was an exercise to collect data for all evaluation questions.	Mr Sinabell emphasised that the evaluation team worked hard to understand how to formulate evaluation questions. Their job was to ensure that the evaluation questions could be answered. Only in a few cases could data be developed, but he advised targeting the data where most of the money goes.

After the presentations, participants exchanged experiences and ideas regarding the **identification of data gaps** on different topics in CAP evaluation plans. This input was used by the Evaluation Helpdesk to identify topics for further discussion during the group discussions on day 2. A full list of the outcomes of the discussions is provided in Annex 1.

2.2 Day 2 - Sharing practical experiences from EU projects and the JRC on addressing data gaps to evaluate CAP Strategic Plans

2.2.1 Data gaps for evaluation of the CAP – current developments and future responsibilities

Mr Hans Vrolijk (Wageningen Economic Research) gave a presentation on the current developments and future responsibilities regarding data gaps for CAP evaluations. Due to societal challenges and changes in policy priorities, the objectives of the CAP have expanded to encompass a wide range of sustainability goals. Evaluators require data on these sustainability topics, but efforts have been made in the past five years to address respective data gaps in agricultural statistics and other information sources. Research projects such as MEF4CAP, FLINT and MIND STEP have emerged to address future data needs and propose solutions. Legislation such as Statistics on Agricultural Input and Output (SAIO) and IACS have been adapted, and the anticipated new legislation on FSDN will offer data on various sustainability indicators. This presentation discussed data availability developments for indicators such as innovation, trade data, pesticides and nutrient balances. Mr Vrolijk explained that it is important to define innovation as it plays a crucial role in assessing farm practice changes and their impact on productivity and sustainability, and that trade data also requires clear definitions, which are available from various sources. Pesticide use will be covered by the Farm-to-Fork strategy while Eurostat provides nutrient balance data and several countries have monitoring initiatives related to the nitrate directive. Additionally, digital farm books and other farm tools contain relevant information. The presentation concluded by highlighting the impact of digitalisation on the agricultural sector, not only in precision farming but also in streamlining sustainability reporting through digitised information flows and robotic accounting.

Link to Mr Vrolijk's presentation: Data gaps for evaluation of the CAP – current developments and future responsibilities

After the presentations, participants asked the presenters the following questions	
Ms Helaine asked how innovation was defined. If it goes beyond precision farming, where does it stop? There is a network of advisors in the process of being set up, which could be mobilised for questions in the future (more information to follow at a later date). Furthermore, Ms Helaine asked if the PMEF database on the Commission's website was used, as all information on trade balance (per EU Member State) is in this database, and if this database would need to be promoted more.	Mr Vrolijk answered that there were two approaches to defining innovation: (i) to have a specific list of machinery/technology being used and ticking boxes, or (ii) a more open approach following the Oslo manual: the innovation does not have to be new to the world, but new to the farm itself. An issue that Mr Vrolijk had with a specific database was that it takes a lot of time to maintain and is quite subjective. The Netherlands uses a methodology that, if there is an evaluation at farm level, it is done in the context of FADN and so some examples have to be given on what is included and what is not.
Ireland asked if a coefficient is needed for pesticides to track dose amount per kilo, as granularity is so important. Otherwise, it was seen as too broad.	Mr Vrolijk agreed, but also mentioned that it was a trade-off between costs and practicality. It was nice to see general trends, but if one wants to say something about sustainable farm performance, it is nicer to have the data at farm level (or even lower) to use for benchmarking.

2.2.2 Knowledge synthesis on the effect of farming practices on environment and climate – iMAP assessment

Ms Irene Guerrero-Fernandez (JRC) gave a presentation on the knowledge synthesis on the effect of farm practices on environment and climate regarding iMAP assessments. She suggested using knowledge synthesis for policy support. Through iMAP, the JRC provides the Commission with scientific assistance with regard to the CAP's environmental objectives. Their work focuses on assessing the environmental impacts of farming practices. One example is a simplified methodology that the JRC developed to evaluate the climate mitigation potential of draft CSPs. This involved mapping farm practices within proposed interventions, determining the mitigation potential using coefficients from scientific studies and multiplying these coefficients by the planned output. Although the methodology is being improved, one limitation was the lack of data on mitigation coefficients for all farming practices. To address this, the JRC explored the use of a meta-analysis. Instead of conducting meta-analyses themselves, the JRC performed systematic reviews of existing meta-analyses. From these reviews, they extracted qualitative information on environmental impacts, linking them to specific CAP objectives and indicators. Additionally, the JRC can extract numerical coefficients from selected meta-analyses, providing specific and targeted information for individual farm practices. These coefficients can be useful when other coefficients are not available or less suitable. Overall, meta-analysis helps fill data gaps and can be used to feed models at more specific geographical scales, with results based on the scientific literature.

Link to Ms Guerrero-Fernandez's presentation:
Knowledge synthesis on the effect of farming practices on environment and climate – iMAP assessment

After the presentations, participants asked the presenters the following questions	
The Netherlands wondered if there was a data source on which farming practices were used at farm level. They also stressed that the link between farming practices and impacts vary, citing fertiliser use as an example that can have many impacts.	Ms Helaine answered that progress was being made in FSDN to include the farm practices. In parallel, the first step is to know what CSPs contain in terms of farm practices. The plan is then to use the coefficients on the planned outputs and later on the actual realised outputs to roughly estimate the CAP's contribution to objectives. Ms Guerrero-Fernandez added, regarding fertilisation, that the JRC reported on all impacts. When the MA conducts the exercise, they may find many impacts, so the idea was to define the practice correctly, and then through research retrieve everything that comes out. The JRC have already extracted a large amount of information.
Austria was concerned that, when a farmer's practice leads to a reduction of GHG emissions, it could be reported in other systems (e.g. Intergovernmental Panel on Climate Change (IPCC) monitoring system). Different organisations report the reduction of GHG, and it is important not to end up with two different inventories that say different things.	Ms Helaine encouraged EU Member States to improve the methodology in the IPCC monitoring system to move to Tier 3 of farm practices. Furthermore, MAs have to keep in mind that what is assessed using the presented coefficients is not what would happen without the CAP. The Commission hopes that EU Member States will use this information when designing the interventions.
Finland wondered how to take into account the difference between EU Member States, especially regarding environmental impact. Finland implements it at the national level and multiple mistakes were found within the country. So what about if one or two coefficients are developed at the EU level?	Ms Guerrero-Fernandez explained that coefficients JRC used were general and global, but there are ways to adapt them to national situations, for example to fine-tune the numbers. It was emphasised that it was not only the coefficient, but it was also the interventions that were designed and the expected uptake.
Italy wondered whether the data would be applied and used at a global level or at CSP level. Is there a technique to apply it at the EU Member State level?	Ms Helaine explained that the Evaluation Helpdesk is currently applying and fine-tuning the developed methodology. The JRC did a pilot in 2021 for a draft CSP. It should be seen as a starting point to find and use data.

After the presentations, participants exchanged ideas on **addressing data gaps** on five topics: a) the environment focusing on climate, b) the environment more generally, c) innovation, social issues and LEADER, d) income and competitiveness and e) other issues. A full list of the outcomes of the discussions is provided in Annex 2.

2.3 Wrap-up

At the end of the GPW, participants were asked to provide input on how their issues regarding data gaps for evaluating the CSP were addressed. Below is an overview of the main messages:

> Overall, the workshop helped highlight common issues in identifying several data sources that were not on the radar of many evaluators and other evaluation stakeholders.

> It is important to collect data at the application stage. For instance, applicants may indicate what exactly the support is targeting and how it will contribute to specific and relevant output and result indicators.

> The limitations of a counterfactual analysis were stressed and the need to determine other methods to assess if a change in practice happened due to an intervention or whether it would have happened without it.

> The identification and closure of data gaps is particularly critical for certain topics like LEADER added value, which presents challenges in terms of its various dimensions at which it needs to be assessed (e.g. it is mainly produced at the local level but needs to be assessed at the CAP level). Another topic is investments, where the challenge is to identify relevant data sources that link investments to incomes (e.g. FADN, farm survey or other).

> Data needs to enable the assessment of trade-offs, for instance, investments that are designed with the aim of improving the environment but that produce a negative effect on profitability and income.

> Finally, participants stressed the need for and usefulness of coordination and cooperation between all stakeholders involved in evaluation, such as the MA, PA, evaluators, researchers and the Commission. A coordination mechanism can also be created to help them address data gaps.

Ms Helaine closed the GPW by sharing what she had learned, highlighting the value of citizen science to collect information at a reasonable price, such as people taking pictures in specific locations to monitor pollinator populations. Furthermore, she learned about the importance of linking EU Member State's data collection to all data points. For example, a country can align to and utilise LUCAS points when it expects a specific form of data collection. She concluded by indicating that it could be challenging at EU level to show that the CAP is delivering because homogenous data needs to be collected in all EU Member States before the Commission can proceed with an overall evaluation of the CAP. However, she was confident that EU Member States would carry out the needed data collection and analysis for the Commission to assess the current CAP.

3. Concluding remarks

The outcomes of the presentations and group discussions provided useful insights into the most pressing issues identifying data gaps as well as suggestions to help EU Member States address them for CSP evaluations. The solutions proposed are based on the experiences of EU Member States and can be applied in different countries.

An overarching issue is the **governance of data collection** as there are many different institutions collecting data in different formats, resulting in fragmentation. Clear responsibilities and harmonisation are therefore necessary. This can be achieved through closer collaboration between relevant data providers, the establishment of identifiers for farms and/or beneficiaries and common coding for farm practices.

Other difficulties with data collection result from high costs for data collection, time lags, lack of detailed data and the voluntary nature of obtaining information from farmers. These issues can be addressed by identifying additional data that needs to be collected early on. This can be done with the use of indicator fiches, mobile applications that collect data directly from farmers (this may require some training, but appears worth the effort), the creation of samples and extrapolation, the use of iMAP based on the work of the JRC to link farm practices to impacts, and the use of bookkeeping services or farm advisory services to extract information from farmers (e.g. using pre-filled forms).

Data for **environment- and climate-related indicators** entail difficulties such as linking gaps in existing databases, combining IACS with models, a lack of historical data and sufficient samples, and the variety of measurements and pace of change, which is too slow to observe impacts. Potential solutions include the creation of baselines using evaluation support studies and other thematic research studies, the establishment of environmental impact monitoring systems (already established in some EU Member States), the use of satellite images and other remote sensing techniques, the systematic collection of samples in the case of soil, the use of volunteers to monitor 'bee-hotels' in the case of farmland birds and, finally, adopting coefficients where they exist for certain farm practices.

Data and attribution gaps for **income- and competitiveness-related indicators** stem from limitations in FADN samples (e.g. size of the sample, small farms not covered), the potential offsetting effects of economic and environmental sustainability and the lack of data for constructing counterfactuals. Potential solutions include improvements in FADN such as enlarging the samples, linking FADN to beneficiaries' databases, obtaining the required information from additional databases, studies and surveys, as well as creating new samples. A decisive factor would be to use EU Member States' existing knowledge to identify what already exists and what needs to be obtained as a priority. This prioritisation of data gaps may be useful from a cost-effectiveness perspective since closing data and attribution gaps may be a costly exercise.

In the **field of innovation**, data gaps exist due to the unclear or different definitions of innovation, while the nature of some indicators makes their measurement difficult to link changes in farm practices to innovation. Proposed solutions include surveys and primary data collection as well as the use of proxies, while making use of current data systems as much as possible.

In relation to **socio-economic aspects**, there are data gaps in measuring social effects, such as social inclusion, and attribution gaps in measuring the net effects of the CAP on employment or GDP. At the same time, there are currently no indicators to allow the assessment of the value added from LEADER. Modelling and primary data collection may be a way forward to address attribution gaps, while more guidance is needed for EU Member States to assess LEADER added value, including a common understanding of the concept, a clear evaluation framework and an identification of existing experience from LAGs that have already carried out a respective evaluation exercise.

In conclusion, perfect data may not exist. Any chosen approach or solution to address gaps therefore needs to balance costs and priorities. However, it is worth emphasising that EU Member States cannot control what they cannot measure. It is therefore important to ask evaluation questions that can be answered based on available data. To this end, the development of a data management approach to identify what data is available and how it can be accessed, used and complemented with additional information, is paramount to minimise the risks of encountering data gaps.

ANNEX 1 – Results from group discussions on day 1: How to identify data gaps

Below is a full list of the input from the GPW participants during the break-out discussions on day 1, during which they exchanged experiences and ideas regarding issues for **identifying data gaps** on different topics for CSP evaluations. The table below lists the different issues for identifying data gaps for the PMEF result and impact indicators, for additional result and impact indicators as well as attribution gaps for impact indicators.

Issues related to the identification of data gaps		
	Results	**Impacts**

PMEF indicators	› Issues with FADN:
	  › sample size
	  › investments repeat every five years in the sample of FADN but there are insufficient farms in the sample.
	
	› Difficult to collect all data required by the PMEF in regionalised countries, as every region has a PA (e.g. Italy) and it is difficult to ensure homogeneity since environmental data is not collected at the national level. Therefore, the identification of what data to be collected is a challenge.
		› Competitiveness:
		  › Possible to assess CAP investments overall, but difficult to assess specific interventions.
		  › Data gaps may exist for direct payments and sectoral interventions.
		
		› Environment:
		  › Carbon sequestration: varying measurements can create uncertainty; at the same time there is a lack of historical data and sufficient samples.
		  › Farmland birds: measurement of birds differs between regional and national level. Data gaps foreseen for bird index.
		  › Environmental indicators experience slow/long-term impact/effect. However, policy is much faster, which creates misalignment.
		  › Data gaps may exist for I.9 (resilience to climate change) and I.21 (landscape features).
		  › How to link environmental sustainability with economic sustainability (especially locally).
		
		› Digitalisation: how to assess competitiveness when there are not enough samples in FADN.
		
		› General issues:
		  › Data gaps could be created due to budget, as they are too expensive to collect.
		  › Lack of baselines, outdated data and different collection frequencies.
		  › Update/frequency of agricultural census provides very interesting data but the 'pace' of collection is not sufficient to compensate for the lack of FADN data (regarding small farms).
		  › Data on farms is not the same from all sources/databases, which raises the question of whether there is a need for identifiers. For instance, an ID for farms or for beneficiaries would ensure synergies between databases, but it seems that EU Member States are reluctant to do so.

Issues related to the identification of data gaps		
	Results	**Impacts**

Additional indicators	› The need to collect additional data in application forms.
	
	› Pillar 1 type indicators and data are often new, so the PA needs to learn by doing.
	
	› Innovation:
	  › The definition is unclear or provided after the funding.
	  › It is not evident how to measure the change in practices after innovation.
	
	› Collection of data from farms is voluntary, but it is needed to complement data that is not in FADN. How can famers become more willing to submit data?
	
	› The involvement of many stakeholders is needed for collecting/providing data. How can this be done in the best possible way from the beginning?
		› Too much data and not specific enough to use for assessing the CAP.
		
		› The need to collect additional data in application forms.
		
		› General issue with accessibility to data for additional indicators due to: a) not allowed access, b) cooperation needed between institutions (e.g. ministry of agriculture and ministry of environment), c) fragmentation of data sources, i.e. data scattered in many databases.
		
		› Issues in accessing farmers' data (from practical information to precision farming).
		
		› Issues persist for environmental data:
		  › How to collect data at CSP level when it is available at lower levels.
		  › There is a time gap to detect impacts (especially for the environment), while political changes may also affect progress towards impacts.
		
		› Data is needed for additional indicators in relation to animal welfare, LEADER added value, innovation and biodiversity.
		
		› In relation to innovation, the Community Innovation Survey (CIS) is not useful for rural comparison and a separate focused survey on innovating in rural/agricultural firms is needed.
		
		› The Spanish electronic farm book may provide access to micro-data and will be mandatory for big farms from 2024.

Attribution gaps	› Data governance issues:
	  › Who is responsible for the data? It is unclear in some EU Member States.
	  › Different institutions/groups collect data in different formats. There is a need for harmonisation of data across regions, PAs, institutions, etc.
	
	› Regionalised data challenge: PA should use the same data template across regions.
	
	› It is difficult to identify attribution gaps for specific indicators:
	  › I.21 is not the same as R.34; the definitions differ. R.34 landscape feature – how can it be quantified? More support is needed.
	  › Is R.34 fit for purpose?
	  › Soil: slow to observe changes and attribute impacts
	  › Biodiversity: difficult to link the CAP to changes.
		› Issues with specific indicators/topics:
		  › Water: difficult to attribute communication with plots/interventions.
		  › Water pollution (ground water): time lag of information provided makes it difficult to identify pollution sources – farms vs industry (common issue in Ireland, Spain, Slovakia)
		  › Climate (GHG) impacts – IACS/non-IACS data difficult to combine in modelling.
		  › Net effect of CAP income support.
		  › Rural business effect on I.24 and I.25.
		  › Bird data: broad data even if data exists; composition of indicator is changing faster than the monitoring takes place (case of Germany).
		  › LEADER added value.
		
		› Link between measurement and farm practices. Relevance of sampling points.

ANNEX 2 – Results from group discussions on day 2: How to address data gaps

Below is a full list of the input from the GPW participants during the break-out discussions on day 2, during which they shared ideas and experiences on **how to address data gaps** and the identified issues. Where relevant, the EU Member State(s) suggesting the solution to address data gaps is/are mentioned in brackets.

General issues	
Issues in relation to data governance	**Possible solutions**
Who is responsible? Involvement of many stakeholders	› Strengthen farm advisory services to obtain the data needed from beneficiaries – generate prefilled forms (Portugal, Poland, Malta) › The PA can create a 'data lake' to develop identifiers to find data gaps → Hosted on a shared server with researchers + MA (France)
Different institutions/ data/formats/databases causes fragmentation and need for homogeneity, harmonisation and interoperability	› Various ideas for harmonising data: 　› Collaborate with statistical offices, e.g. through annual census (Hungary) 　› Use a business register 　› Create common language around investments and link it to impacts and then indicators (Poland) 　› Pilot projects with data analyst for Pillar I (Hungary) 　› Create a code system to identify farm practices across different regions (Germany) › Exploit synergies between databases by having an identifier for farms or for beneficiaries (MAs are reluctant) › Collect data more regularly by using PowerBi/data analysis tool – automated processes (Estonia)
Issues in relation to data collection	**Possible solutions**
The fact that data is too expensive to collect creates data gaps due to budget constraints	› Do not ask for the same data twice (Estonia) › Know what to ask and how (Estonia) › First step to identify data gaps is indicator fiches, then determine resources available to reveal the need for additional indicators and respective data (Portugal) › Mobile applications showcase benefits, but require farmer training (Malta)
Data collection is voluntary in the FADN – when sample is too small, what can be done to make farmers more willing to send data?	› Increase FADN data collection through mandatory processes (e.g. CAP payment application) (Slovakia and Estonia) › Increase FADN data collection through bookkeeping services (Slovakia)
Accessibility (when not allowed to access data)	› For ex post evaluation, analyse impact indicators to identify gaps and then contract studies to help address them

General issues	
Other issues in relation to data gaps	**Possible solutions**
Timing of data: time lag to detect effects/impacts and uptake/frequency	› Collect FADN every year; more cost-efficient to collect regularly and more relevant and useful (Slovenia) › Accept that 'perfect data' does not exist and balance cost restraints with priorities › To stimulate farmers to support FSDN, they could receive an incentive (Romania) › Map data early – studies on using data, disaggregate
Data identification: what data can be used to assess the CAP under the PMEF?	› Only ask Evaluation Questions (EQ) that can be answered (data availability) › Arrange additional indicators around available data (France) › Map data early – studies on using data, disaggregated
Regionalised data is a challenge	No solution discussed.

Issues related to environment (climate)	
Issues in relation to I.9	**Possible solutions**
Improving resilience to climate change	› Establish a baseline → use evaluation support studies (Estonia) › Study on impact in ammonia: focusing on fertilisation and monoculture, analysis of business plans. Very little impact measured (Hungary)
Issues in relation to I.10	**Possible solutions**

Climate (GHG) impacts – invest IACS/non-IACS difficult to combine in modelling	› Information already in the application:
	  › Applications provide a label of the farm practice supported already at the application stage
	  › Applications have to list output/result indicators
	
	› Which structure/institution is in charge? The PA, MA, a research institute? Are there incentives for farmers to provide the right information?
	
	› Using satellite images to estimate carbon sequestration
	
	› Environmental impact monitoring programme, including soil monitoring

Issues related to environment (climate)	
Issues in relation to I.11	**Possible solutions**
Varying measurements can create uncertainty; lack of historical data; lack of enough samples; lack of counterfactuals	› State of health requirement to take soil samples before and after the AECM → results vary but no counterfactual (Malta)
Soil organic matter – slow to change and attribute impacts	› Soil samples analyse the third year; campaign when national measures are finalised; collection with Chamber of Agriculture (Hungary)
	› Share soil samples when a country is similar to another in terms of environmental conditions
	› Determine which result-based measures align with practices that can use coefficients. Swedish statistics make their own assessment using samples on fertilisers and monocultures.

Issues related to environment (diverse)	
Issues related to the farmland bird index (FBI)	**Possible solutions**
FBI	› Tailor the list of species under the FBI to the local/national level; link to impact
	› Use data from other sources (e.g. volunteers) and combine with FBI measurements (modelling)
	› Use LUCAS grid to set up bee hotels and have volunteers monitor them for data
	› Use additional biodiversity indicators
Issues related to biodiversity	**Possible solutions**
Landscape features	› R.34 → difficult to quantify and unclear if it is fit for purpose so use co-efficient instead
	› I.21 → not yet developed (expected in autumn), so, in the meantime, check complementarity with R.34
	› Remote sensing to check diversity of grassland and landscape features
Natural resources: long time lag of data for impact indicators	› Use monitoring systems (Estonia/Finland) and regular assessments to address past and future time lags.
Issues related to horizontal matters	**Possible solutions**
› How to link impacts to indicators › Difficult to access farm level data, e.g. from farm books › Data is expensive to collect › National data is not detailed enough	› Create a sample → monitor → extrapolate → assess intensity of improvement → link to LUCAS › Use iMAP to link practices to impacts › Explore the use of private data › Fast farm management information systems → eco-schemes → central repository of data

Issues related to income, competitiveness	
Issues in relation to competitiveness	**Possible solutions**

Possible to assess CAP investments overall, but difficult to assess specific interventions	› Suggested improvements in FADN:
	  › Determine if FADN proxies already exist (costs)
	  › FSDN aims to link economic and environmental
	  › Link FADN to beneficiaries' databases
	  › Lower threshold of FADN to include small farmers
	  › Generally, enlarge FADN sample

How to link environmental sustainability with economic sustainability	› Build samples from the start: Link environment sample sites to income and farm book data › Typology of innovation linked to environment could be used to link investment to environment impacts/sustainability
Small farms: not covered by FADN, no accounting data for small farms and need for economic research	› Focus on need-to-know details of investments › Use sector's data market performance (France) › Use individual case/field studies for information › EU-SILC database can identify small farms, for household income. EU-wide statistics office might be able to match data to support

FADN: sample size	› Insurance schemes require a reference yield – however, not applicable/useful for no tillage farms
	
	› Risk management:
	  › Research institutes may carry out surveys
	  › Compare farms with/without risk management

Investments: separating five years after in the sample of FADN but insufficient number of farms in the sample	› Beneficiaries required to report financial data five years after investments
Issues in relation to income	**Possible solutions**

Net effect of CAP income support	› Relevance of tax data:
	  › Clear agreements with the tax authority (Spain)
	  › Connecting tax data with agricultural census data
	
	› ANC: when farm location is known, use that information
	
	› Aggregate level comparisons on EU level can be useful for learning – between states or regions (regional economic accounts at NUTS2-level)

Direct payments and sectoral interventions	› Distinguish whether income support is an economic or a social policy › Use EU-SILC also for measuring rural poverty and income gap › Link farm size to information on CAP beneficiaries

Issues related to innovation, social aspects and LEADER	
Issues in relation to innovation	**Possible solutions**
How to measure change in practices after innovation	› Surveys: Separate focused survey in innovation for rural and agricultural firms › Primary data collection: following collection in 2018/2019, prepare a second round that covers all rural businesses and agricultural firms, asking additional needed questions (Sweden)
Definitions unclear or received after funding was provided	› Use proxy to see if changes can be matched/linked in order to link data between indicator and intervention. A group of beneficiaries will function as proxy/representatives and data will be compared to them (Italy) › Have market numbers for certain machinery used to determine/identify innovation in, for example, precision farming
Community innovation surveys (CIS) are not always useful for rural companies	› Look at current data systems available and determine how/when to use
Issues in relation to economic and social aspects	**Possible solutions**
Rural businesses effect on I.24 (employment rate) and I.25 (GPD in rural areas)	› Connect LEADER to I.24 and I.25: what is added value according to Local Action Groups (LAGs) and how can this be linked to these indicators (Sweden) › Two options for CAP contribution to I.24 and I.25: modelling and micro level samples
Social indicators; Result indicators do not tell us much	› R.42 was not planned → it is only focused on smart villages which definitely include a social inclusion aspect (Italy)
Missing indicators for LEADER added value	› Collect data from actual beneficiaries on implementation (Netherlands, Italy) › Develop a national agreement on indicators, a common understanding and evaluation framework for the assessment of LEADER added value › Some LAGs gather additional information at their own initiative (Italy) › LAGs can include result indicators for LEADER added value in their local development strategies › LAG level evaluations on added value can determine what can be identified at national level › Develop guidelines for LEADER added value

ANNEX 3 - Results of the feedback poll

Please find below the outcome of the Mentimeter feedback poll on the GPW. The poll was launched in order to determine participants' satisfaction with the workshop, as well as to obtain feedback as to how future events can be improved.

POOR ← → **VERY GOOD**

Relevance of the content of presentations — 3.6

Usefulness of the group discussions for understanding the content — 3.5

Facilitation of the workshop — 3.8

Overall organisation of the workshop — 3.8

Overall participation by the attendees in the discussion — 3.5

Your level of knowledge of the topic before the workshop — 2.6

Your level of knowledge of the topic after the workshop — 3.2

Strengths, weaknesses, suggestions, comments?

Consider one day of workshop, over two days.

Good discussion on topics, might be useful to have some worked examples from EU Member States. Overall a great workshop.

Data gaps and attribution gaps are large topics. Maybe too large to get specific and insightful group discussions. The GPW in Prague was better at the discussions as they were based on shorter presentations.

Great networking, great hosting.

Always a strength to hear many ideas from other EU Member States, especially for monitoring

Excellent, right points addressed.

It was a very successful workshop. Thank you.

It was a great event. The network is growing significantly. Well done to the hosts. It was a memorable event. A suggestion for future events is one specifically on data collection systems.

Very well organised and useful, compliments again and thank you!

Very well organised and led, compliments again!

Useful exchange of experiences.

Weaknesses: the level of concern, interest, progress between EU Member States is too different so some have not thought as much about the topic as others.

Strength: Specific issues were addressed.

Thank you!

ANNEX 4 – Highlights from the Good Practice Workshop

Funded by
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