



**Building a European framework
for the secure and trusted data space for agriculture**

D1.2: Systematic assessment of the experiences with the code of conduct

**Lead Author: Mark Ryan (WR), Kelly Rijswijk (WR), Marc-Jeroen
Bogaardt (WR)**

**Contributors: ANAMOB - Viorel D. Marin, Adina E. Cristea, Ciprian
Dobre; ILVO – Eva Maes, Ella Deroo, Stephanie Van Weyenberg; Ivo
Hostens (CEMA), Vanja Biševac (CEMA), FNSEA – Melchior Bizot-
Espiard; 1001Lakes - Viivi Lähteenoja and Marko Turpeinen**



**Funded by
the European Union**



D1.2: Systematic assessment
of the experiences with the
code of conduct

Document Information

| | | | |
|--|---|-----------------|-------------------|
| Grant Agreement No. | 101083401 | | |
| Project Acronym | AgriDataSpace | | |
| Project Title | Building a European framework for the secure and trusted data space for agriculture | | |
| Type of action | DIGITAL-CSA | | |
| Call | DIGITAL-2021-PREFACTS-DS-01 | | |
| Start – ending date | 1 October 2022 – 30 April 2023 18 months | | |
| Project Website | https://agridataspace-csa.eu/ | | |
| Work Package | WP1: Understanding and mapping of the data sharing landscape | | |
| WP Leader | ILVO – Eva Maes, Ella Deroo, Jürgen Vangeyte | | |
| Deliverable type [1] Dissemination level [2] | R PU | | |
| Due Date | 30 September 2023 | Submission Date | 30 September 2023 |
| Lead Author | WR - Mark Ryan, Kelly Rijswijk, Marc-Jeroen Bogaardt | | |
| Contributors | ANAMOB - Viorel D. Marin, Adina E. Cristea, Ciprian Dobre; ILVO – Eva Maes, Ella Deroo, Stephanie Van Weyenberg; CEMA - Ivo Hostens, Vanja Biševac; FNSEA – Melchior Bizot-Espiard; 1001Lakes - Viivi Lähteenoja, Marko Turpeinen | | |

Disclaimer

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

Copyright message

This document contains unpublished original work unless clearly stated otherwise. Previously published material and the work of others has been acknowledged by appropriate citation or quotation, or both. Reproduction is authorised provided the source is acknowledged.

AgriDataSpace Consortium

| | Participant organisation name | Short name | Country |
|----|--|------------|---------|
| 1 | AGDATAHUB | ADH | FR |
| 2 | FOODSCALE HUB GREECE ASSOCIATION FOR ENTREPRENEURSHIP AND INNOVATION ASTIKI MI KERDOSKOPIKI ETAIREIA | FSH | EL |
| 3 | INSTYTUT CHEMII BIOORGANICZNEJ POLSKIEJ AKADEMII NAUK | PSNC | PL |
| 4 | UNIVERSIDAD DE LLEIDA | UdL | ES |
| 5 | EIGEN VERMOGEN VAN HET INSTITUUT VOOR LANDBOUW- EN VISSERIJONDERZOEK | EV ILVO | BE |
| 6 | FONDAZIONE BRUNO KESSLER | FBK | IT |
| 7 | VDI/VDE INNOVATION + TECHNIK GMBH | VDI/VDE-IT | DE |
| 8 | STIFTUNG FACHHOCHSCHULE OSNABRUCK | HSOS | DE |
| 9 | STICHTING WAGENINGEN RESEARCH | WR | NL |
| 10 | 1001 LAKES OY | 1001 Lakes | FI |
| 11 | ASOCIATIA NATIONALA A INDUSTRIILORDE MORARIT SI PANIFICATIE DIN ROMANIA | ANAMOB | RO |
| 12 | COMITE EUROPEEN DES GROUPEMENTS DE CONSTRUCTEURS DU MACHINISME AGRICOLE | CEMA | BE |
| 13 | FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV | Fraunhofer | DE |
| 14 | AGRICULTURAL INDUSTRY ELECTRONICS FOUNDATION AEF | AEF | DE |
| 15 | FEDERATION NATIONALE DES SYNDICATS D'EXPLOITANTS AGRICOLES | FNSEA | FR |

Acknowledgements: We would like to thank Can Atik and Quirijn van der Goes for their reviews of the deliverable. Also, to Karolina Dostatnia and Raul Palma for getting feedback from stakeholders on the EUCC.

Executive Summary

The EU Code of Conduct on Agricultural Data Sharing by Contractual Agreement (EUCC) is one of the building blocks to support agricultural data sharing between farmers, agricultural advisors, and ag-tech providers. The EUCC was first proposed in 2018 by several large European farmers' cooperatives and industry organizations in agriculture. It has been five years since the EUCC was first published and there has yet to be any definitive insights into how this code of conduct has been received within the industry and implemented in practice and whether it has been useful for farmers and agribusinesses alike. Therefore, one of the primary aims of this report is to find out what different stakeholders think about the EUCC, how has it been adopted within different EU countries, and if there is a need to re-examine, change, or replace the EUCC; in particular, as the horizontal Data Act is set to implement specific legal requirements for data sharing across sectors, while the agricultural sector, due to its specificities, could require additional vertical legislation. To do this, we carried out five national workshops (Romania, Belgium, the Netherlands, France, and Finland) and one EU-level workshop, focusing on the EUCC with 99 key stakeholders throughout Europe. The outcomes of these workshops resulted in several interesting insights about the EUCC and the future of the EUCC alongside the EU Data Act.

Unfortunately, many of the workshop participants did not know about the EUCC, what it contains, or how to implement it. There appears to be a serious lack of adequate dissemination of the document to farmers, farmer groups, organisations involved in agricultural data sharing, and the sector. All participants were aware of the GDPR and many with the upcoming Data Act, but not so many with the EUCC. This may be because of the difference between required regulation that they must act on (e.g., regulation, such as GDPR and the Data Act) compared with guidelines and recommendations that are nice-but-not-essential (e.g., the EUCC).

In the workshops, some participants were positive about the self-regulation aspects of the EUCC and feared an overregulation of the industry would stifle innovation and data-sharing. It would be an additional burden to implement with their legal teams and requires money, time, and effort on the businesses; something which is much more burdensome on smaller farms and SMEs (Small and Medium sized Enterprise) than multinationals with larger budgets. Some participants said the EUCC should be abandoned, others said it should be rewritten to reflect the Data Act (e.g., alignment of terminology regarding data roles), and some stated there

should be a greater focus on how the Data Act will impact the agricultural sector (while keeping the EUCC as another tool, but with less importance). Considering the Data Act is designed as a general framework for all the sectors by acknowledging that there may be sector-specific regulatory objectives to be realized future sectoral data regulations. In this regard, until a binding EU Ag-data Regulation, the EUCC may play an important experimental role.

A strong recommendation from the workshops is to adequately translate the Data Act for the agricultural sector (some academic efforts have already been made toward this; cf Can Atik, 2022, *Data Act: Legal Implications for the Digital Agriculture Sector*). Some said that there should be a complete feedback loop on data within the whole agri-food chain (not just agriculture) and between relevant data spaces (e.g., broadening it to become an agri-food dataspace or the entire food supply chain). The interpretation of the Data Act to the agri-food industry should also be able to address sector (vertical) specific needs and objectives by means of complementary sectoral regulations (e.g., dairy, horticulture, meat, etc.). However, in its current design, it may be difficult to use the Data Act to meet all the sectoral needs of agricultural data-sharing alone.

As the legal and technical terms presented in the EUCC were confusing for farmers, efforts should be made to make terminology context-specific and related to farming (with many stating that the terminology used in the Data Act should correspond to any future efforts to guide agricultural data-sharing). In addition, using more practical examples/use cases in different domains of agrifood to clarify the rules in the Data Act would be helpful.

There were concerns about the enforcement of data sharing, in the Data Act, in cases of emergency e.g., in case it is about saving lives and if this data will be used for other purposes/misused. Some claimed that the Data Act threatens to disturb this balance by forcing businesses to share potentially sensitive data (for use by third parties), such as releasing data if it concerns intellectual property rights (e.g., databases) or trade secrets (i.e., confidential business information) (while trade secrets are normally outside the scope of the Data Act, there are actually provisions in it, e.g., Art 4(3), 5(8), and 8(6)).¹ This needs to be addressed in the context of the agri-food sector and how agri-food businesses can respond to such challenges. It was also noted that each country, and even sectors within countries, have different levels of data-sharing knowledge and experience; this needs to be considered when implementing any data-sharing code or guidance: how can it be implemented in each country and sector?

¹ *ess otherwise provided by Union law, including Article 6 of this Regulation, or by national legislation implementing Union law, an obligation to make data available to a data recipient shall not oblige the disclosure of trade secrets within the meaning of Directive (EU) 2016/943."*

It was clear from the workshops that the success of any agricultural data-sharing policy is heavily underpinned by how this information will be disseminated to end-users and stakeholders within the sector. If nobody knows about the next steps that the European Commission (EC) take on the matter, or they are simply seen as 'nice-but-not-essential' things to be aware of, the impact of these actions will certainly fall flat. Therefore, there is a greater need for dissemination, communication, and education, of those within the agri-food sector on data-sharing. There is a lack of awareness, even among organisations explicitly sharing data, and are part of data-sharing initiatives, about the EUCC and guidelines set out by the EU. Any further efforts to either rewrite the EUCC, provide further codes on agricultural data-sharing, or translate the Data Act for the agri-food sector, need to ensure that they will be disseminated through the right channels, that relevant parties will receive them and be made aware of them. However, the Data Act alone is inadequate to fully address the sectoral issues, and for this reason, it may be necessary to take the initiative to go beyond and fill sectoral gaps with tailored provisions based on sectoral needs. The Data Act does not have the claim that it will be the ultimate step. Contrarily, it declares follow-up sectoral regulations can address sector-specific regulatory objectives. Therefore, appropriate responses to, and elaborations on, the Data Act are important for the future of the agricultural data-sharing domain.

Table of Contents

| | |
|---|-----------|
| 1. Introduction..... | 9 |
| 2. The EU Code of Conduct on Agricultural Data Sharing by Contractual Agreement..... | 10 |
| 2.1. Other Agricultural Data-sharing Documents..... | 12 |
| 2.1.1. The New Zealand Farm Data Code of Practice..... | 14 |
| 2.1.2. The Australian Farm Data Code..... | 15 |
| 2.1.3. American Farm Bureau Federation's Privacy and Security Principles..... | 16 |
| 3. Methodology..... | 17 |
| 4. Literature Review of the EUCC..... | 21 |
| 4.1. Scientific Literature..... | 21 |
| 4.2. Grey Literature..... | 26 |
| 5. Workshop Results..... | 31 |
| 5.1. The Netherlands..... | 31 |

| | |
|---|-----------|
| 5.1.1. Experiences with the EUCC | 32 |
| 5.1.2. How the EUCC relates to the Data Act | 33 |
| 5.1.3. Recommendations by stakeholders | 33 |
| 5.2. Belgium | 33 |
| 5.2.1. Experiences with the EUCC | 34 |
| 5.2.2. How the EUCC relates to the Data Act | 35 |
| 5.2.3. Recommendations by Stakeholders | 35 |
| 5.3. Romania | 36 |
| 5.3.1. Experiences with the EUCC | 37 |
| 5.3.2. How the EUCC relates to the Data Act | 37 |
| 5.3.3. Recommendations by stakeholders | 38 |
| 5.4. France | 38 |
| 5.4.1. Experiences with the EUCC | 39 |
| 5.4.2. How the EUCC relates to the Data Act | 40 |
| 5.4.3. Recommendations by stakeholders | 40 |
| 5.5. Finland | 41 |
| 5.5.1. Experiences with the EUCC | 42 |
| 5.5.2. How the EUCC relates to the Data Act | 42 |
| 5.5.3. Recommendations by stakeholders | 42 |
| 5.6. EU-level..... | 43 |
| 5.6.1. Experiences with the EUCC | 44 |
| 5.6.2. How the EUCC relates to the Data Act | 44 |
| 5.6.3. Recommendations by stakeholders | 45 |
| 6. Discussion and Conclusion | 45 |
| References | 48 |
| Appendix: Methodology for workshops..... | 51 |
| Target group..... | 51 |
| Methodology..... | 51 |
| Workshop Plan | 51 |
| 4.1 Overall Workshop Plan..... | 51 |
| 4.2 Workshop Plan Task 1.2 Thoughts on data sharing initiatives | 52 |
| 4.3 Workshop Plan Task 1.3 Feedback and experiences with EUCC | 52 |
| To do list..... | 54 |
| Workshop Necessities | 54 |
| Workshop report structure | 58 |

^[1] R: Document, report; DEM: Demonstrator, pilot, prototype, plan designs; DEC: Websites, patents filing, press & media actions, videos, etc.; DATA: Data sets, microdata, etc; DMP: Data management plan; ETHICS: Deliverables related to ethics issues; SECURITY: Deliverables related to security issues; OTHER: Software, technical diagram, algorithms, models, etc.

^[2] PU – Public, fully open, e.g. web (Deliverables flagged as public will be automatically published in CORDIS project's page); SEN – Sensitive, limited under the conditions of the Grant Agreement; Classified R-UE/EU-R – EU RESTRICTED under the Commission Decision No2015/444; Classified C-UE/EU-C - EU CONFIDENTIAL under the Commission Decision No2015/444; Classified S-UE/EU-S – EU SECRET under the Commission Decision No2015/444

1. Introduction

The main objective of the AgriDataSpace project is to pave the way for a European Agriculture Data Space that facilitates data sharing, processing and analysis in a secure, trusted, transparent and responsible manner to create new opportunities for monitoring and optimizing natural resource use stimulating data-driven innovations.

The EU Code of Conduct on Agricultural Data Sharing by Contractual Agreement (EUCC) is one of the building blocks to support agricultural data sharing between farmers, agricultural advisors, and ag-tech providers. The EUCC was first proposed in 2018 by several large European farmers' cooperatives and industry organizations in agriculture. This code is a voluntary initiative without any obligations but is considered a basis for rights and responsibilities with many companies and platforms. The EUCC was the first attempt to get some clarity on data 'ownership' before many recent developments in data regulation, such as the European Data Strategy (2020), the EU Data Governance Act (2022), and the EU Data Act (2022 – draft version, still not passed). The voluntary code (guideline) was supposed to contribute to drawing up more balanced and transparent agreements about data sharing and use between parties than before.

It has been five years since the EUCC was first published and there has yet to be any definitive insights into how this code of conduct has been received within the industry and implemented in practice and whether it has been useful for farmers and agribusinesses alike. Therefore, one of the primary aims of this report is to find out what different stakeholders think about the EUCC, how has it been adopted within different EU countries, and if there is a need to re-examine, change, or replace the EUCC; in particular, as the horizontal Data Act is set to implement specific legal requirements for data sharing across sectors, while the

agricultural sector, due to its specificities, could require additional vertical legislation.

Therefore, this report contributes to a better understanding of the challenges and opportunities around data sharing in the EU which allows the consortium to enhance the design of the framework for the governance of the European Agriculture Data Space that is being developed in the EU project AgriDataSpace. It starts by providing an analysis of the scientific and grey literature that focuses on the EUCC, along with a comparison with other data-sharing codes in the agri-food domain (Section 2). Section 3 provides a detailed description of the methodology and steps that we implemented to conduct our qualitative research for this report. Our empirical analysis consisted of five national workshops (Romania, Belgium, the Netherlands, France, and Finland), and one EU-wide workshop, focusing on the EUCC with key stakeholders throughout Europe (Section 4). Section 5 consists of an analysis of the overall findings from the six workshops and how these findings contrasted with those from the desk-research on the EUCC. We conclude with recommendations on where to go with the status of the EUCC.

2. The EU Code of Conduct on Agricultural Data Sharing by Contractual Agreement

The EUCC was first established on April 23rd, 2018, by a group of nine leading agricultural cooperatives and farming organisations throughout Europe. The EUCC was led by COPA-COGECA, who represent 13 million farmers around Europe and are considered the largest united voice for farmers in Europe. In addition to COPA-COGECA, the consortium for the code of conduct consisted of CEJA (which represents young farmers throughout Europe); CEMA (European agricultural machinery industry association); FertilisersEurope; CEETTAR (the European Organisation of Agricultural, Rural, and Forestry Contractors); ESA (European Seed Association) (the European Seed Association); Fertilizers Europe; FEFAC (the European Compound Feed Manufacturers' Federation); CLE (the Crop Protection Industry in Europe); and EFFAB (European Forum of Farm Animal Breeders) (the European Forum of Farm Animal Breeders).

The EUCC was highly welcomed when it first came out because it was a response to many discussions at the time. These discussions on data were between Directorate-General for Justice and Consumers (DG JUST), who wanted a legal approach starting with the position that all data should be open, as opposed to Directorate-General for Communications Networks, Content and Technology (DG CNECT), who stated that the contract law is suitable

for the time being as it already covered data-related issues between those entering contracts. The EUCC was initiated because of these disagreements and is in fact in favour of the contractual agreement. Another foundational reason for developing the EUCC was to build trust among all stakeholders in the value-chain, by defining the roles and responsibilities on data sharing, with special attention to the role of the farmer/data originator.

The purpose of the EUCC was 'to provide support on contractual relations and provide guidance on re-using and sharing agricultural data' (Copa Cogeca, 2022). It focused on providing information to farmers and agribusinesses when entering contractual agreements for sharing agricultural data. It aimed to promote and increase agricultural data-sharing throughout Europe for the benefit of the farmer, the industry, and society. The COPA-COGECA-led consortium was focused on improving the farmer and agribusinesses' awareness of data-sharing and equipping them with the ability to discuss relevant topics when entering contractual agreements about their data.

One of the main underpinning principles of the EUCC is trust. The EUCC states that trust is required for ensuring fair agricultural data-sharing and the purpose of the EUCC is to build trust between the data originator and those they are sharing their data with. The EUCC wants to instil confidence and trust in farmers when they share data, while also promoting and encouraging the process of data-sharing itself. It aims to give greater control to the data originator in relation to their data:

'Data originator (sometimes referred as "owner"): In this code the originator (owner) is generally defined as "the person or entity that can claim the exclusive right to license access to the data and control its downstream use or re-use", i.e., the party that the data is attributed to. The data originator of all the data generated during the operation is the one who has created/collected this data either by technical means (e.g., agricultural machinery, electronic data processing programs), by themselves or who has commissioned data providers for this purpose.' (EUCC, 2019).

The EUCC has five main principles that underpin responsible data-sharing for the data originator:

1. Data rights (data ownership): The EUCC formulates data ownership in the context of rights given to the person/business that creates/collects agricultural data or commissions others to do so on their behalf. The data originator is the same role as the data rights holder.
2. Data access, control, and portability: Data originators should be able to access,

control, and reuse their data, and any third-party access needs to be explicitly consented to by the data originator.

3. Transparency and data protection: The sharing of data must be transparent and cannot be done with any third parties that are not listed in the contractual agreement. If there are changes to the contract, these must be agreed upon by all parties. The EUCC emphasises that data should be protected in accordance with GDPR (General Data Protection Regulation) and legislation.
4. Privacy and security: Personal or sensitive information should be anonymised and all efforts to protect the identity of individuals whom the data may identify should be made. If there are potential security breaches, those affected need to be informed immediately.
5. Liability and intellectual property: There must be a clear liability when there are breaches to the contractual agreement for data-sharing. Intellectual property needs to be protected so that there is no subsequent loss of business by those entering the agreement (Ryan & van der Burg, 2021).

The principles in the EUCC are there to protect all parties, to increase agricultural data-sharing, and as a result, to increase trust in, and growth of, the economy of agricultural data-sharing. There needs to be a trust that data-sharing is safe and beneficial between respective partners, and trust in the overall data-sharing industry. The EUCC is there to provide recommendations and principles to follow in an economy where there is little regulation (data sharing in agriculture) yet (Ryan & van der Burg, 2021). The EUCC was created as a step towards better ensuring farmers receive fair deals and that they understand the legalities and issues at stake when they enter contractual data-sharing agreements (Ryan & van der Burg, 2021).

Overall, the EUCC provides guidelines and principles to help the data originator (typically, the farmer) to navigate the legal landscape of data-sharing. It aims to provide a level playing field by informing data originators of their rights and what should be contained within contractual data-sharing agreements (Ryan & van der Burg, 2021). The EUCC is not a legally binding document, nor does it attempt to replace legitimate legal agreements between stakeholders. It merely points towards the context and content of these agreements.

2.1. Other Agricultural Data-sharing Documents

The EUCC is neither the first of its kind nor the only while it is unique in its focus on a European context, there have also been agricultural data-sharing documents created in New

Zealand² (2014), Australia³ (2020), and the USA⁴ (2014). A broad comparison between the different documents can be found in Table 3.

Table 3: Overview of four agricultural data-sharing documents

| | The EUCC | The Australian Farm Data Code | The New Zealand Farm Data Code of Practice | American Farm Bureau Federation's Privacy and Security Principles |
|-------------------------------|--|--|---|---|
| Lead Authors | Copa and Cogeca | National Farmers Federation | Farm Data Accreditation Ltd. | American Farm Bureau |
| Target Audience | Farmers, agribusiness, data providers, data users | Service Providers primarily, secondarily to inform farmers | Organisations that collect, hold, or share data about primary producers and their farming operations (p. 4) | Agricultural Technology Providers (ATPs) |
| Purpose For Farmers | Allow farmers to feel more secure when they share data | Understanding of data sharing; compare data providers; improve industry practice | Farm data will be handled securely and appropriately | Farmers own their data, and they are responsible for agreeing with other stakeholders how it should be used |
| Purpose For Service providers | Provide guidance on the use of agricultural data and contracts | Clear guidance on data policy; and inform discussions about farm data | Improve data ease of access | A service provider's principles, policies and practices be consistent with their contracts with farmers. |
| Language used | Dense and detailed | Clear and direct | Clear and direct | Clear and direct |
| Length | 20 pages | 8 pages | 16 pages | 5 pages |
| Date | 2018 | Feb-20 | Mar-16 | Apr-16 |
| Checklist | Yes | No | Yes | No |

² New Zealand Farm Data Code of Practice: <https://www.farmdatacode.org.nz/>

³ Australian Farm Data Code: https://nff.org.au/wp-content/uploads/2020/02/Farm_Data_Code_Edition_1_WEB_FINAL.pdf

⁴ American Farm Bureau Federation's Privacy and Security Principles :
<https://www.agdatatransparent.com/principles>

| | | | | |
|------------------------|--|---|---|---|
| <p>Main Principles</p> | <p>1. Data ownership; 2. data access, control and portability; 3. data protection and transparency; 4. privacy and security; 5. liability and intellectual property rights</p> | <p>1. Transparency; 2. Fair & Equitable use of data; 3. Ability to control and access data; 4. Documentation & Record keeping; 5. Portability of farm data; 6. Keeping farm data secure; 7. Compliance with national and international laws</p> | <p>1. Corporate identity; 2. Rights to data; 3. Security standards; 4. Data access; 5. Data sovereignty</p> | <p>1. Education; 2. Ownership; 3. Collection, access and control; 4. Notice; 5. Transparency and Consistency; 6. Choice; 7. Portability; 8. Terms & Definitions; 9. Disclosure, use and sale limitations; 10. Data retention and availability; 11. Contract termination; 12. Unlawful or anti-competitive activities; 13. Liability & security safeguards</p> |
|------------------------|--|---|---|---|

2.1.1. The New Zealand Farm Data Code of Practice

The New Zealand Farm Data Code of Practice was written in 2014, by the Farm Data Accreditation Ltd. The New Zealand Farm Data Code of Practice (2014) has three tiers of stakeholder organisations at the start of its document: shareholders of the Farm Data Accreditation Ltd., which owns the code of practice (seven organisations); the code of practice advisory group (eight organisations); and funders and project managers (five organisations). Several of the owners of the accreditation were on the advisory group, and/or were the funders and project managers of the code. Some of the original industry partners and farmer representative groups that were involved were: Dairy NZ; CRV Ambreed; LIC; FarmIQ; Federated Farmers of New Zealand; TE TUMU PAEROA; Fertiliser Association; and Fonterra. Following its publication, the code broadened its stakeholders beyond the dairy industry to include the 'Red Meat Profit Partnership and the Ministry of Primary Industries through the Primary Growth Partnership' (FarmDataCode Website, 2023).

The document is focused on compliance with the codes set out in this document, but also, the management and administrative steps in processing one's application and certification. The New Zealand code focuses more on the organisations' managing the data, rather than the farmer. The code outlines what must be disclosed to the farmer, but also how this is put into practice. However, it is a little unclear what the farmer is supposed to do with this document. It is more akin to a standardisation document than a code of conduct. It is also the only document, from the four analysed in Table 3, that indicates a benefit for accepting it (by

means of accreditation). They are given an annual licence and certification, which can be used to show others that they endorse and abide by the values in the code. This may give the document a stronger degree of credibility (Ryan & van der Burg, 2021).

However, they require a fee of \$1400 for membership, license, and trademark use of the codes. Furthermore, there are many restrictions and compliances that an organisation must abide by to receive accreditation. For example, a requirement is that 'the organisation complies with ISO 27001, or the NIST Engineering Principles for Information Technology Security (NIST Special Publication 800-27 Rev A) or has an equivalent information security management system to protect against data being compromised' (Farm Data Code of Practice Authority 2014, p. 6).

A difference between the New Zealand Code and the EUCC is that the former has a very specific and detailed checklist that actors can use to identify if they are abiding by the criteria set out in the document (Farm Data Code of Practice Authority 2014). This checklist may provide organisations with an easy and usable tool to identify if they are using, storing, and sharing, data in a safe and ethical way. While the EUCC has a list of questions to ask at the end of its report, titled 'Main legal principles in order to have a balanced contract – Contract check list for agricultural data', this is not as explicit and comprehensive as the New Zealand code.

2.1.2. The Australian Farm Data Code

The Australian Farm Data Code was 'developed and adopted by the National Farmers' Federation (NFF) in consultation with industry, and with support from the Australian Government' (National Farmers Federation, 2023, see <https://nff.org.au/programs/australian-farm-data-code/>). The Australian code is clearer and easier to understand compared to the EUCC. It is using less convoluted language than the EUCC (National Farmers Federation, 2020) as the EUCC goes into greater detail about the diversity of actors, types of data, and principles, that becomes confusing. Despite the abundance of detail, there is a much better distinction in the EUCC between the overlap of different types of data than in the Australian code.

The Australian code places a stronger emphasis on the needs of the farmer, rather than focusing too much on the legal necessities, which the EUCC does. The EUCC rarely mentions the farmer, instead, referring to them as data originators. While the Australian document refers to farmers, instead of disassociating them as the abstract term of data

owner. However, the EUCC goes into more detail about the different categories of actors, rather than only the farmers or service providers, than the Australian code does.

The Australian code does not give examples of how one would implement the codes in practice, who is responsible, and the different chains of command involved in the data processing. The EUCC identifies that it is important to distinguish these different actors, for this reason. The visual diagrams in the EUCC could be beneficial but are too convoluted and unclear for an average reader. Extensive definitions and concepts in the EUCC, whereas it is kept to a minimum in the Australian document.

There is also a lack of clarity about the implementation of the Australian code, where they state that they 'allow flexible implementation, so that providers can establish appropriate practices around farm data collection, use and sharing' (National Farmers Federation, 2020, p. 1). This could give the indication that they can implement precarious rules to get around policy, regulation, and their ethical obligations. It is unclear what 'appropriate practices' are, and who classifies these.

2.1.3. American Farm Bureau Federation's Privacy and Security Principles

The American Farm Bureau Federation's Privacy and Security Principles were written in 2016 by the American Farm Bureau and have received adoption and approval by most of the leading agricultural technology providers in the US and internationally. The latest list of adoptees consists of: AGCO; Ag Connections, Inc.; Agrible, Inc.; AgSense; AgWorks; Ag Leader Technology; American Farm Bureau Federation; American Soybean Association; Beck's Hybrids; CNH Industrial; Conservis Crop IMS; CropMetrics; Dow AgroSciences LLC; DuPont Pioneer; Farm Dog; Farmobile LLC; Granular; Grower Information Services Cooperative; GROWMARK, Inc.; Independent Data Management LLC; John Deere; Mapshots, Inc.; National Association of Wheat Growers; National Barley Growers Association; National Corn Growers Association; National Cotton Council; National Farmers Union; National Potato Council; National Sorghum Producers; North American Equipment Dealers Association; OnFarm; Raven Industries; Reinke Manufacturing Co., INC.; Syngenta; The Climate Corporation – a division of Monsanto; USA Rice Federation; Valley Irrigation; and ZedX Inc.

This huge list of participants demonstrates the initial approval and need for a code of conduct for agricultural data-sharing in the USA. The code itself is primarily targeted at these agricultural technology providers (ATPs) and is much shorter than the EUCC and more

succinct and clearer. It is the shortest out of the four codes, being only 5 pages in length, but is also written concisely for users of the code. However, there are no tangible tools or guidelines on how to implement its principles in practice. It has 13 principles, which is the most out of all the codes analysed, emphasising its strong principle-focused approach, rather than concentrating too much on definitions and providing a mapping of stakeholders in the field.

It does not provide the depth and detail of the EUCC, the accreditation of the New Zealand Code, or the simplicity and focus on the farmer as the Australian code does. One of the major selling points of the US code is, however, that it gathers so many of the key players in the industry to agree to its principles, albeit these are a little vague and not enforced. It also has agricultural data transparency in its compliance certification, which is not available in the EUCC.

3. Methodology

The evolution of the EU AgriDataSpace project began in late November 2021, when the call fiche for the EU Preparatory actions for Data Spaces (DIGITAL-2021-PREACTS-DS-01) was made available. Within this call fiche, our project was funded under the call for “DIGITAL-2021-PREACTS-DS-01-AGRI – Preparatory action for the data space for agriculture”. Within this call, there was a requirement to evaluate the ‘experiences with the EU Code of Conduct on sharing agriculture data by contractual agreement.’ Responding to this requirement, we prepared an outline for how this would be done in practice in the AgriDataSpace project (see Table 1).

Table 1 Description of Action for Task 1.3 (Systematic assessment of the experiences with the code of conduct)

This task will begin with an analysis of the experiences of the EU agricultural code of conduct for agricultural data-sharing (EUCC), and how it contrasts with other similar codes (e.g., Ryan and van der Burg 2021, van der Burg, Wiseman Krkeljes article 2020, and Wiseman and Sanderson 2017). This desk research will provide an initial overview of how the EUCC has been received in the literature and provide input and questions for our qualitative analysis. We will organise multiple national workshops with actors who have different levels of experience with the EU code of conduct, both individual and organisation, e.g., also labelling initiatives. They will respond to, verify, and challenge our findings of what makes a good code of conduct for agricultural data-sharing based on their experience. This task will identify stakeholders' experiences, how well the existing EUCC is known, understood and adopted by end-users and how they view similar agricultural data-sharing codes.

Following approval of funding by the European Commission (EC), AgriDataSpace began on October 1st with a kick-off meeting in Paris, France (as this is the headquarters of the team leading the project – AgDataHub). This initial meeting started the discussion on how to initiate the task outlined in Table 1. After this kick-off meeting, the task leader initiated a more formal Teams meeting 2-weeks later, as not everyone involved in the task was able to attend the kick-off meeting in Paris. This meeting established an agenda for completing the tasks, responsibility allocation for tasks, and overall approach to take to identify experiences with the EUCC.

Following the input from the consortium partners, it was decided to meet via Teams twice a month until the completion of the task. During each session, an agenda would outline the main points of discussion, a set of minutes would be sent around to all partners, and all documents relevant to the WP were uploaded to a shared Teams folder repository. This was done throughout the 12 months of the task to ensure a consistent catalogue of our work and documentation for partners to follow the steps of the task.

The first major step in the task for this report was to detail the methodology to identify and analyse currently available viewpoints on the EUCC. The partner leading the task began this process shortly after the first initial kick-off meeting of the project. This methodology is the result of this work. The methodology stemmed from several brainstorming sessions and meetings between the individuals from the partner organisation leading the task and in the bi-weekly review meetings with the other consortium partners involved in this task.

In parallel, the Task team worked on providing an overview of the EUCC and did a broad evaluative mapping of the literature that focuses on the EUCC and many different aspects of its implementation, such as the pros and cons of the document, how it is being implemented, how it has been received within the community, what contexts it is being used, organisations involved in it (countries, projects, the team involved – i.e., is it national, local, or transnational), governance by particular organisations in practice etc., and levels of compliance and enforcement of the code. The Task team did a thematic analysis of the literature on these topics (see Section 4 of this report).

The literature review was provided to the partners to retrieve their input and feedback, with a definitive version being completed six months after the project kick-off. The literature review was a useful tool to map the main themes to focus on during the six workshops that took place in April 2023. Because of coordination, time available for the task, and time restrictions of when the task must be completed (after 12 months), it was decided that each of the six consortium partners should conduct one workshop each (five national workshops and one

European-focused workshop).

The reason for this was based on the geographic locations of the partners involved in the task, and the need for both national (In total, the five national workshops were in: the Netherlands, Belgium, France, Finland, and Romania) and transnational viewpoints on the EUCC. As the workshops were not meant to be a representation of all EU countries, but rather function as a snapshot of views from some countries integrating the EUCC, we stuck with the partner countries for pragmatic reasons. The partners were aware of data-sharing activities taking place in these countries and were familiar with the key partners to invite to the workshops in these countries. The EU workshop was implemented to identify some of the more overarching EU-wide perspectives on the EUCC and to perhaps get insights from an EU-level to contrast with the views from the national workshops.

The structure, themes, and questions, used in the workshop were created through an iterative process between the task leader and the task partners throughout the course of four months (December 2022 – March 2023). These conversations took place through bi-weekly online exchanges (on Microsoft Teams), as well as working on a template document on a group SharePoint, which all partners could access and edit. The first draft questions were written by the task team leader and was based on the insights found in the literature on the EUCC from Section 4 of this report.

A workshop protocol was devised for guiding the facilitators of the workshops. This workshop protocol contained an outline of the task, a brief methodology of how to implement the task, a proposed agenda structure and timing, a draft invitation letter to potential stakeholders, a consent information document and consent sheet, and an outline of the report required after the workshops (see Appendix).

The workshops took place in each of the five countries listed earlier and the sixth was an EU-level workshop. The partners developed an agenda, which would be used in all six workshops to ensure consistency. Each of the partners sent around an informed consent sheet one week before the workshop, in the participants' native language, to ensure that they understood the purpose of the workshop and how their data would be processed. It was disclosed to them that the workshop would be fully anonymised and that the information from the workshop would be used in a report and possible scientific publication. They were then provided these sheets before the workshops to sign them to acknowledge that they were aware and consented to the use of information from the workshop.

The workshops for the EUCC were joined together with task 1.2 and task 2.4 from the

AgriDataSpace project, making them 3 hours in total (1 hour dedicated to the EUCC component of the workshop). The workshops began with a brief introduction from the hosting partner about the goals and aims of the task, and a quick recap of the main content of the AgriDataSpace project. The workshop then focused one segment towards data sharing initiatives for Task 1.2, another on the EUCC (for the purposes of this report), and thirdly, a section on data sovereignty for Task 2.4. ILVO attended all workshops, except the one in Poland, as WP and task 1.2 lead, to ensure a correct explanation of the project and workshop objectives for this task and facilitate this part of the workshops to have qualitative input, and get acquainted better with the network, to expand the AgriDataSpace ecosystem.

The five national workshops were conducted in the native language of the country where the workshop was based, but the findings were translated into English for the purpose of this report. The EU-level workshop was conducted in English because of the wide diversity of participants (and their languages) in attendance. It was decided that it would be best to do this as participants in each country were more comfortable speaking their native language. Each consortium partner involved in the task had a member(s) of their team conduct the workshop and another taking notes throughout the workshop. We opted not to record the meetings because it was felt that people would feel uncomfortable about this.

Once the workshops were completed, each of the workshop facilitators evaluated the findings of their respective workshops. The workshop partners were given a methodology for writing their reports (see Appendix X) so that all partners were working with the same objectives and frameworks for analysis. The overall methodology was based on a grounded theory approach (Charmaz 2006) and the thematic qualitative methodology developed by Braun and Clarke 2006. The grounded theory approaches the views and experiences of stakeholders in relation to a particular discussion, in this context, the EUCC. While Braun and Clarke's (2006) thematic approach are 'a method for identifying, analysing, and reporting patterns (themes) within data. It minimally organizes and describes [the] data set in (rich) detail' (Braun and Clarke 2006, 79). The data in this report stems from the information from each of the seven workshops and the discussions and views of the participants involved.

After each of the partners wrote their six individual reports, the task leader provided feedback to the partners on their reports. Based on this input, each partner could further refine, edit, and improve their individual reports, while also providing the lead partner with insights on the overarching outcomes of the seven workshops. The input from the partners was then inputted into one overall document in July 2023 and went through several iterative stages of refinement (from the task lead and other partners) until a final report was ready for

submission on September 30th, 2023. The below sections are the result of this process, starting with the literature review of the EUCC and followed by the results from the six workshops on the EUCC.

4. Literature Review of the EUCC

This section looks at the literature and what has been published on the EUCC. The purpose of this section is to evaluate how the EUCC has been received in scientific and grey literature.

4.1. Scientific Literature

The scientific literature on the EUCC is relatively limited. The search was done in all fields (i.e., author, abstract, references, etc.) and with the limitation of the language being in English and the years of publication between 2018 up to and including 2023 (the search itself was done in December 2022). The search terms used in Scopus and results see Table 1.

Table 1. Overview of used search terms and number of results per search term in Scopus.

| Search Terms | Results (#) |
|--|--------------------|
| "European Union code of conduct on agricultural data sharing by contractual agreement" | 0 |
| "European Union code of conduct on agricultural data sharing" | 0 |
| "EU code of conduct on agricultural data sharing by contractual agreement" | 15 |
| "EU code of conduct on agricultural data sharing" | 19 |
| European Union code of conduct on agricultural data sharing by contractual agreement (AND) | 12 |
| European Union code of conduct on agricultural data sharing by contractual arrangement (AND) | 4 |
| EU code of conduct on agricultural data sharing by contractual agreement (AND) | 21 |
| EU code of conduct on agricultural data sharing by contractual arrangement (AND) | 4 |

In total, 75 results were found and after checking for duplicates, this resulted in 26 documents. These documents were scanned for the use of the EUCC in the body text of the document. Very often the full search term as indicated in Table 1 could only be found in the reference list. Hence the in-text searches were done based on the author of the EUCC (COPA-COGECA in most documents) or on the words '*code of conduct*'. Relevance meant that there was more than just a mere mention of the existence of the EUCC. After scanning

the 26 documents, we were left with only 13 documents which were usable for our analysis (see Table 2).

Table 2. Overview of selected literature.

| # | Reference |
|----|--|
| 1 | Amiri-Zarandi, M., Fard, M. H., Yousefinaghani, S., Kaviani, M., & Dara, R. (2022). A Platform Approach to Smart Farm Information Processing. <i>Agriculture (Switzerland)</i> , 12(6). |
| 2 | Atik, C. (2022). Towards Comprehensive European Agricultural Data Governance: Moving Beyond the “Data Ownership” Debate. <i>IIC International Review of Intellectual Property and Competition Law</i> , 53(5), 701-742. |
| 3 | Atik, C., & Martens, B. (2021). Competition Problems and Governance of Non-personal Agricultural Machine Data: Comparing Voluntary Initiatives in the US and EU. <i>Journal of Intellectual Property, Information Technology and E-Commerce Law</i> , 12(3), 370-396. |
| 4 | Brown, C., Regan, Á., & van der Burg, S. (2022). Farming futures: Perspectives of Irish agricultural stakeholders on data sharing and data governance. <i>Agriculture and Human Values</i> . |
| 5 | Garske, B., Bau, A., & Ekardt, F. (2021). Digitalization and ai in European agriculture: A strategy for achieving climate and biodiversity targets? <i>Sustainability (Switzerland)</i> , 13(9). |
| 6 | Grieve, B. D., Duckett, T., Collison, M., Boyd, L., West, J., Yin, H., . . . Pearson, S. (2019). The challenges posed by global broadacre crops in delivering smart agri-robotic solutions: A fundamental rethink is required. <i>Global Food Security</i> , 23, 116-124. |
| 7 | Lioutas, E. D., Charatsari, C., La Rocca, G., & De Rosa, M. (2019). Key questions on the use of big data in farming: An activity theory approach. <i>NJAS - Wageningen Journal of Life Sciences</i> , 90-91. |
| 8 | Lorencowicz, E., & Uziak, J. (2023) Selected Problems on Data Used in Precision Agriculture. In: <i>Vol. 289. Lecture Notes in Civil Engineering</i> (pp. 217-226). |
| 9 | Martens, K., & Zscheischler, J. (2022). The Digital Transformation of the Agricultural Value Chain: Discourses on Opportunities, Challenges and Controversial Perspectives on Governance Approaches. <i>Sustainability (Switzerland)</i> , 14(7). |
| 10 | Relf-Eckstein, J. E., Ballantyne, A. T., & Phillips, P. W. B. (2019). Farming Reimagined: A case study of autonomous farm equipment and creating an innovation opportunity space for broadacre smart farming. <i>NJAS - Wageningen Journal of Life Sciences</i> , 90-91. |
| 11 | van der Burg, S., Wiseman, L., & Krkeljas, J. (2021). Trust in farm data sharing: reflections on the EU code of conduct for agricultural data sharing. <i>Ethics and Information Technology</i> , 23(3), 185-198. |
| 12 | Wiseman, L., Sanderson, J., Zhang, A., & Jakku, E. (2019). Farmers and their data: An examination of farmers’ reluctance to share their data through the lens of the laws impacting smart farming. <i>NJAS - Wageningen Journal of Life Sciences</i> , 90-91. |
| 13 | Wiseman, L., & Sanderson, J. (2019). <i>Empowering farmers by resolving the trust and legal issues emerging from precision farming</i> . Paper presented at the Precision Agriculture 2019 - Papers Presented at the 12th European Conference on Precision Agriculture, ECPA 2019. |

Out of these 13 documents, a few (Garske et al. (2021), Grieve et al. (2019); Lioutas et al. (2019)) gave a brief overview of the purpose or content of the EUCC, while one gave a comprehensive outline of the EUCC (Lorenkowicz & Uziak (2023)).

Amiri-Zarandi et al. (2022) went beyond a description of the EUCC and identified that there are gaps with regards the regulations related to big data in agriculture, namely “the lack of comprehensive and unified regulations for agriculture data, while the available practices and a code of conduct are not compulsory”. According to them (Amiri-Zarandi et al., 2022, p.14) a data sharing platform needs to “provide mechanisms ensuring compliance with available policies in smart farming. A smart farming platform should encourage the parties to trust the services provided and participate in collaborative practices that enhance the performance of data processing systems in agriculture applications” (p.14).

Others also comment on the self-regulation of the agricultural sector. Relf-Eckstein et al. (2019) point out that the existing codes of conduct (including the EUCC) are voluntary, and that industry participation is limited. Martens & Zscheischler (2022) provide an overview of perspectives given by a variety of participants at a European conference on digital transformation. Some of these participants even go as far to say that the EUCC is referred to as outdated. According to the authors, it is recommended: “to establish legal provisions so that companies wishing to buy data are responsible for ensuring that the contracting parties understand the contracts” (p. 7). This will also help to adjust the perceived power asymmetry “due to the different digital capacities and skills of the public and private sectors” (p. 7), with new global players entering the agricultural sector (e.g., Amazon or Google). Making a more formal regulation around data sharing also helps to ensure sustainability (e.g., through compliance or by having mayor players pay for their environmental costs) as digitalisation is seen as a tool to meet the EU sustainability goals. However, there are also opponents of further regulation as “it will harm European market and prevent important innovations in the field from developing” (p. 7). Martens & Zscheischler (2022) furthermore point out that there are doubts about the ability of the EUCC to truly support farmers in practice, as farmers prefer to have the data governance organized by farmers themselves (without agri-business interference) or governments rather than by the market. Another argument for the EUCC is that through adequate data-sharing contracts, all farmers will profit from their data sharing.

Although the EUCC states that “the farmer remains at the heart of the collection, processing, and management of agricultural data” in the “era of digitally enhanced farming” in the agri-food sector (COPA-COGECA et al. 2018, p. 3), Brown et al. (2022) argue however that for

that to become a reality a more nuanced understanding of data must be adopted in policy development as the understanding of farmers about their data (e.g. what is public or private and personal or non-personal) has shifted. Hence EU policy should focus on fostering trust in data sharing to support a free flow of data.

Atik and Martens (2021) come to a similar conclusion about the need for further regulation. They outline that data-driven agricultural business models create a lock-in for farm data into technologies. According to them the voluntary codes of conduct, such as the EUCC, have not been very successful so far. The EUCC does allow farmers to have more control over their data, “but do not really change market-based outcomes due to their legal design.” (p. 370). The authors continue to state that farmers are in a weak bargaining position as individual farm data has low marginal value. Farmers are therefore often locked in third-party platforms, which are necessary to act as intermediaries in data sharing to achieve economies of scale and scope in data aggregation. Hence, Atik and Martens (2021) argue for regulatory intervention that facilitates mandatory data portability and interoperability, allowing farmers to overcome data lock-ins and monopolistic market failures. This does, however, raise questions about data access rights (i.e., who should get access to which data, for what purpose and under what conditions?).

Atik and Martens (2021) also investigated the EUCC in detail and identified that there are some prominent limitations in its design: First, it is a voluntary initiative, and it has inherent limitation of participation. Secondly, it says nothing about the enforcement of the proposed rules and principles as there is not any consequence for the non-compliant participants. Third, contractual superiority over the proposed rules is repeated all over the text and this makes its enforceability more difficult. Also, data rights and right holders are not fully clear from my perspective. For all these reasons, even though EUCC might have created a sense of trust among farmers (as having some rules may be seen as better than free market), the listed limitations may render this trust a kind of ‘false trust’, and this may be more dangerous than the lack of trust.

Atik (2022) builds on this and continues to state that the concept of data ownership as applied in the current voluntary codes of conduct does not solve the underlying issues of power imbalances that are a consequence of market failures (including problems of data lock-in, data fragmentation, data access and a lack of trust from farmers). In fact, the current framing of ownership in these codes of conduct might exacerbate the problems, as with ownership also comes the right to transfer data to another party. Property rights often end up

in the “hands of those who attach most value to them”. Thus, a data ownership design might even result in stronger data holders (owing to their superior bargaining power and interest in controlling data) rather than removing the chains from weaker entitlement holders” (p.711/712). Further regulation or legal design should therefore be flexible with regards to the framing of data ownership to allow for solving the above-mentioned problems, if that is possible at all through regulation.

The lack of trust from farmers in relation to data sharing, according to Wiseman et al. (2019) and Wiseman and Sanderson (2019), stems from concerns about the ownership of data and the inequality of the farmers’ bargaining power, as also mentioned above (Atik and Martens, 2021; Atik, 2022). In addition, the lack of trust stems from privacy concerns; a lack of transparency about the terms of use in data licenses; and a lack of benefit-sharing between farmers and third-party advisers/agribusiness. According to the authors “farmers feel that they bear too much of the risk and vulnerability, and do not benefit from the rewards that smart farming brings.” (Wiseman et al., 2019, p. 10). Hence broader legal and regulatory issues should be considered in broadly implemented open and transparent governance frameworks. Wiseman et al. (2019) point out that codes of conduct are aiming to provide consent, disclosure and transparency through the encouragement of best practices in data management by technology providers, and by enhancing farmers’ knowledge around data sharing issues, all ultimately contributing to the building of trust. Wiseman and Sanderson (2019) add that it also requires the agricultural industry to learn more and provide more support to farmers about digital literacy, data literacy and legal literacy, allowing for a more level playing field between farmers and agri-businesses. Hence, even though having voluntary agricultural data codes is a step in the right direction, the success and impact of such codes of conduct remains to be seen (Wiseman et al., 2019, Wiseman and Sanderson, 2019).

Van der Burg et al. (2021) continue with a deeper reflection on trust, contract agreements and related power imbalances in the EUCC. They state that the EUCC aims to support trust in data sharing through a contractual agreement, but this does not consider the existing power relations between experts and non-experts. Hence van der Burg et al. (2021) argue in order to foster trust through contract agreements for data sharing the following three aspects need to be in place: 1) the more vulnerable partner in a (potential data sharing) relationship understands the information that is in the contract; 2) the information should be provided by the more powerful partner; and 3) the information is tailored towards the needs of the more vulnerable partner. Additionally, the authors question if contract agreements can build trust in

the first place, especially when there is no existing relationship to begin with, or whether they function more as a trust maintainer. If a code of conduct truly wants to build trust, then it should consider:

“Responsibilities for agribusinesses to use the data to develop services that help farmers thrive or adopt protective measures against making them vulnerable for new risks and harms that farmers may still be unaware of or could commit to fostering broader (and more just) accessibility of the technologies for farmers with little digital expertise or resources to spend on buying the technologies. Rather than seeking solely transparency and consent, the EU Code would then foster trust by engaging all partners in a shared effort to realize fairer and more equitable outcomes for the diverse partners in the data-sharing network.” (Van der Burg et al., 2021, p. 196)

In more practical terms they state there is a difference between trust and accountability in relationships, hence more ethical components, such as informed consent, should be included in a “more encompassing code of conduct.” (Van der Burg et al., 2021, p. 185).

The scientific literature tends to appreciate efforts being made to create a code of conduct for data sharing at and EU level, since there is no formal regulation and data sharing creates many challenges. However, the literature also shows that there are still several issues that are not solved by the current EUCC, or potentially even exacerbated. The fact that the EUCC is voluntary causes several authors to worry about the role and position of farmers in contract agreements. The existing power imbalances and the lack of trust from farmers, amongst other things, thus create a need for additional and formal regulation for data-sharing.

4.2. Grey Literature

The combined search term we used in Nexis Uni was “Code of conduct” AND “agricultural data sharing”. This produced 15 results. We also translated the combined search term into four other languages – German, French, Italian, and Spanish (because they are the four largest languages spoken in Europe, outside of English) - but with no result. The search terms used in Nexis Uni and results see Table 3.

Table 3. Overview of used search terms and number of results per search term in Nexis Uni.

| Search Terms | Results (#) |
|--------------|-------------|
|--------------|-------------|

| | |
|---|----|
| "Code of conduct" AND "agricultural data sharing" | 15 |
| "EU Verhaltenskodex" AND "Austausch landwirtschaftlicher Daten" | 0 |
| "Code de conduite de l'UE" AND "données agricoles" | 0 |
| "Codice di condotta dell'UE" AND "dati agricoli" | 0 |
| "Código de conducta de la UE" AND "datos agrícolas" | 0 |

We ended up with in total 20 documents of which none were duplicates. We also made use of two relevant documents of the EU funded project Internet of Food and Farm 2020, of which we were aware that they focused on the EUCC (totalling 22 documents). Finally, only 13 documents were relevant for our analysis due to generality of the description of the EUCC of the other 9 documents (see Table 4). Our analysis of the documents is focused on issues discussed concerning the application of the EUCC. We noticed that the articles published in 2018 are mainly about describing the launch of the EUCC and do not raise any issues or discussions yet.

Table 4. Overview of selected grey literature.

| # | Reference |
|----|--|
| 1 | ABC Premium News (2022). Are big ag tech companies harvesting farmers' confidential data? Australia Broadcasting Corp. February 18, 2022. |
| 2 | Burg, S. van der, M. Ryan, E. Oosterkamp, M.J. Bogaardt, E. Giesbers, H. Adema (2021). D7.7 Overview of preconditions for trust in data sharing. <i>Internet of Food and Farm 2020</i> . March 26, 2021. |
| 3 | Byrne, J. (2018). New EU code aimed at 'fair and transparent' sharing of feed and farming related data. <i>FeedNavigator.com, William Reed Business Media Ltd., April 24, 2018</i> . |
| 4 | Cheesly, A. (2018). Precision agri solutions 'help cut carbon footprint and drive resource efficiency'. <i>Agri Investor, PEI Media Ltd., November 22, 2018</i> . |
| 5 | Gennen, K., and L.S. Walter (2022). Datenhoheit, Datenschutz un Datensicherheit bei KI im Agrar- und Ernährungssektor. In: <i>M. Gandorfer et al.: Künstliche Intelligenz in der Agrar- und Ernährungswirtschaft, Lecture Notes in Informatics (LNI), Gesellschaft für Informatik, Bonn, 2022, pp. 105-110</i> . |
| 6 | Härtel, I. (2020). Gutachten zum Thema "Europäische Leitlinien bzw. Regeln für Agrardaten"(European Agricultural Data Governance). Juni 2020 |
| 7 | Impact News Service (2020). Agricultural Machinery Data-sharing: industry releases its strategy paper to achieve a full roll-out. <i>Impact Media Ltd. February 6, 2020</i> . |
| 8 | Michalopoulos, S. (2020). LEAK: EU plans 'common data spaces' to exploit agriculture and health potential. <i>EurActiv.com, Acteurs d'Europe, February 17, 2020</i> . |
| 9 | Oppewal, J. (2021). Schouten onderzoekt of boer genoeg grip heeft op eigen data. <i>Boerderij Vandaag, ed. 35, nr. 188, Reed Business BV, August 17, 2021</i> . |
| 10 | Ryan, M. and S. van der Burg (2021). D7.6 (Revised) Guideline and/or Code of Conduct. <i>Internet of Food and Farm 2020</i> . March 16, 2021. |
| 11 | Stam, C. and S. Michalopoulos (2018). EU agri-food operators sign milestone data sharing deal. <i>EurActiv.com, Acteurs d'Europe, April 24, 2018</i> . |
| 12 | Tomasso, L. (2022). L' accès aux données agricoles: les domaines d'intervention de la loi et du contrat. <i>L' agriculture numérique, Enjeux numérique, Annales des Mines,</i> |

| | |
|----|---|
| | <i>Septembre 2022, No. 19, pp 74-78.</i> |
| 13 | US Official News (2018). Janzen Ag Law on European Union's Code of Conduct on Ag Data Sharing. <i>Plus, Media Solutions Private Ltd, July 18, 2018.</i> |

4.2.1. Main concerns about the EUCC

Ryan and Van der Burg (2021) stated that codes of conduct and codes of ethics intended for companies and professional groups are not always effective for three reasons: i) they are not well aligned with the values of the people who need to use it, ii) they are often not clearly formulated, and iii) they are not always carefully implemented and administered. According to Ryan and Van der Burg, these three reasons are also applicable to the EUCC. Regarding the third aspect, it is not clear who is responsible for the implementation and enforcement of the EUCC. Also, the consequences of the breach of the agreed set of rules/principles are not determined at all. One participant can practically declare its participation to create a sense of 'false' trust among its customers while it can act against the main principles of the EUCC. The contractual superiority over the principles (if agreed by the party's kind of emphases) throughout the text may create a 'justification' base for these actions.

4.2.2. More trust in law, regulation, and technology

The reason for creating the EUCC is that trust in data sharing is considered as an important issue in the agricultural sector (Cheesley, 2018). Like what was found in the scientific literature, the grey literature also states that due to its voluntary characteristic and not being legally binding, the EUCC cannot take the place of a clear regulatory framework (Gennen and Walter, 2022) and therefore has a limited range (Tomasso, 2021: 76). In Australia the question has been raised about regulating digital technology in agriculture as heavily as social media companies are by the European commission (ABC Premium News, 2022). Farmers' personal data is protected by (privacy) law, but their agronomic or productivity data are not. The news item continues by stating that some farmers advocate anchoring data collection and exchange in legislation (by expanding consumer data laws in agriculture) instead of a voluntary code such as the EUCC. Some farmers have insufficient trust/confidence in voluntary guidelines (ABC Premium News, 2022). Also, Härtel (2020: 61) stated that the existing problems and imbalances concerning data sharing in agriculture will not be solved with voluntary self-regulation (such as the EUCC), but with binding legal regulations as regulated self-regulation or hard law regulation for example in the form of an EU agricultural data act. And the effectiveness of those legal rules can be secured through evaluation and compliance.

In 2021 Carola Schouten, the former Minister of Agriculture in the Netherlands, suggested additional policy or measures when voluntary data sharing codes do not provide farmers with sufficient control over their own data (Oppewal, 2021). However, to date the current Minister of Agriculture has not taken any decision on this. In mid-2023 the Ministry of Agriculture, Nature and Food Quality will publish its Digitalization Action program in which we expect that matters such as data standards and agreements on data sharing will be further elaborated.

The EUCC has been shaped to foster (more) trust in farm data sharing. But contracts - drafted on the base of the EUCC - will not do all the work to bring about trust. It is important to look at the data sharing activities as social activities which should be approached with a social perspective to trust (van der Burg et al., 2020; 15).

The agricultural machinery industry sees the EUCC as the basis for establishing an easy, secure, automatic transfer of data between platforms to realize sharing of agricultural machinery data (Impact News Service, 2020). With the development of technological tools, agricultural machine producers want to support farmers to do more with the data coming from their farming equipment (Impact News Service, 2020). According to these machine producers, well-designed technology also builds trust alongside the principles of the EUCC (Impact News Service, 2020).

And the European Feed Manufacturers' Federation (FEFAC), that committed itself to apply the EUCC in 2018, stated that, to fully reap the benefits of digital farming, sharing data between different partners in the agri-food chain must be conducted in a fair and transparent way (Byrne, 2018). By drafting the EUCC the conditions for data sharing were identified and the published EUCC provided some form of cross-sector agreement to avoid conflicts between farmers and input industries such as animal feed manufactures (Byrne, 2018).

4.2.3. Will the EUCC improve the data position of farmers?

A USA lawyer noticed in 2018 that the EUCC favours and uses the concept of “data originator” instead of “data ownership” (US Official News, 2018). In his view, the EUCC states that, as a basic principle, data produced by the farm operator, or commissioned by the operator, is considered the property of the data originator. Furthermore, it was assumed that existing contracts are complex and that the EUCC should help to simplify the process (US Official News, 2018). However, according to Härtel (2020), the EUCC fails to achieve this goal because many of the guidelines are vague in their wording and do not provide recommendations on how to deal with potential conflicts of interest, especially on the issue of data authorship or data ownership. It is unclear what concrete rights farmers have in the

event of multiple authorship of data (Härtel, 2020). Furthermore, the EUCC does not indicate to what extent the interests of farmers of different farm sizes can be considered when drafting data-sharing contracts. The EUCC also does not give farmers any rights with regard to the required interoperability (Härtel, 2020).

Härtel (2020) states that the EUCC contains gaps when it comes to protecting farmers. The first gap relates to the data rights of the farmer when they have data sharing relationships with two or more parties. The right of a farmer to access the data has not been sufficiently established. Furthermore, there are no indications of sanctions in the event of contractual provision breaches by the provider. Härtel (2020) argues that trade associations should address and further develop these gaps.

She wrote for instance that “a number of guidelines [in the Code] remain vague in their wording, and hence also do not constitute concrete recommendations for potential conflicts of interest. This particularly relates to the question of data originatorship/data ownership. It is not made clear which concrete rights farmers have in the case multiple originatorship of data (several stakeholders are data originators) in the digital data value chain framework in case of multiple originator ship of data (several stakeholders are data originators) in the framework of the digital data value chain” (Härtel 2020, p. 14).

Another aspect noticed was that the EUCC stimulated the data processor to use pseudonymization, unless the involved parties agree on the terms by which the data originator can be identified. The purpose of pseudonymization - a procedure for replacing certain fields in data with artificial identifiers or pseudonyms - is to render data less identifiable and therefore lower the risks that it inadvertently shares personal information (US Official News, 2018).

Others saw the EUCC to protect farmers against the improper handling of data they generate. It was also stated that big agrifood businesses could hold smallholder's “hostage” and leave them without a choice when it comes to data sharing, especially individual farmers who have low bargaining power (Stam and Michalopoulos, 2018).

4.2.4. Common AgriDataSpace

Despite all the challenges with the voluntary character and enforcement of the EUCC, there are positive aspects about it such as the willingness to improve the data position of farmers, and better protection of farmers. It also inspires the European Commission to develop a common data space (Michalopoulos, 2020) which should result in a space for sharing agricultural data. This could support the establishment of an innovative data-driven

ecosystem based on fair contractual relations (Michalopoulos, 2020).

5. Workshop Results

The five national workshops and an EU-wide workshop took place during the month of April 2023 and had a wide range of different stakeholders in attendance, with a total of 99 participants. In addition to these workshops, one of our colleagues in Poland also asked about the EUCC in an event that they organised (also in April 2023). The result of this was that almost all the participants (20/21) did not have any knowledge about the European Code of Conduct; although, all participants thought such code could be useful/beneficial for Agri stakeholders. This lack of awareness of the EUCC is something that appeared throughout many of the six workshops, which we will now discuss.

5.1. The Netherlands

The Dutch workshop was hosted by Wageningen Economic Research Institute (WEcR) on April 6th, 2023, in The Hague, the Netherlands. In preparing the workshop, the facilitators started by making a list of potential stakeholders, resulting in a list of more than 40 stakeholders; where 15 agreed to participate. Finally, eleven people showed up for the workshop representing the following organisations (see Table 5).

Table 5. Overview of Dutch workshop participants

| No. | Representative Organisation | Description |
|-----|-----------------------------|---|
| 1 | NZO | Representative organisation of Dutch dairy processing companies |
| 2 | ZuivelNL | Organisation of the Dutch dairy supply chain |
| 3 | ZLTO | Southern Farmer and grower association |
| 4 | Cumela Nederland | Representative organisation for Dutch businesses in green, soil and infrastructure work |
| 5 | POV | Representative organisation for Dutch pig farmers |
| 6 | Ministry of Agriculture | Government |
| 7 | Nevedi | Representative organisation of feed suppliers |
| 8 | JoinData | Independent data platform that supports farmers in data sharing |
| 9 | LeeO Precision Farming B.V. | ICT service provider |

| | | |
|----|---------------------------|---|
| 10 | VAA | ICT service provider |
| 11 | Stichting Boer en Data | Foundation of farmers and data |
| 12 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |
| 13 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |

5.1.1. Experiences with the EUCC

According to the representative of ZLTO, many companies act in the spirit of the code, but it has not really been implemented in the Netherlands. The EUCC is barely known by farmers in the Netherlands, and it is mainly used as a buzzword to stimulate discussion about data sharing. Despite this, the participants in the workshops stated that it is important to have an agreement in advance on the purpose for which the data will be used. It is important to have reciprocity and control about the data, but often it is difficult to ensure compliance after contracts are signed.

A topic that came up during the workshop was that there are many differences in the structure between the agricultural sectors in the Netherlands. The dairy sector is largely dominated by 1 large milk processor - Royal FrieslandCampina – and dairy farmers cannot withdraw their authorization in JoinData's authorization register (because Royal Friesland Campina will not allow them to deliver their milk to the milk processing factories of Royal FrieslandCampina). So, there is a power imbalance and lack of voluntariness.

There are also differences in the levels of data-sharing between agricultural sectors in the Netherlands and their implementation of the EUCC. For example, the agricultural robot manufacturer Lely has contracts with dairy farmers about data-sharing; while the Producers Organization for Pig Farming (POV) has not developed any guidelines regarding data sharing. There is, however, a recently informally established so-called working group on data, comprised of several Dutch pig farmers. Their first goal is to get pig farmers in the Netherlands involved in data sharing.

The participants said that Dutch farmers are not afraid of their suppliers and customers in their food supply chain, but they are more afraid of the government, banks and insurance companies (as there may be pressure on them to ensure compliance, lower their ability to negotiate with banks and could affect loans, and impact their insurance rates). Farmers are also afraid of veterinarian clinics (as they have been taken over by investment companies) and that large investment companies will get access to data about animal health and treatment of their cows, and it will be used against them.

Farmers are also afraid that about data sharing because it is often linked to their home address (as the business and home are at the one location). Therefore, GDPR and non-personal data are closely related to each other, which is somewhat unique for the agricultural sector. In response to this, we heard that many organizations (like ZuivelNL and NZO) now make sure that all data is GDPR-proof. They do this to be on the safe side regarding data management.

5.1.2. How the EUCC relates to the Data Act

The coming EU Data Act will be a regulation to ensure that there is a level playing field in the EU. According to the representative of the ministry, the upcoming EU Data Act is aimed at large companies and not small family-owned agricultural businesses in Europe. One farmer stated that the Act does not apply to companies with less than 50 employees and an annual turnover of less than 10 million euro, so is therefore not important for all farms. However, this is not actually true, as the farmer was probably referring to an earlier version of the Data Act (possibly Article 13(1). This was removed from the current version of the Data Act, so it now applies to all farms (see the March 2023 version).

5.1.3. Recommendations by stakeholders

Some of the stakeholders stated that the current EUCC should be “refined” for each sector of agriculture: pig farming, dairy farming, poultry farming, contract workers, etc. However, it is yet to be seen if there are such large differences among these different sectors, in the context of data sharing, that would necessitate different rules. Others in the workshop stated that there could also be one guideline that allows for sector-specific details. Someone also suggested that the EUCC should implement a kind of certificate or quality mark regarding behaviour and ethics in data management, beyond the legal and contractual agreements. This may increase the transparency of the companies following these rules and ensure compliance with it.

It was suggested to evaluate the impact of the Data Act and adjust the EUCC (COPA-COGECA has already responded by highlighting several sensitive matters in the Data Act such as the right of the national government to obtain data in special situations, i.e., B2G). Some of the terminology used in the coming Data Act are different from those used in the EUCC (such as “data recipient”). Aligning these terminologies and acknowledging that one individual or organization can have multiple roles within a data flow is important.

5.2. Belgium

The Belgian workshop had many kinds of expertise at the table (law, business, agriculture, IT, science) and different points of view from representatives of the Agri-industry, representatives of farmers, people involved in general data sharing initiatives and people working at policy level or in governmental institutions. The workshop was held in Brussels on the 4th of April 2023 and was facilitated by ILVO (see Table 6).

Table 6. Overview of Belgium workshop participants

| No. | Representative Organisation | Description |
|-----|-----------------------------|--|
| 1 | Dept LV | Government |
| 2 | EU-Farmbook | University |
| 3 | Datanutsbedrijf | a neutral public company that fosters the data economy |
| 4 | Inagro | Research institute |
| 5 | Bayer | global market leader in crop protection products and seeds |
| 6 | VUB | University |
| 7 | Agoria | sectoral employer organization for technology companies |
| 8 | Depoortere | Manufacturer of harvesters and scutchers |
| 9 | AgriFoodTech | Consultant in Agri-Food-Tech |
| 10 | CRA-W | Walloon Agricultural Research Centre |
| 11 | Vlaamse Smart Data Space | Government – Digital Flanders |
| 12 | EC, DG agri | European commission |
| 13 | Boerenbond | Organization of and for every farmer |
| 14 | CEMA | Agrifood industry association |

5.2.1. Experiences with the EUCC

The EUCC is not very well-known by farmers and advisors in Belgium. Despite dissemination and communication from organisations such as ILVO, not everyone in governmental organisations (e.g., the Flemish Department of Agriculture and Fisheries) were aware of it either. The Agrifood companies are more aware of it (because of the efforts of ILVO, CEMA, and Agoria), especially if they are a member of CEMA. Nevertheless, the values and guidelines in the EUCC are quite well applied in Belgium by companies, and farmers are aware of their rights on data.

Participants felt that the EUCC is a necessary instrument to create trust in data sharing because a lot of farm data is sensitive (personal data of the individual farmer and their family is the same as their business). The EUCC makes it clearer who is using data for which purpose and gives a stronger role to the farmer in the process. A big obstacle is that farmers

do not have time, power or knowledge to control, challenge and discuss contracts when buying products, machinery or services. Information on data sharing is often mentioned in farmers' contracts, often giving companies the right to share farmer's data, which the farmer is unaware of. This is a big problem that requires multiple actions to address it. For example, designing legal requirements to grant inalienable and non-waivable rights to data access and portability to the active operators of farms.

Farmers collect a variety of data, and there are many different types of data sources, containing farming data. Many of these data sources are wanted by companies and businesses, and by the government. The industry wants farmer's data to improve processes, offer new types of services, or communicate environmental results. Governments also want a lot of data to ensure the goals of the European Green Deal are met.

But for a farmer, sharing all this data, could potentially be harmful to their business. The (perceived) disadvantages often weigh heavier than the possible advantages. Farmers and agribusiness are suspicious towards the government because they believe the mandatory transfer of data will have an impact on their revenue and that data will be reused for other purposes than what it was originally intended.

Furthermore, it is difficult to distinguish between personal and non-personal data in an agricultural context; making the EUCC difficult to implement – as there are many grey zones about what personal data is. One participant, an expert in legislation, claimed that the EUCC is not very clearly formulated in relation to GDPR, making it difficult to enforce. However, the GDPR is already applicable to all personal data sets in the EU. While the EUCC mostly fills the gaps in relation to non-personal agricultural data access, so there is not necessarily a need for alignment between the two.

5.2.2. How the EUCC relates to the Data Act

It was pointed out that the roles and terminology are different in the EUCC and the Data Act. Some participants said that the Data Act will make the EUCC obsolete, so there is no need to work on the EUCC. They did not feel any need to make the EUCC even more 'complex', because people will get lost in applying it anyway. Regardless of this, some participants expressed a concern about the Data Act's involuntary sharing of data with the government for the common good or in times of crisis. Many in the workshop stated that it is not clear what these conditions are and there is a threat it could be used against farmers and businesses by the government.

5.2.3. Recommendations by Stakeholders

There is a need to search for common understanding for the rules around conflicting interest

and the need to share data with the government. There are many grey areas, situations in which it is not clear how to apply the EUCC and Data Act in practice. It would be useful to give practical examples/use cases in different domains of agrifood to clarify the rules in the data act.

There is a need to bring the terminology in line between Data Act and the EUCC. There is a need to translate the Data Act and start communication in the different member states by trusted partners for the different stakeholders, so that it is well known (not like the EUCC). Training, peer to peer learning and use case-based approach is the base for the successful implementation of the EUCC. Some proposed that it could be useful to translate what the Data Act means for the agricultural (and agrifood) sector and make it understandable and implementable. There should be a clear explanation of the legal framework and the advantages of enforcement should be made clear.

5.3. Romania

The workshop was organized in Bucuresti, on April 5th, 2023. The facilitator sent out 30 invitations to all relevant type of stakeholders, with 20 participants attending the workshop. Some representatives from the Romanian Parliament and the Ministry of Research, Innovation & Digitalisation could not attend due to other already confirmed commitments. The participants ranged from MPs; MEPs; academics; farmer representative groups; agribusiness; and the ITC sector involved in the agrifood domain (see Table 7).

Table 7. Overview of Romanian workshop participants

| No. | Representative Organisation | Description |
|-----|--|---|
| 1 | Member of the Romanian Parliament | Parliament |
| 2 | former MEP | Parliament |
| 3 | Rural Development Payment Agency – AFIR – Director | Ministry of Agriculture and Rural Development |
| 4 | Rural Payment Agency – APIA – Director | Ministry of Agriculture and Rural Development |
| 5 | Rural Payment Agency – APIA – Deputy General Director | Ministry of Agriculture and Rural Development |
| 6 | National Meteorological Authority – ANM – Director | Government |
| 7 | National Meteorological Authority - ANM | Government |
| 8 | Computer Sciences College – Pro-Dean | University |
| 9 | Micu –Management and Rural Development College Pro-Dean & Copa-Cogeca vice president | University & Copa-Cogeca |
| 10 | The Farmers Association of Romania | Farmers organization |

| | | |
|----|---|---|
| 11 | The Farmers APPRP Forum | Farmers organization |
| 12 | Computerland Romania - President | IT&C |
| 13 | IQ Management – President & CEO | IT&C - DSI |
| 14 | Orange Romania - Director | IT&C |
| 15 | Orange Romania | IT&C |
| 16 | IBM Romania - Director | IT&C |
| 17 | IBM Romania | IT&C |
| 18 | AGRIVI – President & CEO | IT&C - DSI |
| 19 | AGRIVI – General Manager Romania | IT&C - DSI |
| 20 | Input & Pesticides Association – AIPROM – General Manager | Agricultural business |
| 21 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |
| 22 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |

5.3.1. Experiences with the EUCC

The Romanian farmers were aware of the EUCC and consider it a very important step that induced their awareness about the importance of their collected data and related legal/contractual issues. This awareness was due to ANAMOB's continuous active presence in the Copa-Cogeca Advanced Technologies working group where the EUCC was discussed, updated and endorsed (as well as the Data Act proposal). The code was shared (since 2020) with all details to national farmer organisations in Romania which forwarded it to their members. The open-minded and mainly young farmers have already been aware for some time about the EUCC and its recommendations. In contrast, the Romanian branches/subsidiaries of the large EU & international agribusiness companies were, until the workshop, unaware of the EUCC. The Romanian farmers are interested in the EUCC to better negotiate, in their favour, contracts related to digital solutions adoption.

Farmers complained that for their purchased farm equipment (including data collection apps), the manufacturers/suppliers are not willing to provide any access to their farms' collected data, which they need to upload & integrate into their acquired FMIS services (a clear demonstration of farm data lock-in). Farmers request the obligation of technology/equipment suppliers/vendors to provide them with full access to all the data collected by their owned equipment (something which will be addressed in the Data Act). Farmers are starting to become aware that they are paying service fees not only for GPS access necessary to secure an accurate field operation but also, for their farms' data collection by the equipment manufacturers.

5.3.2. How the EUCC relates to the Data Act

Farmers are willing to apply the EUCC with their digital services providers, but they need model contracts that include EUCC provisions. They would like that EUCC provisions securing their data rights to be included, as mandatory, in further EU acts, such as the Data Act. In addition, many of the farmers stated that there were trust issues when it came to sharing data because of the threat that their data would be misused, increased costs (need of subsidies), and the use of data may reduce farm profit. They stated that to reduce these concerns, there should be greater regulation in, for example, the Data Act.

5.3.3. Recommendations by stakeholders

Participants stated that data that is sensitive to a business' operations and intellectual property (e.g., related to their market data strategies) should not be collected, but only (non-sensitive) agricultural data, by governments. Governments need to do this in a fair, transparent, and responsible way.

5.4. France

The French workshop had many kinds of expertise at the table (legal, industry, farming, IT, research) and different points of view from representatives of the Agri-industry, representatives of farmers, people involved in general data sharing initiatives and people working at policy level or in governmental institutions. The workshop was held in Paris on the 24th of April 2023 and was facilitated by FNSEA (see Table 8).

Table 8. Overview of French workshop participants

| No. | Representative Organisation | Description |
|-----|-----------------------------|--|
| 1 | Phyteis | Union of Plant Protection Industries |
| 2 | CNIEL | Dairy Interprofessional Organization |
| 3 | FAST | Digital Livestock Farming Network |
| 4 | ITAVI | Technical institute of poultry, rabbit and fish farming |
| 5 | Agr'iDées | Agricultural Think Tank |
| 6 | Terres Inovia | Oilseed and Protein Crops technical institute |
| 7 | Terres Univia | Oilseed and Protein Crops interprofessional organization |
| 8 | CLIAA | Committee for the Liaison of Agricultural and Agri-food Interprofessional Organization |
| 9 | Octopize | Anonymization technology provider |
| 10 | ACTA | Association for Agricultural Technical Coordination |
| 11 | BDPorc Association | Association in charge of French Pork |

| | | |
|----|---------------------------|---|
| | | Database |
| 12 | Brad Technologies | Sensor and FMS provider |
| 13 | CdA France | French Chamber of Agriculture |
| 15 | FNA | Federation of Agricultural Trading |
| 16 | SNVEL | National Union of Self-Employed Veterinarians |
| 17 | RobAgri | Agricultural Robot Association |
| 18 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |
| 19 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |

5.4.1. Experiences with the EUCC

About two-thirds of the stakeholders were aware of the existence of the EUCC. However, only a few participants had used the EUCC to guide the drawing up of data-sharing contracts. Overall, they considered the EUCC to be an accessible document if you have some knowledge of the vocabulary and relationships between digital and/or agricultural actors. Despite this, many felt that there is a greater need to establish a clear distinction between nominative and non-nominative data (personal and professional) and scenarios where data is co-generated during food processing (e.g., does the data recorded prior to or during the killing of animals (weight, dimensions, etc.) in slaughterhouses belong to farmers and the slaughterhouses?). This may be a legitimate reason for granting access rights to both parties, but it is still unclear (from the EUCC) how this should be done.

The EUCC has made it possible to inform and sensitize farmers' partners about when and how to collect and share agricultural data. The EUCC has also helped in the design of digital tools for the agricultural sector (as it provides guidelines for the organisation of information systems for digital tools destined to the agricultural sector). In fact, the EUCC enforces asking the authorisation before collecting data and informing about the potential use of the data collected. Thus, several digital tools were developed to ensure the compliance with the EUCC.

Participants felt that there needs to be a better clarification on the concept of management of pseudonymized or anonymized data and their contractual management. For example, if agricultural data has been anonymized as far as possible and without loss of information, should farmers always be asked for permission to share the avatars of their data (generate an avatar of a farm is a way to anonymise farm's data). Avatar or synthetic data is a statistical process to anonymize data already used for personal data. This is not necessarily the case for anonymized personal data subject to the GDPR. Anonymising data is something

that was directly used from the GDPR in the EUCC but with little context of how it should be implemented in an agricultural data-sharing setting.

5.4.2. How the EUCC relates to the Data Act

The regulatory framework for agricultural data sharing has evolved since the creation of the EUCC in 2018. With the Data Governance Act (DGA) and Data Act, European regulations largely reflect the general principles of the EUCC. The principles that are shared are the authorization before collecting professional data (DGA) or the obligation to provide information about the potential use of the data collected and the means used to collect data (Data Act) and to ensure the portability of agricultural data. Also, the evolution of the regulatory framework relating to digital will create favourable conditions for the sharing of agricultural data. There was a relative consensus that the main principles of the EUCC incorporated into the DGA, and the Data Act will create favourable conditions for the sharing of agricultural data.

However, some workshop participants alerted us to the risk of having data-sharing conditions that were too restrictive. They could create significant entry costs on the data market for small economic players while most digital tools are deployed on farms both because of the arrival of environmental regulations (optimization of inputs and traces, etc.) and increased competitiveness (reduction of workload on the farm). The question of valuing agricultural data independently of regulatory constraints should be kept in mind. If certain (broad) data processing services are imposed prior to data exchanges, it must be ensured that the valorisation of the data will cover the costs associated with this processing service. In the field of research (varietal selection, veterinary medicine, animal feeding) agricultural data should not be overly restricted, which would undermine the competitiveness of the European agricultural sector.

There was also a concern about some information within the Data Act and DGA, specifically, in the context of "altruist use" of data (DGA Art 2(16))⁵ and what this consists of and when governments will be able to use this distinction for accessing organisations' data. However, in its current definition in the DGA, there is no way for the government access to data by using this framework. This is about encouraging the private sector to share data for free, rather than a mandatory framework.

5.4.3. Recommendations by stakeholders

⁵ *data altruism' means the voluntary sharing of data on the basis of the consent of data subjects to process personal data pertaining to them, or permissions of data holders to allow the use of their non-personal data without seeking or receiving a reward that goes beyond compensation related to the costs that they incur where they make their data available*

The EUCC will need to be updated in view of the evolution of the regulatory context (e.g., the DGA and the Data Act). Regarding updating the EUCC, the main challenges lie in updating its definitions while keeping a practical component so the document can continue to be used as a working tool in a common application of the new regulations. To do this, there needs to be an alignment between the EUCC vocabulary with regulation vocabulary (e.g., the Data Act). The EUCC should also consider more recent initiatives and associated tools, for example, the new status of data intermediaries, consent managers, etc. The EUCC could also be improved with more concrete examples (use cases) and by providing a template version directly usable by farmers when they are faced with a contract involving agricultural data exchanges.

5.5. Finland

1001 Lakes organized and conducted a workshop with Finnish stakeholders representing different agri-food domains and aspects on April 12th in Espoo, Finland. The meeting was organised with 14 participants (+ 4 organizers) broadly representing the different actors related to the agriculture sector: farmers, national farmer association, agricultural application developers, data space infrastructure providers, researchers, and the local government (see Table 9). Their background in terms of gender, age, and previous knowledge of the data spaces was very mixed.

Table 9. Overview of Finnish workshop participants

| No. | Representative Organisation | Description |
|-----|---|---|
| 1 | Luonnonvarakeskus | Public research institute |
| 2 | DataSpace Europe | Service provider, small company |
| 3 | HAMK | Institute for farmer education |
| 4 | University of Helsinki | University research |
| 5 | Tampere University | University research |
| 6 | VTT | Research institute |
| 7 | Raisio | Food production, midsize company |
| 8 | Second Thought | Service provider (smartness to supply chains and traceability), small company |
| 9 | Grainsense | Service provider, small company |
| 10 | Suonentieto | FMIS provider (Financial Management Information Systems), small company |
| 11 | MTK - The Central Union of Agricultural Producers and Forest Owners | Farmer association |
| 12 | Ministry of Agriculture and Forestry | Government |

| | | |
|----|--------------------------------------|---|
| 13 | Ministry of Agriculture and Forestry | Government |
| 14 | Mtech | Tech provider, small company |
| 15 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |
| 16 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |

5.5.1. Experiences with the EUCC

The workshop participants stated that farming data is a very particular kind of data since the boundaries between what is considered personal data and what is considered non-personal data. Farmers have knowledge about their farm, but they have difficulties in thinking about this knowledge as ‘data’ that may be useful for someone else. In addition to this, farmers are hesitant about sharing data because of fear about what the government may do with it (e.g., changing the rules/legislation/sustainability requirements swiftly).

The EUCC was discussed to alleviate some of these concerns and to demonstrate the value of farm data. Despite the EUCC being translated into Finnish in 2021 (this is available on the CEMA website), it was not widely known by Finnish farmers. In one participant’s opinion, ‘nobody’ (in the context of Finnish farmers) knows the content of the EUCC. Similarly, the agribusinesses did not know about the EUCC, but stated that they would discuss it in their business after the workshop. They mentioned that Finnish agribusinesses typically have their own code of conduct with suppliers, but they were not typically data focused.

It was noted that ‘smart farming’ is a term that is more recognized in Finland than the EUCC. A “smart farming” thematic group, organised as a series of events through Agrihubi (by the Finnish Rural Network that is mainly targeted to farmers, farm advisors, and research and education institutions), has been held every month to awaken discussions around DA and the EUCC.

5.5.2. How the EUCC relates to the Data Act

The participants claimed that the EUCC should pay more attention to the grey area of data ‘ownership’ between farmers and technology companies, where both can claim the right for data control based on the Data Act. It was noted that the Data Act has not yet been finalized, but the overall impression was that there is a need for some kind of data sharing guidance that is specific for agriculture. Participants noted that it is important that the information about the initiatives and regulations (such as the EUCC and the Data Act) is shared more broadly, forcefully, and clearly.

5.5.3. Recommendations by stakeholders

The terminology used related to data sharing is often quite generic and not tailored to the existing agricultural practices. Typically, a combination of legal and technical terms is presented, which makes the essence of data sharing initiatives difficult for stakeholders to grasp. Terms used should be more context-specific related to farming to increase understanding. There should also be clear and understandable practical examples on why the farmers should be interested in the EUCC, the Data Act, and other EU regulations. In addition, there should be clear demonstrations of generation of (monetary) value from data sharing, instead of always just claiming that there will be value.

5.6. EU-level

CEMA organized and conducted a European-level workshop online on April 20th with stakeholders, the different agri-food domains, and original signatories of the EUCC. Below is the list of the participants (Table 10), representatives of CEJA and Fertilizers Europe were not able to participate due to other commitments but got an opportunity to address all aspects in written form. At the time of preparing this report, no feedback from Fertilizers Europe was received, while CEJA referred to their position paper (May 2023).

Table 10. Overview of International workshop participants

| No. | Representative Organisation | Description |
|-----|----------------------------------|--|
| 1 | MSD Animal Health | Animal Health Europe |
| 2 | CEETTAR | Association of contractors |
| 3 | CLE | Crop Life Europe: association of Plant Protection Products manufacturers |
| 4 | CLE | |
| 5 | CLE | |
| 6 | CLE | |
| 7 | CLIMMAR | Association of agricultural machinery dealers and repairers |
| 8 | COPA-COGECA | Association of farmers and cooperatives |
| 9 | European Commission DG AGRI A.4 | |
| 10 | European Commission DG AGRI F.2 | |
| 11 | European Commission DG CNECT E.4 | |
| 12 | European Commission DG CNECT E.4 | |
| 13 | European Commission DG CNECT G.1 | |
| 14 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |
| 15 | Technology, ILVO Agrifood | Institute for Agricultural, Fisheries and Food Research |

5.6.1. Experiences with the EUCC

The EUCC was seen as a one of a kind, with clear examples for different subsectors which provided insight official into how legislation could be built up. Mostly, the companies active in CEMA, or from their active national association, were positive about the EUCC. However, they mentioned that it was difficult to assess how well company lawyers are following the EUCC. The EUCC was circulated to all CLE members, companies, SMEs and National Associations; but, overall, it depends on country to country and company to company how it is implemented in practice.

It was acknowledged that the agricultural industry differs from other sectors in terms of data sharing requirements, necessitating a specific code of conduct. Participants stated that the Ag industry was ahead of other sectors because it had its own sector-specific data-sharing guidelines. However, the overall effectiveness of the EUCC relies on its implementation and practice. The EUCC has sometimes been directly implemented into general farming contracts with data-related points separated for easier access. By bundling them within these more general contracts, it is more readable and easier to find - this is also recommended in the EUCC. Some companies place guidance on their websites on what is their data policy, which is further reflected in their contracts.

Despite the positive feedback about the EUCC, concerns were raised regarding the lack of awareness and understanding among farmers about their data and the EUCC. Educating farmers about the value of their data and the benefits of data sharing was seen as an important aspect. The connection between the EUCC for machinery and the responsible business Code of Conduct for processors and retailers was questioned, highlighting the necessity for early discussions to avoid conflicts. Participants also raised concerns regarding how to balance the EUCC with other goals within a business and how to ease the burden on manufacturers implementing the code.

The voluntary nature of a code of conduct was seen as beneficial for self-promotion and self-regulation within the industry was emphasized. Participants stated that data sharing can only occur with the farmer's consent and through a contract that includes all involved players. Having legal value attached to a code of conduct was considered an added value for members, as it ensures implementation, provides a framework for data sharing and creates a level playing field.

5.6.2. How the EUCC relates to the Data Act

The EUCC describes the balance between the consent of the farmer to allow machinery manufacturers to use agronomic data collected from the machinery for follow-up of the

proper working and possible improvement of the performance of the machinery. Some claimed that the Data Act threatens to disturb this balance by forcing businesses to share potentially sensitive data (for use by third parties). Whereas the EUCC allows the manufacturer to withhold data if IPR-trade secrets are concerned. The participant stated that the Data Act states that such data should be shared with third parties. There is a risk of losing innovation potential and require more lawyers to work in engaging in negotiations on data sharing. However, this is not entirely accurate as in the latest version of the Data Act, it emphasises and respects trade secrets (see Art 4(3) and 4(3a)).

5.6.3. Recommendations by stakeholders

The EU must provide European farmers with the tools to take advantage of the value created by data sharing, while increasing their bargaining power with multinationals. When drafting data sharing contracts, there should be a rebalance of power by protecting farmers from potentially unfair contractual clauses imposed by suppliers/retailers. It is also important to educate farmers on the value of their data and the benefits of data sharing.

Because agricultural data may contain particularly sensitive information, policymakers need to ensure that any dedicated EU legislation takes this into account. Having a legal value attached to a code of conduct can be valuable for members, as it ensures implementation and provides a framework. In addition, the workshop participants stated that there is a need for trust and interoperability within the sector, along with the importance of an entire agri-food chain approach for farmers and machinery manufacturers. There is perhaps a need for sector-specific legislation to complement the EUCC and regulate data sharing in the agricultural industry.

6. Discussion and Conclusion

The EUCC has no legal value, but despite this it was, and is, seen as a door opener and it is used as basis for many platforms and therefore embedded in the contract formats (many platforms have the same contract for all participants). Then the possible initiative to update the EUCC should also consider generating some model contractual terms for different sub-sectors e.g., arable farming, horticulture, livestock, fisheries, etc.

The need for agri-food data-sharing within Europe was unanimous throughout the workshops, and all participants also echoed the need for some guidance and direction on how to do this in practice. Unfortunately, many of the workshop participants did not know about the EUCC, what it contains, or how to implement it. There appears to be a serious lack of adequate dissemination of the document to farmers, farmer groups, organisations involved

in agricultural data sharing, and the sector. The workshop participants reflected organisations and individuals that really should have a familiarity with this document and be effectively implementing its advice.

While it is worrying that there has not been a greater knowledge, and adoption of the EUCC, it is unclear why this could be. All participants were aware of GDPR and many with the upcoming Data Act, so it may be related to what is a 'must have' (i.e., regulation, such as GDPR and the Data Act) to a nice-but-not-essential (i.e., soft law recommendations and guidelines, such as the EUCC). Therefore, it is difficult to provide a distinct recommendation for the future of the EUCC and this was also echoed in the responses from the workshop participants themselves. When questioned with what should become of the EUCC, respondents in different workshops varied from abandoning the EUCC altogether, to rewriting it in response to the Data Act (e.g., alignment of terminology regarding data roles), or focusing instead on how the Data Act will impact the agricultural sector (while keeping the EUCC as another tool, but with less importance).

The action needed at this stage is updating the EUCC in line with the Data Act, but also having a progressive approach to fill the sector specific needs with specific provisions based on sectoral peculiarities – considering the fact that the Data Act is a horizontal design (not designed for the ag-data) and there are remaining sectoral issues after Data Act. Until the sectoral (ag data) regulation arrives (assumably no earlier than 3-4 years), updated EUCC can be a great experimentation for the sectoral rule making. The EUCC plays a soft law role in the absence of a binding sectoral regulation. A possible sectoral regulation would replace the soft law with binding rules, rights and obligations. The EUCC has a potential to serve the sector till then, so there is still a need for a comprehensive update.

While all responses have their own degree of merit and could be seen as effective responses to help those sharing data in the agricultural sector, their success is still underpinned by how this information will be disseminated to end-users and stakeholders within the sector. If nobody knows about the next steps that the European Commission (EC) takes on the matter, or they are simply seen as 'nice-but-not-essential' things to be aware of, the impact of these actions will certainly fall flat.

Implementing agri-food data regulation would certainly bring greater attention to any proposed next steps for data-sharing in the industry, many of the businesses stated that they enjoyed the self-regulation aspects of the EUCC and feared an overregulation of the industry would stifle innovation and data-sharing. It would be an additional burden to implement with their legal teams and requires money, time, and effort on the businesses; something which is

much more burdensome on smaller farms and SMEs than multinationals with larger budgets.

The suggestion of translating what the Data Act means for data sharing in the agricultural sector was seen as a possible remedy to many of these issues. As the Data Act will be a regulation and therefore become directly into force across the EU, its use in the agricultural sector is not necessarily 'additional policy' as this is a horizontal policy that all businesses must implement. However, its interpretation to the agricultural sector is still unclear, and thus, how businesses in the sector should apply it. A strong recommendation from the workshops is to adequately translate the Data Act for the agricultural sector and overcome some of the mistakes that the implementation of the EUCC has made.

Additionally, there were recommendations to implement a complete feedback loop on data within the whole agri-food chain (not just agriculture) and between relevant data spaces (e.g., broadening it to become an agri-food dataspace, or the entire food supply chain). The interpretation of the Data Act to the agri-food industry should also be able to address sector (vertical) specific needs and objectives by means of complementary sectoral regulations (e.g., dairy, horticulture, meat, etc.). As the legal and technical terms presented in the EUCC were confusing for farmers, efforts should be made to make terminology context-specific and related to farming (with many stating that the terminology used in the Data Act should correspond to any future efforts to guide agricultural data-sharing). In addition, using more practical examples/use cases in different domains of agrifood to clarify the rules in the Data Act would be helpful.

There was a lot of concern about the Data Act, in particular, its part on B2G data sharing in cases of emergency e.g., in case it is about saving lives, if this data will be used for other purposes/misused. Some claimed that the Data Act threatens to disturb this balance by forcing businesses to share potentially sensitive data (for use by third parties), such as releasing data if it concerns intellectual property rights (e.g., databases) or trade secrets (i.e., confidential business information). This needs to be addressed in the context of the agri-food sector and how agri-food businesses can respond to such challenges. It was also noted that each country, and even sectors within countries, have different levels of data-sharing knowledge and experience; this needs to be considered when implementing any data-sharing code or guidance: how can it be implemented in each country and sector?

In the context of farmers, something that kept arising throughout the workshops was the concern around sharing farm data and the sensitivity of such data (e.g., farmers are afraid about data sharing because the farm's data is often linked to their home address). There is often a blurring between the lines around what is personal, as opposed to non-personal, data

in the agricultural sector. This needs to be factored into any document on data-sharing in agriculture. Distinctions need to be made between personal and non-personal. Furthermore, greater clarity needs to be given towards a distinction of data ownership and what happens when data is co-generated or when there is a lack of distinction between raw and primary data. Also, there were concerns about how this data would be used for compliance, banks, insurance etc.; which is something that needs to be factored into any further documents providing data-sharing advice or guidelines in the sector.

Lastly, there is a greater need for dissemination, communication, and education, of those within the agri-food sector in the EU in relation to data-sharing. There is a lack of awareness, even among organisations explicitly sharing data, and are part of data sharing initiatives, about the EUCC and guidelines set out by the EU. Any further efforts to either rewrite the EUCC, provide further codes on agricultural data-sharing, or translation of the Data Act for the agri-food sector, need to ensure that they will be disseminated through the right channels, that relevant parties will receive them and be made aware of them, and there are opportunities for education around agri-food data-sharing.

References

ABC Premium News (2022). Are big ag tech companies harvesting farmers' confidential data? Australia Broadcasting Corp. February 18, 2022.

Amiri-Zarandi, M., Fard, M. H., Yousefinaghani, S., Kaviani, M., & Dara, R. (2022). A Platform Approach to Smart Farm Information Processing. *Agriculture (Switzerland)*, 12(6).

Atik, C. (2022). Towards Comprehensive European Agricultural Data Governance: Moving Beyond the "Data Ownership" Debate. *IIC International Review of Intellectual Property and Competition Law*, 53(5), 701-742.

Atik, C., & Martens, B. (2021). Competition Problems and Governance of Non-personal Agricultural Machine Data: Comparing Voluntary Initiatives in the US and EU. *Journal of Intellectual Property, Information Technology and E-Commerce Law*, 12(3), 370-396.

Brown, C., Regan, Á., & van der Burg, S. (2022). Farming futures: Perspectives of Irish agricultural stakeholders on data sharing and data governance. *Agriculture and Human Values*.

Byrne, J. (2018). New EU code aimed at 'fair and transparent' sharing of feed and farming related data. *FeedNavigator.com*, William Reed Business Media Ltd., April 24, 2018.

Cheesly, A. (2018). Precision agri solutions 'help cut carbon footprint and drive resource efficiency'. *Agri Investor*, PEI Media Ltd., November 22, 2018.

Garske, B., Bau, A., & Ekardt, F. (2021). Digitalization and ai in European agriculture: A strategy for achieving climate and biodiversity targets? *Sustainability (Switzerland)*, 13(9).

Gennen, K., and L.S. Walter (2022). Datenhoheit, Datenschutz un Datensicherheit bei KI im Agrar- und Ernährungssektor. In: M. Gandorfer et al.: Künstliche Intelligenz in der Agrar- und Ernährungswirtschaft, Lecture Notes in Informatics (LNI), Gesellschaft für Informatik, Bonn, 2022, pp. 105-110.

Grieve, B. D., Duckett, T., Collison, M., Boyd, L., West, J., Yin, H., . . . Pearson, S. (2019). The challenges posed by global broadacre crops in delivering smart agri-robotic solutions: A fundamental rethink is required. *Global Food Security*, 23, 116-124.

Härtel, I. (2020). Gutachten zum Thema "Europäische Leitlinien bzw. Regeln für Agrardaten"(European Agricultural Data Governance). Juni 2020

Impact News Service (2020). Agricultural Machinery Data-sharing: industry releases its strategy paper to achieve a full roll-out. Impact Media Ltd. February 6, 2020.

Lioutas, E. D., Charatsari, C., La Rocca, G., & De Rosa, M. (2019). Key questions on the use of big data in farming: An activity theory approach. *NJAS - Wageningen Journal of Life Sciences*, 90-91.

Lorencowicz, E., & Uziak, J. (2023) Selected Problems on Data Used in Precision Agriculture. In: Vol. 289. Lecture Notes in Civil Engineering (pp. 217-226).

Martens, K., & Zscheischler, J. (2022). The Digital Transformation of the Agricultural Value Chain: Discourses on Opportunities, Challenges and Controversial Perspectives on Governance Approaches. *Sustainability (Switzerland)*, 14(7).

Michalopoulos, S. (2020). LEAK: EU plans 'common data spaces' to exploit agriculture and health potential. *EurActiv.com, Acteurs d'Europe*, February 17, 2020.

Oppewal, J. (2021). Schouten onderzoekt of boer genoeg grip heeft op eigen data. *Boerderij Vandaag*, ed. 35, nr. 188, Reed Business BV, August 17, 2021.

Relf-Eckstein, J. E., Ballantyne, A. T., & Phillips, P. W. B. (2019). Farming Reimagined: A case study of autonomous farm equipment and creating an innovation opportunity space for broadacre smart farming. *NJAS - Wageningen Journal of Life Sciences*, 90-91.

Ryan, M. and S. van der Burg (2021). D7.6 (Revised) Guideline and/or Code of Conduct. *Internet of Food and Farm 2020*. March 16, 2021.

Stam, C. and S. Michalopoulos (2018). EU agri-food operators sign milestone data sharing deal. *EurActiv.com, Acteurs d'Europe*, April 24, 2018.

Tomasso, L. (2022). L' accès aux données agricoles: les domaines d'intervention de la loi et du contrat. L' agriculture numérique, Enjeux numérique, Annales des Mines, Septembre 2022, No. 19, pp 74-78.

US Official News (2018). Janzen Ag Law on European Union's Code of Conduct on Ag Data Sharing. Plus, Media Solutions Private Ltd, July 18, 2018.

van der Burg, S., M. Ryan, E. Oosterkamp, M.J. Bogaardt, E. Giesbers, H. Adema (2021). D7.7 Overview of preconditions for trust in data sharing. Internet of Food and Farm 2020. March 26, 2021.

van der Burg, S., Wiseman, L., & Krkeljas, J. (2021). Trust in farm data sharing: reflections on the EU code of conduct for agricultural data sharing. Ethics and Information Technology, 23(3), 185-198.

Wiseman, L., Sanderson, J., Zhang, A., & Jakku, E. (2019). Farmers and their data: An examination of farmers' reluctance to share their data through the lens of the laws impacting smart farming. NJAS - Wageningen Journal of Life Sciences, 90-91.

Wiseman, L., & Sanderson, J. (2019). Empowering farmers by resolving the trust and legal issues emerging from precision farming. Paper presented at the Precision Agriculture 2019 - Papers Presented at the 12th European Conference on Precision Agriculture, ECPA 2019.

Appendix: Methodology for workshops

Target group

We aim to invite a broad range of participants including:

- Farmers, advisors, and their associations
- Technology providers and Data intermediaries (e.g., data an aggregator, data brokers, data platforms)
- Agribusiness (e.g., machinery suppliers, logistics)
- Society (e.g., citizens, consumers and their associations)
- Public bodies (public administration and governmental bodies)
- Academia and scientific communities and professionals

The potential participants ideally have knowledge of and experience with data sharing (initiatives) from their different backgrounds and roles (e.g., data provider, data user, data sharing facilitator, etc.). It could for example be the national equivalent/ representative organisations of the 10 organisations involved in the development of the EUCC.

Methodology

The preparation of the workshops includes finding, contacting and inviting the right persons. The effort and time required for that should not be underestimated.

Six different workshops will be held in different countries by the respective partners in that country (The Netherlands, Belgium, Finland, France, Romania) and 1 workshop will comprise of an array of different EU stakeholders involved in the EUCC (CEMA).

The workshops are to be held towards the end of March/Early April 2023.

Workshop Plan

4.1 Overall Workshop Plan

| <i>Time</i> | <i>What</i> | <i>Who</i> | <i>Additional info</i> |
|-------------|-------------------|------------|--|
| 12.30 | Lunch | All | |
| 13.00 | Introduction | Organiser | <ul style="list-style-type: none"> - PPT to introduce AgriDataSpace, data spaces concept and the workshop - Round table introductions of participants - Explain first step of workshop |
| 13.20 | Workshop Task 1.2 | Organiser | Thoughts on data sharing initiatives and data spaces |
| 14.20 | Break | | |
| 14.30 | Workshop Task 1.3 | Organiser | Feedback and experiences with EUCC |
| 15.30 | Next steps | Organiser | <p>The way forward: how to ensure data sovereignty in data spaces</p> <ul style="list-style-type: none"> - How can farmers and agribusinesses retain data sovereignty in data spaces? - Will data spaces help or hinder one's control of their data? |

| | | | |
|-------|--------|--|--|
| | | | <ul style="list-style-type: none"> - How can the EUCC be integrated into data spaces? - What can policymakers do to protect data sovereignty in data spaces? |
| 15.45 | Finish | | |

4.2 Workshop Plan Task 1.2 Thoughts on data sharing initiatives

| <i>Time</i> | <i>What</i> | <i>Who</i> | <i>Additional info</i> |
|-------------|--|--------------------|---|
| 13.20 | Intro on Data Sharing Initiatives (DSI) | ILVO/ Organiser | Explanation on the Holistic Analysis Framework, and presentation of first results of survey |
| 13.35 | Mapping of local DSI | All | Collect input on flipchart / board from the participants on existing initiatives in the region. Facilitator should be local organiser |
| 13.50 | Experiences with local DSI's: are existing local DSI's compatible with the existing current and future needs | All | 1 facilitator + 1 note taker per table Canvas |
| 14.10 | Feedback of results per group | Facilitators | |
| 14.20 | Finish | | |

Sample Questions:

- Which DSIs do you know of, that we didn't map yet?
- Are there high-level initiatives on data sharing in your member state? In which way is your member state involved in the future of data sharing? Is there any umbrella initiative (maybe not agriculture specific)?
- Based on the given overview: what are important aspects to work on in the future? What are good examples, advantages?
- Based on the given overview: what is there to avoid?
- How easy is it to participate and share data in this DSI? What is your role in the DSI context?
- In which aspects does the DSI help you to share data (or other tasks related to the specific DSI)?
- What are the most challenging aspects when using the DSI? E.g., related to any rules or processes?
- How does the DSI gain your trust, what is especially important for you in that context?
- Are you involved with several DSIs, or do you wish to be? Would it be helpful for you, if they cooperated, e.g., for directly exchanging data in a common structure?
- How should Europe influence the future of data sharing? On which aspects (technical, business, governance, legal, ethics) of data sharing, or in the development of DSIs should Europe be involved? And in which way?

4.3 Workshop Plan Task 1.3 Feedback and experiences with EUCC

| <i>Time</i> | <i>What</i> | <i>Who</i> | <i>Additional info</i> |
|-------------|-------------|------------|------------------------|
| | | | |

| | | | |
|-------|--------------------------------|--------------|---|
| 14.30 | Brief explanation about EUCC | Organiser | - PPT + overview of participant per group (predetermined) |
| 14.35 | Split into x groups | All | - 1 facilitator + 1 note taker per table |
| 14.40 | Step 1 – Experiences with EUCC | All | - Aim: to focus on the experiences of experts on the EUCC and verify or reject the findings from the literature - Get all participants to write their experiences down on a sticky note (1 idea per sticky) - Group the stickies on a flip-over sheet & discuss |
| 15.05 | Step 2 - Recommendations | All | - Based on the experiences and the comparison with literature findings: what would the participants recommend as point for improvement. - Get all participants to write their experiences down on a sticky note (1 idea per sticky) - Group the stickies on a flip-over sheet & discuss |
| 15.20 | Feedback of results per group | Facilitators | |
| 15.30 | Finish | | |

Sample Questions:

- Is the EUCC known to farmers? And Agri- businesses?
- Is it easy to understand for farmers? And Agri- businesses?
- How has the EUCC been implemented in practice? By whom? Examples?
- How has the EUCC been received by farmers, agribusinesses, and policymakers?
- What a CC are working well?
- What aspects of the EUCC are not working well?
- How has the EUCC helped farmers and/or agribusinesses?
- How has the EUCC harmed farmers and/or agribusinesses?
- Does the EUCC need greater enforcement/regulation? If yes, why, who? If no, why not?
- How can the EUCC be improved? What would you change about the EUCC?
- How will the Data act data-sharing in the agricultural sector, and what is the link with the EUCC?

| <i>Time</i> | <i>What</i> | <i>Who</i> | <i>Additional info</i> |
|-------------|--|------------|------------------------|
| 15.30 | Brief explanation about data sovereignty | Organiser | See slides |
| 15.35 | Roundtable discussion | Organiser | |
| 15.55 | Finish | | - |

To do list

| <i>When</i> | <i>What</i> | <i>Additional info</i> |
|-------------|--|---|
| February | Send invite to potential participants (the goal is at least 10 participants at the workshop, so you may need to invite 20+ people) | - Adapt provided invitation to their local context (e.g., date, time, location, language) - |
| February | Book a venue | - Think about size and set-up of the room (e.g., number of participants, space for lunch, availability of screen, laptop, etc.) |
| March | Send reminder to potential participants | - Only to those who have not responded yet |
| March | Arrange lunch with venue | - Check dietary requirements of participants who accepted the invitation (also part of invitation) |
| March | Prepare workshop content | - Adapt provided PPTs & homework to the local context (e.g., language, group division of participants) - Make sure you have enough facilitators and note-takers - Arrange name tags, pens, tape, flip-overs, sticky notes, etc. |
| March | Send a reminder, homework & consent sheet to participants | - 1 week before workshop |
| April | Actual Workshop | - Arrive at workshop venue at least 1 hour before the lunch start to set up the room and make sure everything works. - Have someone take notes during the workshop and possibly record audio of the meeting in case you missed something during notetaking |
| May | Write a detailed workshop report | - Outline of report provided by 1001Lakes/ILVO/WR - In English - See report structure in Annex 5 – format will be provided |

Workshop Necessities

- Homework sheets (provided by 1001Lakes/ILVO/WR)
- Large screen & projector
- Laptop

- PPTs (provided by 1001Lakes/ILVO/WR)
- Name tags for all participants and organizers
- Sticky notes
- Flip over
- Pens
- Tape

Example Invitation

Dear (name participant),

You are probably aware that data-driven innovations are transforming the economy and society, also the agri-food sector. They reshape the way we produce, consume, and share food. Changes are fast and profound. Benefits of data-driven food innovations are expected in every aspect of our lives, ranging from more personalized and healthy diets to more transparency about the food we are offered and more customized, local and sustainable food production.

While these changes are promising, the digital transformation of food systems does not concur in Europe as quickly as expected and it is unclear how their broader integration - in an inclusive and responsible manner - can be realized in a variety of food system contexts across the EU.

It is situated at the present point of development where food systems, supported by data-driven innovations and data platforms, are expected to transform into a food data economy grounded in data spaces. But whether this happens and how fast, will depend on encompassing technological and socio-economic developments, which are closely intertwined. There is a need for design principles and a clear roadmap towards fair, inclusive data spaces which support sustainable food systems in Europe.

Against this background, the main objective of the [AgriDataSpace](#) project is to pave the way for a European Agriculture Data Space that facilitates data sharing, processing and analysis in a secured, trusted, transparent and responsible manner to create new opportunities for monitoring and optimising natural resource use and stimulating data-driven innovations.

To support the development of such a Data Space we need your input. Therefore, we would like to invite you to a half-day workshop that aims to explore the current data sharing landscape by taking stock of the experiences gained with 1) data sharing initiatives; 2) the *EU code of conduct on agricultural data sharing by contractual agreement*; and 3) the generation of data sets in the public and private domain. Given your experience and expertise with ..., we think you could provide us with valuable insights.

The benefits to you are the opportunity to guide the discussions around agricultural data sharing in Europe; contribute to the recommendations that we will provide to the European Commission; and have your organisation a place at the table for topics that will affect them.

The workshop will be held on (date) at (location) from (time) to (time) including lunch. Please let us know if you will attend this meeting and if you have any dietary requirements.

We look forward to meeting you there!

Kind regards,

(Names & contact details organizers)

Consent sheet for participants

AgriDataSpace Information Sheet – Work Package 1

*Please take some time to read this information and ask questions if anything is unclear.
Contact details can be found at the end of this document.*

What is the purpose of this study?

This study aims to develop a case study for the AgriDataSpace project regarding the mapping of the current data sharing landscape and record experiences with data exchange, assess governance and business models and evolving legislation, define a technical reference architecture and integrate them in a roadmap that compiles all requirements and needed actions into a comprehensive pathway towards the implementation of the EU data space for Agriculture. The information from these workshops will help to develop our report on how best to achieve this in the context of existing data sharing initiatives, data sovereignty, and the EU code of conduct for agricultural data sharing.

Who is organising this research?

Wageningen Economic Research is leading this task and the research for this study is being undertaken by the consortium partners of the AgriDataSpace project.

Why have I been chosen?

The project aims to develop 5 national workshops to focus on existing data sharing initiatives, data sovereignty, and the EU code of conduct for agricultural data sharing. Stakeholders invited to these workshops will include businesses, governments, NGOs, farming cooperatives, farmers' associations, and data sharing initiatives. The aim is to develop an understanding of the views of stakeholders on these topics. You have been chosen as a member of one of these groups with a good understanding of these topics.

Do I have to take part?

Participation in this workshop is voluntary and you may ask any questions before agreeing to participate. If you agree to participate, you will be asked to sign this consent form. However, at any time, you are free to withdraw from the study.

What will happen to me if I take part?

If you agree to take part in this workshop, we will discuss your experiences with data sharing initiatives, data sovereignty, and the EU code of conduct for agricultural data sharing.

What are the possible benefits of participating?

The study aims to develop an understanding of existing data sharing initiatives, data sovereignty, and the EU code of conduct for agricultural data sharing. This is to inform the AgriDataSpace project and the development of European data spaces. You can help us identify current issues around these topics, advise the European Commission on agricultural data sharing, and have a voice at the table for agricultural policy recommendations.

What are the possible risks of taking part?

There are no risks in taking part in this study. At any time during the workshop, you can choose to withdraw. The data from the workshop will be anonymised.

How will my workshop feedback be used?

The information from the workshop will be used by AgriDataSpace to write our report to the European Commission and for an academic paper. Information will be anonymised.

What will happen to the results of the project?

You will not be identified in any reports or publications and your name and other personal information will be anonymised.

What happens at the end of the project?

You may request a summary of the research findings by contacting the task leader, Mark Ryan: mark.ryan@wur.nl

What should I do if I have any concerns or complaints?

If you have any concerns about the project, please speak to the researcher, and they will give you an answer to how your concern will be addressed.

Fair Processing Statement

This information which you supply and that which may be collected as part of the project will be entered into a database and will only be accessed by the researcher and supervisor involved in the project. The information will be retained by the researcher's institution and will only be used for the purpose of research. By supplying this information, you are consenting to us storing your information for the purposes above. The information will be processed by us in accordance with the provisions of the GDPR. No identifiable data will be published.

Project AGRIDATASPACE – Consent Form

| Issue | Initials |
|--|----------|
| I have read the information presented in this information letter | |
| I have had the opportunity to ask any questions related to this study and received satisfactory answers to my questions. | |
| I am aware that excerpts from the workshop may be included in publications to come from this research. Quotations will be kept anonymous. | |
| I understand that relevant sections of the data collected during the study may be looked at by individuals from the AgriDataSpace project. I give permission for these individuals to have access to my responses. | |

With full knowledge of all the foregoing, I agree to participate in this workshop.

Yes ___ No ___

I agree to be contacted again by the researchers for clarification or elaboration from the workshop.

Yes ___ No ___

If yes, my preferred method of being contacted is:

- Telephone:
- Email:
- Other:

| | | | |
|--------------------|--|------------------|--|
| Participant's Name | | Consent Taken by | |
| Signature | | Signature | |
| Date | | Date | |

Workshop report structure

Please incorporate the following aspects in your report (see also format that will be send around in March by WR). Please write your report in English.

- Introduction (setting the scene + background to your workshop)
- Stakeholder overview (backgrounds, age, skills, etc.) and background information (number of stakeholders invited, attended, reasons for not coming to the workshop)
- Findings, Task 1.2 workshop
- Findings, Task 1.3 workshop
- Findings, Final workshop segment
- Discussion (your main findings and viewpoints about the overall workshop; new discoveries; similarities/differences from the literature; and possible cultural or personal biases reflected by the participants).
- Conclusion