EUROPEAN EVALUATION HELPDESK FOR RURAL DEVELOPMENT

European Commission

REPORT

DATA MANAGEMENT FOR THE ASSESSMENT OF RDP EFFECTS

GOOD PRACTICE WORKSHOP
ONLINE, 13-14 MAY 2020

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The Evaluation Helpdesk is responsible for the evaluation function within the European Network for Rural Development (ENRD) by providing guidance on the evaluation of RDPs and policies falling under the remit and guidance of DG AGRI's Unit C.4 'Monitoring and Evaluation' of the European Commission (EC). In order to improve the evaluation of EU rural development policy the Evaluation Helpdesk supports all evaluation stakeholders, in particular DG AGRI, national authorities, RDP 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 Rural Development is available on the Internet through the Europa server (http://enrd.ec.europa.eu).

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LIST OF ACRONYMS

CAP	Common Agricultural Policy
CATS	Clearance Audit Trail System
CEQ	Common Evaluation Question
DG AGRI	Directorate General Agriculture and Rural Development
DiD	Difference in Difference
EC	European Commission
ENRD	European Network for Rural Development
EU	European Union
Eurostat	Statistical Office of the European Commission
FADN	Farm Accountancy Data Network
FBI	Farmland Bird Index
FLINT	Farm Level Indicators for New Topics in policy evaluation
FSS	Farm Structure Survey
GAEC	Good Agricultural and Environmental Condition
GHG	Greenhouse gas
GIS	Geographic Information System
IACS	Integrated Administration and Control System
JRC	Joint Research Institute
LEADER	Liaison Entre Actions de Développement de l'Économie Rurale (original acronym)
LDS	Local development strategy
LPIS	Land Parcel Identification System
LUCAS	Land Use and Coverage Area frame Survey
MA	Managing Authority
MAES	Mapping and Assessment of Ecosystem Services
NIVA	New IACS Vision in Action
NUTS	Nomenclature of Territorial Units for Statistics
PA	Paying Agency
RDP	Rural Development Programme
UAA	Utilised Agricultural Area

EXECUTIVE SUMMARY

The 13th Good Practice Workshop 'Data management for the assessment of RDP effects' was the **first online workshop** of the Evaluation Helpdesk, resulting from the need to adapt the format to the COVID19 situation. It took place on 13 and 14 May 2020, with the overarching objective to reflect on the 2019 experiences in relation to data management, with a view to preparing the ex post evaluation of RDPs 2014-2020 and help identifying necessary lessons relevant for future monitoring and evaluation.

The workshop brought together 70 participants from 25 different EU Member States and focused specifically on how to identify and meet data needs in relation to the evaluation, how to better use existing data sources and how to resolve specific data related issues for preparing the ex post evaluations and future monitoring and evaluations.

The workshop offered insight into the use of existing data sources, the limitations and challenges encountered, and the solutions applied for better identification and use of data for evaluation purposes. Five case studies were presented to this end, notably from Germany and Italy on the assessment of economic and socio-economic effects, from Germany on the assessment of environmental effects, from Greece on the assessment of effects on water abstraction and water quality, as well as a composite analysis of experiences from several Member States for the assessment of effects on emissions. Input from DG AGRI representatives on data management related developments, including issues related to the definitions of rural areas, complemented the case studies and enabled fruitful discussions with participants. The workshop culminated in a number of key lessons for evaluation stakeholders:

- **For the assessment of socio-economic effects**, the limitations in existing data sources can be addressed in the future with the use of experimental approaches and beneficiary surveys, while also using all available data sources, including national sources and thematic studies, and covering a longer implementation period. Quality data is especially important for evaluating the impacts on employment or poverty, which are expected to be small.
- **For the assessment of economic effects** (e.g. changes in entrepreneurial income, agricultural output, etc.), the FADN can be complemented with additional samples to address data gaps, e.g. satellite samples proved useful, cost-effective and comparable with FADN in Italy. The key success factor lies in the design of a strong and powerful data system from the early stages of programming, paying attention to the integration and the harmonization of information. The cooperation amongst all relevant stakeholders (MA, PA, administrative information systems, evaluators, etc.) is critical to this end.
- **For the assessment of environmental effects**, there is a rich repository of data sources but with differences in data content and quality, spatial coverage, definitions, collection timeframe or governance. There is also a wealth of experience in addressing these issues, including inter alia, statistical/modelling approaches, farm business surveys, comparative studies, etc. The common lesson from these varied experiences is that the capacity to identify and access the different data sources, coupled with efforts to integrate and harmonise them to the extent possible (e.g. using common identifiers, streamlining definitions, obtaining permissions to access, etc.) will determine the capacity to carry out robust evaluations in the future.
- Overall, the need for **harmonisation and integration of data sources** as well as the harmonisation of definitions was also stressed by DG AGRI. Against the challenge to design systems that are able to connect and integrate various databases, the Commission is aiming to capitalise on the wealth of agricultural data by identifying data gaps, quantification possibilities and integration options to build a more solid set of indicators and monitoring system for the future.

1 SETTING THE FRAME

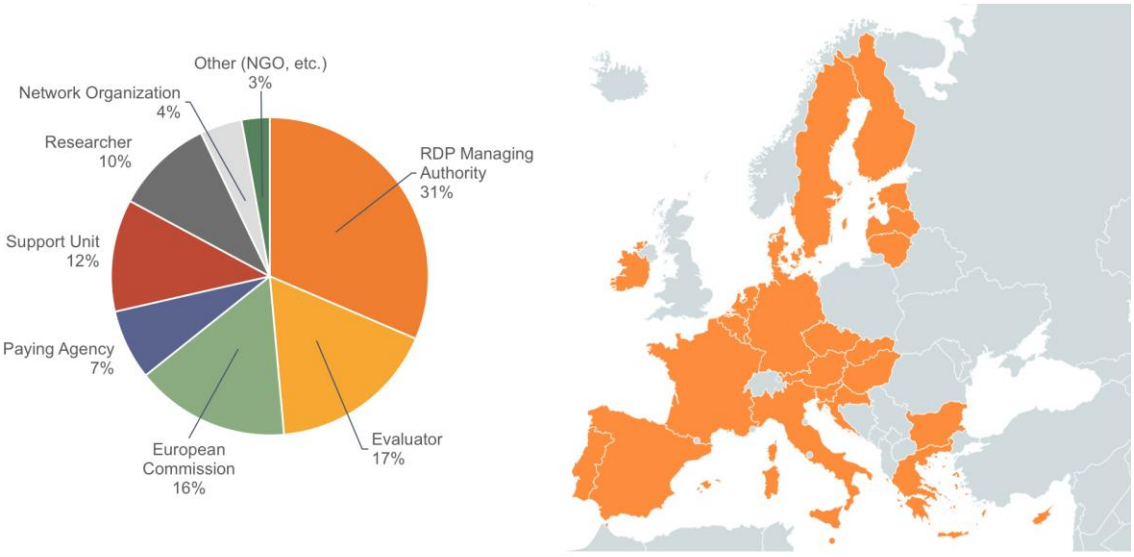
In the enhanced Annual Implementation Reports submitted in 2019 Member States completed their evaluations on the achievements and impacts of rural development policies. This exercise helped identifying bottlenecks and challenges regarding ex post and future evaluations. Data management and data systems were common issues highlighted by Managing Authorities and evaluators of Member States as key areas for improvement.

The challenges related to data management for the assessment of RDP effects are diverse, as summarised by Ms Marili Parissaki (Evaluation Helpdesk) in the opening of the Good Practice Workshop. These challenges include inter alia governance issues and data accessibility, data availability and frequency of data collection, finding the data in the required disaggregation level, quality of data management systems, differences in definitions and lack of harmonisation of databases, need for complementary data. These issues cover all the stages of the evaluation cycle: planning and preparing for evaluation, structuring, analysing and reporting.

The Good Practice Workshop aimed to exchange good practices on how to identify and meet data needs, how to best use, integrate and complement existing data and how to resolve specific data-related issues. It also helped point out further needs for support for Managing Authorities, Paying Agencies and evaluators in relation to data management for preparing the ex post evaluations and future monitoring and evaluation activities.

70 participants from 25 different EU Member States attended the online event, including RDP Managing Authorities, evaluators, EU level representatives (e.g. European Commission, ENRD Evaluation Helpdesk), researchers, National Rural Networks, and other actors.

Figure 1. ***Participants of the Good Practice Workshop by role and Member State***



Ms Sophie Helaine (DG AGRI, Head of Unit C4 Monitoring and Evaluation) and Mr Pierluigi Londero (DG AGRI, Head of Unit D3 Implementation Support and IACS) presented the updates and challenges of data systems at the EU level, highlighting the importance of integrating different data from different data sources and Member States, and of timely data collection. Data in agriculture is rich compared to other sectors, a capital that has been built through the years. However not all existing data is available for analysis. Confidentiality issues, sample collection and data fragmentation hinder data accessibility. The European Commission (EC) is dealing with all these challenges and working towards their improvement, as proper data management is essential to make the digital economy work.

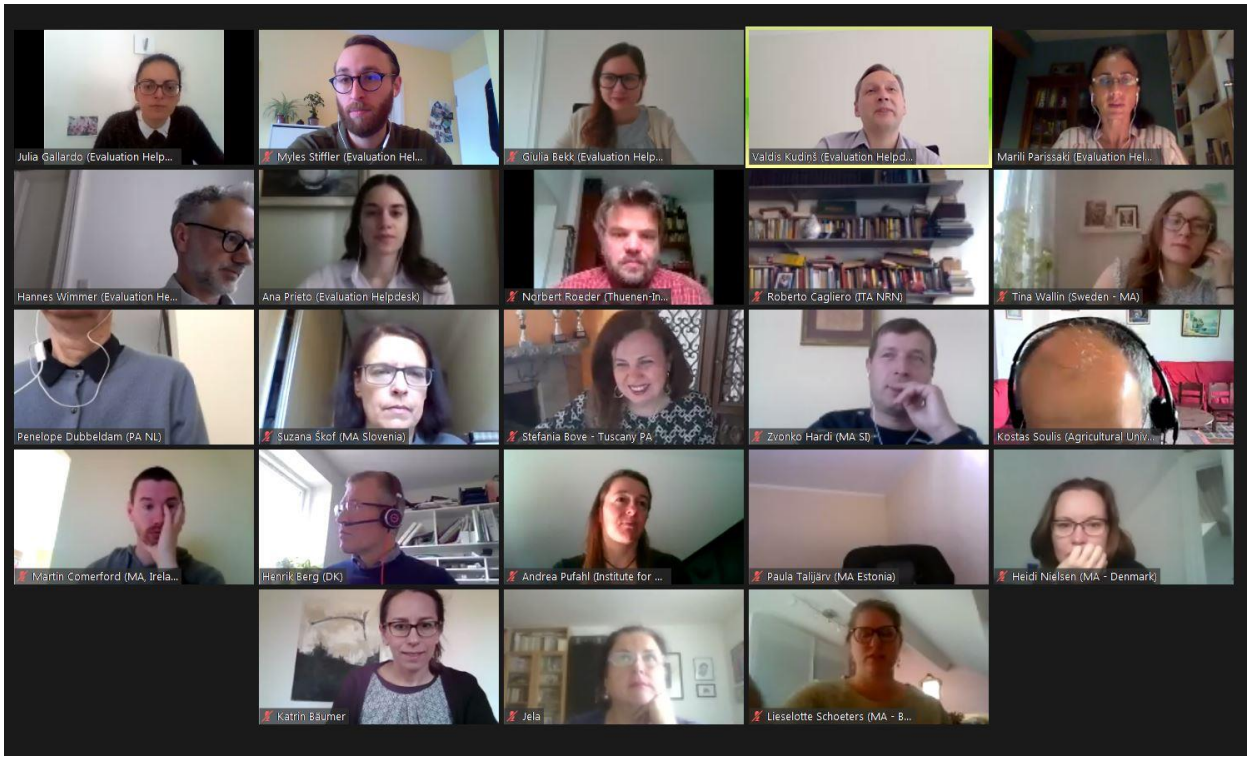
After the introductory presentation by DG AGRI, participants posed the following comments/questions:

Regarding the calculation of target and result indicators with the most recent data available: how are targets now calculated so that we are sure to use the right denominators? Do we have to use the most recent year for the denominator? Sometimes the data for the most recent year is not available.	*Ms Sophie Helaine (EC) clarified that the changes in the calculation of result indicators using the most recent denominators mentioned during the presentation concern what is published in the CMEF by the EC as result indicators. Calculation of achieved targets in AIR reports are not supposed to be changed and remains based on fixed denominators. For the future, the denominator will remain unchanged.*
If for the future period, the denominator to be used does not change over the period, which reference year should therefore be used for the denominator?	*When calculating target indicators for the future, for the share of UAA, Member States are encouraged to use the most recent information for their denominators. The numerator is up to the Member States, according to what they want to achieve.*

Links to the presentations:

Setting the frame: Data management for the assessment of RDP effects – Marili Parissaki

Overview from DG AGRI on key data management related developments - Sophie Helaine and Pierluigi Londero



2 SHARING EXPERIENCES

2.1 Assessing economic and socio-economic effects

Ms Andrea Pufahl (evaluator, Thuenen Institute of Rural Studies, DE) presented the **experiences of five German RDPs on data for the evaluation of socio-economic effects.** She stressed the challenges in relation to the lack data of non-beneficiaries or context data on NUTS-3 or lower level. In particular, she elaborated on their experience of using beneficiary surveys to examine deadweight effects, using national data at lower territorial levels (NUTS3), evaluating impacts of more than one period and adding national top-ups from other data to complete the CATS data. She concluded with the message that socioeconomic impacts are expected to be small and the smaller the impacts, the better the database needs to be. In the future, efforts to improve data should focus on CAP measures with higher impact rates. Experimental approaches may contribute to the evaluation of RD measures, but they cannot adopted during "normal" RDP evaluations.

After the presentation, participants posed the following questions to the presenter:

As Italy is facing problems to handle regional data for certain result indicators (e.g. forestry): have you been able to manage CATS data at regional level?

Ms Andrea Pufahl confirmed they used CATS data at regional level mostly for microdata (beneficiary level). They use CATS data for macro level evaluation (mainly for Pillar 1 and Pillar 2 payments), but they add national top-ups and national rural development measures, so they can do their macro-economic modelling at NUTS-3 level.

Experience shows that it is impossible to create a control group for LEADER and that because of the limited amount of LEADER implementation, it is impossible to measure LEADER impact on, for example, poverty reduction in rural areas. How can a macro-approach model and counterfactual be combined with the micro level impact?

Ms Andrea Pufahl explained that while on poverty it was not possible to find a theoretical link to assess, on employment there were small impacts that however could not be measured with impact indicators but rather with result indicators showing that some jobs had been created.

For all interventions under LEADER, it is almost impossible to find a control group of non-beneficiaries. However, if beneficiaries are enterprises (which is hardly the case) control groups can be selected from existing databases (e.g. German start-up panel). Otherwise one must go to municipality level to compare supported and non-supported municipalities. On the micro-level, a small impact can be appreciated, but it is impossible to measure it with the impact indicator suggested.

Could you elaborate more about the experimental approaches?

Ms Andrea Pufahl clarified that experimental approaches would be a subject for a future research project rather than an issue of current evaluation in Germany. She suggested to use those farms as control groups that applied for support but were randomly excluded from it.

Marianne Lefebvre, representative of the Research network on economic experiments for the CAP (REECAP) stressed they are researching on the feasibility of experimental approaches for CAP evaluation. Interested evaluators and administration representatives are invited to contact them.

Ms Federica Cisilino (researcher, CREA, IT) presented the **use of FADN satellite samples in Italy** in order to address some of the main weaknesses and potential of the present FADN database to be used for the ex post evaluation. The aim is to make the FADN sample more useful for evaluation and to overcome the lack of data at regional level, as well as undertake updates and reviews that could affect time series and sometimes the too small size of treated in the sample. She described the satellite design - each satellite sample is set up starting from the regional list of beneficiaries of a single RDP measure

- underlying the methodological assumptions (same FADN survey on satellite farms), the criteria for building satellite samples and the regions that have developed satellite samples. She stressed the comparability of FADN and satellite samples and their usefulness for rural development policy evaluation.

After the presentation, participants posed the following questions to the presenter:

When collecting data from satellite samples, is it the same infrastructure as FADN?

Ms Federica Cisilino confirmed that farms in the satellite samples are surveyed using the same methodological procedures as for the FADN survey. She explained that comparable data and methods for both the FADN sample and the non-treated sample have been used. The links among samples are ensured by using a set of common variables for the survey at farm level.

How was the data reported to EC separated from the data used for research?

She answered that they take data separated and keep it in two different databases.

For the satellite sample, were farmers identified from the mandatory census? Having found the farmers with the right characteristics, are they asked if they want to participate or is FADN data used to extrapolate to build in the census so that the extra information needed from farmers is minimised?

She explained that the link of FADN is clear. Satellite samples are identified starting from the supported holdings. The regional list is the starting point to identify satellite farms. It is a matter of integration of information. Sometimes the list of administrative databases is not fully completed, there is a lack of variables and they need to check and compare. When they extract data from the list of beneficiaries and get the survey, they set a common set of variables. The definition of variables should be the same to get the results. They therefore use the satellite for farmers that have got support, so any farmer that gets the support agrees as part of their contract to participate.

What kind of farms are used for diversification? Farms that have already diversified or farms that have not yet done so?

She specified that in the satellite sample there are only farms that have received support.

Satellite samples are necessary when the size of FADN sample is small. In RDPs with smaller number of farms, they do not have enough number of beneficiaries. Can an increase of the number of farms in the FADN sample be a solution to substitute the satellite sample?

Ms Federica Cisilino stressed it depends on the context. The size of the main FADN sample is defined a priori following a sample design. In this context we are wondering how to improve evaluation using FADN data. If there is a quite large sample of beneficiaries inside the FADN main sample, there is no need to activate satellite samples. In Italy, the problem exists as there is often a small size of samples of beneficiaries inside the FADN sample, so they need to look for data outside.

Has the possibility of combining IACS data of Pillar 1 applications with satellite data been explored?

She clarified that so far only Pillar 2 combinations have been explored.

Links to the presentations:

Evaluation of socio-economic effects: Experiences from RDP evaluations in the German federal states of Lower Saxony, Schleswig-Holstein, North Rhine-Westphalia and Hessen - Andrea Pufahl (DE)

The FADN satellite samples in Italy – Federica Cisilino (IT)

2.2 Data management for the assessment of environmental effects

Mr Norbert Röder (researcher, Thuenen Institute of Rural Studies, DE) presented **experiences from research projects in Germany on data for the assessment of environmental effects of agricultural policy.** During the assessments of the impact of the 2013 CAP reform on result, impact and context environmental indicators, several issues regarding data from various sources (FSS/IACS/FADN/LPIS) were identified. Among them, the different terminology, e.g. different definitions of grassland because of legal context changes, the segmentation of data in different sources (e.g., soybeans are recorded as protein crops in IACS and as oil seeds in FADN and FSS), differences in data structure and mismatch between geographic and alphanumeric information. He concluded by recommending inter alia to extend the period covered in the ex post evaluation to take into account time lags, to promote cross-regional thematic evaluation studies, while for the future to review definitions and devote resources to context and impact indicators, especially for biodiversity.

After the presentation, participants made the following remarks:

Marcin Zarzycki from DG AGRI, dealing with the analysis of data, acknowledged that there are differences between FADN and FSS, that are related to differences in methodologies and samples of both surveys. Efforts will be made to align as much as possible FADN with Eurostat. For the next programming period, most of the context and impact indicators will stay as they are, however some data sources will change.

Mr Dimitris Skuras (Evaluation Helpdesk expert) presented experiences from various Member States (IT, IE, LT, PL, UK) on **using data from available sources for the evaluation of effects on emissions**. He stressed that FADN is a good candidate data source for the evaluation of greenhouse gas emissions (impact indicator I.07), but since it is not an environmental database, there are challenges in its use, mainly the lack of information on management practices and activity data. His recommendations include inter alia to consult Managing Authorities and Paying Agencies as well as the GHG national reporters for GHG and ammonia and to use IACS and other external data sources. Looking at the future, evaluations will shift towards a more holistic approach, potentially linked to ecosystem services and ecosystem accounts.

After the presentation, participants posed the following question:

Since IACS only reports positives, it is difficult to know what the situation is in the area that is not covered by a programme, for example in catch crops.

Mr Skuras answered that FADN farm returns supported by data from IACS constitute the closest substitute to a field survey. This implies that some information, e.g. management practices, some areas or farms below a certain size or of a specific type may be missing or underrepresented. This information should be completed by the evaluator from other sources or by an ad hoc survey.

Mr Konstantinos Soulis (researcher, Agricultural University of Athens, GR) presented his experience from Greece regarding **the available data for the assessment of water abstraction and water quality.** The presentation specifically addressed data management challenges for assessing indicators I.11 'Water quality' and I.10 'Water abstraction in agriculture'. The key issues regarding the assessment of Gross Nutrient Balance and Nitrates in Freshwater are the high level of uncertainty, the complexity of the methodology, the lack of information about employed coefficients and equations and the variability of results depending on the user. Regarding water abstraction, the main challenges are the outdatedness of the main data source – the Eurostat Survey on Agricultural Production Methods – and the lack of monitoring infrastructure in many Member States. Therefore, using models seems the most suitable methodology. For the modelling of water abstraction in Greece, IACS has been used as the main data source. The main issues with this database were the lack of farm identifiers and the yearly changes of the parcels' polygons and codes as well as the area included. His recommendations include

to improve IACS and Eurostat data accuracy and frequency, simplify the methodology for Gross Nutrient Balance and improving communication between data management bodies.

After the presentation, participants posed the following questions to the presenter:

If there are differences between nitrogen and phosporous in the national context of AIR 2017, how difficult is it to apply this methodology?

Mr Konstantinos Soulis stressed the fact that the methodologies are challenging. The calculation of nitrogen inputs and outputs - to see how much nitrogen is fixed in grasslands or moved by animals fed by grasslands - was complicated. Each user would get a different result. Improving the data of Eurostat is really important, since it is not only used by RDP evaluation but also to design policies in Europe. When an unreasonable water abstraction value is recorded there, it can have a negative effect on the design of policies around Europe.

In the presentation, there was no correlation or negative link between high water quality and participation on RDP actions. Have you looked at the correlation with the change of water? The RDP usually targets areas with low water quality. Have you looked between any increase from low to a little bit less than low and have you taken any actions?

He clarified that any possible correlation was considered. The data from aquifers was aggregated in smaller units. There were nearby wells, one with high quality and one with low quality. The data are influended by other factors. It was not easy to connect what happens in the farms and what happens in the sample. For that, each point should be studied sepparately but that is not possible in three months of evaluation, pilot studies should be conducted to go deeper and see what is going on.

Germany stated that in their assessment there were some implausible results. Data flows were not checked (being IACS or another data source) and there were changes over the years that were unnoticed. For example, catch crops were not checked for consistency. Would it be possible to get information on data flows and consistency check?

Mr Konstantinos Soulis also noticed that there is unreasonable data. Therefore, it would be necessary to mention the source of data in the documentation and metadata, in which it is recorded which authority or organism provided the data. That way, it is possible to understand the reasoning behind the numbers. But if you only have a number, as a user it is not possible to check what is going on.

Why were only agri-environmental measures selected to assess the nutrient balance, although it is an effect for the whole RDP?

He explained that the assessment of nutrient balance was done for the whole RDP, but it was focused on agri-environmental measures because of the increasing legume cultivation. They tried to find anything related but finally they came up with two or three things that could have an effect.

Links to the presentations:

Data for the assessment of environmental effects of the agricultural policy: Experiences from research projects in Germany - Norbert Röder (DE)

Data for the evaluation of effects on emissions - Dimitris Skuras (Helpdesk)

Improvements in the available data for the assessment of water abstraction and water quality - Konstantinos Soulis (GR)

After these sessions, participants were divided into smaller online groups and worked together on identifying solutions on how to improve data management systems for the assessment of competitiveness, environmental and socio-economic effects and LEADER. The outcomes of the group work are presented in the Annex of this document, including links to mind maps developed for each group work topic.

3 PANEL DISCUSSION WITH REPRESENTATIVES FROM THE EUROPEAN COMMISSION

Participants had the chance to ask data management related questions to a panel of representatives of DG AGRI: Ms Joanna Kiszko and Mr Eduardo Serrano, both from Unit C.4 Monitoring and Evaluation; Mr Andrea Furlan from Unit C.2 Analysis and Outlook; Mr Mariusz Migas, Head of Unit C.3 Farm economics, and Mr Marcin Zarzycki, economic data analyst of the same unit; and Ms Zelie Peppiette, policy advisor on the CMEF. The session opened with some remarks by the panellists.

Mr Andrea Furlan highlighted the need to **organise and consolidate the currently available information** in different databases and repositories. Including data from the private sector could bring additional insight. Focusing on data collection of a stable set of indicators seems essential to provide solid evaluations. Mr Andrea Furlan finally announced that a project is starting with the JRC in order to provide a data – legislation inventory, identify data gaps and quantification possibilities of environmental farming practices.

Mr Mariusz Migas presented the preliminary definition of **Functional Rural Areas.** The objective of this concept is to build a comparable definition at EU level, to make more efficient policies. The lack of a common definition of rural areas implies an additional challenge in the context of growing fragility of rural territories.

A question and answer session with participants followed.

From an evaluation perspective, it is important to be able to link the baseline data to the rural areas, but the definition varies amongst RDPs. Will the concept of Functional Rural Areas be used from a policy programming perspective? Does this mean measures to support the rural economy will be limited to Functional Rural Areas?

Mr Mariusz Migas and Mr Marcin Zarzycki clarified that the definition of rural areas will still be up to the Member States to choose. For now, the Functional Rural Areas is a preliminary concept, that is based on the population density in grid cells of 1 km^2 and additional criteria (e.g. related to the land cover/use, linked to a network of services available in areas).The latter criteria are still in testing phase. In order to allow better and simpler comparability with other data sources, the Functional Rural Areas definition could be upscaled from 1 km^2 grid cells to LAU (Local Administrative Unit) level and later even to NUTS-3 level. In the long term, the EC hopes that a concrete proposal will be available to be used by Member States if they find it useful. It will give Member States the possibility to make interconnections between territories to explain certain choices.

On the issue of having common definitions, Mr Andrea Furlan highlighted landscape features as a good example. As the EC is proposing to use a new indicator, there is a lack of a baseline situation, and there is no database provided for Europe. The definition of EFA (Ecological Focus Area) is established in a European framework and it is very detailed. This level of detail has been criticised by Member States. However, it allows for a single definition, so we all know what we mean when we talk about 'hedges', for instance. In the GAEC (Good Agricultural and Environmental Condition), each Member State will define themselves, which will be challenging in terms of measurement due to differences amongst Member States. Because of this, the EC will get common or scalable definitions at least for indicators to measure.

One of the participants highlighted that some years ago a project funded through the 'Central Europe programme' co-financed by ERDF worked on the definition of rural areas. The outcomes of that project can be seen here via this link.

Could the EC share some insights about the gaps in FADN?

Mr Mariusz Migas explained that FADN does not cover environmental and climate data. However, work is undertaken to possibly enrich FADN with environmental data. A proposal is to transform FADN into FSDN wherein 'S' stands for sustainable. The timing for that is 2023. The idea is to link this initiative to other initiatives of the next programming period and to build the database for farmers and decision makers as policy becomes clearer. That is a big area of development and the discussion is only starting. It will be linked to the Farm to Fork Strategy 2020.

Will the upcoming regulation of the CAP get a clear definition of data uses of IACS and animal registry? For privacy issues this data could be deleted which would be a loss for environmental evaluation and evaluation of structural change.

Ms Zelie Peppiette clarified that in the new set of proposals under discussion there is a big emphasis on data, especially on indicators and monitoring system in the Regulation for the forthcoming period. The focus of the EC is set on getting the right data for monitoring and evaluation for the forthcoming period. The proposal contains references to the data needed to monitor and evaluate the programme (e.g. indicators in Annex I), but baseline data is also needed (context indicators for the SWOT for example). It would be optimistic to think that it would be possible to impose retention or use of data from previous programming periods. But what we are talking about here is not the time of how long data is stored, but about how the data is used, which becomes more complex with greater subsidiarity for the Member States. Access to data depends largely on the internal rules of the Member State. When the IACS database was created, its purpose was not providing data for monitoring and evaluation, but for management and control. But now due to the high digital capacity, such as the developments in GIS, data should be joined up. Some of these tools are useful for other purposes, e.g. M&E, while parameters and criteria also change, therefore their use needs to be further assessed.

Link to the presentation on Functional Rural Areas:

Concept of Functional Rural Areas (FRA) - Mariusz Migas & Marcin Zarzycki (DG AGRI)

4 CONCLUDING REMARKS

The outcomes of the case studies, discussions and group work contributed to building knowledge on ways to improve data management for the assessment of RDP effects on economic, socio-economic and environmental parameters. The workshop resulted in a rich collection of practical examples and ideas for improving data management for evaluation purposes.

How to improve data management for the assessment of effects on competitiveness

- Improving the FADN so it responds to evaluation needs stands out as the overarching challenge. The first step would be to analyse the limitations of using FADN for evaluation. The next step would be to undertake improvements such as using additional variables, adding new questions in the FADN survey or incorporate the results of research studies (e.g. JRC study using FADN to compare ecological with economic performance of farms). The biases of the FADN sample can be overcome by following the lessons from Member States like Italy that used satellite samples or Austria that used other databases for larger farms. The underlying principles should be knowing what to change in FADN and for what purpose, while also considering the additional costs entailed.
- The integration of FADN and other data sources is an important consideration in several Member States. The provision of unique identifiers is a challenge currently addressed in Austria or Denmark, while Greece is planning a pilot project for extending FADN and including the FLINT project results. Other factors to achieve the integration of FADN and other data sources include overcoming legal issues (e.g. data protection), streamlining content and collection periods as well as overcoming governance issues (MA, PA, data management bodies).

How to improve data management for the assessment of socio-economic effects

- Improving FADN is an important issue here too, notably because it is not representative of lower spatial levels required for evaluation. Improving the representativeness and the size of the FADN sample entails several options, ranging from encouraging farmers or local authorities to encourage farmers to participate in FADN, to developing satellite samples.
- General data availability and quality can improve by covering gaps in different data sources (e.g. through additional surveys, focus groups, use of proxies), overcoming time lags mainly through early data collection, and ensuring the required spatial level of detail in existing data sources.
- The quality of data in the operations database can improve with harmonisation of data, definitions and spatial scales, the use of quality assurance procedures or with the medium to long-term follow-up of data to improve its reliability.

How to improve data management for the assessment of LEADER

- Improving the information obtained from LAGs is the main challenge. The first step would be to clarify what the evaluation is about and what needs to be assessed about LEADER. The second step is to give very clear instructions to LAGs, ask additional questions and offer support that they may need in order to improve the usefulness and quality of the data they collect.
- The quality of data about LEADER in the operations database can improve by including more information about local development strategies, including all types of LEADER beneficiaries and ensuring more cooperation between different data providers.
- Measuring job creation by LEADER is another important challenge that can be addressed with counterfactuals between similar LAG territories, cross-checking data against other databases or checking the before and after situation based on project applications and final reports.
- Measuring other LEADER benefits besides job creation may require the use of specific surveys.

How to improve data management for the assessment of environmental effects

- The use/integration of the large variety of environmental data sources is the most pressing challenge. The harmonisation of definitions would be a pre-requisite for data integration. This would be followed by the identification of potential integrations, e.g. IACS and FADN, LPIS and IACS, LPIS and ESDAC. The integration of data sources may involve adding data sets (e.g. Austria has added data on fertiliser and pesticide use in FADN) or incorporating the results of projects like the FLINT or the NIVA projects. Considering the key factors for integrating different data sources is another pre-requisite, e.g. knowing all potential data providers, setting up common identifiers, data sharing or single hub principles, definitions of system boundaries, spatial/geographic distribution of data, time series of data. The integration would be easier if there is a clear governance system in place.
- The gaps in available databases can be overcome inter alia by resolving legal issues, allowing time for planning and collection of data and investing resources in obtaining good time series data, establishing common practices/models and using alternative data sources depending on the scope and needs of the evaluation, e.g. private databases, application forms and project reports, case studies, field surveys, other agencies or thematic studies (good examples of the later were offered from Austria, Greece, Estonia and Slovenia). National data sources are another option for addressing data gaps but may require harmonisation of definitions with EU definitions and better guidance on how to access them. The use of alternative data sources often requires agreements/coordination with different data providers.
- The large variety of environmental data sources creates a highly fragmented landscape and poses more challenges, notably where to find the data and how to access it. To this end, there is a need for guidance and documentation on the different data sources and easier access for evaluators and researchers through for instance, data sharing facilities and research centres and better coordination (e.g. knowing where the data is does not help access it if the collection is not coordinated). Validation and cross-checking mechanisms are also useful given the variety of sources.
- Finally, the quality of environmental data in the operations database can improve with the collection of more data (baselines, more environmental characteristics, more observations, etc.) and better quality through validation and consistency checks and over a longer period of time. Clear organisation and governance structure remain again key factors for improving the operations database.

The overarching conclusion is that efforts to improve data management are pertinent in all stages of the evaluation cycle: at the planning and preparing stage to have a clear idea of the data required; at the structuring stage to minimise the burden on beneficiaries while making the best use of different data sources (beware of differences in definitions, spatial scales, collection timeframes); at the analysing and reporting stages to use available information from other sources for validation purposes.

ANNEX 1 - Building knowledge: Outcomes of the Group Work

Assessment of competitiveness, socio-economic effects and LEADER

Specific questions related to the topics of the presentations were asked by the facilitators. Each group created a mindmap with questions and identified issues and solutions. The most relevant topics were presented in plenary. Below you can find a summary of the groups' presentations. The full compilation of mindmaps can be seen in this link.

Table 1. Summary of groupwork discussions during Day 1 of the Good Practice Workshop

Topic	Highlighted group discussion outcomes
How to improve data management for the assessment of competitiveness?	• **Improving FADN** stands out as a main potential solution: adding extra questions to FADN to assess all aspects of competitiveness such as innovation (IT), changing the methodology of database farm selection so that it includes small and large farms, etc. In general, it is acknowledged that FADN was not designed for Pillar II evaluation purposes but given that FADN is being used for evaluation, it should be redesigned and extended as to be able to properly serve for this use. • **Integrating FADN data** with other administrative sources can compensate for FADN sample bias (AT). A smoother integration can be achieved by improving coordination between Managing Authorities and other institutions and by using farm unique identifiers. This could streamline the integration of the information from different data sources (AT, DE). Centralised authority would keep this data safe. Integrating FADN with a more dynamic farm register could also be a solution to improving FADN • **Integrating FADN variables** with other variables could sometimes be more interesting than adding more farms to FADN sample (JRC perspective). • When FADN sample is not enough, using a **satellite sample** is a good option. • Having Managing Authorities **collecting primary data** that is essential to evaluation.
How to improve data management for the assessment of socio-economic effects?	• Group discussing socio-economic effects reached similar conclusions regarding the **improvement of FADN**. Using satellite sample when this is not possible was also considered a suitable solution. • For the topic of the assessment of socio-economic effects, a useful integration would be between FADN and LPIS. **Harmonisation amongst data sources and definitions** could help make the best use of existing data sources. • The required level of data can be ensured by employing a **downscaling methodology.** This methodology should be centrally designed at EU-level. Some Member States (AT) have been able to downscale to municipality level. • Ensure early data collection by responsible authorities is also important. • **Data gaps** can be solved by using surveys and questionnaires, directly contacting beneficiaries, establishing proxies, etc.
How to improve data management for the assessment of LEADER?	• Having a clear idea on what the evaluation is aiming at by getting enough information of the nature of what LAGs are implementing. • Give **clear and simple instructions to LAGs** in order to minimise the burden of LAGs employees. • **Link provision of data to provision of funds** in order to increase the chances of obtaining the information. This can also be achieved by **asking for the information more than once** (in the beginning and in the end). • **Validation** (especially on the indicators of jobs created) of information provided by asking for formal proof (e.g. copies of employee contracts).

Assessment of environmental effects

Specific questions related to the topics of the presentations were asked by the facilitators. Additionally, some groups formulated their own questions. Each group created a mindmap with questions and identified issues and solutions. The most relevant topics were presented in plenary. Below you can find a summary of the groups' presentations. The full compilation of mindmaps can be seen in this link.

Table 2. Summary of groupwork discussions during Day 2 of the Good Practice Workshop

Topic	Highlighted group discussion outcomes
How to integrate different data sources?	• Since environmental impacts are very specific, there are different data collection methods. **Geographical integration of data** is very important. To reaggregate data spatially is difficult. For example, Austria linked different databases, the NIDA and IACS. There is a possibility to use IACS and other databases which will be linked to the GAEC file. There is an **interest to aggregate databases from different sources of information**. This will be the next topic of Horizon 2020 project NIVA, which will explore the usability of **IACS data and remote sensing-data for evaluation**. • When the information is gathered from different databases, it is necessary to do **consistency and completeness checks**, to get feedback from data. At EU level it is difficult, since it is not possible to ask Member States - who are the main data provider - to provide information. A possible solution is to harvest information from **precision farming or companies** about inputs (fertilizers and pesticides). There are also thematic studies that have a specific focus on some of these issues. • Some Member States have done research projects to create a **datahub**. Member States or regions have different realities and different resources. A proposed solution is the establishment of a **common methodology**. All Member States could adopt the methodology used for High Nature Value in the programme 'Mapping and Assessment of Ecosystem Services' (MAES) of the Joint Research Centre (JRC) of the EC. • Another solution could be to **link IACS and FADN**. Slovakia is a successful example. When farmers sign the contract with FADN, they can share anonymously the data with other sources. This helps in the harmonization of data. • An identified issue that can hinder the integration of different data sources is the existence of different definitions. It is important to have **common and clear definitions**, and a **common identifier**. That way, it is possible to make links between data sources. • **FADN database** is valuable. A proposed solution to improve it is to mainstream FLINT, a pilot study to add in the collection of environmental indicators to farms in FADN samples.
To what extent should evaluation rely on non-context related indicators?	**Sub-question: Should we focus on environmental indicators that have a predefined methodology and are 'easier' to calculate?** • Field data collection for non-context related indicators requires a high amount of resources. A solution could be to use a **predefined methodology - theory based approach -**, which requires less resources. This is important because not all regions in Europe have research resources. • Problems related to the **baseline**: lack of data for some indicators.
How to improve the quality of relevant data in the operations database?	• An identified issue on this topic is that **critical information is missing**. Databases collect data on hectares, contracts, etc. More data needs to be collected **in IACS**. • Another challenge highlighted was the **variability of data**. A proposed solution was to provide clear **guidance of best practices in data cleaning**. To assess environmental impact, it is also important to **list the measures implemented** and explain which changes have occurred over time, why and which impacts they had. • The **change of indicators** is also hindering the quality of data; more **stability** is needed.

Topic	Highlighted group discussion outcomes
	• **Managing Authorities** and **Paying Agencies** should solve differences between their data sources.
Extending the evaluation period: to what extent will this help?	• **Extending the evaluation period** could help especially if activities continue in other programme periods. However, if the quality of data is not good, it would not be useful. More effort should be given to **thematic evaluations**. Another alternative to extending the evaluation period would be to focus on the areas where a priori the impacts are expected to be greater.
How to improve data in national data sources?	• National databases sources can be irregular, therefore, **coordination between national data providers is crucial**. This could be applied to temporal and special databases as well. Latvia provided a good practice example: they gathered data from data providers and explained where the data will be used and why. This practice has proved to be very good. It is difficult to estimate net effects like water quality because there were gaps in available datasets. Spain provided another good practice example on cross-regional cooperation. In regions with similar environmental conditions, they have joined services. They have used ad-hoc field services to fill in data gaps in European data samples. • Another solution to improving data in national data sources could be the use of **crowdsourcing methods**, by which users send data through their mobile phone. • An identified issue is the fragmentation of data management. There are many data sources - LUCAS, Farmland Bird Index, etc. - but they are not coordinated. Often it is known where the data is but **the time of collection is not coordinated with data managers.**
How to overcome gaps in available databases?	• A solution adopted by Greece was the use of **thematic studies** for water, soil and biodiversity (e.g. Farmland Bird Index and High Nature Value). Scientific support was provided by university/research institute for each theme (for ex post). • Another proposed solution was to **use several databases from the administration**. • Since regional data is always different, it would be recommended to **concentrate on focus areas** rather than having a holistic approach. • Another solution could be to **collect data from the beneficiaries**. As an example, in Bulgaria the environmental agencies that collect data add information from beneficiaries and non-beneficiaries. This information is useful for evaluation. • **Adding environmental data to the FADN sample** was another proposed solution. • A **geospatial identifier** is necessary to link information from different farms together and localise on the ground where certain activities are happening. For investments, it would be useful to include a geospatial location. • It is also necessary to get **information on which farms are non-beneficiaries** (control group). • Greece and Germany are planning to make an **inventory of data providers – datahubs**.
How to improve the identification of data?	• One proposed solution is the compilation of data on the analysed indicator and data sources. **Including metadata in the definition** of all systems will allow to have homogeneous definitions. • Databases should be prepared to receive good information from beneficiaries but without adding extra burden on them. • The existence of a **common database** would **improve the identification of data**. To create a common database, **data needs to be shared** - Sometimes there are gaps because people do not want to share data. Private data should not be used as an excuse for not sharing data -, identifiers should be included and a common language used. • It would be good to have a **contract for evaluators for longer periods**, so they can familiarise themselves with the data.

ANNEX 2 - Background paper for the workshop: Identified issues in Member States in relation to data management

A survey to selected RDPs was conducted in preparation for the workshop aiming to identify issues encountered by Member States in relation to data sources and data management for evaluation purposes. This was followed by telephone interviews to collect further information and identify specific solutions or approaches followed by Member States in order to address these issues. The outcomes of the survey were used as background information for the workshop. They are listed here in two different ways: a) per topic or group of indicators and b) per data source. Many of these issues were addressed at the GPW either by presentations or by the group work or both.

1. Identified issues by topic / group of indicators

General issues (covering various topics/indicators) in order of importance, i.e. most frequently mentioned by MS

1. **Collecting and integrating data from different sources**:
   - Data is located in different databases, fragmentation of data (merge databases?)
   - Compatibility of different databases
   - What is the progress of IACS-LPIS data sharing (JRC project)
   - Not all the data needs to be in the operations database; the point is how to combine different sources to get data easily
2. **Quality of data and systems**:
   - The quality of monitoring systems differs between regions, depending on IT systems and public administration
   - Database structure not suitable for monitoring and evaluation
3. **Governance issues**:
   - Data provision by MA and PA
   - Access to data when under different responsible bodies
4. **Definitions**: Differences in the definition of rural areas (e.g. different interpretation of definitions of rural areas between national statistics and Eurostat)
5. **Data not up to date**:
   - Eurostat time delays: data for some context indicators is from 2015
   - Some topic specific indicators not up to date (see below environmental indicators)
6. **Data availability**:
   - Some operations databases do not collect data related to complementary result indicators and impact indicators
   - Some operations databases do not include baseline data - how to improve the operations database so as to include all necessary data and facilitate its extraction by facilitators
   - Eurostat: lack of data on R&D for the assessment of innovation (LT)
7. **Data not available at the required level**:
   - IACS: National census not comparable with IACS, not available at NUTS2 (PL)

<u>Issues for environmental indicators</u>

Data not up to date and not available at the required level:

1. Gaps in Eurostat:
   - Energy statistics: No regional data for C40 (water quality), C43 (renewable energy) and C44 (energy use)
   - LUS: CAP indicators not updated. For instance: last data updated for LUS in 2013, land cover in 2012 (ES-BAL)
   - Lack of updated data in Eurostat for I.12 soil organic matter (only up to 2012) (RO)

2. Gaps in national databases:
   - various data gaps for I.11, I.12, I.14, I.15, I.16 (HU)
   - Old / not updated data for environmental indicators (RO)
   - Lack of data and studies on specific issues (e.g. soil, birds) (PL)
3. CORINE Land Cover database: OK if only one year data is analysed but it is problematic if multiple years are analysed due to methodological differences from one year to the next (LV)

Finding the required data:

4. Difficult to find places in the national groundwater monitoring network that would reliably represent groundwater quality exclusively in the RDP area (LT)
5. EEA: data for water quality is recorded on a wider scale and not at the level of plots so they cannot measure impact (SI, RO)

Updating the indicators and their calculation, methodology of calculation:

6. Common impact indicators for environment are not always the most accurate to assess environmental impacts (EE)

Definitions:

7. The definition of utilised agricultural land (AA) differs between the Central Statistical Office and the PA and it is also difficult to compare trends in changes in UAA over a longer period of time (LV)

Issues for economic and socio-economic indicators

Data not available at the required level

1. Gaps in Eurostat:
   - EEA: No regional data for C26 (AEI) and C27 (TFP)
   - FSS: No regional data for C27

   (Some Spanish regions created regional databases)

   - GDP for rural areas not disaggregated by rural areas (ES-BAL)
   - LFS: Rural employment rate: data not available; data not disaggregated by rural areas for Balearic Island (15-64 years; 20-64 years)
   - Livestock survey: Livestock units: last update in 2013 (ES-BAL)
2. NUTS3 regions are generally not used in IACS; how can this be overcome to monitor and evaluate performance at the micro level (PL, DK, HR)
3. Not possible to identify the link between farm-level data and field-level, which makes it difficult to perform area-based calculations (DK)

LEADER: MS will have to account for the outcome of LAGs annually and there is a need to improve data collection:

- How to assess the contribution of LEADER to job creation, especially when there are hundreds of LAGs and no common data or common electronic system (PL, ES)
- There was little information available from LAGs for the 2019 evaluation (SI)
- Problems with data aggregation at national level (PL, ES)
- Whether to require LAGs to prepare annual implementation reports, like for the RDP, including aspects like the value added, and how to aggregate this information at RDP level (HR)

2. Identified issues by data source

Overview of key issues in relation to FADN

Identified issues	Solutions implemented or proposed
1. How to assess the counterfactual when most farms in the sample are RDP beneficiaries (MT, SI)	Latvia has implemented an approach to assess the counterfactual in this case Carry out annual survey or beneficiary survey for distinguishing beneficiaries and non-beneficiaries (proposed by RO)
2. Timing of FADN data (RO)	Romania combined quantitative and qualitative approaches, FADN and WB data, estimates based on context indicators Align reporting deadlines with the availability of FADN data to address the timing issue (proposed by LV, EE)
3. FADN over-estimates data and does not offer regionalised data (ES)	Aragón in Spain developed a regional database (a "Unique Register") including ALL farms in the region linking it to the Tax Agency so as to get more accurate data
4. FADN does not include all farms (IT, PL)	Italy developed satellite samples
5. Difficult to get more accurate data from FADN that matches the applicants for the measure (EE)	Estonia conducted a study to explore the possibilities to increase the use of FADN data, as well as made agreement with several data providers to streamline data collection

Open questions:

- How to overcome the small size of the sample (small number of farms) (CY, MT, SI)
- How to overcome confidentiality issues (LT)

Overview of key issues in relation to the Operations Database

Identified issues	Solutions implemented or proposed
1. Low uptake makes the calculation of some indicators very difficult (RO)	Romania made the calculation based on a limited sample of completed projects
2. Data only for output and target/result indicators, not for complementary result indicators and impacts (HR)	Croatia used further info from business plans and additional surveys
3. Lack of baseline data	Include baseline data in the post 2020 operations database (proposed by CY, MT)
4. How to ensure evaluators are familiar with the operations database	Check the evaluators' knowledge at the procurement stage (proposed by EE)
5. Data is located in different databases	Set-up a new common management system (proposed by DK)

6. The quality of the monitoring system is different between regions, depending on IT infrastructure and public administration capacity	Invest in building good IT structures in the future (proposed by DE)

Overview of key issues in relation to Eurostat

Identified issues	Solutions implemented or proposed
1. Lack of regional level data, e.g. for indicator C27 in FSS, C26 and C27 in EEA, rural employment rate not disaggregated enough in LFS (ES)	Some Spanish regions created regional databases Allow flexibility to use other data sources and/or create regional databases (proposed by CY, ES)
2. Lack of updated data for the indicator I.12 soil organic matter (RO)	Romania used a qualitative approach and literature review
3. Time delays, e.g. data for some context indicators is from 2015	Allow flexibility to use different data sources (proposed by CY)

Open questions

- How to address the lack of data on R&D in Eurostat for the assessment of innovation related questions (LT)

Overview of key issues in relation to national sources

Identified issues	Solutions implemented or proposed
1. Various data gaps for I.11, I.12, I.14, I.15, I.16 (HU)	Hungary has developed a matrix with key issues per indicator and identified solutions, responsible bodies and follow-up actions
2. Old / not updated data for environmental indicators (RO)	Romania has initiated meetings with the National Institute of Statistics to collect data on several indicators and has used estimates for the 2019 evaluation. A survey and a case study were used for the FBI. A survey and literature review for soil organic matter.
3. Lack of data and studies on specific issues (e.g. soil, birds) (PL)	Poland is undertaking a study to calculate the FBI
4. The National Census does not include data for rural areas because of differences in definitions (CY)	In small countries the definition of rural areas could be based on population density (proposed by CY, MT)
5. Lack of regional level data	Adapt the statistical system to the information requirements of the RDP (proposed by ES)
6. Different interpretation of definitions of rural areas between national statistics and Eurostat	Consider the counties as regions (proposed by LT)

Open questions

- The national census cannot be compared with IACS, not available at NUTS2 in Poland
- Difficult to find places in the national groundwater monitoring network that would reliably represent groundwater quality exclusively in the RDP area in Lithuania

Overview of key issues in relation to environmental databases

Identified issues	Solutions implemented or proposed
1. There are problems with data for water quality in the EEA as it is recorded on a wider scale and not at the level of plots so they cannot measure impact (SI, RO)	Greece implemented a model for the calculation of impacts on water quality Romania implemented a comparative analysis (naïve type) supported by qualitative data collection as well as a qualitative analysis of external factors, for indicator I.11
2. Common impact indicators for environment are not always the most accurate to assess environmental impacts	Estonia uses national studies that provide more specific and more accurate information about the environmental situation. For example, the FBI does not reflect the Estonian situation at all, so they use their own farmland birds study that analyses RDP-fields and non-RDP fields
3. Lack of uniform keys for joining different data sets is a challenge for GIS analysis (DK)	Better data governance and institutional maturity (proposed by DK)

Open questions

- How to calculate net effects, especially for water, soil and biodiversity (SI)
- The CORINE Land Cover database is OK if only one year data is analysed but it is problematic if multiple years are analysed due to methodological differences from one year to the next (LV)
- The definition of utilised agricultural land (AA) differs between the Central Statistical Office and the PA and it is also difficult to compare trends in changes in UAA over a longer period of time (LV)

Overview of key issues in relation to IACS

Identified issues	Solutions implemented or proposed
Not possible to identify the link between farm-level data and field-level, which makes it difficult to perform area-based calculations (DK)	Denmark is currently working to integrate the system and use solutions like photo-documentation of the farmers, build APP for the area-based controls, etc.

Open questions

- NUTS3 regions are generally not used in IACS; how can this be overcome to monitor and evaluate performance at the micro level (PL, DK, HR)

Overview of key issues in relation to information from LAGs

Identified issues	Solutions implemented or proposed
1. There was little information available from LAGs for the 2019 evaluation (SI)	Slovenia is planning to carry out an independent evaluation of LEADER. They collect yearly information from LAGs based on a detailed questionnaire that covers issues like governance, value added and results and impacts of LEADER
2. How to assess the contribution of LEADER to job creation, especially when there are hundreds of LAGs and no common data or common electronic system (PL, ES)	Poland used a combination of monitoring data, desk research, in-depth individual interviews, quantitative study with the participation of LAGs, case studies, expert groups to discuss findings and final workshop for drawing conclusions and recommendations
3. Problems with data aggregation at national level (PL, ES)	Train LAGs to ensure common interpretation of concepts and terms. Also introduce an electronic application submission system that will help aggregate data (proposed by PL)

Open questions

- How to overcome data needs when the administration of LAGs is located in a different Ministry (DK)
- Whether to require LAGs to prepare annual implementation reports, like for the RDP, including aspects like value added, and how to aggregate this information at RDP level (HR)

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