INTERNATIONAL INSTITUTE FOR THE UNIFICATION OF PRIVATE LAW
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UNIDROIT Working Group for the preparation of a Guide on Legal Structure of Agricultural Enterprises

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ISSUES PAPER

1. The International Institute for the Unification of Private Law (UNIDROIT), the Food and Agricultural Organisation of the United Nations (FAO) and the International Fund for Agricultural Development (IFAD) have undertaken a joint project to develop a guide on Legal Structures of Agricultural Enterprises (LSAE), which was included in the Work Programme of the Institute for the 2020-2022 triennium in 2019. The LSAE Guide is a natural follow-up from the Legal Guide on Contract Farming (finalised in 2015) and the Legal Guide on Agricultural Land Investment Contracts (finalised in 2020).

2. This document provides a preliminary outline of the issues that the UNIDROIT Working Group on Legal Structures of Agricultural Enterprise may wish to consider during its first session on 23-25 February 2022.

3. The issues considered in this document were identified by the participants of a Consultation Webinar that was co-organised by UNIDROIT, IFAD and FAO on 14-15 April 2021[1] and further elaborated by the UNIDROIT Secretariat and a selected group of experts[2]. This document does not intend to provide an exhaustive list of issues nor a full legal analysis of each topic. Rather, its purpose is to provide a starting point for the Working Group's deliberations at its first session to refine the scope of the LSAE project.

4. Consistent with the draft annotated agenda for the Working Group's first meeting, this document is structured into three sections: (i) preliminary matters; (ii) scope; and (iii) content of the Guidance Document. It provides a number of questions and recommendations that the Working Group may wish to consider and decide upon.

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[1] This document may be read alongside the Summary Report of the Consultation Webinar.

[2] The Secretariat is grateful to Fabrizio Cafaggi, Lorenzo Cotula, Virgilio De Los Reyes, Matteo Ferrari, Hagen Henry, Paola Iamiceli, Matthew Jennejohn, Georg Miribung and Carlo Russo for their contributions to this document. The Secretariat is also grateful to FAO and IFAD representatives for their preliminary feedback.

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I. PRELIMINARY MATTERS

A. Background of the project

5. UNIDROIT's work in the field of private law and agricultural development began in 2009, when the Governing Council agreed that UNIDROIT's broad mandate in the field of private law gave the Institute a wide range of opportunities to contribute to the development goals established by the international community, and to create new synergies with other inter-governmental organisations in the field of agricultural investments and production[3].

6. In 2011, the Secretariat organised a Colloquium on "Promoting Investment in Agricultural Production: Private Law Aspects" (Rome, 8-10 November 2011). The Colloquium focused on the following potential areas of work: (a) title to land, (b) contracts for investment in agricultural land; (c) legal structure of agricultural enterprises, (d) contract farming, and (e) the financing of agriculture[4].

7. The tripartite partnership between UNIDROIT, FAO and IFAD was established after the above-mentioned colloquium, and the Legal Guide on Contract Farming was the first joint instrument adopted in 2015. The Legal Guide on Agricultural Land Investment Contracts was developed subsequently, between 2016 and 2020.

8. In light of the finalisation of the agricultural land investment contracts project, the UNIDROIT Governing Council, during its 98th session,[5] reassessed the future areas of work in the field of private law and agriculture development and agreed to recommend new work on the legal structure of agricultural enterprises[6].

9. As a first step, the Governing Council recommended that the Secretariat conduct a stocktaking exercise and feasibility analysis with respect to the legal structure for investment in agriculture activities, in order to ascertain whether UNIDROIT could make a useful contribution. At the 99th session of the Governing Council (23-25 September 2020), the Secretariat prepared and submitted the requested feasibility study,[7] which suggested that the LSAE project could pursue four main objectives:

(i) *improve market access* by identifying the current legal structures that limit entry to agricultural markets and by making recommendations as to which legal structure facilitates access to adequate domestic and global agricultural markets, with special attention to both smallholders and agriculture Micro-, Small-, and Medium-sized Enterprises (agri-MSMEs);

(ii) *improve forms of coordination of agricultural enterprises* by analysing how contractual networks, corporate governance rules and ownership may help smallholders and agri-MSMEs achieve market scale through diverse forms of aggregation;

(iii) *ease access to critical resources and insurance* by analysing which investment vehicles are best suited to promote access to capital, know-how, and technology; and

(iv) *address unfair commercial practices* by analysing the remedies, as well as dispute settlement mechanisms, that may be used to address compliance issues and unfair

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[3] For more information see: UNIDROIT 2009 – C.D. (88) 17, para. 88 and UNIDROIT 2009 – C.D. (88) 7. Add.6.

[4] The Acts of the Colloquium were published in the *Uniform Law Review* 2012-1/2.

[5] UNIDROIT 2019 – C.D. (98) 14 rev.2, paras. 78-82.

[6] UNIDROIT 2019 – A.G. (78) 12, para. 51.

[7] UNIDROIT 2020 – C.D. (99) B.5.

commercial practices in agri-food chains, so as to obtain more responsible business conduct.[8]

10. The Governing Council authorised the Secretariat to continue its consultations with a view to identifying the main legal issues in which UNIDROIT, in cooperation with FAO and IFAD, could make a meaningful contribution. Accordingly, on 15 and 16 April 2021, UNIDROIT, FAO and IFAD co-organised a Consultation Webinar to discuss the new LSAE project and, notably, to outline the possible topics the prospective future instrument could address. The complete report is available on UNIDROIT's website and a video recording of both days is available on UNIDROIT's YouTube channel.

11. The Secretariat presented the conclusions and recommendations of the Consultation Webinar at the 100th session of the Governing Council (22-24 September 2021), and proposed that the LSAE project be upgraded to high priority in order to allow the Secretariat to establish a Working Group. Following the deliberations, the Council endorsed the proposal and decided that the Working Group could start by focusing on a more detailed definition of the project's scope.[9]

B. Target audience

12. As consistent with all UNIDROIT instruments, the prospective guidance document should be relevant to all jurisdictions irrespective of their particular legal tradition (e.g., common law and civil law States) and could aim to provide assistance to parties involved in agri-food supply chains, in particular to legal professionals and, to certain extent, legislators and policymakers.

13. By focusing on the challenges that smaller enterprises may face, the LSAE Guide may identify good practices and possible solutions for the adaptation of the legal structure to different scenarios. The challenges faced by agri-food supply chain leaders operating downstream (e.g., large retailers) may also be considered, but the framing of the LSAE Guide should resonate with realities and challenges faced by actors operating in the midstream segment and in low- and middle-income countries. The envisaged instrument might therefore be drafted in an accessible manner to extend its use to a broader audience beyond the legal professionals, including farmers themselves.

C. Composition of the Working Group

14. As consistent with UNIDROIT's established working methods, the Working Group is composed of experts selected by UNIDROIT for their expertise contract law, corporate law, commercial law, property law, agricultural law, digital technology, and sustainability. Non-legal experts, such as economists, have also been invited as members of the Working Group. Experts participate in a personal capacity and represent the world's different legal systems and geographic regions. Additional members may be invited in the future to ensure balance in terms of gender, geographical regions and different law expertise.

15. To date, the LSAE Working Group is composed of the following experts:

- Ricardo Lorenzetti (Justice at the Supreme Court of Argentina, Member of the UNIDROIT Governing Council) – *proposed Chair of the WG*
- Fabrizio Cafaggi (Judge at the Italian Council of State, Professor University of Trento) – *proposed coordinator of the WG*
- Carlo Russo (Professor, University of Cassino and Southern Lazio)
- Cynthia Giagnocavo (Professor, Universidad de Almeria)

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[8] Committee on World Food Security (CFS) Principles for Responsible Investment in Agriculture and Food Systems (2014), paras. 50-52.

[9] UNIDROIT 2021 – C.D. (100) B Misc 2.

- Georg Miribung (Professor, Freie Universität Bozen)
- Hagen Henry (Professor, University of Helsinki)
- Jennifer Bair (Professor, University of Virginia)
- Matteo Ferrari (Professor, University of Trento)
- Matthew Jennejohn (Professor, Brigham Young University)
- Paola Iamiceli (Professor, University of Trento
- Virgilio De Los Reyes (Professor, De La Salle University)

16. The following experts will be representing FAO and IFAD, partner organisations in the LSAE project.

Representatives from FAO

- Donata Rugarabamu (Legal Counsel, LEG)
- Buba Bojang (Legal Officer, LEGN)
- Teemu Viinikainen (Legal Consultant, LEGN)
- Sisay Yeshanew (Legal Consultant, LEGN, Ethiopia)
- Siobhan Kelly (Agribusiness Economist, ESF)

Representatives from IFAD

- Katherine Meighan (General counsel)
- Ebrima Ceesay (Legal Counsel)
- Athur Mabiso (Senior Technical Specialist, Research and Impact Division (RIA)
- Jonathan Agwe (Senior Technical Specialist, Inclusive Rural Financial Services)

17. A number of intergovernmental organisations, non-governmental organisations, and private sector representatives have also been invited to attend the Working Group sessions as observers. Participation of these organisations and stakeholders will ensure that different regional perspectives are taken into account in the development and adoption of the instrument. It is also anticipated that the partner organisations will assist in the regional promotion, dissemination and implementation of the Guidance Document once it has been adopted.

18. To date, the following organisations and stakeholders have been invited to participate as observers in the Working Group:

- Asian Farmers' Association for sustainable rural development (AFA)
- Eastern Africa Farmers Federation (EAFF)
- Global Action for Improved Nutrition
- International Agri-Food Network
- International Cooperative Alliance (ICA)
- International Development Law Organisation (IDLO)
- International Institute for Environment and Development (IIED)
- International Institute for Sustainable Development (IISD)
- Organisation for the Harmonisation of Business Law in Africa (OHADA)
- Organization of American States (OAS)
- United Nations Commission on International Trade Law (UNCITRAL)
- United Nations Industrial Development Organisation (UNIDO)
- United Nations Conference on Trade and Development (UNCTAD)
- World Bank Group
- World Farmers Organisation (WFO)
- World Food Law Institute
- World Food Programme (WFP)

19. Finally, UNIDROIT has also invited a number of individual experts and academics to participate in the Working Group as observers.

D. Methodology and timeline of the project

20. The Working Group will undertake its work in an open, inclusive and collaborative manner. As consistent with UNIDROIT's practice, in principle the Working Group will not adopt any formal rules of procedure and seek to make decisions through consensus. Working Group meetings will be conducted under Chatham House rules in order to encourage open discussion.

21. The Working Group will meet at least twice a year (for two-three days) in Rome, Italy. Meetings will be held in English without translation. Remote participation will be possible, although experts will be expected to attend in person if circumstances permit.

22. The documents for the Working Group meetings will generally be distributed two weeks in advance of each session. After each meeting of the Working Group, the Secretariat will share a summary report with all participants on a confidential basis, for internal purposes of the Working Group only. A separate, high-level summary of the meeting will be published on the UNIDROIT website.

23. The preparation of the LSAE guidance document is a high priority project on the current Work Programme for the period 2020-2022 and should be completed during the next Work Programme 2023-2025. The following would be a tentative work plan for 2022-2023.

- Development of a guidance document on Legal Structure of Agricultural Enterprises over four sessions of the Working Group in 2022-2023:

    i. *First session*: 23 – 25 February 2022
    ii. *Second session*: September 2022
    iii. *Third session*: February 2023
    iv. *Fourth session*: September 2023

- Consultations and finalisation: Second half of 2023

- Adoption by the Governing Council of the complete draft at its 103rd session in 2024.

E. Relationship with existing international initiatives

24. The guidance document could focus on improving the forms of collaboration in agri-food supply chains through the analysis of the internal and external functioning of agricultural enterprises operating in different scenarios for which there is currently a lack of international guidance (see the proposed scope in detail in Section II below). However, there are several international instruments that may be relevant and should be taken into account by the Working Group when developing the guidance document to avoid duplication of efforts and overlap. The initiatives mentioned below are illustrative.

25. A large part of the work done by FAO and IFAD has thus far been focused on the implementation of broad policy objectives in the field of agricultural development, such as the promotion of agriculture for purposes of poverty alleviation, food security, legal empowerment of small farmers and social development of rural populations. However, FAO and IFAD have also paid particular attention to small businesses and microenterprises in support of the empowerment of specific categories of persons, such as women and young entrepreneurs. Their work has found that farming businesses tend to be established informally and that incorporation under a specific legal form is not a common practice nor a legal requirement. Producers tend to develop small to medium-sized enterprises, including family-managed undertakings, without carefully considering the legal structures of their business.

26. At FAO, the Agri-food Economics Division (ESA) is developing a methodology that assesses the business models of small food manufactures and is looking at management issues, as well as at challenges related to agripreneurship in several countries[10]. Some of FAO's technical guides have summarised the main opportunities and risks related to certain business models for agricultural enterprise (e.g., management contracts, sharecropping, joint venture, farmer-owned businesses and cooperatives),[11] highlighting the challenges to access global supply chains, alternative markets (e-commerce) and barriers to entry, such as complex administrative licensing requirements and regulatory frameworks entailing timely and costly business registration procedures which discourage entrepreneurship (e.g., the time needed to set up a limited liability company can range from half a day in New Zealand to 84 days in Eritrea). Access to finance is also highlighted as a significant challenge that rural entrepreneurs face, having to negotiate with risk-averse banks that demand unrealistic collateral, credit arrangements and contracts. These technical guides, however, do not provide detailed private law guidance regarding the legal structure established for each business model.

27. Together with FAO technical units, the Development Law Service of FAO has published, among others, legal studies on rules and principles related to land tenure, marketing of agricultural products, agricultural cooperatives,[12] international joint ventures in agriculture,[13] and legislative approaches to sustainable agriculture and natural resources governance[14]. Some of these legal studies have identified several types of contractual arrangements to organise agricultural production (contracts for land use, joint ventures, employment contracts and producers' agreements with cooperatives)[15]. While some studies identify the limited inclusion of smallholders in certain business models, they have not explored, through the lens of private law, why decision-making and the allocation of risks are unbalanced, for example, even when joint ventures entail co-ownership. One of the key issues faced in relation to the private law aspects of legal structures of agricultural enterprises is the difficulty to successfully establish adequate compliance mechanisms to enforce on the owners/participants of such enterprises the applicable legal framework.

28. IFAD's mandate focuses on country-specific solutions and finance specific programmes, such as value chain development projects involving small producers and private enterprises, with a particular focus on small to medium-sized local enterprises. As a result, IFAD's funded projects have the aim of stimulating the establishment of mutually beneficial partnerships with small rural producers involving legally binding contracts between two or more parties to better regulate risk-sharing, the pooling resources, and profit-sharing. To improve the outcomes for all engaged parties, IFAD has been promoting the concept of Public-Private-Producer Partnerships (4Ps), as a more integrated way of doing business. According to IFAD, a "4P arrangement ensures that smallholder producers are respected partners and not relegated to the receiving end of public-private partnerships (PPPs)"[16]. From IFAD's perspective, contractual arrangements through the 4Ps can facilitate the financial integration of smallholders and rural small and medium-sized enterprises, as well as attract additional resources and support from banks, equity investors, input suppliers, and equipment leasing firms. In addition, the adoption of these "4Ps business models" has also received support from FAO's Investment Center which believes that "the 4P financing instruments also address

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10 FAO, Agripreneurship across Africa – Stories of inspiration, 2019.

11 FAO, Governance of tenure technical guide n°4: Safeguarding land tenure rights in the context of agricultural investment, 2015, p. 15-16

12 FAO, Agricultural cooperatives: key to feeding the world, 2012.; FAO, Agricultural cooperatives: paving the way for food security and rural development, 2012.

13 FAO, Legal aspects of international joint ventures in agriculture, Legislative study 45, 1990.

14 FAO, Legislative approaches to sustainable agriculture and natural resources governance, Legislative study 114, 2020.

15 FAO, Enabling regulatory frameworks for contract farming, Legislative study 111, 2018, p. 17.

16 IFAD (2016), How to do public-private-producer partnerships (4Ps) in agricultural value chains, p. 2.

the missing middle phenomenon – i.e. rural enterprises too small to obtain loans from commercial banks and development finance but too large to access microcredit schemes"[17].

29. IFAD has developed guidance documents on how to design 4Ps, and has identified different business models that may be established within the partnership framework, including contract farming schemes, a joint-venture shareholding scheme, or a cooperative-led model. However, a legal analysis of the pros and cons of each one of these business models in terms of membership, access to capital, decision-making procedures, allocation of risks and responsibilities, as well as regulation of profit-sharing is lacking. This constitutes an apparent gap with respect to preparing for and implementing enterprises.

30. In the light of the specificities of agri-businesses, the guidance to be developed in the LSAE project could consider other international instruments which provide guidance for simplified legal structures, such as the ones developed by the United Nations Commission on International Trade Law (UNCITRAL), the Organisation of American States (OAS), as well as by the Organisation for the Harmonization of Business Law in Africa (OHADA). In this regard, and by way of example, the LSAE project could verify if some of the recommendations included in the OAS Model Law on the Simplified Corporation[18] and the recently adopted UNCITRAL Legislative Guide on Limited Liability Enterprises could contribute to the establishment and development of more inclusive agri-businesses[19]. The UNCITRAL Guide envisions to reduce legal obstacles encountered by MSMEs and is adaptable to "any lawful business or commercial activity",[20] including agricultural activities[21].

31. The reports prepared by the Special Rapporteur on the Right to Food could also be relevant, as they have identified that "better access to markets is key to improving livelihoods for many small-scale farmers in developing countries" and that "contract farming rarely encourages farmers to climb up the value chain and move into the packaging, processing or marketing of their produce"[22]. Other business models could be considered, such as farmer-controlled enterprises, joint ventures and direct-to-consumer food marketing practices[23]. Regarding the role of cooperatives more specifically, the International Labour Organisation (ILO) is contributing to the development of a public international cooperative law through the elaboration of international guidance documents which aim to stimulate and assist national governments in the adoption or review of national legislation regarding cooperative law. Cooperatives, as a business model, may improve the agricultural productivity of farmers and facilitate access to markets, savings, credit, insurance and technology[24].

Question for the Working Group

- *Are there any further international instruments and initiatives to those mentioned above that need to be considered when developing the LSAE Guidance Document?*

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17 FAO, Investment Center, Public-private producer partnerships to increase farmers' incomes in Benin – PADAAM.

18 OAS (2012). Model Act on the Simplified Stock Corporation.

19 The Legislative Guide was adopted during UNCITRAL's fifty-fourth session. The Guide will be available on the UNCITRAL website at https://uncitral.un.org/en/texts/msmes.

20 Recommendation n°2, UNCITRAL (2021), Draft Legislative Guide on an UNCITRAL Limited Liability Organization.

21 UNCITRAL (2021), Draft Legislative Guide on an UNCITRAL Limited Liability Organization, para 27.

22 UN, 66th session of the General Assembly, Report on the right to food: towards more equitable value chains – alternative business models in support of the right to food", A/66/262.

23 UN, 66th session of the General Assembly (2011), Report on the right to food: towards more equitable value chains – alternative business models in support of the right to food", A/66/262.

24 UN General Assembly (2013), Report of the Secretary-General, Cooperatives in social development and the observance of the International Year of Cooperatives, A/68/168, para. 80 (b).

II. SCOPE OF THE GUIDANCE DOCUMENT

32. The legal structures and functions of agricultural enterprises, including the types of contractual arrangements, corporate entities and cooperatives established for collaboration along the agri-food supply chain, are constantly transforming and being adapted to new needs. Sustainable Development Goals (SDGs), new technology scenarios, digitalisation processes, as well as increasing due diligence legislations that establish requirements through the supply chain and within the sphere of influence of larger enterprises,[25] may have an impact on the choice of the legal structure of agricultural enterprises.

33. The ways in which small producers and agri-MSMEs (which would arguably be the main target group of the LSAE project) organise themselves, and the legal structure they set up for the development of their agricultural activity may depend on a number of factors, such as the landholding size, the ability to carry out commercial activities, the position within the value chain, the participation in business networks and strategic alliances, and the functional purpose of the enterprise (e.g., to achieve socio-economic, environmental and/or cultural objectives). Agricultural enterprises may have different legal structures, objectives, and functions, and may link producers to markets, suppliers of inputs and financial services in various ways. Collaboration among micro, small and medium-sized enterprises may be the only path to growth in order to generate the benefits of scale, to access global markets for instance. Collaborative agreements between small and large enterprises may be established when smaller producers are organised in networks or cooperatives and adopt collective arrangements with intermediaries or final producers. A functional connection may be developed between the horizontal variety of collaborative agreements and the vertical relationships established with large transnational companies at retail level.

34. The prospective guidance document could focus on analysing collaborative legal structures that support small producers and agri-MSMEs. In this sense, the target group and legal issues to be covered in the LSAE Guide could be broader than the ones previously covered in the UNIDROIT/FAO/IFAD Legal Guide on Contract Farming (LGCF).

35. The LSAE project could further develop a topic briefly addressed in the LGCF regarding the "forms for conducting an agricultural production activity". With the objective of promoting more inclusive agri-businesses, which consider the interests and voices of smallholder producers and agri-MSMEs, the future legal guide could provide guidance on the establishment, operation, and challenges that may appear throughout the life cycle of agricultural enterprises. Therefore, the LSAE project may aim to identify best practices in order for agri-MSMEs to become active players, especially in the context of increasing sustainability and digitalisation of agricultural activities.

Questions for the Working Group

- *Further discuss whether narrowing the focus of the LSAE project to collaborative legal structures is specific enough for a workable 2-year project.*

- *How should collaboration be defined? Based on time/repetition of the interactions between operators (vis à vis spot relations)?*

[25] Legislative initiatives regarding supply chain due diligence have been developed in a number of countries specially in Europe. See for example legislations adopted in France, United Kingdom, the Netherlands and Germany.

III. CONTENT OF THE GUIDANCE DOCUMENT

36. The project is premised on the idea that the structures and the activities of agricultural enterprises are the result of many concurring factors. Freedom of contract and parties' choice is an important but not the exclusive factor that influences the choices of legal forms. The legal structure of agricultural enterprises and the organisation of agri-food supply chains may be influenced by endogenous as well as by exogenous factors. The use of digital platforms to produce and distribute, the intervention of financial institutions, and the implementation of sustainability standards, all play a significant role in the design and implementation of the legal structures of agricultural enterprises.

37. The project could analyse how each of these factors influence both the design and the activity of agricultural enterprises, including the types of contractual arrangements and corporate entities that may be established along the agri-food supply chain. It is therefore necessary to think about innovative approaches to the way enterprises function internally and to how they collaborate externally with other market participants. This section further describes some of the factors that may influence the choice of legal structure and proposes questions for the Working Group to discuss.

A. The impact of market structure on agricultural enterprises

38. As briefly noted in the previous section, the scope of the LSAE Guide could be broader than the scope of the UNIDROIT/FAO/IFAD Legal Guide on Contract Farming in several ways such as by considering:

- supply chain stages beyond the farm gate, to further understand how processors and retailers affect the production process and the evolution of farming;

- a more extensive definition of agricultural production, to include a much wider variety of economic activities contributing to agricultural production (e.g., logistics, processing, marketing, capacity building, etc.);

- which activities are performed in house and which ones are outsourced especially for the introduction of digital farming and compliance with sustainability standards;

- multiparty contracts that organise the agri-food supply chain both horizontally and vertically;

- coordination tools for production other than contracts (e.g., merger and acquisitions - M&A).

39. Flexibility, efficiency and coordination of the supply chain are key competitive advantages for retailers, which is why processors and retailers often promote aggregation of farming enterprises to minimise coordination costs. Hence, retailers may prefer to work with cooperatives, producer organisations, and large traders instead of contracting with individual farmers. This preference may have a great impact on the choice of legal structures, as supermarket chains for example may promote the adoption of cooperatives and producer organisation structures that undertake to ensure compliance with international standards among their members. From this perspective, the choice of the legal structure of the first buyer is strongly affected by the incentives provided by the retailers to aggregate firms (the leaders of the value chains). Aggregation can be project-based or organisational, with the formation of new entities such as cooperatives, corporate joint ventures, consortia, etc.

40. Among the main advantages of horizontal coordination/concentration of production for the retailers are:

- reduction of transaction and contracting costs (one contract instead of hundreds of them);

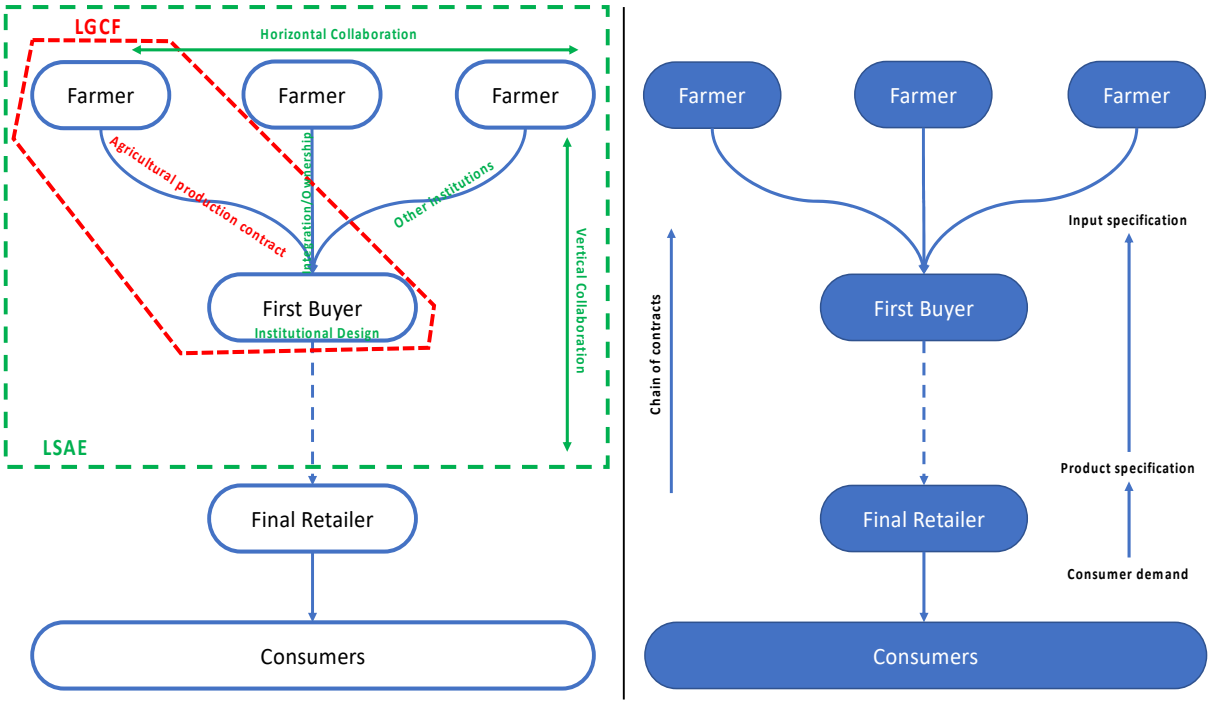
- economies of scale in technology adoption (for example, producer organisations can hire agronomists serving hundreds of associates);

- managing information asymmetries (intermediaries know local farmers better than the retailer);

- economies of scope in production (large traders can offer a basket of many products instead on few ones);

- advantages in litigation and dispute resolution (especially with private traders). It is easier to settle disputes with one large structure than finding compromises with many farmers with diverging interests.

41. This implies that the legal structure should support the economic agents in more complex challenges than those considered in the LGCF. The following figure explains these issues using the example of a stylised value chain.



42. In the example, a group of *farmers* sells their products to one or more *first buyers*. Goods are processed and traded downstream until they reach the *final retailer*, which sells to *consumers*. In modern value chains, the consumer may demand products with a complex set of characteristics (e.g., environmental, ethical, health, and organoleptic attributes), which is why retailers may require that their suppliers comply with strict product specifications (including product standards, process standards, delivery and sale conditions, etc.). In order to comply with these specifications, suppliers of retailers may require that their own suppliers provide raw materials and inputs that meet detailed input specifications. A key factor in this process is the role of input compliance with specification (input quality) in determining the compliance of the final goods with the desired product specification (output quality). For example, how important the quality of the cocoa bean is in determining the quality of chocolate. If input quality is important for output quality, the economic interdependence between the stages of the value chain is high. Instead, if input quality is not important, interdependence is low.

43. Therefore, the organisation of the value chain (governance) may be determined (among other factors) by the degree of interdependence among the different nodes participating to the production process. Interdependence may depend upon different factors. It may be determined by the need to implement product and process standards that require controls at every stage of the production process. Such standards may concern safety, quality, environmental and social dimensions. Interdependence may also depend on risk management, as risks refer to a process that often includes multiple parties. Risk management often requires contractual and technological coordination that cannot be made efficiently through bilateral contracts. Interdependence may also depend on technology and common platforms, which tend to aggregate parties that would otherwise carry out their own activities independently. In addition, interdependence may depend on the perishable nature of the commodity that requires fast and common risk management.

44. If the degree of interdependence is high, it may be expected that *final retailers* (or their immediate suppliers) exert some form of control over input production. Therefore, if interdependence is high, legal agreements between *first buyers* and *farmers* must be such that compliance with *input specification* is granted to downstream buyers. In essence, the characteristics of the legal agreement between *farmers* and *first buyers* depends on the characteristics between the *first buyers* and their own buyers. All these dynamics may affect the legal structure of agricultural enterprises, for instance by favouring the emergence of contract chains for better coordination.

45. Considering the example of interdependence and contract chains in the Italian fresh produce sector, it is possible to identify a high level of interdependence, given that the quality of the final product entirely depends on the quality of the input. Consequently, the legal agreements (mainly contracts or cooperative memberships) between farmers and their first buyers (private traders or cooperatives) strictly depend on the legal agreements with the final retailers. The quality of the final product strongly depends on processes and on inputs. As a result, a strong degree of process interdependence translates into contractual or corporate interdependence.

46. Retailers face unpredictable short-term fluctuations in the short run due to several reasons (such as weather conditions etc.), and they are able to have a reliable estimate of demand quantity and price for a given day only, and only a few days in advance. For this reason, they ask their supplier to deliver at very short notice (usually one or two days) once the demand is revealed. Prices are determined when the order is placed, depending on consumer's (unpredictable) willingness to pay. In this context, retailers transfer demand risk onto suppliers. In fact, suppliers must be flexible in delivery, but they must buy and stock produce at harvest time. In order to manage this risk, they require farmers to accept sales with a price to be determined. In this case, a characteristic of consumer demand (unpredictability) results in a product specification (delivery on demand) resulting in an input specification (price to be determined). The terms of contract are adjusted accordingly.

47. In addition, consumers are becoming more and more aware of health and environmental issues in produce consumption (namely, use of chemicals and residues). For this reason, retailers require compliance with strict product specifications regarding chemical residues. These specifications can only be met if agricultural production is managed accordingly. In fact, retailer suppliers ask farmers to comply with strict agronomic production practices and they provide on-site agronomic advice to make sure that these practices are implemented properly. Also in this case, a key feature of the legal agreement between farmers and first buyers is the ability to conform rapidly and seamlessly to changes in specifications that are required by retailers (flexibility of the supply chain).

48. As previously noted, the UNIDROIT/FAO/IFAD LGCF focused on a small part of the value chain (see Figure 1, the dashed red line) and the focus on agricultural production contracts had several implications:

- it limited the analysis to a bilateral agreement between a farmer and a first buyer;

- vertical coordination was not addressed. The organisation of the value chain (including the organisation of the first buyer) was not debated;

- horizontal coordination was not an issue. The fact that a first buyer may allocate interdependent tasks to several farmers was not considered (for example, producing different crops to supply a competitive mix of products to downstream buyers);

- other types of arrangements, including cooperative membership or ownership integration, were not considered.

49. The LSAE Guide could consider taking guidance a step further, to analyse the legal challenges that, for example, a group of farmers may face when they are willing to take over the role of *first buyer* (vertical integration) or beyond. In this case, the farmers may consider:

- choosing a legal structure for a joint activity. This includes defining property rights, for example;

- defining how risks, costs and benefits may be allocated between the first buyer entity and each one of the individual farmers. For example, how transfer prices may be determined, how the joint enterprise may be financed, etc.;

- setting decision-making rules (e.g., majority vote, capital shares or democratic control);

- deciding how disputes between members can be settled;

- finding a way to make sure that agricultural production meets their own interests and downstream buyers' specifications.

Questions for the Working Group

Further discuss the link between coordination, collaboration, and legal instruments for agricultural enterprises

- *Vertical integration through M&A. The frequency and intensity of M&A in the agricultural sector. M&A driven by data sharing and M&A driven by financial factors.*
- *Why is contractual coordination in agricultural production needed? Distinguish between technical, technological, information, and financial factors.*
- *Should horizontal contractual coordination be distinguished from vertical coordination?*
- *Is collaboration a valid response to ensure coordination? What are the legal instruments for collaboration?*
- *Should collaboration, as a response to coordination, differ depending on why it is required, to implement standards or to deploy a technology or a platform, for instance? Discuss whether different types of collaboration may be needed and how each type of collaboration may result in different legal forms.*
- *How should collaborative contracts be distinguished from corporate entities?*

B. The role of midstream agri-MSMEs in contributing to rural transformation

50. The 2021 United Nations Food Systems Summit called on the international community to engage in collaborative efforts to see the transformation of the food system into one that is more nourishing, sustainable, equitable and resilient. With 70-90% of business in low-income countries registered, be it informally or formally, as small and medium sized enterprises, it recognised the importance of these small firms as major constituents in the production, transport, processing and retailing of food.

51. Driven by rapid urbanisation, migration, and a growing middle class, the changing global food system, particularly in developing countries, is seeing heightened attention on the middle segment of agri-food value chains and their potential role in accelerating pro-poor and sustainable growth. Despite the part that post-farm gate small and medium agri-food enterprises play in rural transformation and rural-urban connectivity, until recently there has been little attention paid in policy and academic circles to these businesses for developing country contexts.

52. As defined by SOFA 2021, agri-food systems have three main components: (i) primary production; (ii) food distribution, linking production to consumption through food supply chains and transport networks; and (iii) household consumption. In addition to primary producers; households, individuals as final consumers, and large agri-food companies, agri-food enterprises fall into one of the following categories; providing input supply, post-harvest, storage, transport and food processing services; food distributors, wholesalers and retailers. While agri-food MSME is a heterogeneous term, it encompasses an array of entrepreneurial activities of varying sizes and structures. At times, the same agri-food MSMEs often play the important role of supplying farm inputs, information and advisory services as well as financial services such as credit to farmers. As such, these enterprises carry a lot of responsibility and accountability for ensuring the supply of safe, nutritious and sustainably produced food for people living in rural and peri-urban communities, notwithstanding their role as suppliers of farm inputs, financial and advisory services, as well as creators of much sought-after off-farm rural jobs.

53. Agri-food MSMEs account for a major share of rural jobs, and significantly contribute to the total added value in developing countries. In the African region, about 40% of non-farm employment is in the agri-food system, and an estimated 80% of the region's processed food is produced by small and medium processors. Their contribution to rural poverty reduction is evident from the activities they undertake to connect farmers to markets, while providing employment opportunities to unskilled poor people and vulnerable groups such as women or youth.

54. Agri-food processors (small, medium and large) also play a role through a range of value-adding services beyond processing, including transportation of commodities from the farm, post-harvest quality improvement activities, and food distribution to urban centres. Typically located close to production zones, agri-food processors are also important sources of off-farm rural employment generation, especially for young people who are more likely to seek off–farm work. In addition, the availability of foodstuffs from food processors provides alternatives for home food preparation, enabling women to dedicate more time to income generating activities for household welfare.

55. As such, these enterprises are significantly invested in rural areas, acting as a connectivity hub bridging farming communities to increasing urban demand, while also generating employment and adding domestic value to the quality and nutrition of the food supplied to the national agri-food sector and beyond. Despite the potential of agri-food-processing enterprises in developing countries, this sector encounters a number of challenges, and struggles to keep up with the rapidly changing modern agri-food system.

56. Agro-processing in developing countries can be characterised by low technical and managerial competencies, a lack of support and access to financial services, particularly in the rural

areas; and poor soft and hard infrastructure – all contributing to higher transaction costs and compromising firm competitiveness.

57. As retailers and consumers become increasingly stringent and discerning with respect to food safety and environmental and social sustainability standards, additional burdens are placed on smaller enterprises in the form of investments in better technology and the training or recruitment of higher skilled employees. Smallholders and agri-MSMEs may struggle to compete with the increasingly higher standards due to their inherent small size, lack economies of scale, and scarce resources.

58. With a view to "leave no one behind"[26] and the right support in terms of policy, legal resources and investment, the role of agri-food MSMEs can be nudged in a direction that leads to sustainable growth in the agri-food system, while enhancing competitiveness in domestic and international markets by ensuring that: nutritional value is added to food, rather than depleted; the employment generated results in decent jobs; and the operations and technologies employed are aligned with national climate change and social goals.

Questions for the Working Group

- *How has the role of intermediaries changed? Have they been replaced or are they undergoing specific transformations?*
- *Who are the intermediaries between producers and retailers? Is there a difference between local and global intermediaries?*
- *Do intermediaries play a role in the selection of the legal structure of agricultural enterprises?*
- *Do intermediaries play a role in promoting the formalisation of agricultural enterprises?*
- *What are the main functions of intermediaries (coordination of producers, service provider, know how transfer, data collection, management of risks and unanticipated circumstances, monitoring compliance with transnational standards, resolution of conflicts)*
- *Does the contractual relationship between intermediaries and producers change depending on the function the intermediaries play?*

C. Contractual arrangements for collaboration in agri-food supply chains: use of multiparty contracts

59. Contracts play an important role in the coordination and integration of actors in agri-food supply chains as well as in corporate governance. Contracts are important because they sustain and structure agricultural value chains; coordinate diverse economic activities by linking input suppliers to producers, all the way to end buyers; and distribute risks and rewards among value chain actors. Contracts often also define obligations and standards on issues such as farming techniques, technology and product quality.

60. Contracts may be used to specify the internal organisation and management of the agricultural enterprise in detail (e.g. membership, representation, decision-making process, form of management, share of profits and losses, exclusion and withdrawal of a party, transfer, termination, dispute resolution, etc.). From an external point of view, associative contracts may also be important

[26] For more information see the UN Food Systems Summit website, in particular Action Track 4 – Advance Equitable Livelihoods.

instruments to facilitate commercial cooperation and cross-border trade relationships. The LSAE Guide could cover the basic terms, general principles, and guidelines that might be addressed in these contracts, and how they can be designed to assist smaller enterprises in becoming contract-makers rather than just contract-takers and overcoming their main difficulties.

61. Contracts vary substantially depending on whether we consider global value chains either as highly formalised chains led by a major agribusiness, or in terms of the realities of the vast majority of small-scale farmers that operate in local and often more informal markets. Approaching agricultural enterprises from the perspective of smaller enterprises, rather than a lead firm, could therefore lead to a different set of contractual issues. Contracts also vary depending on commodities, jurisdictions, social contexts and the value chain segment they refer to.

62. Many other guidance documents have focused on certain types of contracts, such as contract farming arrangements. Less guidance is available on the wider range of multiparty contracts that cover provisions of inputs, technology, intellectual property, finance, insurance, and sales combined under the same contractual arrangement.

63. In order to understand and improve multiparty contractual arrangements, it is important to not only look at contracts between farmers and their immediate buyers, but at the whole contracting chain. In this sense, the LSAE Guide could helpfully take a more holistic approach to contract issues in agri-food supply chains – perhaps focusing on overarching principles concerning the role contracts play in coordinating value chains, more than on detailed guidance about specific contractual provisions. These issues primarily relate to coordinating sets of private contracts, so the private law dimensions are central, though there are also links to public governance, for example as regards anti-trust legislation, where asymmetries in market power originate from concentration in certain segments of the chain.

64. Contractual issues may often relate to the process through which contracts are developed and implemented. Determining which contracting party has what say, and at which stage, can thus ultimately affect smaller enterprise's ability to shape contractual terms. Therefore, it may be helpful to consider matters related to processes and power distribution in relation to both contract development and contract formalisation initiatives.

65. Unlike the bilateral contractual relationships addressed in the LGCF (agricultural production contracts), the LSAE Guide could cover different contractual arrangements established in the case of integrated relations, where a legal dependency among contracting parties is created and they form one single legal entity. In this context, it is important to pay attention to how the balance between the different contracting parties is maintained. The major risk may be that smaller producers and agri-MSMEs lose any real power they may have if a joint or common venture is created with a more powerful party, which may essentially dictate the course of action. Therefore, the LSAE Guide might address issues related to ownership and proprietary rights so as to point out best contractual practices to regulate the operation of the business (e.g., proprietary rights over assets of the business), as well as to analyse the question of ownership of assets within a corporate structure.

66. When collaboration takes place within multiparty contracts or linked bilateral contracts, liabilities may be allocated in different ways depending on the applicable law and possible agreements among the parties. In this sense, the prospected guidance document could consider best practices to address risk-sharing issues (e.g., debts and losses) and differentiate any liabilities (e.g. non-compliance of the producer with social and environmental standards and how personal assets should be protected from farm business liabilities). Best practices could be distinguished depending on whether cooperation occurs within multilateral or linked bilateral contracts.

Questions for the Working Group

- *Within the contractual instruments, what are the driving factors that determine the choice between bilateral and multiparty contracts?*

- *Within the multiparty contracts, what are the driving factors that determine the choice?*

  a) the number of participants
  b) the size of participants
  c) the (a)symmetry of power among participants
  d) the resources available to collaborate
  e) the domestic or transborder nature of collaboration
  f) the subject matter of collaboration (service provision, data sharing, know how transfer, quality or safety certification)
  g) the duration of the contract

D. The impact of sustainable development goals, green finance and insurance on the structure of agricultural enterprises

67. The level of impact one can expect on the functioning and structure of agricultural enterprises depends on the relationships that the latter have with public bodies and financial investors. Because of the specific risks that farmers face, they may benefit from financial systems and *ad hoc* system of public subsidies conditioned to the achievement of sustainability goals[27] proposed by the UN 2030 Agenda for Sustainable Development[28].

68. Financial systems are increasingly developing frameworks for so-called green finance, which consists in investing financial resources in economic activities that meet given environmental and social requirements[29]. In these cases, it is important to measure the sustainability performance of agricultural enterprises. As further described in the following section, ongoing digitisation process and, in particular, precision agriculture applications, can be a crucial way to provide data on the environmental performance of farmers and farming operations. It is therefore intuitive that such a development could have a meaningful impact on agricultural enterprises, both in terms of their structure and of their financial sustainability. Precision agriculture technologies can help achieve the environmental requirements that are imposed by public aid systems and/or by private investors, for example by preventing water loss in irrigation, by reducing the use of agrochemicals, etc. It is even possible to consider that the adoption of some forms of precision agriculture applications may become a prerequisite to access public aid and/or private investment.

69. While these dynamics may be seen as favourable in terms of environmental policy and sustainable use of public and private resources, they may also represent a risk for farmers especially (but not only) in developing countries, since they might lack the resources and infrastructures to take part to these processes.

70. Insurance services are another field that will probably be affected by sustainability and digitisation of agricultural activities. The data that digital farming applications generate may constitute an important reservoir for assessing risks and, therefore, for calculating premiums,

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[27] See EU Commission, Farm to Fork Strategy, 20 May 2020, COM/2020/381 final, 16.

[28] United Nations General Assembly, Resolution adopted by the General Assembly on 25 September 2015, Transforming our world: the 2030 Agenda for Sustainable Development.

[29] N. BATINI, Transforming Agri-Food Sectors to Mitigate Climate Change: The Role of Green Finance, in Vierteljahrshefte zur Wirtschaftsforschung, 2019, 88, 7.

measuring damages, and setting indemnities[30]. Therefore, the interplay between sustainability, digital farming and insurance can represent both an opportunity for farmers, since they might have access to more effective insurance services that are better tailored to their needs on the one hand, and a risk, since they might be discriminated because they face higher risks than other farmers and/or because they do not have the resources and infrastructures to subscribe these new types of insurance policies, on the other. For example, the challenges related to climate change mitigation and adaptation may exacerbate some of the risks that the agricultural sector faces, placing insurance companies under additional stress and making it more difficult to calculate risks and predict their exposure. This is one of the reasons why insurance premiums have increased globally[31]. Precision agriculture might partially change this scenario, allowing insurance companies to better assess premiums and/or to reward farmers who adopt digital applications, for example by offering discounts.

Questions for the Working Group

- *How do sustainability requirements influence the structure of agricultural enterprises?*
- *Are there examples of contractual or corporate collaboration aimed at implementing sustainability standards?*
- *What is the role of investment funds in agriculture and how do they impact collaborative governance?*

E. The impact of technology on agricultural enterprises

Online sales and the transformation of agricultural enterprises

71. Digitisation can have a meaningful impact on the ability of agricultural enterprises to put their products on the market. The possibility to market products through online sale platforms may exclude or reduce the role of some traditional intermediaries while allowing new intermediaries to emerge, such as digital service providers. Many of the existing digital platforms are generic and do not only deal with agricultural and food products, offering a wide range of other products. Moreover, they do not interfere with farming operations as they simply showcase the products for sale. As an alternative to centralised digital platforms, agricultural enterprises can set up their own websites with an online shopping section and/or use other types of platforms (e.g., Facebook) to sell their products[32]. In the first case, intermediaries are almost completely excluded, except for the hosting provider offering the digital space for setting up the website; in the second case, the intermediary has *per se* a different function than that of placing products on the market.

Questions for the Working Group

- *How is access to online sales distributed across enterprises and regions?*
- *How do online sales transform agri-food supply chains? In particular the role of distributors and retailers.*
- *Do online sales have an impact on collaboration? Is the formation of cooperatives and consortia associated with the creation of online sale platforms?*

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30 S. BAROCAS, K. LEVY, A. MATEESCU, *Reap What You Sow? Automation, Information, and Economic Distribution on the Farm*, 2019, 7-8, available at: https://robots.law.miami.edu/2019/wp-content/uploads/2019/03/BarocasLevyMateescu_WeRobot.pdf.

31 L. PORTH, K. SENG TAN, Agricultural Insurance. More Room to Grow?, in The Actuary, 2015, 35, 36.

32 Data revolution: emerging new data-driven business models in the agri-food sector, cit., 10.

Data as a new production factor

72. Along with the inputs that are traditionally employed in the agri-food chain (seeds, agrochemicals, fertilizers, agricultural machinery), data is gaining importance as a new production factor capable of changing the structure and operational routines of agricultural enterprises. This is due to the fact that farming is becoming increasingly reliant on the digitisation of its processes and operations. The digital transformation underway in agriculture implies the generation of huge volumes of data, which can be stored and shared among different stakeholders, such as providers of agricultural services, farmer cooperatives, public bodies, etc. Like in other economic fields, agri-food sector data is also becoming an increasingly precious asset that must be processed at aggregated level in order to fully exploit the potential interconnections that can be generated. Within this scenario, big data analytics represent a way of developing new products and services that can make the agri-food chain safer, more secure, sustainable and efficient.

73. Precision agriculture is the most promising application of digitisation and big data analytics in the agri-food domain, and the most widely considered by policymakers, industry and academic researchers. Precision agriculture has been defined as "a farming management concept based upon observing, measuring and responding to inter and intra-field variability in crops or in aspects of animal rearing"[33]; it has also been described as a "a set of technologies that combines sensors, information systems, enhanced machinery, and informed management to optimize production by accounting for variability and uncertainties within agricultural systems" in order to "apply the right treatment in the right place at the right time"[34]. The combination of data from different sources (field sensors, drones, satellites, tractors, robots, etc.) and algorithmic processing makes it possible to optimize farming operations by, for example, reducing the use of agrochemicals, harvesting a crop at the best time, and using the right quantity of water for irrigation. Data represents the fuel that allows these dynamics to work and, therefore, have a crucial value for the future not only of precision agriculture, but of the agri-food chain at large.

74. Data from the USA show that farmers are increasingly adopting precision agriculture technologies, especially medium and large companies[35]. The level of adoption changes depending on the type of technology and yields considered: for example, self-steering guidance systems are used for 50-60% of farmland planted with corn, peanuts, rice and spring wheat[36]. In Europe, a study published in 2016 shows that 25% of European farmers have adopted some forms of precision agriculture[37]. While the adoption rate seems to be growing, the percentage of farmers that employ some form of precision agriculture applications is still limited, which is leading policymakers to propose strategies to increase the numbers[38].

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[33] JRC, *Precision Agriculture: An Opportunity for EU Farmers – Potential Support with the CAP 2014-2020*, European Union, 2014, 11, available at the URL: http://www.europarl.europa.eu/RegData/etudes/note/join/2014/529049/IPOL-AGRI_NT%282014%29529049_EN.pdf.

[34] R. GEBBERS, V.I. ADAMCHUK, *Precision Agriculture and Food Security*, in *Science*, vol. 327, issue 5967, 2010, 828.

[35] D. SCHIMMELPFENNING, *Farm Profits and Adoption of Precision Agriculture*, USDA Economic Research Report n. 217, October 2016, available at: https://www.ers.usda.gov/webdocs/publications/80326/err-217.pdf?v=0.

[36] D. SCHIMMELPFENNING, *Precision Agriculture*, in D. HELLERSTEIN, D. VILORIO, M. RIBAUDO (eds.), *Agricultural Resources and Environmental Indicators 2019*, USDA Economic Information Bulletin n. 208, May 2019, 56, available at: https://www.ers.usda.gov/webdocs/publications/93026/eib-208.pdf?v=2348.3.

[37] European Parliament Research Service, *Precision Agriculture and the Future of Farming. Scientific Foresight Study*, December 2016, 35, available at: https://op.europa.eu/en/publication-detail/-/publication/40fe549e-cb49-11e7-a5d5-01aa75ed71a1. The study does not provide further data on the type of technologies adopted, the kind of yields concerned, and Member States where adoption rates are higher.

[38] This is the case of the European Union. The Farm to Fork Strategy foresights investments within the Common Agricultural Policy to facilitate the adoption of precision agriculture: EU Commission, Farm to Fork Strategy, 20 May 2020, COM/2020/381 final.

75. A testament to the importance of precision agriculture for the future of the agri-food chain is the level of investments, merger & acquisition operations and partnerships that are taking place[39]. Multinational corporations active in the seed, agrochemical and machinery industries are buying small and medium companies offering digital farming tools[40]. Venture capital is increasingly channelled towards financing start-ups developing digital services for farmers[41]. These investments are placed within a scenario in which in the last years the entire industry of agricultural inputs has experienced major processes of consolidation, such as the acquisition of Monsanto by Bayer (2016), the acquisition of Syngenta by ChemChina (2016), the merging between Dow Chemical and Dupont (2017). It is now estimated that 60% of the world seed market is controlled by four companies[42]. All these companies are also investing in precision agriculture.

76. The main reason behind the investments in precision agriculture applications is represented by the existing complementarities between traditional inputs and digital farming. In particular, precision agriculture technologies make it possible to combine traditional inputs with agronomic services. This is the case, for example, of field sensors capable of collecting data on the mineral deficits in the soil or the level of water stress in a plant; these data can be processed through a software which, in its turn, sends instructions to tractors on the kind of fertilizer to be used or the quantity of irrigation necessary. Clearly, those who control these precision agriculture applications can also suggest the type of seed, fertilizer, or agrochemical to be used on the field. These types of non-horizontal concentration and partnerships have already been experienced in the past when agrochemical companies invested in gm technologies in order to market gm seeds resistant to particular herbicides. Something similar is occurring nowadays, but on a larger scale, since precision agriculture functions as a sort of platform where different inputs and services can be integrated. Indeed, in the next future we might assist to a shift from *precision* agriculture to *prescriptive* agriculture, the latter referring to a scenario in which diagnosis of the problems and prescription to solve them are combined together[43]. Even if from a partially different perspective, this evolution is also envisioned in the recent Farm to Fork Strategy published by the European Commission, which refers to *tailored advisory services* for supporting farmers in achieving sustainability goals and who place these services in the context of agricultural data network and digital farming[44].

77. Artificial Intelligence, the Internet of Things, and Big Data are expressions that will become more and more frequently employed in the agri-food domain. They all require large amounts of data to work effectively. The transition towards a sustainable agricultural system itself, which represents the main goal around which to build the future of the sector, is frequently linked to the development of a digital agri-food chain. These trends imply the need to enlarge the notion of inputs by including data as both a valuable asset for both private operators, public bodies and society at large, as well as an important factor for rural development.

78. Digital farming is usually associated with the pursuit of four main goals: (i) cost reduction, due to a more efficient use of (human, natural, man-made) resources; (ii) environmental protection,

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39 OECD, Concentration in seed markets: potential effects and policy responses, Paris, 2018, 58, 65.

40 I. LIANOS, D. KATALEVSKY, A. IVANOV, The Global Seed Market, Competition Law and Intellectual Property Rights: Untying the Gordian Knot, in Concurrences, 2016, 2, 62, 71.

41 K.O. FUGLIE, The Growing Role of the Private Sector in Agricultural Research and Development World-Wide, in Global Food Security, 2016, 10, 29, 36.

42 P.H. HOWARD, *Global Seed Industry Changes since 2013*, 31 December 2018, available at: https://philhoward.net/2018/12/31/global-seed-industry-changes-since-2013/.

43 Referring to the acquisition of Climate Corporation, a company developing precision agriculture services, by Monsanto, LIANOS, KATALEVSKY, IVANOV, *The Global Seed Market, Competition Law and Intellectual Property Rights: Untying the Gordian Knot*, cit., 71, write: "Combined with the existing product portfolio of Monsanto (seeds, traditional and biopesticides, etc.) the data analysis and recommendation tool of the Climate Corporation will enable Monsanto to become an ultimate one stop-shop opportunity for a farmer".

44 EU Commission, Farm to Fork Strategy, 20 May 2020, COM/2020/381 final, 16.

due to the more precise application of production factors; (iii) higher productivity in the field associated with a reduction of agri-food loss; (iv) better logistics thanks to the adoption of automated systems that can improve traceability and the performance of pre- and post-harvest operations, including distribution. These goals are capable of transforming the existing legal structures of agricultural enterprises since the digitisation processes will require not only significant (private and public) investments, but also a different approach to the way enterprises function internally and collaborate with other market participants.

79. One of the distinctive features of agricultural enterprises is that they face not only the business risks that any economic operator has to deal with, but also some specific risks that depend on *1.* weather and climate factors, *2.* the biological cycles of the plants/animals (zoonoses, phytonoses) and *3.* the difficulty to rapidly redirect the type of cultivated crop. Along with the smaller size and lower income that characterise most of the agricultural enterprises compared to business operators in other domains, these risks make agricultural enterprises particularly vulnerable and justify *ad hoc* regulatory and financial frameworks to support them. Digital farming might partly change this scenario by allowing farmers to keep some of those risks under better control, such as those linked to climate and weather factors and those consisting in zoonoses and phytonoses. The special, *ad hoc* measures that are provided to tackle the distinctive risks that characterise agricultural enterprises might be benchmarked against the adoption of digital farming technologies and the data they collect. More in general, digital farming might imply the need to reconsider both *1.* the role that risks specific to agriculture have in making agricultural enterprises special and *2.* how the changes in risk management processes impact the internal structure of enterprises.

The impact of digital farming on the internal functioning of agricultural enterprises

80. The adoption of digital technologies in agriculture might lead reduce the amount of freedom farmers have in conducting their activities, and some of the functions that are traditionally performed within the enterprise's structure might be outsourced *via* digital services[45]. This is vividly clear in the case of prescriptive agriculture: the farmer might be unable to control which inputs to employ, having been supplanted by the provider of precision agriculture technologies. In addition, the control that buyers will be able to exercise on farming operations and on the level of compliance of suppliers with contractual requirements will be much more pervasive, sophisticated and up-to-date than earlier. Buyers might be able to monitor and address the deficiencies they detect in real time, thus intruding into the farmer's managing operations in ways that were not possible in the past. In a visionary scenario, farmers might become passive receivers of instructions that are then implemented by machines, almost suppressing any autonomy they have.

The impact of digital farming on the external functioning of agricultural enterprises

81. The previous points have sketched two possible areas of impact of digital farming on the *internal* functioning of agricultural enterprises. However, the digitisation of agriculture also has an *external* dimension concerning the way agricultural enterprises relate with other subjects, being private economic operators, public institutions, and producer organisations. Procurement processes represent a first domain where digital services can partly change the scenario. Some processors are structuring their procurement strategies by leveraging on digital technologies. For example, the

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[45] See the example reported in EIP-AGRI Seminar Report, *Data revolution: emerging new data-driven business models in the agri-food sector*, 22-23 June 2016, 11, available at: https://ec.europa.eu/eip/agriculture/sites/default/files/eip-agri_seminar_data_revolution_final_report_2016_en.pdf: "A European example in services is the Dutch-Flemish breeding cooperative CRV, which supports dairy farmers in insemination decisions for cows. Where traditionally the farmer looked in the meadow if a cow was in heat and ready for insemination, pedometers have taken over this detection. CRV developed an app that not only signals this status but also suggests sperm from three preferred bulls. As most farmers always choose option A of the list of three, they can now subscribe to a service where CRV automatically delivers the sperm, if not in stock with the farmer already".

Dutch sugar cooperative Cosun has developed a software through which "farmers can register their field data [and] then receive management tips and benchmarking data. At the same time, the cooperative uses this data to organise its logistics, production planning and its marketing (as it can provide its clients with sustainability data)"[46]. In this example, the software has been developed internally by the cooperative under the pressure of the food and drink industry which is asking its suppliers to develop a sustainable supply chain. In other cases, companies rely on technology and software provided by a third party. For example, the Abaco group offers services that range from geo-spatial information related to plots to the collection of data on the field, from the control of the production costs for each plot and crop to the application of agronomic protocols[47]. Processors, such as Ferrero and EcorNaturaSì[48], for example, resort to these services to better manage their supply chain, coordinating the different players and providing them with support and instructions to meet the desired production requirements.

82. A specific issue that frequently emerges in the management of the supply chain is the need to guarantee an adequate level of traceability of the materials employed in the production processes. Global Positioning System (GPS) technology, monitoring sensors, databases can be used to improve the traceability within the entire supply chain**.** For example, in Montenegro a digital traceability system for honey has been implemented consisting in a database containing information about the beekeeper, the queen bee, the hives and their position, the honey varieties produced, the weather conditions. All this information, which is partly collected through sensors and other devices, is used to guarantee the origin and safety of the honey[49]. Another possible avenue to improve the traceability system is to resort to blockchain technology[50].

83. Chain leaders have a keen interest in developing relationships with reliable suppliers. In order to do so, they can promote the growth of new suppliers. For example, a subsidiary of Ferrero, Ferrero Hazelnut Company, has a specific program to promote the production of hazelnuts by supporting the creation of new agricultural enterprises specialised in this type of crop. Digital technologies and services support these business development processes since they allow *1.* to transfer the know-how (in terms for example of agronomic practices) and inputs (in terms of plant varieties, agrochemicals, etc.) that are considered necessary to have reliable suppliers to the incoming producers and *2.* to monitor that they are used appropriately. These dynamics represent a further example of the how digital technologies can increase the level of cooperation within procurement processes, the peculiarity being that they shape the structure of the agricultural enterprise from its very first day of operation.

84. In sum, digitisation can lead to a higher degree of integration within agricultural supply chains. This trend has an impact on the structure of agricultural enterprises from both an internal and an external perspective. Internally, it determines better management of some of the risks that are specific to the agri-food sector, while at the same time also causing a compression of the farmers' degree of autonomy and the symmetrical higher degree of intrusion by the chain leader into farming operations. From an external perspective, agricultural enterprises become one of the nodes of a complex web in which information is collected, stored and processed with significant implications in terms of procurement processes, traceability and business development models.

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[46] EIP-AGRI Seminar Report, Data revolution: emerging new data-driven business models in the agri-food sector, cit., 10-11.

[47] See https://www.abacogroup.eu/en/products/abacofarmer.html.

[48] See https://www.agrifood.tech/precision-farming/abaco-partecipa-alla-costruzione-di-un-futuro-piu-digitale-e-sostenibile/.

[49] EIP-AGRI Seminar Report, Data revolution: emerging new data-driven business models in the agri-food sector, cit., 9.

[50] I.H. SAN JUAN, The Blockchain technology and the regulation of traceability: The digitization of food quality and safety, in European Food and Feed Law Review, 2020, 6, 563.

Questions for the Working Group

- *Does a digital divide between micro, small, and medium agricultural enterprises exist and how does it affect the accessibility to agri-food supply chains?*

- *How does the outsourcing of important management decisions determined by digital farming affect the governance of horizontal collaboration? If many farmers in the same area collaborate in relation to production, and most of their crop-related decisions are outsourced to the processor via digital farming, how do their modes of collaboration change?*

- *What are the different forms of control and how is control associated to digital farming at agri-food supply chain level exercised?*

- *Does the outsourcing of important functions linked to digital farming influence the legal structure of agricultural enterprises?*

- *Does the participation in a global chain change the accessibility to data collection and automated decision making (precision agriculture)?*

Digital farming and the role of farmers' organisations

85. Since many agricultural enterprises are small and might lack the resources and/or expertise to carry out some of their activities, many of them rely on farmers' organisations in order to support part of their daily operations. This is the case, for instance, for some agronomic services, such as agronomic consulting, field treatments, chemical analyses, etc., which are provided by the organisations to their members. The development of digital farming might reduce the role that farmers' organisations play nowadays, since precision agriculture providers might supply some of the agronomic services that are now provided by these organisations. At the same time, there are also new opportunities for producers' organisations[51]. For example, in Australia big data cooperatives are emerging as a response to the request from farmers to have more control on the data generated in their fields or during their farming activities. The same trend is emerging in the USA, with the establishment of new cooperatives[52], non-profit organisation[53] and farmers' networks[54]. A paper recently published by the United Nation Development Programme (UNDP) suggests that cooperatives can favour the adoption of digital technologies by farmers in developing countries[55]. The tight connection that traditionally exists between agricultural enterprises and farmers' organisations might be reshaped by the digitisation of the agri-food chain, in the sense that the importance of such organisations might be reduced or magnified (or a combination of the two). In both the scenarios, the functioning of agricultural enterprises will be affected.

F. Cross-cutting legal topics that may become the core elements of guidance

Scope of control and degree of autonomy

86. The different scenarios sketched in the previous sections entail a rather broad set of legal issues. Even if to a different extent, they all impact on the functioning of agricultural enterprises by shaping their internal structure and how they relate to other players of the agri-food chain. In other

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51 Big Data Cooperatives in the United States, in Farm Institute Insights, 2016, 13, no. 4.

52 See for example the Grower Information Service Cooperative: https://www.gisc.coop/.

53 See for example the Agricultural Data Coalition: http://agdatacoalition.org/.

54 See for example Farmers Business Network: https://www.fbn.com/about.

55 United Nation Development Programme, *Precision Agriculture for Smallholder Farmers*, Singapore 2021, 75, available at: https://www.undp.org/sites/g/files/zskgke326/files/2021-10/UNDP-Precision-Agriculture-for-Smallholder-Farmers.pdf.

terms, each scenario implies regulatory frameworks that can either accelerate or slow down some of the dynamics of collaboration envisaged.

87. The degree of freedom that agricultural enterprises enjoy increasingly depends on the amount of control that can be exercised over data. If the control on data is placed outside the agricultural enterprise, the latter will have limited spaces of autonomy. The question of data control is therefore crucial from a legal standpoint and the different applicable regulatory frameworks can affect the issue to a significant degree.

88. The first, basic question at this regard concerns who should retain control over the data generated by digital technologies employed in the agri-food sector. There are at least three different subjects to be considered: farmers; suppliers of digital services; manufacturers of agricultural equipment. In the case of control over data, farmers seem to represent the most natural option, since data originate within their range of activities[56]. Nonetheless, at the same time, farmers may receive data that has been processed by the providers of digital services, which can be deemed as qualitatively new *vis à vis* the raw data that the farmers provided in the first place. The role played by the manufacturers of agricultural equipment further highlights the importance of technology as an apparatus to *de facto* control data (for example by limiting data portability). In addition to the question of who can be identified as the data holder, a further issue concerns the kind of legal framework to be used for controlling access to data. Different solutions have been explored, ranging from patents for algorithms to copyright and/or patents for software, from trade secret protection to the *sui generis right* for data banks, from the creation of a new right of data ownership to the implementation of an open data environment[57]. All of them have significant limits and are only applicable to a limited extent. In a recent paper, the United Nation Development Programme seems to suggest that open approaches (open data; open source software; open standards) can favour the adoption of digital technologies in developing countries[58].

89. It seems that contracts represent the tool most often used to control access to data[59]. In most of the cases, data circulation is guaranteed *via* contract, which identifies the limits for data use, portability, and the degree of control that can be exercised over it. The pivotal role that contracts play in this domain points to the ability, along with technological solutions, to guarantee a factual exclusivity on data on behalf of those who have a stronger market power (processors; providers of digital services) and/or who control technological solutions (manufacturers of agricultural equipment)[60]. By controlling data through contracts and technology, these subjects can shape and address the process of integration that the increasing digitisation of the agri-food sector is making more possible than ever before.

90. An additional regulatory framework that can impact the degree of control over the data generated during farming operations consists in the norms on personal data. Nonetheless, there are two variables that seem to limit the possibility to resort to such framework: (i) the framework only applies to physical persons, and therefore companies and other types of organisations are outside the range of application of the norms; (ii) a significant part, if not most of the data generated in

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[56] See COPA-COGECA, EU Code of Conduct on Agricultural Data Sharing by Contractual Agreement, 2017, 8, available at: https://eudatasharing.eu/node/736.

[57] J. DREXL, *Designing competitive markets for industrial data – Between propertisation and access*, Max Planck Institute for Innovation and Competition Research Paper No. 16-13, 2016, 24, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2862975; C. ATIK, B. MARTENS, *Competition Problems and Governance of Non-Personal Agricultural Machine Data: Comparing Voluntary Initiatives in the US and EU*, in *Journal of Intellectual Property, Information Technology and Electronic Commerce Law*, 2021, 3, 370.

[58] United Nation Development Programme, *Precision Agriculture for Smallholder Farmers*, cit., 78.

[59] EU Commission, Building a European data economy, COM(2017) 9 final, 10 January 2017, 10; DREXL, Designing competitive markets for industrial data – Between propertisation and access, cit., 29-30.

[60] DREXL, Designing competitive markets for industrial data – Between propertisation and access, cit., 29.

agriculture seem to be non-personal. Of course, the two variables do not apply in absolute terms as farmers can act as physical persons and, therefore, personal data protection laws apply.

91. A lot of data is already stored in public data banks. In the future it is likely that the amount of data in public repositories will increase. The Farm to Fork Strategy of the EU envisages the creation of a *Farm sustainability data network* and of an *Agriculture data space*[61]. The first initiative proposes to collect data on sustainability indicators, while the second represents a platform through which production, land use, environmental and other data are processed for the precise and tailored application of production approaches at farm level and the monitoring of performance of the sector. The information held in these public data banks is of interest for different private stakeholders, ranging from insurance companies to financial investors, from input providers to real estate operators. An interesting example is offered by the enforcement of IP rights for new plant varieties in Europe. Under specific conditions, the holder of a breeder's right (which is a *sui generis* IP right for new plant varieties) can ask public authorities information stored in public data repositories in order to enforce his right[62]. Regulating access by third parties to information held in public repositories represents a key issue that can have a meaningful impact on the capability of agricultural enterprises to get access to the credit market, insurance policies, real estate services and the like.

92. Antitrust law is another domain that is very relevant for many of the dynamics described in the previous section: (i) with respect to the concentration processes and the tying practices characterising the input industry, it is intuitive how antitrust rules can play an important role in governing such dynamics, even if a limit to the efficacy of these rules is represented by the fact that they are centred around the consumer welfare paradigm; (ii) with respect to the choice of technological solutions that, along with the contract, can lead to a *de facto* exclusivity, antitrust rules can contribute to guarantee some degree of openness in their access, together with principles such as that of data portability; (iii) with respect to the role of producers and interprofessional organisations, many legal systems provide for exceptions to general antitrust legislation, with the aim of incentivising their formation and activities. The two general functions that these derogations perform also find evidence in the context of the provision of digital services: (i) producers' and interprofessional organisations have the size, resources and representativeness that place them in a better position to negotiate with the suppliers of digital services than their individual members; (ii) producer and interprofessional organisations can supply the same services that are supplied by third-party service providers to their members, as the example of big data cooperatives seem to show.

93. A cross-cutting theme with respect to many of the legal issues introduced above concerns the role of codes of conduct[63] and, more in general, of private regulations. Since, for many of the applications employed in the digitisation processes underway in agriculture, it is difficult to identify the applicable regulatory framework and/or this is insufficient, producers' organisations, service providers and other stakeholders have elaborated codes of conduct with the aim of addressing the conducts that the different stakeholders should follow. An example is offered by the *Code of conduct on agricultural data sharing by contractual agreement*, promoted by Copa-Cogeca and signed by different agri-food players; another example is represented by the *Privacy and security principles for farm data*, promoted by the American Farm Bureau Federation and signed by many stakeholders. Generally speaking, the goal of these private regulatory initiatives is to fill a gap in public regulation, even if their contents vary. Their capability of providing an effective solution, as well as the possibility of verifying how operators comply with them *via* certification mechanisms, is still to be assessed.

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61 EU Commission, Farm to Fork Strategy, cit., 16.

62 See Commission Regulation (EC) no. 1758/95 of 24 July 1995, in particular art. 11.

63 ATIK, MARTENS, *Competition Problems and Governance of Non-Personal Agricultural Machine Data: Comparing Voluntary Initiatives in the US and EU*, cit.

94. It is difficult to predict to what extent the digitisation processes that are underway in the agricultural sector will impact on the legal structure of agricultural enterprises. However, it is reasonable to imagine that they will lead to a higher level of integration within value chains, as well as to a different way of structuring the relationship between agricultural enterprises and other players active in the agri-food domain (producers' organisations, insurance companies, financial investors, public bodies).

95. The regulatory framework applicable to the digitisation dynamics that are affecting the farming sector is still evolving and far from being clear. Such a situation could be met with resistance by farmers due to possible fears of these new technologies being a double-edged sword with regard for example to the protection of their personal data or their ability to retain part of the value generated within the chain[64]. There is an increasing consensus on the need to reassure farmers on the trustworthiness of these digital processes. The role that rules can play at this regard is intuitive; the same development of voluntary codes of conduct in the precision agriculture domain is often justified in terms of the need to create an environment which is perceived as trustworthy by farmers. In addition, the existence of an appropriate regulatory framework represents an important precondition for private operators for investing money, time and know-how in a field which is extremely dynamic and fluid.

96. The changes that digitisation can determine in the agri-food sector entail an additional set of challenges in terms of skills and know-how that farmers will have to develop to become active players in, and not passive receivers of, such transformations. In turn, these processes will determine both modifications in the structures and operations of agricultural enterprises and the emergence of new business models[65].

[64] L. WISEMAN, J. SANDERSON, A. ZHANG, E. JAKKU, Farmers and their data: An examination of farmers' reluctance to share their data through the lenses of the laws impact smart farming, in NJAS – Wageningen Journal of Life Sciences, 2019, 90-91

[65] European Parliament Research Service, Precision Agriculture and the Future of Farming. Scientific Foresight Study, December 2016, 34.