CLIMATE SMART ADVISORS

Data Management Plan

Deliverable 9.1

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List of Abbreviations

AC	Associated countries
C&D	Communication and Dissemination
CFD	Climate Farm Demo
CoDIE	Co-Design Innovation Experiment
CoP	Community of Practice
CS	Climate smart
CSA	Climate Smart Advisor
(CS) AKIS	(Climate Smart) Agricultural Knowledge and Innovation Systems
(CS) AS	(Climate Smart) Advisory Services
(CS) ASP	(Climate Smart) Advisory Service Providers
CSC	Climate Smart Coach
CSF	Climate Smart Farming
DEC	Dissemination, exploitation and communication
DLA	Dynamic Learning Agenda
GA	General Assembly
GHG	Greenhouse Gas
MA	Multi-actor
ME&L	Monitoring, evaluation and learning
MIP	multi-actor innovation project
MS	Member States
NC	National Coordinator
PA	Practice Abstracts
P2P	Peer-to-peer
PDF	Pilot demonstration farm
PIP	Projects, flagship Initiatives and Policy makers

TL	Thematic Leader
TTT	Train the Trainer
GDPR	General Data Protection Regulation
EC	European Commission
HE	Horizon Europe
URL	Uniform Resource Locators
HTTP	Hypertext Transfer Protocol

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Revision history

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Abstract

This document represents the initial iteration of the Data Management Plan for the ClimateSmartAdvisors project, which focuses on managing data and the various types of research data that will be reused, processed, collected, or generated within the project. The main objective is to establish a comprehensive strategy that ensures the data's findability, accessibility, interoperability, and reusability, adhering to the principles of efficient data management. This entails managing data throughout its entire lifecycle, starting from early access and collection and extending to storage or even potential rejection if deemed necessary.

In alignment with the Open Access strategy of Horizon Europe, ClimateSmartAdvisors will primarily concentrate on facilitating data reuse. This will be achieved by making data available through free data sharing platforms and the project website, accompanied by relevant metadata to enhance data understanding.

The scope of this document encompasses all data produced or utilized by the project, including numerical information and various datasets. Each dataset will be extensively documented, providing insights into its purpose, origin, adherence to FAIR principles (Findable, Accessible, Interoperable, and Reusable), security measures, and ethical considerations.

The Data Management Plan is a dynamic document and will be regularly updated to reflect the project's progress and address emerging data management requirements. This iterative approach ensures that any potential changes in the data management strategy and decisions made during the project are appropriately integrated. Additionally, it accommodates the inclusion of new datasets that were not initially foreseen.

The Horizon Europe Model Grant Agreement mandates all project beneficiaries to establish and routinely update a data management plan (DMP). As a result, this template is recommended for Horizon Europe projects. When completing the sections of the template, special attention should be given to fulfilling the research data management requirements of Horizon Europe, and analysed in the Annotated Grant Agreement.

1 Introduction

This document outlines the process of developing a comprehensive Data Management Plan (DMP) within the context of the ClimateSmartAdvisors project, in accordance with the guidelines set forth by Horizon Europe.

D9.1 represents the initial version of the ClimateSmartAdvisors Data Management Plan, subject to future revisions during task 9.3 of the project. The plan outlines the strategic approach intended for managing datasets expected to be generated or utilized throughout the project. This document focuses on data management, specifically pertaining to the collection, reuse, or creation of data within the Climate Smart Advisors project's scope. Emphasizing adherence to the FAIR principles (ensuring data is Findable, Accessible, Interoperable, and Reusable), the plan will address the following aspects:

• Data management throughout the project's duration and post-project completion.

• Protection and archiving of data throughout the project's duration and beyond.

• Protocols for data collection, reuse, and generation within the project.

• Data sharing and open access availability to the public.

• Adherence to data handling and metadata standards.

• Comprehensive description of datasets.

The Data Management Plan encompasses all data, including numerical information conveying value, and other consistently organized datasets that will be either generated or reused throughout this project. Moreover, this document takes into account the management of the data even beyond the project's duration. As a dynamic and living document, it will continuously evolve and adapt to any changes or modifications that may arise during the course of the project.

2 The DMP at a glance

2.1 ClimateSmartAdvisors objectives

In 2020, the European Green Deal set out how to make Europe the first climate-neutral continent by 2050. In 2021, the European Council adopted the "FIT for 55" package, with the goal of reducing greenhouse gas emissions by at least 55% by 2030 compared to 1990. The Farm to Fork (F2F) strategy highlights the urgency of transitioning to a sustainable food system and developing green business models.

While agriculture is responsible for 10.1% of the European greenhouse gas emissions (CH_4, N_2O, CO_2), it also has the potential to regulate CO_2 uptake through carbon sequestration in soils. The key lies in incentivizing measures within the land use sector to ensure that EU activities related to forests, soils, and agriculture contribute to the climate goals without compromising food production. The objective is to achieve a balance between anthropogenic emissions and removals by 2050 while preserving and enhancing carbon storage. In addition to mitigation efforts, the agricultural sector must adopt climate change adaptation solutions. For this purpose, innovative climate mitigation and adaptation strategies need to be tested and implemented, with a focus on their potential replication and transfer across regions and Member States (MS).

In the new Common Agricultural Policy (CAP) for the period 2023-2027, farm advisors are recognized as crucial actors in sharing knowledge and ideas. They are an integral part of a stronger Agricultural Knowledge and Innovation System (AKIS) and contribute to the development and dissemination of results in innovation projects. Farm advisors play a vital role in driving the transition to more climate smart farming (CSF) systems by developing and sharing climate smart innovations and best practices among peers and farmers.

Therefore, ClimateSmartAdvisors has as an overall objective to mobilise the European agricultural advisory community, leading to an acceleration of the adoption of CSF practices by the wider farming community within and across EU AKISs. ClimateSmartAdvisors aims to boost the role of agricultural advisors and advisory service providers by strengthening their capacity in providing targeted advice, and by implementing the approaches and sharing the solutions developed in Climate Farm Demo on a wider scale, across EU member states and associated countries.

To do so, the project will set-up 260 advisory Communities of Practice (CoPs) to boost peer knowledge exchange and cross fertilization on CSF practices and methods on a national and European level. The CoPs will be supported with dedicated training activities and a CSF interactive knowledge and methods repository. Connections will be made with national MA innovation projects (MIPs) and AKIS actors to further strengthen the advisor's capacity in providing CS advice and supporting farmers in their systemic transition. To achieve this, we have brought together a consortium of 73 partner organizations, covering a wide range of CS-ASP across 25 EU MS and 2 AC (UK, RS). Through these organizations, we will directly engage with a minimum of 1500 advisors - 140 to be trained as Climate Smart Coaches (CSCs), equipped to support capacity building in their peers, and 1360 supported in their development as Climate Smart Advisors (CSAs).

2.2 Data summary

The Data Management Plan covers various types of data that will be generated or processed within the ClimateSmartAdvisors project. These include the identification and description of datasets, data access protocols, as well as data storage and protection measures: datasets identification and description; data sharing protocols; data archiving and preservation. The following types of data are foreseen: reports, briefs, guidelines, etc. in .pdf, .pptx, .txt, .jpg and similar formats; database in CSV format; videos in MP4 format; software.

The project will comply with GDPR concerning processing of personal data, consent, breach notification, right to access and right to be forgotten. ClimateSmartAdvisors will ensure the highest ethical standards and legal restrictions regarding personal data, with the DMP providing guidelines and procedures for the collection, handling, and storage of data. All processing of personal data will be conducted in accordance with the provisions of the GDPR. No special categories of personal data (article 9 of GDPR) will be collected.

This Data Management Plan is a living document: during project implementation the document will be regularly updated, providing more detailed information following evolving insights, and other significant changes.

2.2.1 Data reuse

The ClimateSmartAdvisors project aims to reuse existing datasets already produced in previous research projects, especially NEFERTITI, CLIENfarm (Green Deal), CARBON FARMING (Life) and EJP SOIL (H2020) as well as the “sister project” namely Climate Farm Demo and the project funded under “HORIZON-CL6-2023-CLIMATE-01-4”. If so, a memorandum of understanding will be drawn up between the projects in which the reuse of these existing datasets will be outlined.

2.2.2 Types and formats of data generated by the project

The ClimateSmartAdvisors consortium anticipates generating a significant volume of data in various formats and sizes as part of its activities. As the project is currently in an early stage (M4), providing an exact list of data formats and sizes is not feasible. However, the following types of data are expected to be generated:

a) Documents, measurements, interviews, surveys, reports, briefs, guidelines, and publications in formats such as .pdf, .pptx, .doc, .docx, .jpg, .jpeg, .png, and similar formats.

b) Databases in .csv format.

c) Spreadsheets in .xls/.xlsx format.

d) Pictures in .jpg, .jpeg, and .png formats.

e) Videos in MP4 and WEBP formats.

f) Web and social media content.

Please note that this list is subject to expansion as the project progresses. Annex 1 of this document provides a summary of the expected data types and sizes for each of the work packages in the project.

Regarding the expected outputs, as set in the ClimateSmartAdvisors Grant Agreement, in the course of the project the following deliverables are to be delivered as summarized in the table below:

Deliverable (number)	Deliverable name	Data Type	Data Format
D1.1	State-of-play, gaps, barriers & drivers of CS-AS across MS & AC	Report	Report
D1.2	Database of CSAs in the network	Report	Report
D1.3	Intermediary evaluation of the impact and role of CoPs on the development of CSAS across MS & AC	Report	Report
D1.4	Final evaluation of the impact and role of CoPs on the development of CSAs across MS & AC	Report	Report
D2.1	CSA Train the Trainer module outline plus support materials	Report	Report
D2.2	Intermediary synthesis report of lessons learned from training interventions	Report	Report
D2.3	Final synthesis report of lessons learned from training interventions	Report	Report
D3.1	Intermediary analysis of role of advisors in MIPs and White Spot analysis	Report	Report
D3.2	Updated analysis of role of advisors in MIPs and White Spot analysis	Report	Report
D3.3	Innovation process support tools for first round of CoDIEs	Report	Report
D3.4	Innovation process support tools for second round of CoDIEs	Report	Report
D3.5	Integrated Assessment and Recommendations following first round of CoDIEs	Report	Report
D3.6	Final integrated assessment and recommendations linked to CoDIEs	Report	Report
D3.7	CoDIES Case Study modules and CSA Learning Materials based on first round of CoDIEs	Report	Report
D3.8	CoDIES Case Study modules and CSA Learning Materials based on first round of CoDIEs	Report	Report
D4.1	ME&L framework to strengthen CS advisory capacity	Report	Report
D4.2	Intermediary report on ME&L in the CSA network	Report	Report
D4.3	Final report on ME&L in the CSA network	Report	Report
D4.4	Portfolio of inspiring practices, narratives and tools to boost CS advice and action	Report	Report
D5.1	Intermediary analysis of barriers and levers for farmers and advisors	Report	Report
D5.2	Final analysis of barriers and levers for farmers and advisors	Report	Report
D5.3	Draft repository with toolkits, methods, and user experiences	DATA — data sets, microdata, etc	Other
D5.4	Updated repository with toolkits, methods, and user experiences	Report	Report
D5.5	Final repository with toolkits, methods, and user experiences	Report	Report

D6.1	AKIS-Stakeholder Activation and Engagement Methodology and Tools	Report	Report
D6.2	Intermediary report on innovative CS-AKIS governance solutions	Report	Report
D6.3	Final report on innovative CS-AKIS governance solutions	Report	Report
D7.1	Strategic Plan for the PIPs	Report	Report
D7.2	Policy briefs for EU, regional and national level	Report	Report
D7.3	Sustainability Strategy for the network	Report	Report
D8.1	Draft dissemination, exploitation & communication Plan at EU & National levels	Report	Report
D8.2	Updated dissemination, exploitation & communication Plan at EU & National levels	Report	Report
D8.3	Final dissemination, exploitation & communication Plan at EU & National levels	Report	Report
D8.4	Digital and printed dissemination, exploitation and communication material – first set of materials	Report	Report
D8.5	Digital and printed dissemination, exploitation and communication material – final set of materials	Report	Report
D8.6	Project website	DEC —Websites, patent filings, videos, etc	Other
D8.7	Practice abstracts – batch 1	Report	Report
D8.8	Practice abstracts – batch 2	Report	Report
D8.9	Practice abstracts – batch 3	Report	Report
D8.10	ClimateSmartAdvisors online training platform	Report	Report
D9.1	Data management plan – version 1	DMP — Data Management Plan	Report
D9.2	Data management plan – version 2	DMP — Data Management Plan	Report
D9.3	Data management plan – version 3	DMP — Data Management Plan	Report
D10.1	OEI - Requirement No. 1	Ethics	Other
D10.2	OEI - Requirement No. 2	Ethics	Other
D10.3	OEI - Requirement No. 3	Ethics	Other
D10.4	OEI - Requirement No. 4	Ethics	Other
D10.5	OEI - Requirement No. 5	Ethics	Other
D10.6	OEI - Requirement No. 6	Ethics	Other

2.2.3 Purpose of data collection

The type and size of data to be generated in this project in each of the work packages at this point, is summarized in the Annex 1 of this document. Since this is the first version of the DMP, the list of data needs and principles for data collection is only a starting point, it will develop and roll out through the project. ClimateSmartAdvisors will both generate (primary) and reuse (secondary) data.

2.2.4 Data size

At the time of drafting this document (approximately M4 of the project lifetime), Work Package leaders involved in tasks and activities that comprise data-related activities have made an estimate of the sizeof data to be generated as per WP, elaborated in Annex 1. However, the exact sizes of data will be available as the project rolls out.

2.2.5 Data origin

Data origin is to be detailed in all deliverables individually. The reuse of existing data or the generation of data within the project will be clearly identified in the different deliverables. Both new and reused data will be submitted for ethical clearance by each work package leader and commented on.

2.2.6 Data utility

The data both generated and reused within the CSA project will be utilized by various users, from the scientific community, other sister projects, policy makers and end-users. The detailed outline of the expected potential users of the data are outlined in the Annex 1 of this document. Nevertheless, all outputs that are to be made publicly available (project reports, deliverables, scientific papers) will be made available through the ClimateSmartAdvisors website.

3 FAIR Data

The ClimateSmartAdvisors project will ensure that the data align with the FAIR principles and will be 'findable, accessible, interoperable and reusable'. Applying the FAIR guiding principles will warrant that data can be retrieved by both humans and machines; data is safely stored and can be made available using standard technical procedures; data can be exchanged and integrated with other data; data originated from the project are well documented and categorized and easily accessed and reused.

3.1 Making data findable, including provisions for metadata

The Project strategy on Open Science Practices is based on two major pillars:

A. Mandatory Open Science Practices: Open access to all scientific publications (peer-reviewed or not) as well as results needed to validate the conclusions of scientific publications, unless exceptions apply, will be provided and stored in trusted repositories (Zenodo), published in Open Research Europe (ORE), licensed under CC BY. All relevant outputs will be open access under CC BY-NC, CC BY-ND or CC BY-NC-ND. Responsible management of research data in line with the FAIR principles through the generalized use of Data Management plans and open access under the principle 'as open as possible, as closed as necessary'. The code will be listed under free licenses of Open-Source Initiative. Information about the research outputs/tools needed to validate the conclusions of scientific publications or to validate/re-use research data will be stored in trusted federated repositories, including detailed description of the research output. Cases of public emergency: the project will provide immediate Open Access in case of public emergency if requested by the granting authority.

B. Recommended Open Science Practices: The Project will involve farmers, advisors, policy makers etc. during co-creation activities in 8-10 CoDIEs and AKIS workshops. The outputs will be distributed through trusted knowledge depositories and the project's knowledge repository which will be kept alive at least 5 years after the project end.
Majority of data, will be easily findable, also at project online knowledge reservoirs, project website and platform. Data will be classified and searchable.

Furthermore, the clear organization of files and assigned names are paramount for the consequent traceability of those files as well as the comprehension of their content. Therefore, the names of the files need to be assigned in a consistent manner. File names need to be intuitive enabling the user centric organization of files indicating where to find the particular data, as well as the very content of the file.

In ClimateSmartAdvisors, due to the expected high diversity of data, the metadata standards, naming conventions and versioning of all types of data needs to be sufficiently flexible. Nevertheless, a set of considerations are paramount, especially regarding recommendations for naming conventions, versioning, keywords, etc. For more general file names of the objects, names should include information corresponding to and

describing adequately the content of the object. The document version must accurately specify which version is being edited.

Based on this, the following standard naming conventions of the ClimateSmartAdvisors project deliverables and publications should be used:

- CSA_DX.X_Deliverable Name_WP_VX.X

General files & working documents, should use the following naming convention:

- CSA _general_type_ of document_file_date

Naming the electronic records and/or files should comply with the following:

- use underscore_ instead of space.

3.1.1. Use of search keyword

To improve findability, it is highly recommended to employ a search keywords approach, especially in the field of competence to which the data refers. This practice is particularly relevant and commonly used for enhancing findability across various platforms such as web contents, social media posts, reports, and scientific articles

3.1.2. Metadata creation

The metadata expected to be created during the ClimateSmartAdvisors project will arise from the use of questionnaires. Consequently, all data collected in the questionnaires shall be deemed as metadata.
Metadata is easily reachable and available for use by both humans and machines.

3.2 Making data accessible

Open access to scientific data, knowledge and tools enables their sharing with all relevant knowledge actors, industry, public authorities, academia, and end users as early as possible. It has the potential to increase the quality and efficiency of research and innovation which will lead to greater responsiveness to societal and environmental challenges. Therefore, open access is one of the pivotal requirements in Horizon Europe. ClimateSmartAdvisors will ensure open access as set out in the Grant Agreement specifically detailed in Article 1.1.2.

3.2.1 Openly available data

Data aimed to be accessible only for the project consortium will be accessible via software for collaboration (in this case: Microsoft Sharepoint/Teams). The project website will also have content available for admin users only, while all other data aimed to be publicly available will be hosted at public pages of the project website.

3.2.2 Making data available

Results are owned by the beneficiaries that generate them. The beneficiaries must exploit and disseminate their results as soon as feasible, in a publicly available format. Consequently, the postulation for further access rights and regulations are defined for

the project partners.

The ClimateSmartAdvisors project will ensure that project partners provide mutual access to data in case of the exploitation of project results, in compliance with FAIR principles. To other parties, access may be provided in accordance with FAIR principles provided that their exploitation of results will contribute to the execution of our project aims and will respect confidentiality agreements.

The ClimateSmartAdvisors project will apply the principle of responsible management of research data under the principle 'as open as possible, as closed as necessary'. Information about the research outputs/tools needed to validate the conclusions of scientific publications or to validate/re-use research data will be stored in trusted data repositories, including detailed description of the research output.

Open access to all scientific publications as well as results, unless exceptions apply, will be provided, and stored in Zenodo. This is a research data repository, functioning according to FAIR principles, enabling easy recovery of research outputs by assigning a Digital Object Identifier (DOI) to every upload. It is free of charge enabling the research community to share and maintain research outputs in every size and format. Therefore, this repository represents the natural choice for storing research data.

Project deliverables and scientific publications will be made publicly available in the project website. The uploaded outputs will be named in accordance with the agreed project's naming conventions.

3.2.3 Methods and tools needed to access the data

BioSense Institute will develop a project website which will act as a knowledge reservoir for the project results and outcomes. It will also inventory the project deliverables, milestones, information about CoP and other activities, and other project data intended to be publicly available. As a result, a web browser will be sufficient to access general project outputs. Project materials will be available in formats like word documents, PDFs, videos, etc., which can be opened using regular Microsoft Office or compatible open-source alternatives. The website's access settings will determine who can view certain materials, and some information might be exclusive to project consortium members.

3.2.4 Access provision in case of restrictions and open access of sensitive data

Sensitive data concerning the human participants (mostly advisors) involved in the ClimateSmartAdvisors project, as well as all the information in relation to the data collection (e.g., place and/or time the data was collected, etc) will not be made openly accessible. Decisions on data sensitivity will be made for each data collection step, in consultation with the project's external ethics advisor.

3.3 Making data interoperable

3.3.1 Facilitating data interoperability

Interoperability[1] refers to the functionality of information systems to exchange data and to enable sharing of information. The importance of the interoperability feature of the data is reflected in the fact that interoperable data are easily accessible, transmitted and exchanged regardless of their origin or designer. This feature of data or datasets provides the possibility to find, investigate, and comprehend its composition and content. Achieving data interoperability means achieving higher efficiency as well as comprehensive and highly visible data.

Four types of data interoperability need to be considered:

1. **Foundational Interoperability**
   The basis of the data interoperability feature is establishing the ground for data to be sent from one IT system to another, meaning that the recipient of the data has the possibility to receive the data. This functionality does not require for data to be interpreted.

2. **Structural interoperability**
   Once the data is sent and received, at this mid-level, it is very important to determine compatible protocols and formats which will facilitate readability of the information received. This entails the fact that data transferred is not altered and are moved in their entirety.

3. **Semantic interoperability**
   Once the information is sent and received, it is paramount that data are interpreted accurately. This feature is facilitated through the structured way in which data are exchanged, but also through coding the data, thus ensuring the computer systems will be able to interpret the data.

4. **Organizational interoperability**
   Organizational interoperability of data refers mostly to establishing standardized practices, as well as policies in the light of data governance. A structured and standardized way of data governance secures the harmonized and well-timed communication between the project partners encouraging seamless and coordinated cooperation.

Data types
As still being at the early stages of the project the data formats to be generated or reused, and thus to be made interoperable, for each of the work packages is anticipated. However, the exact data formats and types are to be determined as the project unfolds. At this point anticipated data formats are text, numeric, audio, video, web data, and images.

[1] https://edps.europa.eu/data-protection/our-work/subjects/interoperability_en

Transfer of the data
Data transmission in the ClimateSmartAdvisors project will be ensured through the JSON files as the information carriers. JSON is a language-independent file format and is supported by a number of various programming APIs. These files are received and transferred to the recipients through HTTP requests, being common text files, using RESTful API architecture. This type of data transmission is widely accepted and broadly used, thus being compatible with the technologies used by project partners.

Rules for data storing and sharing
In the ClimateSmartAdvisors project data will be stored and shared with respect of the GDPR principles. The ClimateSmartAdvisors project will develop guidelines for data interoperability as the data collected will originate from diverse sources. Interoperability with other related platforms is already considered while planning the online reservoir infrastructure. Initiating meetings with projects we want to be interoperable were already held.

3.3.2 Interdisciplinary interoperability

Heterogenous data and datasets from different sources need to be framed to secure their reuse by various project partners.
The previous article states the policies, principles and guidelines which will be followed in this project with the purpose to facilitate the data interoperability between the different actors and disciplineswhich make an integral part of the ClimateSmartAdvisors project, i.e. the advisory and agricultural community. It is however expected that the exchange of data will potentially go beyond this scope, since results and data may also be relevant for use in other climate conscious sectors.

3.4 Increase data reuse

3.4.1 Data license

As stated in the Grant Agreement immediate open access to the publications deposited via repository will be under the latest version of the Creative Commons Attribution International Public Licence (CC BY) or an equivalent license with the possibility to exclude commercial uses and derivative works (e.g.,CC BY-NC, CC BY-ND) for longer documents.

With the abundance of licenses available it is paramount to opt for the ones that would best fit in the requirements set by the project. The latest versions of licenses are listed in the official portal for European data licensing assistant[2].

Following the recommendations by the EC the ClimateSmartAdvisors project brought the unanimous decision to be guided by the rules of the license CC-BY 4.0[3] by the Creative Commons.

This license will enable interested parties to use, reproduce and reorganize the data.

2 https://data.europa.eu/en/training/licensing-assistant
3 https://data.europa.eu/en/training/licensing-assistant?license_id=CC-BY4.0

However, the data will be available for the use under the obligation to assign proper credit to the author, designate any alterations of the respective document and while maintaining intact the copyright and license notices.

3.4.2 Data reuse

The data deemed public shall be made available for re-use as soon as the content is uploaded on the ClimateSmartAdvisors website

The content that is to be made available as outputs of the ClimateSmartAdvisors activities will comply with the requirements of the Creative Commons license, as set out in the Grant Agreement. This will make the published material available for re-use with the binding obligation to clearly state the data source and not to be used for the commercial purposes.

3.4.3 Use of data after the end of the project by third parties

All data deemed to be suitable for a wider audience (e.g., climate smart solutions and practices) shall be published and made available for further re-use on the project website even after the project's end. The data to be made available shall comply with the license.

3.4.4 Data quality control

The quality assurance of the data provided during the project will be secured through the operation of project consortium members. They will monitor all the data submitted by the advisors and partner organizations.

3.4.5 Life span of data after project's end

The outputs will be distributed through trusted knowledge depositories and the project's knowledge reservoir which will be kept alive at least 5 years after the project 's end.

3.4.6 Allocation of resources

The ClimateSmartAdvisors project will make optimal use of services and tools which are free of cost. Therefore, project partners currently foresee no costs to be incurred.

- The publicly available data stored on Zenodo (free of charge)
- Creative Commons copyright licensing (free of charge)
- Project Sharepoint/Teams site (free of charge)
- Project website and platform (free of charge)

In case some costs for data storage still incur, the Management Team will take the decision whether the data should be stored in the respective repository which needs to be paid and whether the incurred costs will be eligible for reimbursement or not.

3.5 Data security

3.5.1 Secure storage and data recovery

The ClimateSmartAdvisors project beneficiaries guarantee that all data collected during the project will be kept secure and unreachable by unauthorized persons. The data will be handled with appropriate confidentiality and technical security.

All data, as well as the entire system, will be stored at the BioSense data centre. The basic characteristics of the Data Center, among others, are:

- Tier III reliability of the subsystem of power supply and air conditioning. 99.982% availability of thesystem.
- A diesel engine of 1.6 MW
- Redundant UPS devices in n + 1 configuration
- Dual power supply UPS, dual power supply of machine equipment and IT equipment
- Independent management of power cables and cables of the structural cable system
- Redundant connection to telecommunication infrastructure and multiple connections to international Internet hubs

The company has established a Security Policy Information, where it is unambiguously stated that the company monitors the process of information usage and prevents deliberate or accidental abuse of data stored in the system. In addition, the company follows ISMS - Information Security Management System - ISO/IEC 27001:2013.

For additional data security, the BioSense Institute will run regular backups of all data on a daily, weekly, and monthly basis. The data will be stored in the Institute's server, whose characteristics are presented below.

All generated/collected data will be stored on a dedicated Data Storage System with dual controllers and dual power supply. Everything stored on those machines is copied on at least three Hard Disc Drives(HDD). In case of failure of one of the HDD, data are secured on two others and within 24 hours the replacement HDD is obtained from the manufacturer. In case of electricity cut offs, a dual power supply enables continued operation by automatically swapping from the electric network to a UPS with diesel aggregate.

The data stored in the BioSense Institute Data Storage System are not exposed directly to the end users/internet thanks to a two line defence architecture (Figure 1). In the first line there is one Virtual Machine running as a Proxy server for all requests, also taking care of balance load. Calls are then forwarded to another Virtual Machine that can access to the stored data. Thanks to this architecture, even if someone manages to intrude into the Proxy machine, it will not have a direct access to the data, which are hidden behind another Virtual Machine. Moreover, the University of Novi Sad proxy/firewall is placed in front of our infrastructure, acting as an additional protective layer.

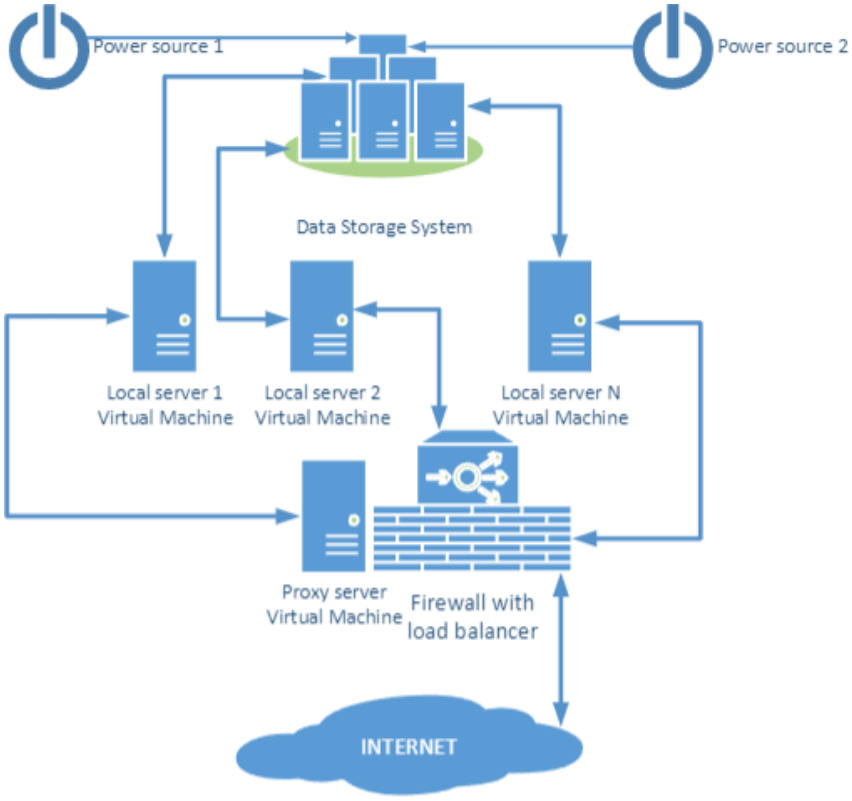

Figure 1. Architecture of the BioSense Institute Data Storage System

The protection of data will also be ensured through procedures and appropriate technologies, like the use of HTTPS protocol for the encryption of all internet transactions. In addition, the server onto whichthe data will be stored will have server-side encryption allowing administration personnel to generate private keys for data access without accessing the data themselves. That means that only authorized personnel will have access to the data and even in the case of a possible data leak or server hack the data stolen will be fully encrypted and thus non accessible.

3.5.2 Transfer of sensitive data

Data transfer to and from end-users (including transfer of sensitive data if allowed) is performed encrypted, either sent by encrypted ZIP or RAR files, or download directly as web-based services from servers (e.g. GeoServer). In any case strong password (more than 30 randomly generated charactersin order to prevent dictionary or brute force attacks) is required for accessing transferred dataset. Passwords must be sent separately from the dataset (preferably using also different channels of communication).

Prior to the sharing for the analysis all data containing sensitive personal information must be anonymized. Anonymization refers to removing any identifier that can reveal identity of the participants both from data and metadata.

4 Ethics

All foreseen and proposed activities in the scope of the ClimateSmartAdvisors project shall fully comply with ethical principles and applicable EU, international and national law, as well as the EU Charter of Fundamental Rights and the European Convention for the Protection of Human Rights and Fundamental Freedoms and its Supplementary Protocols. This article explicitly states that special attention shall be paid to the principle of proportionality, the right to privacy and protection of personal data, physical and mental integrity of persons, non-discrimination as well asthe need to ensure protection of the environment and high level of human health protection.

Actions regarding the compliance with the principles of confidentiality of the Grant Agreement, obligate all partners to comply with the EU standards regarding ethics and management of data.

Activities raising ethical issues, like conducting surveys or interviews which entail acquiring personal information, must comply with the additional requirements of the Grant Agreement.

All tasks as set out in the Climate Smart Advisors project are foreseen to comply with the relevant laws and regulations. Where applicable all project partners will be mandated to obtain informed consent of the project participants. Project management, in coordination with the external ethics advisor, will make certain that all needed procedures are carried out and followed, especially taking into consideration the signing, collection and preserving the consent forms from project participants before initiating the process of data collection.

At this stage of the project, it is anticipated that all work packages will gather some form of personal data and will carry out these activities by supplying additional informed digital consent. All electronic data shall be stored and protected in the respective online repository. Whether anonymization willbe needed is still an open issue since the consent will be required for publishing any personal data.

Other types of forms of ethical issues are not foreseen, which does not liberate project partners from undertaking additional measures should other ethical issues arise during the lifetime of the project

5 Other Issues

As of now, no additional issues have been identified. If any issues arise in the future, partners will promptly communicate them to the Management Team. The Management Team will then take appropriate measures to address the identified issues, and the Data Management Plan (DMP) will be revised accordingly. In the event that a different procedure needs to be adopted, it will be discussed and decided upon during the MT meeting.

6 ANNEX 1

6.1 Data origin

Data	Which of the following contents do you plan to collect/reuse	What type of primary data will your WP generate/reuse	What different data formats will you (re)use	How will the data be collected?	What is the purpose of collecting primary data/ reusing secondary data?	Expected size of data	What software will be used to manage data?	To whom might the data be useful outside your project?
WP1 Networking CSA to foster peer learning and knowledge exchange								
Primary data	Text Numeric Audiovisu al	Interviews Surveys	.por,. spss, .tab, .csv, .xls, .xlsx), .rtf, .xml, .txt, .doc, .docx, .pdf mp4, .jpeg, .jpg, .png	For Task 1.2 we will collect data such as name, organisation (expertise) of the Advisors in the CoP, to make the database. For tasks 1.3, 1.4 and 1.5 we will make use of focus groups, surveys and interviews to collect data on the knowledge exchange within the CoPs, at national and EU level		/	Microsoft Office	Researchers investigating knowledge exchange processes. National AKIS actors interested in the state-of-play on climate smart advice in their country
Secondary data	Text	Interviews	.por,. spss, .tab, .csv, .xls, .xlsx),		For task 1.1 we will develop the state of play on climate smart advice. Existing literature sources and AKIS reports	<100MB	Microsoft Office	Researchers investigating knowledge exchange processes. National AKIS actors interested in the state-of-

	Numeric Audiovisual	Surveys Existing reports	.rtf, .xml, .txt, .doc, .docx, .pdf mp4, .jpeg, .jpg, .png		developed in other projects can be interesting input here. For the guidelines to be developed in Task 1.3 and 1.4, reports and guidelines from other projects can be used.			play on climate smart advice in their country
WP2 Training advisors to deliver targeted climate smart advice								
Primary data	Text Numeric	Surveys	. .por,. spss, .tab, .csv, .xls, .xlsx), .rtf, .xml, .txt, .doc, .docx, .pdf	WP2 needs to understand the training needs of the participants in the Train the Trainer course. To do this we will gather data through a Training Needs survey (in collaboration with WP's 1 and 2) and also pre- and post- Train the Trainer surveys (for training participants only). We will also need to gather data realting to the participants in both annual training workshops (T2.4) and seminars T5		/	Microsoft Office	Policy makers, managers of Advisory Services.
Secondary data	Text	Previous projects, reports etc., organisational expertise, personal expertise	e.g. .rtf, .xml, .txt, .doc, .docx, .pdf		WP2 will use secondary data from previous projects, reports and training events to design the Train the Trainer training intervention. This will be collected	>100MB	Microsoft Office	None, only the synthesis will be useful and some documents of the tools owners could be confidential

					through a desk based review of existing publications and documents, planning meetings, and conversations between WP partners.			
WP3 Strengthening the role of advisors in CSF multi-actor innovation projects								
Primary data		Surveys	por,. spss, .tab, .csv, .xls, .xlsx), .rtf, .xml, .txt, .doc, .docx, .pdf e.g. .mp4, .jpeg, .jpg, .png	For Task 3.1 there will be a survey to NC, TL to collect data on MIPs and other initiatives which will allow a classification of the them and to construct a portfolio of MIPs. This will support the selection of CoDIES. It will be done in two rounds		100MB	Microsoft Office Adobe	understanding current involvement of advisors in climate smart agriculture.
Primary data # 2		Interviews Surveys			The purpose of gathering information is to select CoDIES, in two rounds.	100MB	Microsoft Office Adobe	internal projects members involved in selecting CoDIES
Primary data # 3		Interviews Surveys Workshops			Under Task 3.3 Information from CoDIES workshops will be collected in order to gather insights on the role of advisors in innovation experiments.	100MB	Microsoft Office Adobe	advisory services, policy makers and agricultural businesses in task 3.4

Secondary data	Tabular Textual	Databases	por,. spss, .tab, .csv, .xls, .xlsx .rtf, .xml, .txt, .doc, .docx, .pdf		Task 3.1 we need to create a classification for MIPs related to CSF and advisors. This classification will include Operational Groups, Interreg, (R)IAs and national projects. To this end, we need to build on existing national and international project databases. To develop this, we will screen and gather data from a number of relevant databases, such as the EIP-AGRI Operational Group database, etc.	<100MB	Microsoft Office	advisory services and policy makers and agricultural businesses
Secondary data # 2				Databases on projects, scientific literature, online research on other institutions and projects	This information will be use to construct the CoDIES matrix which will allow the selection of CoDIES in two rounds	<100MB	Microsoft Office Adobe	for internal use but may be of interest to advisory services and policy makers.
Secondary data # 3				research of scientific and grey literature, online sources of data bases Task 3.4	The data will be used in the analysis and integrated assessment of the role of advisors in climate smart agriculture.	<100MB	Microsoft Office Adobe	advisory services, policy makers, researchers and agricultural enterprises
WP4 Monitoring, evaluation and learning								

Primary data	Text Audio visual	Interviews Surveys	e.g. .rtf, .xml, .txt, .doc, .docx, .pdf e.g. .mp4, .jpeg, .jpg, .png	For task 4.1 we will use the insights collected in WP1, 2 and 3 on levers and barriers, training needs and white spots, this will be used to build a ME&L framework. For task 4.2 we will continuously gather information from the NCs, CoP and CSC mainly through surveys, interviews and workshops during anual meetings. This will be used to improve the functioning of the network and to draw lessons learned (in task 4.3). In task 4.4 we will use information about the nominated CSA which will be used to select the award winners. In task 4.5 we will use the data and insights gathered in the previous tasks to develop tools and lessons learned	Interviews - to get an idea of their motives, hurdles and ambitions related to a new climate smart solution and will help to define the action plan of the living lab M&E tools - to evaluate the effectivity and efficiency of the Living Labs and to collect lessons learned to contribute to successful cocreation of climate smart solutions	≥100MB	Microsoft Office	We will not make the primary data available outside the project, due to confidentiality
Secondary data		scientific literature on ME&L methods and experiences	e.g. .rtf, .xml, .txt, .doc, .docx, .pdf		For task 4.1 we will use scientific literature to develop the framwork. In the other tasks we might ocassionally use scientific literature to		Microsoft Office	

					benchmark insights or for presenting our insights in scientific journals			
WP5 Development of training materials & climate smart farming toolkit								
Primary data	Text Numeric Instrumen t-specific	Interviews	.rtf, .xml, .txt, .doc, .docx, .pdf mp4, .jpeg, .jpg, .png documenta tion & computatio nal script	In task 5.1, we need to work on the barriers and levers for Climate Advice. To do so, we will organise focus groups		<100MB	Microsoft Office	Other projects working in the field of Climate advice (EU and national projects) Researchers Local press, newsletter
Primary data #2						>100MB	Microsoft Office	everybody - it will in open access through the website
Secondary data	Text Numeric Instrumen t-specific	bibliography, websites, articles, scientific publications	tf, .xml, .txt, .doc, .docx, .pdf mp4, .jpeg, .jpg, .png documenta tion & computatio nal script		n Task 5.1, 5.2 and 5.3, we will use bibliography of past research and projects	<100MB	Microsoft Office	Other researchers AKIS actors
Secondary data #2				gather tools and methods built up and collected in	make it available and attractive to more people.	>100MB	Microsoft Office	all the AKIS actors

				different other projects at national and/or EU level. Source :project websites, project deliverables	One point stop where advisors can find many different tools and methods			
Secondary data #3				get input from the entire CSA network to populate the project's repository. To do so, we will gather data on this through a survey to be shared further within the CSA network.	Populate the platform and share usefull and well proofed methods	>100MB	Microsoft Office	AKIS actors - it will in open access through the website
Secondary data #4				collect feedback from the CSCs and the CoPs about the tools and methods	sharing experience Motivating others Promoting good practices and tools	<100MB	Platform back-end architecture	farmers and advisors researchers _ AKIS actors
WP6 Reinforcing national AKIS actors to support CS advisory services								
Primary data	Text Audio- visual	Surveys Other: Meeting documentation (flipcharts, notes from co-creation sessions, photographs, reports)	.por,. spss, .tab, .csv, .xls, .xlsx .rtf, .xml, .txt, .doc, .docx, .pdf mp4, .jpeg, .jpg, .png	In T6.1 we will define key AKIS stakeholder types relevant for CS advisory. To identify them, we will launch a survey on how advisory is embedded into national/regional AKIS systems. The survey will be online and sent to all NCs. In addition, we will use the contact data of the NCs to prepare and run the online trainings. In T6.2. national co-creation workshops will		<100MB	Online tool: JotForm	AKIS related projects Policy makers concerned with climate protection

				be held, which means that we will collect the personal data of workshop participants (name, organisation, function, e-mail, phone etc.), presentation as well as documentation (agenda, list of participants, minutes, photographs, flipcharts) of the workshop				
Secondary data	Text Numerical Audio- visual	Database Deliverables from other projects	.por,. spss, .tab, .csv, .xls, rtf, .xml, .txt, .doc, .docx, .pdf		In T6.1. we will review the AKIS reports published on the i2connect website and generated within the projects AtractISS and modernAKIS and collect data which is relevant for climate smart advise. We will also possibly collect relevant CAP data (measures, volumes) from the EC/DG Agri webpage. In T6.4 we will extend the CS-AKIS network, including AKIS Coordination Bodies identified in the modernAKIS project, where we need to build	100MB	Microsoft Office Adobe	ProAgria Etela-Pohjanmaa RY

					on their project database.			
WP7 Link and coordinate with other projects, initiatives and policy makers								
Primary data	Text Numeric	Interviews Surveys Reports	por,. spss, .tab, .csv, .xls, .xlsx rtf, .xml, .txt, .doc, .docx, .pdf mp4, .jpeg, .jpg, .png	The reports identified will contribute to the enhancement and adaptation of WP7 activities based on previous evaluations and reports		>100MB	Microsoft Office Adobe	Other projects, initiatives and policymakers: sister projects
Secondary data	Text Numeric	Surveys Database Interviews	por,. spss, .tab, .csv, .xls, .xlsx rtf, .xml, .txt, .doc, .docx, .pdf mp4, .jpeg, .jpg, .png		T7.3 + T7.4 - Planning purposes of the synergies thematics. T7.5 - Building the sustainability plan based on the outputs of FarmDemo Projects	>100MB	Microsoft Office Adobe	Sister projects: Climate Farm Demo and Linking Research Stations
WP8 Dissemination, Exploitation and Communication								
Primary data	Text Numeric Audiovisual	emails from subscribers; country; duration of visit and pages visited (for the website	por,. spss, .tab, .csv, .xls, .xlsx dwg,. GML,	distribute content related to the project through newsletters. For that, we need to invite people to subscribe. Moreover, we will collect some data from website visitors, to be able to			mailchimp, wordpress	

	Instrument specific			track people's behaviour on the website and improve user experience Task 8.2				
Secondary data	Text Audiovisual Instrument specific	Data about registered Demo farms collected for purpose of other content-wise similar EU projects like Nefertiti, IPM Works, etc	.mp4, .jpeg, .jpg, .png	For Task 8.2 and 8.3 we need to promote project and its' activities which might include sharing photos from the events and activities organised under other WPs.		>100 MB	internet / social media, website	knowledge exchange, innovation exchange and networking

7 ANNEX 2

7.1 Ethics

Informed consent	Other types of forms of ethical issues	Organisation and storage of consent files	The use of personal data	Data security
WP1 Networking CSA to foster peer learning and knowledge exchange				
Yes	No	They will be saved in secured location at the office of project partners	Yes	We don't know yet whether anonymisation will be needed (we will ask consent to publish personal data)
WP2 Training advisors to deliver targeted climate smart advice				
Yes	No		yes	No
WP3 Strengthening the role of advisors in CSF multi-actor innovation projects				
Maybe	No	/	Maybe	No
WP4 Monitoring, evaluation and learning				
Yes	No		Maybe	No
WP5 Development of training materials & climate smart farming toolkit				
Yes	No	the folder will be locked in a cabinet by the responsible partner	Yes	Ensuring secure storage protocols
WP6 Reinforcing national AKIS actors to support CS advisory services				
Yes	No	The consent files will be in an online format	Yes	No
WP7 Link and coordinate with other projects, initiatives and policy makers				
Yes	No	/	Yes	No
WP8 Dissemination, Exploitation and Communication				
Yes	No	/	Yes	No

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