



Standard Observation SOSOC_037

Land Use

Version 0.3

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NOTE: THIS PROTOCOL IS STILL UNDER REVIEW.



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Review Team

The protocol has been reviewed mainly for stylistic aspects.

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0.1	Final draft	Dec 2024	main authors
0.2	Restructured, reformatted	Aug 2026	S. Zacharias
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SO variable overview

Habitat:

Applies to all eLTER habitat groups.

Variable(s):

- Land-use statistics (SOSOC_037-1): Area statistics, farm structure, land management indicators
- Land-use system and stakeholders (SOSOC_037-2): Actor identification, sustainability challenges, climate change adaptation/mitigation

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1 Introduction

The initial idea behind the socio-ecological Standard Observation (SO) "Land Use" is to provide a comprehensive data package including a series of statistical data addressing land cover and land use (complementary to SOSOCs 030, 031, 036, 114, 184), contextual information about the land-use system and its relevant actor groups, as well as an in-depth enquiry into farm-level land use and management. This SO thus consists of two parts: **SOSOC_037-1 Land-use statistics** and **SOSOC_037-2 Land-use system and stakeholders**.

SOSOC_037-1 will include a series of variables describing farm structure, area statistics and land management. These will be retrieved from official statistical sources. SOSOC_037-2 focuses on identification and assessment of key land-use actors and other relevant stakeholders, local sustainability challenges including climate change related aspects, as well as retrieving micro-data on farm management and land-use decision-making.

The aim of this protocol is to define a harmonised and cyclic approach combining quantitative and qualitative data that allows for temporal analysis as well as cross-case comparison of land-use systems between eLTSE Platforms.

SOSOC_037-1 is a mandatory Standard Observation for all terrestrial eLTER Sites and Platforms. Data for corresponding Sites are provided via a centralized eLTER service following the BASIC method. SOSOC_037-2 applies to Platforms only.

2 Method

For all eLTER SOs there exist two method types specifying data collection and processing procedures: the BASIC and PRIME methods. The PRIME method represents the highest standard of data collection, whereas the BASIC method represents a less elaborate approach. Table 1 summarises the main aspects concerning data collection, resolution and sources for both sub-variables.

Table 1: Overview of BASIC and PRIME method types for SOSOC_037-1 and 037-2

Sub-variable	Method	Data collection	Sources/Methods	Temporal resolution	Spatial resolution
037-1	BASIC	Retrieval	EU statistics	Annual	NUTS-2 or higher (cookie cut) Smallest admin. unit (cookie cut)
	PRIME	Retrieval	National statistics	Annual	
037-2	BASIC	Sample	Expert judgement	3 years	Platform boundary
	PRIME	Sample	Site-specific survey	6 years	Platform boundary

Concerning SOSOC_037-1 and its statistical data, differences between the BASIC and PRIME methods pertain to data sources (European versus national/regional) and spatial resolution (BASIC:NUTS2 or 3 versus PRIME:smallest administrative unit available).

For SOSOC_037-2, which applies to Platforms only, BASIC and PRIME methods differ in terms of data collection as well as synthesis and delivery of data products. SOSOC_037-2 BASIC will involve expert judgement and estimation by platform managers and affiliated researchers, implemented every 3 years based on their local expert knowledge, literature review and document analysis of primary and secondary sources, as well as inclusion of other qualitative, experimental and/or statistical data available to researchers. SOSOC_037-2 PRIME additionally includes a harmonised and structured interview series of **at least 30** interviews every 6 years, targeting farmers and foresters.

Both BASIC and PRIME methods have the objective to produce a narrative/profile comprising a qualitative and quantitative description of land-use system characteristics. For the BASIC method, this profile will be shorter and simpler, mainly consisting of the retrieved statistical data (tabular), as well as the filled out survey tables and a collation of reviewed literature, documents and other sources.

For the PRIME method, Platform managers are asked to deliver a full synthesis of the quantitative and qualitative data about the local land use system and its stakeholders by developing a mixed-methods narrative covering all data collected under 037-1 and -2 as well as from other Sociosphere SOs (see Table 2).

Table 2: Synthesis of SOSOC_037 data

Component	Description of Narrative
Land use system	Qualitative and quantitative description of the land use system, including land use types (e.g., arable land, grassland, livestock, forestry), management regimes and input intensities (e.g., fertilizer, pesticides, machinery, tillage, livestock numbers, cutting frequencies), irrigation practices and water use, protected areas (including conservation objectives and measures), existing infrastructure, ownership structures, etc.
Land use stakeholders	Identification and description or analysis of key stakeholders in the local land use system (e.g., landowners and managers, private and public consultancy bodies, interest groups, cooperatives, associations, state and public administrations, authorities, upstream industries and suppliers, processing industries and downstream businesses, policy- and decision-makers, civil society and local citizens, science and research, NGOs, media, etc.).
Sustainability challenges and climate change	Identification and description of environmental and sustainability issues, regional climate change impacts, and relevant adaptation and mitigation measures and strategies.
Land-use conflicts	Manifest or potential land-use conflicts connected to individual land use types, sectors, and/or actors.

2.1 Thematic scope

The data to be collected for SOSOC_037-1 (Land-use statistics) include:

- Legal personality of the holdings: joined categories
- Age of the manager: joined categories
- Other gainful activities type: joined categories
- Labour force quantitative variables: in annual working units and persons, micro-aggregated
- Standard output: in euro, micro-aggregated
- Crop variables: in hectares, micro-aggregated and rounded
- Irrigation variables: in hectares, micro-aggregated and rounded
- Tillage: in hectares, micro-aggregated and rounded
- Crop rotation: as share of arable land, in percentage bands
- Manure application: as share of agricultural area, in percentage bands
- Area under organic farming

The data to be collected for SOSOC_037-2 (Land-use management) include:

- General description of land use and conservation regimes
- Ownership structure
- Land management
- Agricultural extension and consulting
- Governance and policy
- Environmental and sustainability challenges
- Climate change impacts
- Climate change adaptation strategies (political, legal) and technical measures
- Climate change mitigation strategies (political, legal) and technical measures
- Land-use related conflicts

2.2 BASIC method SOSOC_037-1

The BASIC method represents a less elaborate approach for data collection and applies to all eLTER Sites and eLTER Category-2 Platforms. Data will be retrieved from European statistical sources at national, NUTS-2 or NUTS-3 level, and updated annually. Datasets will be retrieved by eLTER RI central services.

Data sources:

- Farm Structure Survey (FSS): <https://ec.europa.eu/eurostat/web/microdata/farm-structure-survey>
- Forestry database: <https://ec.europa.eu/eurostat/web/forestry/database>
- Fisheries database: <https://ec.europa.eu/eurostat/web/fisheries/database>
- Agriculture database: <https://ec.europa.eu/eurostat/web/agriculture/database>

2.3 PRIME method SOSOC_037-1

The PRIME method applies to eLTER Platforms (Category-1 and Category-2) only. In contrast to the BASIC method, which is based on European statistics, data for the PRIME method are collected at a higher spatial resolution (smallest administrative unit available) based on a review of national or regional statistics, with annual temporal resolution.

2.4 BASIC method SOSOC_037-2

The BASIC SOSOC_037-2 will be implemented by eLTER Platforms only. Data will be collected by sampling of expert judgement, implemented every three years at the platform-level.

The expert assessment takes the form of a survey (Questionnaire see Appendix A) and targets eLTER Platform managers (or alternatively, closely affiliated social ecologists or researchers from related fields) as primary respondents. The objective is to answer the included questionnaire in a semi-qualitative manner based on their expert knowledge and local experience, actively incorporating information from existing land-use and Platform-related literature and documents from primary and secondary sources, including qualitative and quantitative observational or experimental, as well as statistical data, where available.

Additionally, respondents are encouraged to actively obtain up to 10 (**but at least 3**) assessments of relevant land-use experts and decision-makers. Land-use experts and decision-makers may be representatives of local land owners and managers associations, representatives of other land-use related sectors (e.g. tourism, or mineral extraction), representatives of local consultancy and administration bodies, nature protection and conservation officials (e.g. from national parks, or conservation authorities), up- and downstream industries and other related business representatives (e.g. suppliers, processing facilities, retailers etc.), local-regional politicians involved in land-use zoning and policy-making, mayors and representatives from local government units, regional development offi-

cers, other local researchers and scientists etc. Experts can be approached to fill out the complete survey, or to provide their specialist knowledge concerning specific sub-questions of the survey.

2.5 PRIME method SOSOC_037-2

The PRIME SOSOC_037-2 will be implemented by eLTSEr Category-1 Platforms only. Data will be collected by conducting a series of structured in-depth interviews (approx. 30, or when saturation is reached) over the course of 3-4 months, implemented every six years at the platform-level (Questionnaire see Appendix B).

This interview series targets primary land users, i.e. owners or managers of local and regional farm and forestry holdings. eLTSEr Platform managers are responsible for creating the sample, conducting the interviews as well as for processing and analysing the resulting data.

Platform managers should use their existing stakeholder networks to set up the sample. Ideally, they should strive to set up a long-term, continuous and balanced interview panel (where the same survey participants may be interviewed repeatedly every six years). Local land-use experts (who may have been involved in collecting data for the BASIC method) should additionally be included in the sampling procedure to add potential survey participants from their personal stakeholder networks.

The sampling technique can be based on a snowball approach, however it is important that the sample is actively balanced and representative of the regions' land-use system and agrarian structure, i.e. include respondents from all major land-use sectors and holding types, e.g. ranging from small-scale family farms over large-scale farm or forestry businesses (e.g. including aristocratic or diocese owners) to large-scale public land owners (e.g. federal forests), as well as underrepresented and potentially marginalised groups.

The interview series should consist of approximately 30 personal in-depth interviews (minimum of 20). Each interview is expected to last around 90 minutes. The interview guide and questionnaire should be followed closely and covered completely; however, there should be enough room for interviewers and respondents to include follow-up questions, additional topics or aspects, or discuss a broader context, if relevant or required for the characterization of a given region.

The questionnaire (interview guide) should be translated and the interview conducted in the native language. The interviews should ideally be conducted in-person (remotely via a video-call or per telephone is acceptable).

The interview solicits more in-depth information about primary land users and their management practices on the farm-level, covering the following thematic areas:

- Demographic of the owner/manager
- Land use and farm structure
- Land management (fertilisers, soil, pests and disease)
- Environmental programs
- Environmental issues and sustainability challenges
- Climate change impacts, adaptation and mitigation
- External conditions, influencing factors

3 Data processing and analysis

The interviews must be recorded using appropriate recording hardware and software including professional microphones to ensure high audio quality (good input volume, no white noise etc.). To minimise background voices and other sounds, please consider the choice of the interview location carefully. If interviews are conducted remotely, please ensure beforehand that respondents are in a quiet setting and use an external microphone/headset.

Audio recordings should be saved in MP3 format with at least 192 kbps. Interviews shall be transcribed from the audio recordings in the native language. Written transcripts must then be translated into English. We encourage the use of professional third-party transcription and translation services or software based on artificial intelligence to save time and personnel costs.

To analyse the interview data, please use an appropriate software package for qualitative content analysis (e.g. Atlas.ti, MaxQDA, NVivo etc.). Coding systems and codebooks need to be delivered together with recordings, transcripts, translations and the final data product (synthesis).

Please apply the deductive coding scheme supplied in the Appendix, covering the main research themes and fields of interest. Additionally, we encourage researchers to apply inductive coding (i.e. derive new genuine codes and code groups from the source material) to capture content that goes beyond the central themes addressed in the questionnaire, such as assessing a region's broader political/economic/biophysical context, additional topics of relevance or supplementary information not covered by the coding scheme.

3.1 Source verification and documentation requirements

Before processing the text, analysts must comprehensively log every source used to complete the survey. This documentation is mandatory for the final triangulation audit and must include:

- **Expert Credentials:** For each external land-use expert and decision-maker consulted (minimum 3, up to 10), record their professional role, organizational affiliation, sector (e.g., conservation, tourism, policy), and specific area of expertise, as well as date and time of the assessment.
- **Literature & Document Tracking:** Document full bibliographic metadata (author, year, title, publishing institution) for all primary and secondary literature utilized.
- **Data Links:** Provide functional, persistent URLs or repository paths for all quantitative, statistical, observational, or experimental datasets referenced.

3.2 Data extraction and tabular consolidation

Analysts will not perform software-based qualitative coding. Instead, data extraction must be executed by systematically transferring information directly from the source material into the pre-supplied formal tables.

- Information must be grouped logically to match the corresponding table dimensions.
- Where data is available from multiple streams (e.g., a platform manager statement, a policy document, and an external expert assessment), the entry in the table must reflect this integrated knowledge.
- Technical terms or specific metrics from non-English sources must be translated into English within the tables, utilizing professional translation software where necessary to ensure consistency.

3.3 Analytical triangulation

The formal tables serve as the primary engine for multi-source triangulation. Analysts must explicitly cross-verify the expert knowledge against the literature and (statistical) datasets utilized. When filling out the tables, analysts must look for:

- **Convergence:** Agreement across the different source types, which strengthens the validity of the profile.
- **Divergence:** Discrepancies or conflicting perspectives between official statistics, local management literature, and decision-maker assessments. These variations must not be omitted; they must be clearly noted within the tables to capture the true complexity of the region's biophysical and socio-economic context.

3.4 Template-based narrative profiling

Once the formal tables are complete and fully verified, analysts must synthesize the findings into a coherent narrative profile, strictly adhering to the pre-supplied narrative template. This profile must translate the structured data from the tables into a fluid, holistic description of the eLTSE Platform. The narrative must explicitly account for the broader political, economic, and biophysical context, drawing directly from the documented evidence and the triangulation findings established in the tables.

4 Reporting format and metadata

Reporting is conducted in accordance with the rules and conventions specified in Peterseil and Geiger (2020)¹ regarding file naming, file formats, and metadata scope. The general and the specific metadata for SOSOC_037 include the following details set out in Tables 3 and 4.

Table 3: General Metadata for Standard Observations

Field	Description	Notes
SO name/code	Identifier for the standard observation	Mandatory
Included variables	List of all sub-variables covered by the standard observation	For example, SOSOC_037-1, SOSOC_037-2
Data collection	Classification of the data sourcing method	Externally sourced or internally collected
Contact person	Name, affiliation, and contact details	If applicable
Keywords	Relevant search terms and classification tags	Used for indexing and discovery

Table 4: Variable-Specific Metadata for the BASIC and PRIME Methods

Field	Description	Notes
Identification Fields		
Variable name	Descriptive title of the variable	Required for all variables
Unit	Unit of measurement	For example, hectares, number, percentage
Resolution Fields		
Legacy data available	Availability of historical data	Yes/no; include the starting date where applicable
Temporal resolution	Frequency of data collection or update	BASIC: every 3 years; PRIME: every 6 years
Spatial resolution	Geographic level at which the data are available	Area, NUTS level, or administrative unit
Data Format Fields		

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¹Document is currently under revision.

Table 4 continued from previous page

Field	Description	Notes
Data type	General classification of the data	Tabular, vector, raster, image, text, audio, etc. CSV/XLS, PDF, TIFF, GPKG, SHP, DOC, analogue, etc. Yes/no
File format	Technical file format or extension	
Geo-reference	Indicates whether the data are geographically referenced	
Collection Method Fields		
Data collection	Classification of the data sourcing method	Externally sourced or internally collected
Data holder	Institution responsible for holding or maintaining the data	Institution, agency, or ministry
Data source	Location or source from which the data can be obtained	URL or physical address, where applicable
Specific method	Method used to collect or generate the data	Remote sensing, statistical census, survey, expert judgement, model simulation, interview panel, etc.
Method details	Reference to detailed methodological documentation	URL to a detailed description, where available
Processing Fields		
Data harmonization	Procedures used to standardize data across sources	Harmonization of units, spatial resolution, temporal resolution, classifications, etc.
Data processing	Transformations or analytical procedures applied to the data	Spatial clipping, mathematical operations, statistical analyses, qualitative analyses, etc.
Access and Management Fields		
Contact person	Point of contact for the dataset	Name, affiliation, and contact details
Access	Mode through which the data can be accessed	On-site only, online access, direct download, etc.
Access cost	Cost associated with accessing the data	Free/paid; per dataset, subscription, or price range
Terms of use	Conditions governing the permitted use of the data	Authorized users, permitted purposes, and usage restrictions
Confidentiality	Sensitivity or confidentiality level	Ranging from open data to highly confidential
Data contract	Indicates whether a formal data-sharing agreement is required	Yes/no

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Table 4 continued from previous page

Field	Description	Notes
Keywords	Terms used to describe and classify the dataset	Search terms and classification tags
Additional comment	Supplementary information not covered by the other fields	Notes, explanations, or clarifications

References

Peterseil, J. and S. Geiger (2020). *eLTER PLUS – Field Specification for data reporting (1.0)*. Zenodo [Technical note]. Version 1.0. DOI: [10.5281/zenodo.6373410](https://doi.org/10.5281/zenodo.6373410).

A SOSOC_037-2 BASIC Questionnaire

Instructions:

Please use the tables below to collect the information. Wherever possible, please directly underpin the qualitative description with quantitative data (directly include quantitative data in the table/data product), or at least indicate where additional quantitative data can be found (either link to part 037-1 in this protocol, or state other external links to relevant data sources).

Please complete all sections below. Print multiple pages if more space is needed. Return completed questionnaire to your regional eLTER coordinator.

1. Relevant Land-use Actors and Stakeholders

1.1 Business and Industry

Examples include landowners and land managers representing different types of agricultural and forestry holdings, upstream industries and suppliers, downstream processing industries, retail and sales, tourism operations, and other important land-use-related commercial operations.

Stakeholder 1	Functions, resources, power, interest, engagement degree
Stakeholder 2	
Stakeholder N	

1.2 Governance and Policy

Examples include relevant local-to-national policy-making and governance bodies, such as local mayors, regional governments, state and public authorities, administrations and environmental agencies, and regional development initiatives such as LEADER programmes.

Stakeholder 1	Functions, resources, power, interest, engagement degree
Stakeholder 2	
Stakeholder N	

1.3 Consulting and Representation of Interests

Examples include chambers of agriculture and other public or private consultancy bodies; farmers', foresters', and landowners' representatives; political interest groups and other lobbying organisations, such as hunters' associations; environmental NGOs; civil society organisations; educational initiatives; relevant media outlets; and the wider public.

Stakeholder 1	Functions, resources, power, interest, engagement degree
Stakeholder 2	
Stakeholder N	

1.4 Science and Research

Examples include research-performing organisations, national parks and conservation programmes, private research institutes, scientific networks, public initiatives such as citizen-science organisations,

individual scientists, co-located monitoring and observation networks, and other research infrastructures in the social and environmental domains.

Stakeholder 1	Functions, resources, power, interest, engagement degree
Stakeholder 2	
Stakeholder N	

2. Specificities of the Land-use System

2.1 General Description of Land-use and Conservation

Describe the most important crop, livestock, and forest types; prevailing management intensities, such as fertilisation, pesticide use, livestock units per area, meadow cuts per season, timber-harvest intensity, and tillage systems; irrigation versus rainfed management; conservation objectives and measures; and existing infrastructure, including urban, mobility, tourism, and industrial infrastructure.

Cropland	Grassland	Forest	Livestock	Protected Areas	Others

2.2 Land Tenure and Ownership

How are land tenure and ownership structured in the region (e.g. public ownership, private ownership, church holdings, foreign investors, etc.)?

2.3 Land Management

Who manages the land? For example, is it managed by the landowners themselves, tenants, family members, seasonal workers, cooperatives, or external service providers?

2.4 Agricultural Extension, Land-use Consulting, Lobbying, and Representation of Interests

Who are the most important actors? What services do they offer, and to whom?

2.5 Governance

Who are the most important regional, national, and European governance actors, institutions, formal bodies, lobbying organisations, and interest groups?

What is their mandate, and which parts of the land-use system and legislation or regulation does each actor govern (e.g. at the municipality, province, state, national, or EU level)?

2.6 Others

Please add any other related and relevant aspects of the land-use system.

3. Environmental and Sustainability Challenges

3.1

What are currently the most pressing environmental and sustainability challenges connected to the different land-use types (e.g. biotic or abiotic pressures, eutrophication, biodiversity loss, or socio-

economic sustainability)?

3.2

What are the most important positive and negative impacts of climate change?

3.3

What are the most important current and future climate-change adaptation strategies, including political and legal strategies as well as technical and agronomic measures?

3.4

What are the most important current and future climate-change mitigation strategies, including political and legal strategies as well as technical and agronomic measures?

3.5

What are the most important land-use-related conflicts, both within and between different actor groups and land-use sectors? Which actors are involved?

3.6

Please select the most pressing land-use challenge or conflict described above and rate the interest and influence of the central stakeholders on a scale from 1 (low) to 5 (high).

4. Information Sources and Expert Credentials

4.1 Information Sources

What are the sources of this information (e.g. own judgement, personal communication with experts, scientific literature, other documents, statistical data, or experimental data)?

Please include expert credentials and cite relevant literature and data sources.

4.2 External Experts

Please provide the credentials of other experts who contributed to this assessment.

External Expert 1	
Name:	
Affiliation:	
Function:	
Date of communication:	
Type of communication:	
Thematic area of contribution:	

B SOSOC_037-2 Prime Questionnaire

1. Overview, Data Handling and Legal Information

1. Presentation of the research question and the project
2. Note on handling the data/anonymity
3. Course of the interview: recording, duration, topic sections
4. Signature/confirmation (written)

2. Farm Manager

1. (Name), age, sex
2. What (agricultural) education or training have you completed?
3. How long have you been farming, in general?
4. When did you become the owner/manager of this farm?
 - a) Did you take over this farm from your parents?
 - b) If yes, how long ago?
5. When do you expect to retire?
 - a) Do you already have a successor?
 - b) If yes, internal/external to your family?

3. Farm Structure and Management

1. Where is the farm (house) located (municipality, height a.s.l., surroundings)?
 - a) At what distance from the farmhouse are your plots located?
 - b) How easily or with what difficulty are these plots accessible?
 - c) Do you own all the land you manage, or do you currently rent land?
 - i) If you rent land, how large is the rented area?
 - d) When buying and/or renting new plots:
 - i) What are the most important criteria?
 - ii) What would you consider the maximum acceptable distance between new plots and the farmhouse?
 - e) In your opinion, how would you describe the current trend in the availability of arable land, grassland, or forest for renting or buying in your region?
2. What is the total size of your farm (managed area)?
3. What types of agriculture do you practice on the farm (arable farming, grassland/livestock, forestry, other)?
 - a) How large are the areas of each land-use type?
 - b) Please describe each one in more detail (crop or grass species, management intensities, livestock species, etc.).
4. Do you manage your land conventionally, according to integrated production principles, organically, in transition to organic farming, or using a mixture of these approaches?
 - a) Which parts are managed under which system, and in what proportions?
5. Is running the farm your primary or a secondary occupation?

6. Do you have diversified income sources on your farm?
 - a) Diversification within land-use types, e.g. many different crops or products
 - b) Diversification through additional services, e.g. rural tourism
7. What types of infrastructure do you have on your farm (stables, irrigation systems, extensive road networks, large machinery, tourist infrastructure, etc.)?
 - a) What were the most recent major investments made on the farm?
 - b) Approximately how large were these investments?
 - c) Why did you decide to make these investments?

4. Past Changes to Farm Structure or Management

1. Have you implemented any major changes in the orientation of the farm since you took over?
 - a) Changes in land-use types or conversion from one land-use type to another
 - b) Changes in crop varieties, cultivars, livestock, etc.
 - c) Changes in farm size (i.e. selling, buying, or renting land)
 - d) Changes in farming methods, management techniques, management intensity, or irrigation
 - e) Diversification or addition of new on-farm or off-farm services or products
 - f) Purchase or rental of new machinery, infrastructure, or other forms of mechanisation
 - g) Changes in landscape structure
2. What were the main drivers and influencing factors behind these changes?
3. How do you personally feel when certain forms of traditional farming that were practised in the past have to be abandoned?

5. Future Changes to Farm Structure or Management

1. Are you planning any major changes on your farm in the near future?
 - a) Changes in cultivated area, cultivars or breeds, land-use types, management strategies, management intensity, irrigation, etc.
 - b) Changes to farm infrastructure, new buildings, or other major investments
2. If yes, what are the main drivers and influencing factors behind these changes?
 - a) Economic pressures, changes in demand, or market fluctuations
 - b) New laws and regulations
 - c) Biotic pressures such as weeds, pests, or diseases
 - d) Climatic or other abiotic factors
 - e) Changes in your own attitudes or values, or public or peer pressure
3. Are you planning to expand or reduce the size of your farm in the future through buying, selling, or renting land?
 - a) If yes, why? Which factors are decisive for you?
4. How would you rate your openness to implementing new farming techniques, growing new crops, or using new machinery or digital tools?

6. Fertilizer Management

1. How would you describe your fertilizer management?
 - a) What types of fertilizer do you use (mineral fertilizer, farm manure, green manure, etc.)?

- b) How often do you apply fertilizer, and at what times?
 - c) How much fertilizer do you apply per hectare and year?
- 2. Do you achieve a zero manure balance on your farm, or do you have either a manure surplus or a need to purchase fertilizer externally?
- 3. What do you do if you have too much or too little manure?
- 4. On average, how much money have you spent on fertilization during the past five years?
- 5. Have you implemented any changes in fertilizer management on your farm during the past five years?
 - a) If yes, what were the main factors influencing these changes?

7. Soil Management

- 1. How do you manage your soils?
- 2. Has the use of machinery on your farm changed since you took over?
 - a) Have you reduced the use of heavy machinery?
- 3. Do you implement any measures to prevent or reduce soil erosion?
 - a) Do you practise conservation tillage on your plots?
- 4. Do you apply any measures to improve soil health?
 - a) Introduction of microorganisms
 - b) Measures to increase soil organic carbon
 - c) Other measures
- 5. Do you apply any other soil additives besides fertilizers or pesticides?

8. Weed and Pest Control

- 1. What are the main weed and pest pressures on your farm?
 - a) Where and when do they occur in particular?
- 2. How do you manage weeds and pests on your farm?
 - a) On average, how much money have you spent on weed and pest control during the past five years?
- 3. Has your weed and pest management changed over time?
 - a) If yes, how?

9. Ecological Compensation Areas / Fallow / Land Abandonment

- 1. What role do ecological compensation areas play on your farm?
- 2. What share of your farm's land lies fallow each year?
 - a) Which land-use types lie fallow more or less often, and why?
- 3. Have you abandoned, i.e. stopped managing, any land during the past five years?
 - a) If yes, which land, and why?
 - b) What is happening to this land over time?
 - c) Are you planning to lease or sell it?
- 4. Have you afforested or reforested any land during the past five years?
 - a) If yes, which land, and why?

10. Environmental Protection

1. In your opinion, what role does environmental protection (i.e. nature and biodiversity conservation, reduction of environmental impacts, and climate change mitigation) play in the agricultural sector in general?
 - a) What are the main reasons for or against implementing specific environmental protection or conservation measures?
2. What role does environmental protection play specifically on your farm?
 - a) Which measures do you apply (e.g. ecological compensation areas, conservation tillage, organic management, reduced herbicide or pesticide use, renunciation of silage, etc.)?
 - b) Why did you implement these measures?
 - c) Do you observe any immediate effects resulting from these measures?
 - d) Have these measures improved or impaired agricultural production?
 - e) Have these measures led to further developments on your farm or within the region?
3. Do you participate in any environmental protection programmes?
 - a) If yes, what motivated you to participate?
4. If your farm is managed conventionally or intensively, what are the main reasons for not switching to organic farming?
Alternatively, if your farm is managed organically or very extensively, what were the main reasons for adopting organic or extensive farming?

11. Sustainability Challenges

1. From your perspective, what are the most pressing sustainability challenges in the region?
 - a) Is your farm directly affected by any of these challenges?
 - i) Do you implement any measures on your farm to counteract these impacts?
 - ii) Alternatively, if your farm is not directly affected, do you implement any measures to address these challenges in a broader sense?

12. Climate Change

1. Do you observe any impacts of climate change and global warming that affect land users in the region?
 - a) Do you feel that your perception of climate-related risks has changed during the past five years?
 - b) In your opinion, who are the most vulnerable actors in this regard, and why?
2. Are you aware of any official climate change adaptation strategies, e.g. by local authorities or national ministries?
 - a) If yes, do you consider these official climate change adaptation strategies effective and meaningful?
 - i) If not, what would you change?
3. Is your own farm directly affected by any of these climate change impacts?
4. Have you already implemented any adaptation measures in response to actual or potential climate change impacts?
 - a) If yes, which measures?
 - b) Did you receive any dedicated support for implementing these measures?
 - i) Funding

- ii) Material support
 - iii) Training
 - iv) If yes, are you satisfied with the level of support available to you?
5. Are you also implementing any specific climate change mitigation measures?
- a) If yes, which measures?
 - i) What were the main reasons for deciding to implement these measures?

Under Review

C Ethics and data management

Informed Consent

Platform managers must ensure that all external land-use experts and decision-makers provide explicit, documented informed consent prior to participating. This process must clearly communicate the scope of the project, how their professional inputs will be utilized in the formal tables and narrative profiles, and their right to withdraw at any stage without consequence.

Confidentiality, Anonymization

To protect respondent privacy, Platform managers must strictly remove or securely obfuscate all personal identifying details before data is compiled into the final tables and narrative templates. External experts and decision-makers must be referenced exclusively by generalized structural attributes—such as their broad sector, organizational type, and region—ensuring their specific identities cannot be reverse-engineered.

Data Recording and Record Keeping

Every step of the extraction and triangulation process must be backed by a clear, chronological audit trail managed by the Platform managers. All original raw materials, including completed questionnaires, expert correspondence, and data links, must be organized in standardized internal folders with consistent file-naming conventions to ensure full verification during the project review.

Data Protection, Archiving

All compiled tables, narrative profiles, and associated source documentation must be stored securely on access-controlled infrastructure in full compliance with the European General Data Regulation (GDPR). Upon project completion, Platform managers must deposit the final data products and verified metadata logs into a secure, long-term digital archive to preserve the findings for future socio-ecological research.