



Standard Observation SOSOC_114

Livestock

Version 0.3

October 12, 2026

NOTE: THIS PROTOCOL IS STILL UNDER REVIEW.



Main Authors

Bastian Hörmann¹, Veronika Gaube¹, Isabelle Charpentier², Lubos Halada³

Review Team

The protocol has been reviewed mainly for stylistic aspects.

¹University of Natural Resources and Life Sciences (BOKU), Department of Economics and Social Sciences (WiSo), Institute of Social Ecology (SEC), Vienna, Austria

²Centre National de la Recherche Scientifique (CNRS), Laboratoire des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie (ICube), Strasbourg, France

³Institute of Landscape Ecology, Slovak Academy of Sciences, Bratislava, Slovakia

The eLTER Standard Observation protocol can be cited as:

Hörmann, B., V. Gaube, I. Charpentier, L. Halada (2026): eLTER Standard Observation protocol SOSOC_114 – Livestock. Version 0.2

**Prepared under contract from the European Commission
Grant agreement No. 871128
EU Horizon 2020 Research and Innovation action**

Project acronym: **eLTER PLUS**
Project full title: **European long-term ecosystem, critical zone and socio-ecological systems research infrastructure PLUS**
Start of the project: Feb 2020
Duration of the project: 60 months
Project coordinator: Jaana Bäck
University of Helsinki, Finland
<https://elter-ri.eu/elter-plus>

By the end of January 2026 the further work on the protocol was handed over to and executed by the provisional eLTER Head Office and Topic Centre on Interoperability of the emerging eLTER ERIC.

Version	Status	Date	Authors
0.1	Final draft	Dec 2024	main authors
0.2	Restructured, reformatted	Aug 2026	S. Zacharias
0.3	Revised, Appendix Ethics added	Oct 2026	B. Hörmann

SO variable overview

Habitat:

Applies to all eLTER habitat groups where livestock farming is present (excludes areas without agricultural activity)

Variable(s):

- Livestock statistics (SOSOC_114-1)
 - Land Use & Livestock Density
 - Animal Head Counts (Populations)
 - Production
 - Slaughter & Outputs
 - Manure & Environmental Management
 - Livestock Economics.
- Livestock management (SOSOC_114-2)
 - General description of the livestock sector
 - Past/future changes
 - Feed management
 - Environmental and sustainability challenges
 - Climate change impacts
 - Adaptation/mitigation strategies

Contents

1	Introduction	1
2	Method	1
2.1	Livestock statistics (SOSOC_114-1)	1
2.2	Livestock management (SOSOC_114-2)	2
3	Reporting format and metadata	5
A	SOSOC_114-2 BASIC Questionnaire	8
B	SOSOC_114-2 PRIME Questionnaire	13
C	Ethics and data management	15

1 Introduction

In many regions the livestock sector is an important and integral part of land use, having broad implications for environmental, social and economic sustainability as well as climate change adaptation and mitigation. There are many different aspects to these sustainability relations, for example concerning the role of feed management, manure management, emissions, tele-couplings and integrated market dynamics, animal welfare etc. More detailed and harmonised data and knowledge about the livestock sector across regions is, however, rather scarce.

The Standard Observation "Livestock" aims to address this shortfall and to provide a compilation of the most relevant existing statistical data as well as more in-depth (semi-) qualitative data on the livestock system on the regional as well as the farm-level. It accordingly consists of two parts: SOSOC_114-1 Livestock statistics, and SOSOC_114-2 Livestock management. SOSOC_114-1 information is retrieved from official European (BASIC) and national/regional (PRIME) statistical sources. SOSOC_114-2 is based on a survey approach including expert judgement (BASIC, Platforms only) and qualitative in-depth interviews (PRIME).

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 livestock systems between eLTSE Platforms.

SOSOC_114 is a mandatory Standard Observation for all terrestrial eLTER Sites and Platforms where livestock farming is present while for Sites only data on Livestock statistics (SOSOC_114-1 are required) and the data for corresponding Sites are provided via a centralized eLTER service following the BASIC method.

2 Method

2.1 Livestock statistics (SOSOC_114-1)

2.1.1 Thematic scope

The data to be collected for *Livestock statistics* include:

- Land Use & Livestock Density
 - Livestock density (ef_fsi_lskd, all variables): This indicator calculates the ratio of aggregated livestock units (LSU) per hectare of utilized agricultural area to evaluate environmental and stocking pressure. It evaluates how intensively farmland is being used for grazing or animal husbandry across regional boundaries.
 - Livestock units by animal groups and size of farm (ef_fsi_lsk, all variables): This census-driven dataset standardizes different animal species into standardized units based on feed and nutrient requirements. It allows analysts to group livestock holdings by physical farm scale and total animal presence to measure land-use distribution.
- Animal Head Counts (Populations)
 - Livestock population: bovines, pigs, sheep, and goats (apro_mt_ls..., all variables): This series contains the primary national surveys that track the raw head count numbers for the major animal categories in Europe twice per year. It is split into individual matrices (such as apro_mt_lscatl for cattle and apro_mt_lspig for pigs) to gauge structural livestock inventory.
 - Animal populations by NUTS 2 regions (tgs00045 / apro_mt_ls_r, all variables): This dataset tracks animal head counts across specific regional territories inside the EU rather than just at a national level. It helps analysts visualize geographic patterns and the localized clustering of intensive livestock farming.
- Production, Slaughter & Outputs

- Slaughtering in slaughterhouses (apro_mt_pann, all variables): This dataset delivers the official physical output metrics for the livestock sector by capturing the number of animals slaughtered and total carcass weight volume. It covers beef, pork, poultry, and ovine meat processing to map domestic meat production.
- Production of milk and milk products on the farm (apro_mk_farm, all variables): This database tracks secondary livestock output by measuring total raw milk yields, farm usage, and delivery quantities to dairy enterprises. It isolates herd productivity rates by detailing milk output from dairy cows, ewes, and goats.
- **Manure & Environmental Management**
 - Manure storage facilities by agricultural area and farm type (ef_mp_ms, all variables): This dataset outlines the infrastructure used across EU farms to hold and manage organic fertilizers produced by farm animals. It helps model ammonia and methane emissions by classifying storage systems into categories like solid dung heaps or liquid slurry tanks.
 - Import and export of manure (ef_mp_mne, all variables): This specialized table captures the environmental trade and displacement of animal manure between individual farm holdings and local NUTS regions. It tracks how nutrients are distributed to monitor potential soil over-saturation and compliance with European nitrates directives.
- **Livestock Economics**
 - Economic accounts for agriculture - Values at current prices (aact_eaa01, all variables): This specific component of the agricultural economic account calculates the direct gross monetary value generated by animal production lines. It isolates output values for live animals, meat products, and animal byproducts to assess the macro-financial health of animal farming.
 - Agricultural prices and price indices (apri_pi, all variables): This index system monitors real-time and historical price shifts for both live animals and animal products at the farm-gate level. It provides the primary data layer used to evaluate real price inflation and sector profitability margins over time.

2.1.2 BASIC method – Sites and Platforms

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 (*cookie-cutting*) at the NUTS-2 or NUTS-3 level. Datasets will be retrieved and updated annually by eLTER RI central services.

2.1.3 PRIME method – Platforms only

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) based on a review of national or regional statistics, with annual temporal resolution.

2.2 Livestock management (SOSOC_114-2)

2.2.1 Thematic scope

The data to be collected for *Livestock management* include:

- General description of the livestock sector
- Past changes in the livestock sector
- Anticipated future changes in the livestock sector
- Feed management
- Current environmental and sustainability challenges in the livestock sector
- Climate change impacts on the livestock sector, adaptation/mitigation strategies

2.2.2 BASIC method – Platforms only

Data will be collected by sampling of expert judgement based on surveys and interviews, implemented every three years at the platform-level.

Data collection and sampling

- **Respondents:** The survey targets eLTSER Platform managers as primary respondents. Alternatively, closely affiliated social ecologists or researchers from related fields may serve as respondents.
- **Approach:** Respondents complete the questionnaire (Appendix A) using a semi-qualitative approach based on their expert knowledge and local experience. They should actively incorporate information from:
 - Existing land-use and Platform-related literature;
 - Documents from primary and secondary sources (qualitative and quantitative observational or experimental data, as well as statistical data, where available).
- **Expert Consultation:** Respondents are encouraged to obtain assessments from 3 to 10 relevant land-use experts and decision-makers. Examples include:
 - Representatives of local landowner and manager associations;
 - Representatives of land-use sectors (e.g., tourism, mineral extraction);
 - Local consultancy and administration bodies;
 - Nature protection and conservation officials (e.g., national parks, conservation authorities);
 - Upstream and downstream industries (e.g., suppliers, processing facilities, retailers);
 - Local-regional politicians involved in land-use zoning and policy-making;
 - Mayors and representatives from local government units;
 - Regional development officers;
 - Other local researchers and scientists.
- **Engagement Mode:** Experts may be approached to either complete the full survey or provide specialist knowledge on specific sub-questions.

2.2.3 PRIME method – Platforms Category-1 only

Data will be collected by conducting a series of structured in-depth interviews (Questionnaire Appendix B) over the course of 3-4 months, implemented every six years at the Platform level.

Data collection and sampling

- **Responsibilities:** eLTSER Platform managers are responsible for creating the sample, conducting the interviews, and processing and analyzing the resulting data.
- **Sampling Procedure:**
 - Platform managers should use existing stakeholder networks to establish the sample;
 - Ideally, set up a **long-term, continuous, and balanced interview panel** where the same participants may be reinterviewed every six years;
 - Include local land-use experts (potentially those involved in BASIC method data collection) to expand participant recruitment through their personal networks;
 - A **snowball sampling approach** is permissible, provided the sample remains actively balanced and representative of the region's livestock systems and structure (i.e., all major livestock types and management systems must be included).
- **Interview Design:**
 - **Volume:** Approximately 30 personal in-depth interviews (minimum of 20);
 - **Duration:** Around 90 minutes per interview;

- **Structure:** The interview guide and questionnaire should be followed closely and covered completely; however, sufficient flexibility must remain for:
 - * Follow-up questions;
 - * Additional topics or aspects;
 - * Broader contextual discussion, if relevant for regional characterization.
- **Implementation:**
 - The questionnaire (interview guide) must be translated, and interviews conducted in the **native language**;
 - Interviews should ideally be **conducted in-person**; remote options (video-call or telephone) are acceptable when necessary.

Data processing and analysis

- **Audio Recording Requirements:**
 - Use appropriate recording hardware and software, including professional microphones, to ensure high audio quality (adequate input volume, minimal background noise);
 - Select interview locations carefully to minimize background voices and ambient sounds;
 - For remote interviews, verify that respondents are in a quiet setting and use external microphones/headsets prior to conducting the session.
- **File Specifications:**
 - Audio recordings must be saved in **MP3 format** with a minimum bitrate of **192 kbps**;
 - Interviews shall be **transcribed from audio recordings in the native language**;
 - Written transcripts must then be **translated into English**.
- **Transcription and Translation Services:**
 - Software based on artificial intelligence may be used to reduce time and personnel costs;
 - Professional third-party transcription and translation services are also acceptable.
- **Data Analysis:**
 - Use appropriate qualitative content analysis software (e.g., Atlas.ti, MaxQDA, NVivo);
 - Deliver coding systems and codebooks together with:
 - * Recordings;
 - * Transcripts;
 - * Translations;
 - * Final data product (synthesis).
- **Coding Scheme:**
 - Apply the **deductive coding scheme** supplied in the Appendix, covering main research themes and fields of interest;
 - Researchers are encouraged to apply **inductive coding** (i.e., create new genuine codes and code groups) to capture content beyond the central themes addressed in the questionnaire, such as:
 - * A region's broader political/economic/biophysical context;
 - * Additional topics of relevance;
 - * Supplementary information not covered by the coding scheme.

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.

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.

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.

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 eLTSEER 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.

3 Reporting format and metadata

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 SOSOC_114-1 and SOSOC114-2.

- **Livestock sector, structure:** Qualitative and quantitative description of the livestock sector, its structure, and production systems;
- **Livestock management:** Qualitative and quantitative description and analysis of key livestock management factors;
- **Livestock challenges:** Identification and description of critical livestock sustainability challenges related to environmental, social, economic, political factors, and climate change.

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 SOATM_114 include the following details set out in Tables 1 and 2.

Table 1: 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_114-1 and SOSOC_114-2
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 2: 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, tonnes, number of heads, or percentage
Legacy data available	Availability of historical data	Yes/no; include the starting date where applicable
Resolution Fields		
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		
Data type	General classification of the data	Tabular, vector, raster, image, text, audio, etc.
File format	Technical file format or extension	CSV/XLS, PDF, TIFF, GPKG, SHP, DOC, analogue, etc.
Geo-reference	Indicates whether the data are geographically referenced	Yes/no
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

Continued on next page

¹Document is currently under revision.

Table 2 continued

Field	Description	Notes
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
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_114-2 BASIC Questionnaire

Characteristics and Specificities of the Livestock Sector

Instructions:

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 _114-1 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. Characteristics and Specificities of the Livestock Sector

1.1 General Description of the Livestock Sector

Most important livestock farm types and characteristics, structure of livestock sector, species, husbandry and management systems, management intensities, organic production and animal-welfare, production systems and value chains etc.

Question	Response
What are the main livestock farm types in your region?	
Describe the structure of the livestock sector (farm sizes, ownership patterns)?	
Which species and breeds are predominantly kept?	
What are the predominant husbandry and management systems?	
Management intensities (extensive, semi-intensive, intensive)?	
Organic production prevalence and animal-welfare standards?	
Production systems and value chains?	
Quantitative data sources (if available):	

1.2 Past Changes in the Livestock Sector

Changes in farm sizes/head numbers, species and breeds, production systems, management intensities and welfare aspects, infrastructures, value chains and market integration, regulations etc.

Question	Response
How have farm sizes changed over the past decade?	
Changes in head numbers for key live-stock categories?	
Shifts in species and breeds?	
Changes in production systems and management intensities?	
Infrastructure developments or declines?	
Value chain and market integration changes?	
Regulatory changes affecting the sector?	
Quantitative data sources (if available):	

1.3 Anticipated Future Changes in the Livestock Sector

Changes in farm sizes/head numbers, species and breeds, production systems, management intensities and welfare aspects, infrastructures, value chains and market integration, regulations etc.

Question	Response
Expected changes in farm sizes?	
Projected changes in head numbers?	
Anticipated shifts in species and breeds?	
Future production system trends?	
Infrastructure development plans?	
Expected value chain/market integration evolution?	
Planned or anticipated regulatory changes?	
Quantitative projections or forecasts (if available):	

1.4 Feed Management

Primary types of livestock feed (e.g., grazing, silage, cereals/soy etc.), produced on-farm, sourced regionally/globally etc.

Question	Response
What are the primary types of live-stock feed used?	
Percentage of feed produced on-farm vs. purchased?	
Regional vs. global sourcing patterns?	

Question	Response
Feed security and supply chain vulnerabilities?	
Expected changes in feed management?	
Quantitative data (feed quantities, origins):	

2. Environmental and Sustainability Challenges

2.1 Current Environmental and Sustainability Challenges

Including actual/potential strategies and measures on the (i) farm-level and (ii) regional level to counteract these challenges.

Challenge Type	Description	Farm-Level Measures	Regional Measures

2.2 Climate Change Impacts on the Livestock Sector

Impact Category	Description	Observed Effects	Anticipated Effects

2.3 Climate Change Adaptation Strategies

Political, legal strategies and technical/agronomic measures (current and future).

Strategy Type	Description	Status	Timeline

2.4 Climate Change Mitigation Strategies

Political, legal strategies and technical/agronomic measures (current and future).

Strategy Type	Description	Status	Timeline

3. Information Sources and Expert Credentials

3.1 Sources of Information

What are the sources for this information (own judgement, personal communication with experts, scientific literature, other documents, statistical or experimental data etc.)? Please include expert credentials and cite literature and data sources.

Source Type	Description/Citation	Relevance
Own judgement		
Personal communication with experts		
Scientific literature		
Other documents		
Statistical data		
Experimental data		
Other (please specify)		

3.2 External Experts Involved in This Assessment

Please provide the credentials of other experts who were part of this assessment:

External Expert 1

Field	Details
Name:	
Affiliation:	
Function/Role:	
Date of communication:	
Type of communication:	
Thematic area of contribution:	

External Expert 2

Field	Details
Name:	
Affiliation:	
Function/Role:	
Date of communication:	
Type of communication:	
Thematic area of enquiry:	

External Expert 3

Field	Details
Name:	
Affiliation:	
Function/Role:	
Date of communication:	
Type of communication:	
Thematic area of contribution:	

Additional Experts (continue on separate page if needed)

Field	Details
Name:	
Affiliation:	
Function/Role:	
Date of communication:	
Type of communication:	
Thematic area of contribution:	

4. Submission Information

Field	Details
Platform Name:	
Respondent Name:	
Respondent Affiliation:	
Date of completion:	
Contact Email:	
Reviewer(s) (if applicable):	
Date of expert consultations:	

B SOSOC_114-2 PRIME Questionnaire

Livestock Farm Assessment Questionnaire

1. What is the current livestock situation on your farm?
 - (a) What species do you have on your farm, and how many heads each?
 - i. Please also name the specific breeds that you have.
 - ii. What kind of livestock production system do you have in place? Which products do you produce/sell?
 - iii. Which parts of the value chain do you cover yourself?
 - iv. Who are other actors in the extended livestock sector that you are most dependent on (e.g. upstream or downstream industries, e.g. suppliers, processing, retail/trade, policy actors etc.)?
 - (b) How much area do you utilize for livestock production?
 - i. for grazing/herding
 - ii. for feed production
 - iii. other
 - (c) How intensively do you manage your livestock (e.g. intensive/indoor, semi-intensive, extensive/free-range etc.)?
 - (d) Is your livestock farm certified organic?
 - (e) Please describe the role of animal welfare in your livestock system.
 - (f) How has the livestock and its management changed in the past?
 - i. since you took over the farm?
 - ii. during the last 5 years?
2. What is the general feed management like on your farm (grazing, silage from on-farm grasslands, cereals from on-farm croplands, off-farm feed/cereals etc.)?
 - (a) How much of your feed requirements can you cover internally, how much do you purchase externally?
 - (b) What type of feed do you primarily buy externally?
 - i. Why, and where from?
 - ii. Is the land of origin and/or production intensity a decisive factor for your purchase decision?
 - (c) In your opinion, will the feed management on your farm change in the future?
 - i. If yes, how?
 - (d) Do you anticipate to cover future feed requirements internally?
3. Do you plan for any substantial changes to the livestock on your farm (e.g. other species/breeds, more/less heads, different production system, changes in husbandry, feed management, infrastructure investments etc.)?
 - (a) Which factors are decisive for changes to the livestock management or numbers on your farm?
4. In your perspective, what are the most pressing sustainability challenges in the livestock sector in the region?
 - (a) Is your farm impacted directly by any of these challenges?
 - i. Do you implement any measures on your farm to counteract these impacts?
 - ii. Or, alternatively, if your farm is not impacted directly, do you implement any measures to counteract these challenges in a broader sense?
 - (b) Is the livestock sector in the region impacted by climate change and global warming?
 - (c) Is your own livestock farm directly affected by any of these climate change impacts?
 - (d) Did you already implement any adaptation measures in reaction to actual (or potential) climate change impacts?
 - i. If yes, which ones?

- ii. For the implementation of these measures, did you receive any special dedicated support?
 - A. funding?
 - B. material support?
 - C. training?
 - D. If yes, are you satisfied with the amount of support that is available to you?
- (e) Are you aware of any official adaptation strategies, e.g. by local authorities, or national ministries?
- (f) Are you also aware of any climate change mitigation strategies and/or measures connected to the livestock and management on your farm?
 - i. If yes, which ones?
 - A. Did you already, or are you anticipating in the future to implement any of these measures?

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.