MEF4CAP

Monitoring and Evaluation Frameworks for the Common Agricultural Policy

Deliverable D1.3

Monitoring and Evaluation Needs of different stakeholders and Associated Indicators

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Executive Summary

Deliverable 1.3 of the MEF4CAP project builds on the work summarised in Deliverables 1.1 and 1.2 to provide a wish list of indicators that are relevant to CAP monitoring and evaluation. Sustainability is now a key driver of EU policy relating to agriculture and therefore the selected indicators are associated with its three accepted dimensions: economic, environmental and social. A comprehensive list of relevant thematic areas across these three facets was already provided in Deliverable 1.1. This document further develops these in the identification of relevant metrics.

The focus of the indicator list is skewed towards environmental concerns and to a lesser extent social concerns, reflecting the fact that numerous economic indicators relating to agriculture already exist.

Analysis of recent policy literature and stakeholder publications, along with direct stakeholder engagement suggests that in so far as agriculture is concerned, the largest gap in terms of data needs for policy monitoring and evaluation relate to the environment.

A list of close to 90 indicator topics is included in this deliverable. They are categorised in a number of ways. Firstly, they are associated with each of the three strands of sustainability. Secondly, they are associated with the CAP objective to which they are most relevant (bearing in mind that the indicator may relate to more than one objective). Thirdly, they are classified as input, output, outcome or impact indicators. And finally, categorised in terms of priority, with indicators that are deemed to be of greatest importance described in the main text of this deliverable. Those indicators deemed to be of a lower priority are detailed in the appendix. They are considered as such for a number of reasons, i.e., they may already be in existence or conversely may be considered too difficult to calculate given existing data structures and mechanisms.

As well as identifying indicator topics, this deliverable goes on to define suitable indicator metrics that could be associated with each indicator topic. Data would then be required to allow the ongoing generation of these metrics which could be used to demonstrate the extent of the progress achieved in the delivery of a specific objective. The data could be collected in a number of ways, for example, through the broadening of the current FADN collection; the utilisation of administrative data sources, remote sensing techniques and/or; other digital technologies.

This wish list will be used, in conjunction with the technologies identified in WP2, to identify suitable approaches to the collection of data for metric calculation in WP3. Although the feasibility of data collection is considered in detail in WP3, an initial assessment is made here to help make that task in WP3 more manageable

In the description of relevant indicators, an overview of the specific topic and associated metrics identified are included. Each metric is given a name, is categorised and defined. An appropriate frequency of data collection and reporting is proposed, as is the appropriate spatial scale.

1. Introduction

Workpackage (WP) 1 of the MEF4CAP project set out to explore the current and potential future direction of the Common Agricultural Policy (CAP) and broader EU level policy concerns which have implications for agriculture. The aim was to understand the implications of a changing European policy landscape, particularly the CAP, and to identify how this might influence the need for data in policy monitoring and evaluation. The evolving CAP has an impact on data provision for administrators and data providers (farmers). New data and associated metrics are required to measure performance across a range of economic, social and environmental goals, to formulate and reformulate policy and lead to a more effective CAP. The end goal of WP1 was to provide a wish list of potential indicators aligned to the new CAP objectives.

The MEF4CAP project's first stakeholder engagement workshop held in January 2021 provided valuable insight into the selection of appropriate indicators for monitoring, economic, environmental and socio-economic sustainability to evaluate the effectiveness of the CAP's broadening objectives. Given that resources to collect data are limited, an important element in the identification of pertinent metrics is the potential to harness technological innovations and solutions which make the production of data more affordable.

MEF4CAP deliverable 1.1 (D1.1) identified the need for a considerable amount of additional environmental data, particularly to address issues highlighted in the EU Farm to Fork Strategy, which pays particular attention to greenhouse gas emissions, carbon sequestration, fertiliser and pesticide use and organic production. Some agriculture related social measures associated with quality of life issues were also identified (social isolation, access to facilities, high speed broadband access, work-life balance, stress, mental and physical health and gender inequalities). Economic measures relating to agriculture are already numerous, but scope remains for the inclusion of further metrics associated with risk management and the distribution of value added in the food chain.

D1.1 concluded that, with a few exceptions, data collection for economic indicators is already relatively well covered and that data collection for social indicators will require some further development. However, the greatest effort required will be in producing data for environmental indicators. Developments in remote sensing and in data sharing technologies, mean that data collection should be more feasible than in the past.

MEF4CAP deliverable 1.2 (D1.2) explored the implications of CAP developments in detail. It found that changes to the CAP have implications for administrative data provision and for data providers. These changes will deliver benefits, but there may also be associated costs. The major CAP development is the New Delivery Model (NDM) which is focused on the achievements of results (performance) associated with the CAP objectives. Previously the CAP relied on adherence to regulations (compliance) to deliver desired outcomes. There are particular implications for national administrations arising from the NDM, since they are given greater autonomy to target policy to national priorities. Member States are required to identify key national policy concerns that can be addressed by the CAP and to formulate these within a

National Strategic Plan (NSP). There is strong emphasis on target setting as a means to measure whether and to what extent policies deliver on their objectives effectively.

The need for data for monitoring and evaluation of the CAP creates concerns about further increasing the burden of data provision on administrators and on farmers. The case for additional data is strong, since it can demonstrate the effectiveness of policy and contribute to better policy design and support policy modification. Greater integration of datasets that already exist is identified as a means of increasing the analytical capacity of policy makers, researchers and the broader community of stakeholders in the agri-food sector. This could be an effective way of increasing the database of available variables used to support policy monitoring and evaluation. Further analysis of such data can provide meaningful metrics that measure progress in the achievement of CAP objectives. Integration of datasets is a less costly way to enhance the analytical relevance of datasets and is preferable to the current approach which is too reliant on collecting the same data in several ways for different purposes.

This current approach in inefficient and can leave gaps in data coverage. It may include coverage of full populations for some data or rely on different sub samples of the population for other data. It may lead to the collection of identical data on more than one occasion and at the same time entirely omit the collection of data which could be useful. More effective integration of existing datasets can free up time and budgets to collect new data which enhance our understanding of agricultural sustainability. It also minimises the burden placed on farmers to provide data relating to their farming activities.

Obstacles to data capture and data integration include legal impediments around data ownership and authorisation agreements for the use of such data, which are now regulated in the EU by the General Data Protection Regulation. Related to the issue of an explicit permission by farmers is the issue of trust, with farmers having particular concern that their data may be used in ways that disadvantage them.

Specific benefits for farmers need to be delivered from the data collection process. Firstly, farmers can be provided with the capacity to measure their own farm performance which can assist them in better farm decision making. Secondly, farmers can also benchmark their performance against their peers.   Thirdly, farmers can demonstrate the sustainability credentials of their farming activity.

Data provision is becoming more affordable, as technology is reducing the cost of data collection and data management. These new technologies and their potential uses are identified in MEF4CAP WP2, while WP3 explores the feasibility of collecting data relevant to specific policy objectives through the application of various technologies.

MEF4CAP deliverable 1.3 (D1.3) is the final deliverable of MEF4CAP WP1 which further elaborates on the relevant thematic areas identified in D1.1 across environmental, social and economic sustainability. This document further considers where data gaps arise and could potentially be addressed. A wish list of metrics relevant to the achievement of CAP objectives is thus compiled. This wish list will be used, in conjunction with the technologies identified in WP2, to identify suitable approaches to the collection of data for metric calculation in WP3.

The wish list comprises potential indicators, the data for which could be collected in a number of ways:

      (i)   through broadening of the current FADN collection,

      (ii)   utilisation of remote sensing techniques or

      (iii)   other digital technologies.

The list does not include those metrics already included within the FADN. Although the feasibility of data collection is considered in detail in WP3, an initial assessment is made here to help make that task in WP3 more manageable. To that end, a longer wish list and a shorter wish list have been compiled here. The shorter list is detailed in the main text with a longer list of additional indicators included in the appendix.

In the description of relevant indicators, an overview of the specific topic and associated metrics identified are included. Each metric is given a name, is categorised and defined. An appropriate frequency of data collection and reporting is proposed, as is the appropriate spatial scale. Indicators across all three sustainability dimensions are also associated with a relevant CAP objective and a degree of prioritisation added. Such prioritisation is based on the data needs and requirements identified in recent EU policy documents (such as Farm to Fork) and consensus from the first MEF4CAP stakeholder workshop held to discuss this very issue.

The wishlist indictors have been categorised as input, output, impact or pressure as set out in the results chain below. The approach developed by the OECD describes **inputs** as those used in order to carry out activities. Such activity leads to product delivery (**outputs**) which start to bring about change (**outcomes**) and ultimately have high-level **impact**. These terms are further described below.

Input - resources	Output - actions	Outcome - benefits	Impact - goals

- **Input** - relate to the resources applied to different operations.
- **Output** - qualitative or quantitative measures or actions, tangible and intangible products that result from activities.
- **Outcome** - benefits the project is designed to deliver.
- **Impact** - higher level goals of the project.

An elaboration on the wish list is provided in Section 2, with conclusions drawn in Section 3. Some indicators will have a relevance for more than one CAP objective.

2. Description of Indicator Wish List

This section describes a wish list of important practicable metrics that have been identified. This priority list has been derived based on emerging themes from recently published policy documents (as summarised in D1.1). Based on those thematic areas and following an initial evaluation exercise, a reduced list was then derived, taking data availability into consideration. Where data already exists (particularly within FADN) and where no further data is deemed necessary, or where data collection was considered particularly difficult, certain topic areas have been moved to the longer list contained in the appendix. As a result, topics included in the shorter wish list are indicated below in bold text.

More detailed information on these topics and the associated sustainability indicators (economic, social and environmental) are itemised in the following tables in sections 2.1, 2.2 and 2.3.

The metrics are grouped into three categories to reflect their principal association with economic, social or environmental CAP objectives. However, it is acknowledged that some metrics may be of relevance to more than one category with many being multipurpose in nature.

2.1. CAP Objectives 1, 2 and 3 - Economic Indictors

The list below is a summary of the full list of economic indicators which have been identified in D1.1. These indicators relate primarily to CAP Objectives 1, 2 and 3. Those shown in bold are considered more important and are contained in the shorter list, which the remaining topics shown in regular font are detailed in the appendix.

CAP Objective 1: Ensuring Viable Farm Income

- o Farm incomes relative to incomes in the broader economy
- o Farm Labour Productivity
- o Farm Structural Change and Income
- o **Farm Assets and Liabilities**
- o Share of support in farm income
- o Distribution of farm income support
- o **Volatility in farm income**
- o **Usage of Risk Management measures**

CAP Objective 2: Increasing Competiveness (Productivity)

- o Agricultural Productivity Growth
- o Total Factor Productivity and Sectoral Productivity Growth
- o **Technology Adoption**
- o Agricultural Training

CAP Objective 3: Strengthening Farmers' Position in Value Chains

- o Concentration in the farm sector
- o Distribution of value added in the food chain
- o **Co-operation among farmers**

- o Market transparency
- o **Use of futures markets**
- o Use of blockchain in the foodchain
- o Short supply chains (local processing)
- o Geographical Indications
- o **Organic Production**
- o Use of contracts by crop

Other

- o **Underemployment**
- o Generational Renewal
- o Incomes of farm employees
- o Age structure of farm employees
- o Farm workforce Salaried
- o Farm workforce Non-Salaried
- o Farm Employment by Gender
- o Farm Employment by Age
- o **Skills and qualifications of farm employees**
- o **Non-farm Income of farmers**

Table 1: Farm Assets and Liabilities

Indicator Name	Farm Asset Age
Type of Indicator	Economic
Definition	The age of key farm assets
Unit of Measurement	Years
Methodology/Formula	Recording of the age of key farm assets
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual, but potentially less frequently
CAP Objective	1. Ensuring Viable Farm Incomes
Indicator categorisation	Input
Proposed Prioritisation	Medium

Table 2: Volatility in Farm Income

Indicator Name	Income Volatility
Type of Indicator	Economic
Definition	Variation in farm income
Unit of Measurement	Percentage change in farm income in a given year relative to the average income of the previous three years.
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	1. Ensuring Viable Farm Incomes

Indicator categorisation	Input
Proposed Prioritisation	High

Table 3: Usage of Risk Management Measures

Indicator Name	Use of Risk Management Tools
Type of Indicator	Economic
Definition	Use of risk management tools
Unit of Measurement	Number/Types of risk management tools used (to be defined)
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	1. Ensuring Viable Farm Incomes
Indicator categorisation	Output
Proposed Prioritisation	High

Table 4: Technology Adoption

Indicator Name	Adoption of Farm Technologies
Type of Indicator	Economic
Definition	Sector specific technologies (to be defined)
Unit of Measurement	Binary variable (Yes/No)
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	2. Increasing Competiveness (Productivity)
Indicator categorisation	Output
Proposed Prioritisation	Medium

Table 5: Farmer Co-Operation

Indicator Name	Membership of a Farmer Producer Group
Type of Indicator	Economic
Definition	Membership of farmer producer group
Unit of Measurement	Binary variable Yes/No
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level

Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains
Indicator categorisation	Output
Proposed Prioritisation	High

Table 6: Use of Forward Pricing

Indicator Name	Use of Forward Pricing of Farm Output
Type of Indicator	Economic
Definition	Share of farm output by volume that is forward sold
Unit of Measurement	Percentage of output
Methodology/Formula	Volume of farm output forward sold / total farm output
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains
Indicator categorisation	Output
Proposed Prioritisation	High

Table 7: Use of Forward Contracts by Crop

Indicator Name	Proportion of crop forward sold and price
Type of Indicator	Economic
Definition	Proportion of crop forward sold and price
Unit of Measurement	Percentage
Methodology/Formula	Percentage of output forward sold
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains
Indicator categorisation	Output
Proposed Prioritisation	High – possible to collect through existing mechanisms

Table 8: Organic Production

Indicator Name	Organic Farm Output Sold
Type of Indicator	Economic
Definition	Share of farm output sold as organic
Unit of Measurement	Percentage of output
Methodology/Formula	Volume of farm output sold as organic/ total farm output
Data Collection Level	Farm level

Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains
Indicator categorisation	Output
Proposed Prioritisation	High

Table 9: Total Labour

Indicator Name	Hours Worked On and Off-farm
Type of Indicator	Economic
Definition	Total hours worked on the farm or other gainful activities directly related to the holding as well as hours worked off-farm.
Unit of Measurement	Hours
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	8. Jobs growth and rural poverty
Indicator categorisation	Output
Proposed Prioritisation	High

Table 10: Skills and Qualifications of Farm Employees

Indicator Name	Level of Educational Qualification of Farm Employees
Type of Indicator	Economic
Definition	Highest level of education of farm employees
Unit of Measurement	Use of a European qualification framework measure
Methodology/Formula	Refer to system of European qualification framework
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	8. Jobs growth and rural poverty
Indicator categorisation	Output
Proposed Prioritisation	Medium

Table 11: Farmer Non-Farm Income

Indicator Name	Non-farm income of the Farm holder
Type of Indicator	Economic
Definition	Farmer income obtained from activity unrelated to the farm business

Unit of Measurement	Euro
Methodology/Formula	Farm
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	8. Jobs growth and rural poverty
Indicator categorisation	Input
Proposed Prioritisation	High

2.2. CAP Objectives 4, 5 and 6 – Environmental Indicators

The list below is a summary of the full list of environmental indicators which have been identified in D1.1. These indicators relate primarily to CAP Objectives 4, 5 and 6. Those shown in bold are considered more important and are contained in the shorter list, which the remaining topics shown in regular font are detailed in the appendix.

The list below is a summary of the full list of economic indicators which have been identified. Those shown in bold are considered more important and are contained in the shorter list, which the remaining topics shown in regular font are detailed in the appendix.

CAP Objective 4: Agriculture and Climate Mitigation

- **GHGs**
- **Carbon Sequestration**

CAP Objective 5: Efficient Soil Management

- Soil Erosion
- Soil Organic Matter Loss
- Soil Biodiversity Loss
- Soil Compaction
- Soil Contamination
- Salinisation
- Sealed Soils
- Desertification
- Soil Practices Addressing Soil Degradation
- **Crop Rotation**
- **Soil Cover**
- **Tillage Management Against Erosion**
- **Precision Farming**

CAP Objective 6: Biodiversity and enhanced eco system services

- **Farmland Bird Index**
- Conservation status of habitats and species of EU interest which are dependent on agriculture
- **Grassland Butterflies Index**
- **Farm landscape features and their loss**

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- **Presence of high-nature-value farming**

Other

- **Ammonia**
- **Adoption of biocontrol**
- **Renewable energy**
- Genetic diversity of seeds
- **Pollinators**
- **N Balance**
- **P Balance**
- **N Use Efficiency**
- **P Use Efficiency**
- **Pesticide Use**

Table 12: Greenhouse Gases per Farm

Indicator Name	Farm Level GHGs
Type of Indicator	Environmental
Definition	GHGs produced per farm
Unit of Measurement	Tonnes of CO_2 eq. per farm
Methodology/Formula	Total farm GHGs in tonnes / farm
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	4. Agriculture and Climate Mitigation
Indicator categorisation	Outcome
Proposed Prioritisation	High

Table 13: Farm Greenhouse Gases per Hectare

Indicator Name	Farm GHGs per Hectare
Type of Indicator	Environmental
Definition	Farm GHG emissions produced on a per ha basis
Unit of Measurement	tonnes CO_2 eq. per ha
Methodology/Formula	Total farm GHGs in tonnes / farm area in hectares
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	4. Agriculture and Climate Mitigation
Indicator categorisation	Outcome
Proposed Prioritisation	High

Table 14: Carbon Sequestration per Hectare

Indicator Name	Carbon Sequestration per Hectare
Type of Indicator	Environmental
Definition	Carbon sequestered in agriculture
Unit of Measurement	CO_2 eq per hectare
Methodology/Formula	Depends of form of sequestration to be measured
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	4. Agriculture and Climate Mitigation
Indicator categorisation	Outcome
Proposed Prioritisation	High

Table 15: Nitrogen Balance per Hectare

Indicator Name	N Balance per Hectare
Type of Indicator	Environmental
Definition	N inputs less N outputs on a per hectare basis
Unit of Measurement	Kg of N Surplus per hectare
Methodology/Formula	N inputs less N outputs per hectare
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	High

Table 16: Phosphorous Balance per Hectare

Indicator Name	P Balance per Hectare
Type of Indicator	Environmental
Definition	P inputs less P outputs on a per hectare basis
Unit of Measurement	Kg of P Surplus per hectare
Methodology/Formula	P inputs less P outputs per hectare
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	High

Table 17: Nitrogen Use Efficiency per Farm

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Indicator Name	N Use Efficiency per Farm
Type of Indicator	Environmental
Definition	Proportion of N retained in the farm system (N outputs/N inputs)
Unit of Measurement	Percentage
Methodology/Formula	Percentage of N outputs/N inputs
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	High

Table 18: Phosphorous Use Efficiency per Farm

Indicator Name	P Use Efficiency per Farm
Type of Indicator	Environmental
Definition	Proportion of P retained in the farm system (P outputs/P inputs)
Unit of Measurement	Percentage
Methodology/Formula	Percentage of P outputs/P inputs
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	High

Table 19: Crop Rotation

Indicator Name	Crop Rotation
Type of Indicator	Environmental
Definition	Crop type by land parcel by year
Unit of Measurement	Area change from one year to the next
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Output
Proposed Prioritisation	High

Table 20: Soil Cover

Indicator Name	Soil Cover
Type of Indicator	Environmental
Definition	Usage of soil cover between harvesting and planting
Unit of Measurement	Number of hectares where soil cover crop is planted
Methodology/Formula	To be considered
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Output
Proposed Prioritisation	High

Table 21: Tillage Management Practices to Prevent Soil Erosion

Indicator Name	Tillage Management Practices Against Erosion
Type of Indicator	Environmental
Definition	Incidence of practices used to prevent erosion
Unit of Measurement	Type of management practice - Binary variable Yes/No
Methodology/Formula	N/A
Data Collection Level	National, regional, farm level
Data Reporting Level	Farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Output
Proposed Prioritisation	Medium

Table 22: Use of Precision Farming Techniques

Indicator Name	Usage of Precision Farming Techniques
Type of Indicator	Environmental
Definition	Incidence of precision technology use on farm
Unit of Measurement	Type of Precision Technique - Binary variable Yes/No
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Output
Proposed Prioritisation	High

Table 23: Farmland Bird Index

Indicator Name	Farmland Bird Index
Type of Indicator	Environmental
Definition	Abundance and variety of farmland birds observed
Unit of Measurement	Number of farmland birds observed
Methodology/Formula	Number of farmland birds observed in a given area/period
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	6. Biodiversity and enhanced eco system services
Indicator categorisation	Input
Proposed Prioritisation	Medium

Table 24: Grassland Butterflies Index

Indicator Name	Grassland Butterflies Index
Type of Indicator	Environmental
Definition	Abundance and variety of grassland butterflies observed
Unit of Measurement	Number of grassland butterflies observed
Methodology/Formula	Number of grassland butterflies observed in a given period/area
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	6. Biodiversity and enhanced eco system services
Indicator categorisation	Input
Proposed Prioritisation	Medium

Table 25: Farm Landscape Features and their Loss

Indicator Name	Record of Farm Landscape Features
Type of Indicator	Environmental
Definition	Number of farmland features observed
Unit of Measurement	Number of farmland features relative to the previous period
Methodology/Formula	Change in the number of landscape features over time
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	6. Biodiversity and enhanced eco system services
Indicator categorisation	Input
Proposed Prioritisation	High

Table 26: Presence of High-Nature-Value Farming

Indicator Name	Presence of High Nature Value Farming
Type of Indicator	Environmental
Definition	Proportion of farm deemed to be of high nature
Unit of Measurement	Area of land classified as being of high nature value
Methodology/Formula	No. of HNV hectares/ Total farm hectares
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	6. Biodiversity and enhanced eco system services
Indicator categorisation	Output
Proposed Prioritisation	High

Table 27: Ammonia Emissions per Farm

Indicator Name	Ammonia Emissions per Farm
Type of Indicator	Environmental
Definition	Amount of ammonia produced per farm
Unit of Measurement	Kg ammonia per farm
Methodology/Formula	Total amount of ammonia produced in agricultural activity on a farm – detail to be considered
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	4. Agriculture and Climate Mitigation
Indicator categorisation	Outcome
Proposed Prioritisation	High

Table 28: Farm Ammonia Emissions per Hectare

Indicator Name	Ammonia Emissions per Hectare
Type of Indicator	Environmental
Definition	The amount of ammonia emissions produced on farm expressed on a per ha basis
Unit of Measurement	Kg of ammonia per ha
Methodology/Formula	Total farm ammonia in tonnes/farm area in ha
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	4. Agriculture and Climate Mitigation
Indicator categorisation	Outcome

Proposed Prioritisation	High

Table 29: Adoption of Biocontrols

Indicator Name	Adoption of (Natural) Biocontrols on Farm
Type of Indicator	Environmental
Definition	Type of biocontrol in use
Unit of Measurement	Number of biocontrol measures used per farm (to be defined)
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	6. Biodiversity and enhanced eco system services
Indicator categorisation	Output
Proposed Prioritisation	High

Table 30: Renewable Energy per Farm

Indicator Name	Renewable Energy Produced on Farm
Type of Indicator	Environmental
Definition	Amount of renewable energy generated on farms
Unit of Measurement	KWh per farm
Methodology/Formula	Energy produced per unit of farm output
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	4. Agriculture and Climate Mitigation
Indicator categorisation	Outcome
Proposed Prioritisation	Medium

Table 31: Pollinators per Farm

Indicator Name	Pollinators
Type of Indicator	Environmental
Definition	Abundance of pollinators (bees) observed
Unit of Measurement	Number of pollinators (bees) observed
Methodology/Formula	Number of pollinators (bees) observed in a given period/area
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual

CAP Objective	6. Biodiversity and enhanced eco system services
Indicator categorisation	Input
Proposed Prioritisation	Medium

2.3. CAP Objectives 7, 8 and 9 – Social Indicators

The list below is a summary of the full list of social indicators which have been identified in D1.1. These indicators relate primarily to CAP Objectives 7, 8 and 9. Those shown in bold are considered more important and are contained in the shorter list, which the remaining topics shown in regular font are detailed in the appendix.

CAP Objective 7: Structural Change and Generational Renewal

- Evolution of Farm Numbers
- Evolution of Farm Size
- Ageing in the Farm Population
- Farm Diversity
- **Status of Young Farmers**
- **Age and Farm Specialisation**
- Age and Farm Income
- Volume of Land Sales
- Land Selling Prices
- Land Rental Prices
- **Access to Finance and Credit**
- Level of Training

CAP Objective 8: Jobs Growth and Rural Poverty

- GDP Growth and Poverty Rates
- Unemployment in Rural Area
- **Broadband Coverage and Speeds**
- Role of Agriculture in total employment
- Size of the Agricultural Labour Force
- **Off-Farm Income**

CAP Objective 9: Health, Food and Anti-microbial Resistance

- **Sales of veterinary antimicrobial agents**
- **Use of veterinary antimicrobials in EU animal husbandry**

Other

- **Distance from services**
- **Remoteness**
- Accessibility
- Poverty rate
- Home consumption
- Social inclusion

Table 32: Income Level of Young Farmers

Indicator Name	Income Level of Young Farmers
Type of Indicator	Social
Definition	Euro income from farming activity
Unit of Measurement	Euro
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Outcome
Proposed Prioritisation	High

Table 33: Farm Specialisation According to Farmer Age

Indicator Name	Extent of Farm Specialisation by Farmer Age
Type of Indicator	Social
Definition	Degree of farm specialisation by farmer age category
Unit of Measurement	To be decided
Methodology/Formula	To be decided
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Input
Proposed Prioritisation	Medium

Table 34: Access to Finance and Credit

Indicator Name	Farmer Access to Finance and Credit
Type of Indicator	Social
Definition	Ease of access to farm finance and credit
Unit of Measurement	Percentage
Methodology/Formula	Percentage of finance/credit requests rejected
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Input
Proposed Prioritisation	Medium

Table 35: Broadband Coverage and Speeds

Indicator Name	Broadband Availability and Speed
Type of Indicator	Social
Definition	Availability and use of broadband and related access speeds
Unit of Measurement	Binary Variable Yes/No; Speed in mbps
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Indicator categorisation	Input
Proposed Prioritisation	Medium

Table 36: Farm Household Off-Farm Income

Indicator Name	Off-Farm Income of the farm household
Type of Indicator	Social
Definition	Household income generated from non-farming sources
Unit of Measurement	Euro
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Indicator categorisation	Input
Proposed Prioritisation	High

Table 37: Farm Pesticide Use

Indicator Name	Pesticide Use on Farms
Type of Indicator	Social
Definition	To Be Defined
Unit of Measurement	To Be Defined
Methodology/Formula	To Be Defined
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Output
Proposed Prioritisation	High

Table 38: Sales of Veterinary Antimicrobial Agents

Indicator Name	Sales of Veterinary Antimicrobial Agents for Farm Use
Type of Indicator	Social
Definition	Amount and value of antimicrobials purchased
Unit of Measurement	Number of animal doses and euro value
Methodology/Formula	To be further considered
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	9. Health, Food and Anti-microbial Resistance
Indicator categorisation	Output
Proposed Prioritisation	High

Table 39: Use of Veterinary Antimicrobials in EU Animal Husbandry

Indicator Name	Use of Veterinary Antimicrobials in EU Animal Husbandry
Type of Indicator	Social
Definition	Frequency of use of medicines on farms
Unit of Measurement	Amount of medicines delivered by farm animal
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	9. Health, Food and Anti-microbial Resistance
Indicator categorisation	Impact
Proposed Prioritisation	High

Table 40: Distance from services

Indicator Name	Physical Distance from Services
Type of Indicator	Social
Definition	Travel distance (km) to services (to be defined)
Unit of Measurement	Km
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Indicator categorisation	Input
Proposed Prioritisation	Medium

Table 41: Remoteness

Indicator Name	Region Remoteness
Type of Indicator	Social
Definition	Travel time to services (to be defined)
Unit of Measurement	Travel distance (time) to services (to be defined)
Methodology/Formula	Minutes
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Indicator categorisation	Input
Proposed Prioritisation	Medium

3. Conclusion

In Deliverable 1.3 we have considered the list of economic, environmental and social topics developed in Deliverable 1.1. The long list of thematic areas developed in Deliverable 1.1 has been refined to produce a wish list of indicators which reflect priority data needs that are either not currently satisfied via existing national data sources or are not already adequately accounted for within FADN. Where possible potential definitions for these metrics have been provided, although it is recognised that expert input from relevant disciplines could be required to further refine these definitions. This list will be further assessed in WP3 on the basis of the technologies identified in WP2 to produce a final list of sustainability indicators for the project and the associated technologies that might be used to produce relevant data for CAP monitoring and evaluation.

Topics that have been excluded from the shorter list produced here are those for which either data already exists in some form, where it is felt that a greater degree of granularity (e.g. at farm level) is unnecessary, or conversely where the required data may not yet be available or possible to collect, where there is uncertainty over what is required, or where the requirement from a policy monitoring and evaluation perspective is of lesser priority (than those prioritised) or not of widespread relevance at an overall EU level. Further information on these metrics is contained in the appendix. The identified sustainability indicators have been paired to the CAP objective to which they are considered to be most relevant. In doing so it should be recognised that some sustainability indicators may have a relevance for more than one CAP objective.

The focus of the list is concentrated on environmental sustainability indicators. The emphasis on environmental sustainability indicators is merited given the lack of attention given to those measures historically and the strong policy shift which is now taking place to transform agricultural production to make it more environmentally sustainable. A MEF4CAP project stakeholder engagement workshop held to gather perspectives on future policy demands and associated data requirements, confirmed that an increase in the range of environmental sustainability indicators relating to agriculture is required. Relative to economic and social sustainability metrics, there is a greater likelihood that data for environmental indicators can be captured using emerging technologies, such as those identified in WP2.

Relatively few economic sustainability indicators have been selected. This reflects the fact that there are already many economic indicators in existence, given that the collection of economic data relevant to the CAP has been the practice for several decades through the FADN, national data sources and other mechanisms. Some additional economic indicators have been selected and these largely reflect new topic areas that are relevant from an economic perspective.

A number of social indicators have also been selected. To this point, the production of social indicators has not had the same priority as economic indicators, perhaps because economic indicators were seen to be of primary importance historically and that improvements in economic sustainability may have been assumed to deliver positive social sustainability outcomes. However, it is now better appreciated that social indicators are important in their own right. They need to address the wellbeing of those working in agriculture. However, social sustainability indicators are also relevant as a means to measure the impact of agriculture on

wider societal objectives of all citizens and not just those engaged in farming. That said, there remain challenges around collecting some of this data, either due to its subjective nature or difficulties in ascertaining such data outside of traditional survey methods.

4. Appendix of Additional Indicators

Indicators included in this appendix have not been deemed to be of sufficiently high priority for one or more reasons:

- National or regional level data may already be reported by national statistical agencies, such as in the case of GDP growth data, employment and unemployment data, data on farm numbers and farm diversity.
- Relevant data may already exist in some form, even though there may be issues relating to its quality or consistency. For example, indicators relating to land sales and rental values and the volume of land transacted have been categorised as of lesser importance since such data already exists, but better quality (more definitionallly consistent) data would be desirable.
- Other indicators have been classified as of lesser priority where they relate to a policy issue which is not considered as important as those included in the main text. Some policy issues may be categorised as such if they do not have an overall relevance across all of the Member States. For example, data on matters such as soil compaction, soil contamination, salinisation, soil erosion, soil sealing and desertification.
- Other indicators, such as those requiring an exploration of the wider food chain, market transparency, short supply chains, have been excluded on the grounds that they extend beyond the boundaries of the project, which is primary agriculture.
- Likewise, data on accessibility and connectivity to services, while relevant relate to rural communities generally more so than primary agriculture.
- Aligned to that, is the fact that it may be prohibitively difficult to collect the data required to adequately fulfil the requirements of such indicators at present, i.e., logistically or financially. Where this is thought to be especially the case a note on the particular measurement challenge envisaged has been added to the indicator table in question.
- Similarly, certain indicators have been deemed of lesser priority as their interpretation could be broad, potentially giving rise to the requirement for numerous related indicators and therefore meaning their collection could be very resource intensive.
- Indicators where data could be relatively easily captured by inclusion in the FADN data collection process (e.g. age/gender of farmer and farm workers) have also been deemed of lower priority.
- Indicators are categorised in a number of ways. Firstly, they are associated with each of the three strands of sustainability. Secondly, they are associated with the CAP objective to which they are most relevant (bearing in mind that the indicator may relate to more than one objective). Thirdly, they are classified as input, output, outcome or impact indicators.

Table 42: Farm Incomes relative to Incomes in the Broader Economy

Indicator Name	Farm Income Ratio
Type of Indicator	Economic
Definition	Ratio of average farm income to average industrial wage
Unit of Measurement	Percentage
Methodology/Formula	Ratio
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	1. Ensuring Viable Farm Incomes
Indicator categorisation	Input
Proposed Prioritisation	Low - can be addressed by existing data

Table 43: Farm Labour Productivity

Indicator Name	Labour Productivity
Type of Indicator	Economic
Definition	Farm productivity relative to labour input
Unit of Measurement	Volume
Methodology/Formula	e.g. output per labour unit
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	1. Ensuring Viable Farm Incomes
Indicator categorisation	Outcome
Proposed Prioritisation	Low - can be addressed by existing data

Table 44: Farm Structural Change and Income

Indicator Name	Trends in Farm Income
Type of Indicator	Economic
Definition	Annual reported income
Unit of Measurement	Euro
Methodology/Formula	Farm income by size category over time
Data Collection Level	Farm level
Data Reporting Level	National, regional, sectoral level
Frequency	Annual
CAP Objective	1. Ensuring Viable Farm Incomes
Indicator categorisation	Outcome
Proposed Prioritisation	Low - can be addressed by existing data

Table 45: Share of Support in Farm Income

Indicator Name	Direct payments as a share of farm income
Type of Indicator	Economic
Definition	Percentage of income derived from support payments
Unit of Measurement	Percentage
Methodology/Formula	Support payments/ Farm income
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	1. Ensuring Viable Farm Incomes
Indicator categorisation	Output
Proposed Prioritisation	Low - can be addressed by existing data

Table 46: Distribution of Farm Income Support

Indicator Name	Distribution of farm income support
Type of Indicator	Economic
Definition	Share of income support held by farm population
Unit of Measurement	Percentage of support held by each income decile
Methodology/Formula	Percentage of support held by each income decile
Data Collection Level	Administrative data
Data Reporting Level	National, regional, sectoral level
Frequency	Annual
CAP Objective	1. Ensuring Viable Farm Incomes
Indicator categorisation	Impact
Proposed Prioritisation	Low - can be addressed by existing data

Table 47: Agricultural Productivity Growth

Indicator Name	Agricultural Productivity Growth
Type of Indicator	Economic
Definition	Farm productivity over time
Unit of Measurement	Volume
Methodology/Formula	e.g. output per hectare
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	2. Increasing Competeiveness (Productivity)
Indicator categorisation	Impact
Proposed Prioritisation	Low - can be addressed by existing data

Table 48: Total Factor Productivity and Sectoral Productivity Growth

Indicator Name	Total Factor Productivity
Type of Indicator	Economic
Definition	Farm output relative to farm inputs
Unit of Measurement	Volume
Methodology/Formula	Ratio of farm outputs to inputs
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	2. Increasing Competeveness (Productivity)
Indicator categorisation	Impact
Proposed Prioritisation	Low - can be addressed by existing data

Table 49: Agricultural Training

Indicator Name	Agricultural Training
Type of Indicator	Economic
Definition	Type of Agricultural Training Received
Unit of Measurement	Number of training topics covered
Methodology/Formula	Record of training courses/qualifications
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	2. Increasing Competeveness (Productivity)
Indicator categorisation	Output
Proposed Prioritisation	High - can be addressed by existing data

Table 50: Concentration in the Farm Sector

Indicator Name	Farm Concentration
Type of Indicator	Economic
Definition	Percentage of output produced by share of farm population
Unit of Measurement	Percentage
Methodology/Formula	Share of output produced by percentage of farm population
Data Collection Level	Farm level
Data Reporting Level	National, regional, sectoral level
Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains
Indicator categorisation	Input
Proposed Prioritisation	Low – can be addressed by existing data

Table 50: Distribution of Value Added in the Food Chain

Indicator Name	Value added share for farmer
Type of Indicator	Economic
Definition	Share of final prices received by farmer
Unit of Measurement	Percentage
Methodology/Formula	Farm level price / consumer (end user price)
Data Collection Level	National level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains
Indicator categorisation	Outcome
Proposed Prioritisation	Low – extends beyond the remit of the project
Measurement Challenge	Potentially difficult to ascertain where farm output has been sold and in determining an end product price.

Table 51: Market Transparency

Indicator Name	To be considered
Type of Indicator	Economic
Definition	To be considered
Unit of Measurement	To be considered
Methodology/Formula	To be considered
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains
Indicator categorisation	To be considered
Proposed Prioritisation	Low – extends beyond the remit of the project
Measurement Challenge	Potentially difficult to regulate the reporting of pricing structures across the value chain.

Table 52: Use of Blockchain in the Foodchain

Indicator Name	To be considered
Type of Indicator	Economic
Definition	To be considered
Unit of Measurement	To be considered
Methodology/Formula	To be considered
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains

Indicator categorisation	To be considered
Proposed Prioritisation	Low – extends beyond the remit of the project

Table 53: Short Supply Chains (Local processing)

Indicator Name	Use of Short Supply Chains
Type of Indicator	Economic
Definition	Proportion of farm output sold via short supply chains
Unit of Measurement	Definition of short supply chain to be determined
Methodology/Formula	Share of farm output volume sold via short supply chains
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains
Indicator categorisation	Outcome
Proposed Prioritisation	Low – extends beyond the remit of the project
Measurement Challenge	Potentially difficult to define short supply chains and comprehensively measure the volume of produce sold through various outlets e.g. farm shops, markets, independent retailers.

Table 54: Geographical Indications

Indicator Name	Use of geographical indication to market product
Type of Indicator	Economic
Definition	Share of output produced under geographical indication
Unit of Measurement	Percentage
Methodology/Formula	Share of output volume sold under geographical indication
Data Collection Level	Farm level
Data Reporting Level	National, regional, sectoral level
Frequency	Annual
CAP Objective	3. Strengthening Farmers' Position in Value Chains
Indicator categorisation	Outcome
Proposed Prioritisation	Medium – can be addressed by existing data

Table 55: Incomes of Farm Employees

Indicator Name	Income of farm employees
Type of Indicator	Economic
Definition	Income of farm employees
Unit of Measurement	Euro
Methodology/Formula	N/A
Data Collection Level	Farm level

Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	To be considered
Indicator categorisation	Outcome
Proposed Prioritisation	Low – extends beyond the remit of the project
Measurement Challenge	Potentially difficult to collect comprehensive, detailed data.

Table 56: Age Structure of Farm Employees

Indicator Name	Age structure of farm employees
Type of Indicator	Economic
Definition	Age of farm employees
Unit of Measurement	Percentage of employees in various age categories
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual or less frequently
CAP Objective	To be considered
Indicator categorisation	Input
Proposed Prioritisation	Low – potentially feasible to collect through existing mechanisms,

Table 57: Farm Workforce Salaried

Indicator Name	Number of farm workers who are salaried
Type of Indicator	Economic
Definition	Number of permanently employed farm workers
Unit of Measurement	Number of workers
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	To be considered
Indicator categorisation	Input
Proposed Prioritisation	Low – can be addressed by existing data

Table 58: Farm Workforce Non-Salaried

Indicator Name	Number of farm workers who are casually employed
Type of Indicator	Economic
Definition	Number of non-permanently employed (casual) farm workers

Unit of Measurement	Number of casual workers
Methodology/Formula	N/A
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	To be considered
Indicator categorisation	Input
Proposed Prioritisation	Low – can be addressed by existing data

Table 59: Farm Employment by Gender

Indicator Name	Gender of those employed on farms
Type of Indicator	Economic
Definition	Numbers in farm employment by gender
Unit of Measurement	Binary Variable Male/Female
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	7. Structural change and generational renewal
Indicator categorisation	Input
Proposed Prioritisation	Medium – can be addressed by existing mechanisms

Table 60: Farm Employment by Age

Indicator Name	Age of those employed on farms
Type of Indicator	Economic
Definition	Numbers in farm employment by age
Unit of Measurement	Age in years
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	To be considered
Indicator categorisation	Input
Proposed Prioritisation	Medium – can be addressed by existing mechanisms

Table 61: Soil Erosion

Indicator Name	Soil Erosion
Type of Indicator	Environmental
Definition	To be considered

Unit of Measurement	To be considered
Methodology/Formula	To be considered
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	Low – does not have sufficiently widespread EU relevance
Measurement Challenge	Potentially difficult to adequately measure on a large scale.

Table 62: Soil Organic Matter Loss

Indicator Name	Soil Organic Matter Loss
Type of Indicator	Environmental
Definition	To be considered
Unit of Measurement	To be considered
Methodology/Formula	To be considered
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	Low – outside the remit of this project
Measurement Challenge	Possible to collect relevant data through a soil sampling campaign. However, this could be prohibitively expensive. Such a campaign could be incorporated into the FADN.

Table 63: Soil Biodiversity Loss

Indicator Name	Soil Biodiversity Loss – quadrant, species, v. expensive, proxy measures possible.
Type of Indicator	Environmental
Definition	To be considered
Unit of Measurement	To be considered
Methodology/Formula	To be considered
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	Low – outside the remit of this project
Measurement Challenge	Possible to collect relevant data through a soil sampling campaign. However, this could be prohibitively expensive.

Table 64: Soil Compaction

Indicator Name	Soil Compaction
Type of Indicator	Environmental
Definition	Incidence of soil compaction
Unit of Measurement	Number of hectares where soil compaction occurs
Methodology/Formula	N/A
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	Low – does not have sufficiently widespread EU relevance
Measurement Challenge	Potentially difficult to measure on a large scale. Possible to explore the use of remote sensors to this end.

Table 65: Soil Contamination

Indicator Name	Soil Contamination
Type of Indicator	Environmental
Definition	Incidence of soil contamination e.g. heavy metals etc.
Unit of Measurement	Number of hectares where soil contamination occurs
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	Low – does not have sufficiently widespread EU relevance
Measurement Challenge	Large scale soil testing required.

Table 66: Salination

Indicator Name	Salinisation
Type of Indicator	Environmental
Definition	Incidence of soil Ph degradation due to salinization e.g. on reclaimed land.
Unit of Measurement	Number of hectares where salination occurs
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	Low – does not have sufficiently widespread EU relevance

Table 67: Sealed Soils

Indicator Name	Sealed Soils
Type of Indicator	Environmental
Definition	Incidence of sealed soils e.g. due to construction of buildings, yards etc.
Unit of Measurement	Number of hectares where sealed soils occurs
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	Low – does not have sufficiently widespread EU relevance
Measurement Challenge	Potentially difficult to measure on a large scale. However, there the use of remote sensing techniques may be possible.

Table 68: Desertification

Indicator Name	Desertification
Type of Indicator	Environmental
Definition	Incidence of desertification i.e. unusable or abandoned land.
Unit of Measurement	Number of hectares where desertification occurs
Methodology/Formula	N/A
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Outcome
Proposed Prioritisation	Low – does not have sufficiently widespread EU relevance

Table 69: Soils Practices to Prevent Desertification

Indicator Name	Soils Practices to Prevent Desertification
Type of Indicator	Environmental
Definition	Practice of planting shelter belts etc. to retain soil moisture
Unit of Measurement	To be considered
Methodology/Formula	To be considered
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	5. Efficient Soil Management
Indicator categorisation	Output
Proposed Prioritisation	Low – does not have sufficiently widespread EU relevance

Table 70: Conservation Status of Habitats/Species Dependent on Agriculture

Indicator Name	To be considered
Type of Indicator	Environmental
Definition	Existence of designated habitat areas such as Special Areas of Conservation or Natural Habitat Areas.
Unit of Measurement	To be considered
Methodology/Formula	To be considered
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	6. Biodiversity and enhanced eco system services
Indicator categorisation	Input
Proposed Prioritisation	Medium – outside the remit of this project
Measurement Challenge	Potential to use remote sensing techniques to determine the prevalence of habitats, although more difficult to ascertain quality.

Table 71: Seed Diversity

Indicator Name	Seed Diversity – type and variety
Type of Indicator	Environmental
Definition	To be considered
Unit of Measurement	To be considered
Methodology/Formula	To be considered
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	To be considered
Indicator categorisation	Input
Proposed Prioritisation	Low – outside the remit of this project
Measurement Challenge	Potentially difficult to measure comprehensively, particularly planting data versus sales data. It may be possible to capture reseeding through the FADN.

Table 72: Evolution of Farm Numbers

Indicator Name	Number of farms
Type of Indicator	Social
Definition	Number of farms by farm type
Unit of Measurement	Number of farms
Methodology/Formula	N/A
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Input

Proposed Prioritisation	Low – data already being collected

Table 73: Evolution of Farm Size

Indicator Name	Size of farms
Type of Indicator	Social
Definition	Number of farm by size category
Unit of Measurement	Hectares
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, sectoral level
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Input
Proposed Prioritisation	Low – data already being collected

Table 74: Ageing of the Farm Population

Indicator Name	Farm holder Age
Type of Indicator	Social
Definition	Age of farmers
Unit of Measurement	Years
Methodology/Formula	Change in average age of farmers over time
Data Collection Level	National, regional,
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Input
Proposed Prioritisation	High – data already in existence

Table 75: Farm Diversity

Indicator Name	Description of farm enterprises
Type of Indicator	Social
Definition	Overview of on-farm enterprises
Unit of Measurement	Percentage
Methodology/Formula	Proportion of farms across enterprise types
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Input

Proposed Prioritisation	Medium – data already in existence in some Member States

Table 76: Volume of Land Sales

Indicator Name	Volume of Land Sales
Type of Indicator	Social
Definition	Amount of land transacted
Unit of Measurement	Hectares
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, sectoral level
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Outcome
Proposed Prioritisation	Low – data already being collected
Measurement Challenge	Country specific regulatory data available but more rigorous collection required and better integration of datasets needed.

Table 77: Land Selling Price

Indicator Name	Land Selling price
Type of Indicator	Social
Definition	Price of land sold per hectare
Unit of Measurement	Euro per hectare
Methodology/Formula	Could be categorised by land quality
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Input
Proposed Prioritisation	Low – data already being collected
Measurement Challenge	Country specific regulatory data available but more rigorous collection required and better integration of datasets needed.

Table 78: Land Rental Price

Indicator Name	Land Selling price
Type of Indicator	Social
Definition	Price of land rental per hectare
Unit of Measurement	Euro per hectare

Methodology/Formula	Could be potentially be categorised by land quality
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Input
Proposed Prioritisation	Low – data already being collected through the FADN

Table 79: Level of Training

Indicator Name	Level of training
Type of Indicator	Social
Definition	Extent of farm related training undertaken
Unit of Measurement	Number of qualifications obtained
Methodology/Formula	N/A
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual or less frequently
CAP Objective	7. Structural Change and Generational Renewal
Indicator categorisation	Output
Proposed Prioritisation	High – data already in existence within FADN

Table 80: GDP Growth

Indicator Name	GDP Growth Rate or Poverty Rate
Type of Indicator	Social
Definition	Annual rate of Real GDP growth
Unit of Measurement	Annual rate of Real GDP growth
Methodology/Formula	Defined in national level statistics
Data Collection Level	National, regional
Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Indicator categorisation	Impact
Proposed Prioritisation	Low – likely to be covered in official statistics

Table 81: Unemployment in Rural Areas

Indicator Name	Unemployment Rate
Type of Indicator	Social
Definition	Annual rate of unemployment
Unit of Measurement	Percentage unemployment

Methodology/Formula	Defined in national level statistics
Data Collection Level	National, regional
Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Indicator categorisation	Impact
Proposed Prioritisation	Low – likely to be covered in official statistics

Table 82: Role of Agriculture in Total Employment

Indicator Name	Agricultural Employment as a share of total employment
Type of Indicator	Social
Definition	Share of employment accounted for by agriculture
Unit of Measurement	Percentage
Methodology/Formula	Agricultural employment as a share of total employment
Data Collection Level	National, regional
Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Indicator categorisation	Impact
Proposed Prioritisation	Low – likely to be covered in official statistics

Table 83: Size of Agricultural Labour Force

Indicator Name	Numbers employed in agriculture
Type of Indicator	Social
Definition	Number of people employed in agriculture
Unit of Measurement	Number of people
Methodology/Formula	N/A
Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Indicator categorisation	Impact
Proposed Prioritisation	Low – likely to be covered in official statistics

Table 84: Accessibility

Indicator Name	Yet to be considered
Type of Indicator	Social
Definition	Potentially concerning access to road networks
Unit of Measurement	To be considered
Methodology/Formula	To be considered
Data Collection Level	National, regional, farm level

Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Proposed Prioritisation	Low – outside the remit of this project
Indicator categorisation	Input
Measurement Challenge	Potential to use mapping/remote sensing techniques

Table 85: Poverty rate

Indicator Name	Poverty Rate
Type of Indicator	Social
Definition	Annual Rate of Poverty
Unit of Measurement	Rate of Poverty
Methodology/Formula	Defined in national level statistics
Data Collection Level	National, regional,
Frequency	Annual
CAP Objective	8. Jobs Growth and Rural Poverty
Indicator categorisation	Impact
Proposed Prioritisation	Low – likely to be covered in official statistics

Table 86: Home Consumption

Indicator Name	Farm produce consumed at home
Type of Indicator	Social
Definition	Composition of food produced on the farm consumed within the household.
Unit of Measurement	Percentage of agricultural output
Methodology/Formula	Percentage
Data Collection Level	Farm level
Data Reporting Level	National, regional, farm level
Frequency	Annual
CAP Objective	9: Health, Food and Anti-microbial Resistance
Indicator categorisation	Output
Proposed Prioritisation	Low – outside the remit of this project.

Table 87: Social Inclusion Index

Indicator Name	Social Inclusion Index
Type of Indicator	Social
Definition	Index comprising e.g. poverty rate, unemployment rate, education level etc.
Unit of Measurement	Yet to be considered
Methodology/Formula	Yet to be considered

Data Collection Level	National, regional, farm level
Frequency	Annual
CAP Objective	8: Jobs Growth and Rural Poverty?
Indicator categorisation	Impact
Proposed Prioritisation	Medium – data already available through official statistics.