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Unit E-1: Agriculture and fisheries

Strategy for agricultural statistics for 2020 and beyond

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Strategy for Agricultural Statistics 2020 and beyond and subsequent potential legislative scenarios

EXECUTIVE SUMMARY

Agricultural statistics aim to produce data on agriculture that meet the current and future user needs in an efficient manner with a bearable burden on data producers. In order to fulfil these aims and requirements periodic strategic revisions are needed. The agricultural statistics strategy 2020 will improve the coherence between the agricultural statistics sub-domains, clarify and streamline the concepts and definitions, improve the integration between agricultural, forestry, land use and environmental statistics and increase the flexibility and reaction speed of the statistical system.

The main stakeholders of the strategy 2020 are in particular DG AGRI in the context of the Common Agricultural Policy, but also DG CLIMA, DG ENV, JRC, DG REGIO, and DG SANTE, the National Statistical Institutes (NSIs) and the farmers, who are the main data providers. Consultations have shown that the main new, emerging needs are linked to the greening of the CAP, challenges of the climate change, production structures, food supply chains, price volatility, yields and geo-referenced information. However it is also important to ensure the high quality base data and long-time series for trend analysis.

Agricultural statistics need to be designed and function as a system, where the parts fit together and make the output more significant than their sum. In addition, agricultural statistics need to fit seamlessly into the entire European Statistical System (ESS). The data sources need to be diversified. Other sources for data must be used where possible; ICT and other new technologies (e.g. big data, researched based innovations) have to be integrated; the effectiveness and efficiency of data collection methods must be assessed against the data needs and the quality criteria, and the existing stove-pipes should be broken.
Agricultural statistics have to cover the economic, environmental and social dimensions of agriculture and rural development. For these reasons the scope and design of the agricultural statistics, including the statistical units need to be re-analysed.

The present legal and methodological structure of agricultural statistics does not cater for the future needs and does not function in an efficient way. After the discussions with the stakeholders and careful deliberation of several options, Eurostat suggests a thorough legal revision of agricultural statistics. The most feasible of the strategy options proposes that all agricultural statistics except the economic accounts of agriculture would be covered by two framework regulations:

- farm level data with micro-data transmission, based on a modular approach with core variables, modules and satellites, and
- aggregated agricultural input/output statistics with tabular data.

The first, a framework regulation for Integrated Farm Statistics (IFS) would be drafted during 2015 and 2016 and should enter into force in 2018 at the latest, as it will replace the Farm Structure Survey regulation that will expire after FSS 2016. The work on the second one, the framework regulation for Statistics on Agricultural Input/Output (SAIO) would be launched in parallel with a target of being in place by 2022.

1. OBJECTIVES OF THE STRATEGY

1.1. Why do we need a strategy for agricultural statistics 2020 and beyond?

Agricultural statistics include more than 50 different datasets which describe agricultural land use, production of crop and animal products, farm structures, prices, economic inputs and outputs and the impact of agriculture on the environment, health and wellbeing. The statistical domains have been developed over time with many changes since the 1950s. Despite streamlining and integration efforts, concepts, definitions and legislation have not been fully harmonised and thus the cross-domain coherence is not optimal. Comparable agricultural statistics from all Member States are important in determining the development of agricultural policy in the European Union. Statistics on agricultural inputs and production contribute to an assessment of the availability of food (food security)[1], feed and biofuel, and agricultural product markets.

Agricultural structures and practices are changing fast, the policy and regulatory environment has been transformed by the reforms of the Common Agricultural Policy and also the global markets for agricultural products have become more turbulent and diversified with e.g. the growing use of biofuels. The tight links between agriculture, environment and climate are more complex and dynamic than previously thought. The impact of agricultural practices and products on human and animal health and welfare is strong but not fully understood. Depicting all these dimensions and inter-linkages sets a lot of new requirements on agricultural statistics. The policy processes steering the development in all these policy fields need a sound scientific knowledge base, which agricultural statistics provide the basis for. The need to further develop agricultural statistics in close cooperation with other statistical domains is therefore strong.

Not only the needs but also the available data are changing constantly. New data sources such as administrative data, various registers (e.g. cattle, tax, business, farm), research projects in the inter-linked fields and big data have become more readily available. ICTs and other new technologies have also modernised data collection methods. New data sources and more flexible ways to collect and produce official statistics require an adaptation of the framework for agricultural statistics.

In line with the ESS Vision 2020, there is thus a need to create a strategy for the further development of agricultural statistics, more adapted to the overall objectives of modern statistics.

Box 1: Why are agricultural statistics important?

Agriculture **produces close to 100% of the food we eat**. The safety of food is non-negotiable. In times of crisis (e.g., BSE, E-Coli, Salmonella, Dioxin residues), detailed knowledge of production structures and supply chains is essential for rapid responses. In the global context, high but increasingly volatile food prices coupled with an ever increasing world population present a challenge not only for developing countries. Data on prices, yields and production structures are used in market analyses and market outlook models for policy development and management. They are also widely used by private operators: such data reduce asymmetries in market information.

[1] Including the ability to maintain the food production potential by maintaining the capacity to do so

Agriculture **covers 47 % of the EU territory** and has a strong environmental impact. The environmental impact of agricultural practices, but also the environmental services provided by agriculture are immense. Agriculture uses soil, water, air and biodiversity and affects these resources through land management practices, input use, cropping and livestock patterns. Agriculture also plays a special role in view of climate change: It is an important source of emissions (currently non-C02 greenhouse gas emissions from agriculture account for approximately 9% of total EU emissions but agriculture produces over 90% of EU ammonia emissions) but can also sequester carbon and protect important carbon sinks related to agricultural land through good management practices. Without a thorough knowledge on what is produced where, by whom and how, it is not possible to target agricultural and related policy interventions to where they are most needed.

Agriculture accounts for roughly **40% of the EU budget**. It is the only policy almost entirely funded from the EU budget, where European spending largely replaces national spending. Clearly, for an annual budget of 58 billion Euros, EU taxpayers should be able to expect a policy based on hard facts and figures. The recent experience in developing the CAP 2014-2020 demonstrates the central role of statistics in high quality impact assessment of policy options and the need for a solid knowledge base against which the policy can be monitored.

Agricultural exports from EU28 amounted to 120 billion euro in 2013, with imports landing at just over 100 billion. The agricultural trade adds up to 6.9 % of total exports and 6% of total imports, but it amounts to **37% of the total trade balance.** The EU is currently negotiating several free trade agreements which will further increase trade in agri-food products. The EU exports in particular value-added products, the imports are concentrated around animal feed and tropical products[2].

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1.2. What are the aims of the strategy?

The preliminary strategic aims have been identified in the discussions with stakeholders (Commission services, other data users, NSIs and the Ministries of Agriculture). In line with Eurostat Vision 2020, eight targets have been set at this stage. They guide the strategy work towards more concrete objectives through legislative tools.

The agricultural statistics strategy aims at

- producing in an efficient way statistics, which meet the users' needs (see box 2)
- not significantly increasing the burden on respondents and on statistical systems, while making more statistics available
- improving the coherence between the agricultural statistics sub-domains
- clarifying and streamlining the concepts and definitions
- improving the quality of agricultural statistics
- improving integration between agricultural, forestry, land use and environmental statistics
- increasing the flexibility and reaction speed of the statistical system allowing easier introduction of new needs, statistics and methodological approaches for supporting better the policy-making and decision processes

[2] http://ec.europa.eu/agriculture/trade-analysis/statistics/outside-eu/extra-eu28_en.pdf

- developing a responsive and responsible governance structure for agricultural statistics

Box 2: The main EU policies depending on agricultural statistics are:

1. The Common Agricultural Policy (CAP), including cross compliance, agri-environmental measures , and Rural Development programmes; handled by DG AGRI;
2. Water Framework Directive, including the Nitrates Directive and Groundwater Directive; handled mainly by DG ENV;
3. Air related Directives (National Emission Ceiling, Air Quality, and Integrated Pollution and Prevention Control), handled mainly by DG ENV
4. Climate change policies (related to the UNFCCC Kyoto Protocol); handled mainly by DG CLIMA
5. Nature conservation legislation, the Birds and Habitats Directives and several other biodiversity policy tools; handled mainly by DG ENV
6. Soil related policies, including the Soil Thematic Strategy, Sewage Sludge Directive; handled mainly by DG ENV
7. Food safety, plant protection, animal health and animal welfare regulations; handled mainly by DG SANCO
8. Regional cohesion policy; handled by DG REGIO
9. In addition, JRC units in both Ispra and Seville are relying heavily on agricultural statistics for a great number of research projects, models and tools used by the DG's mentioned above and the EEA.

1.3. Present European agricultural statistics system (EASS)

Today the European agriculture statistics system (EASS) contains more than 50 sets of data that are transmitted to Eurostat by NSIs. The system contains 7 statistical domains: a. Structural data, b. Agri-monetary data, c. Crop production data, d. Organic farming data, e. Permanent crop data, f. Animal products and livestock data and g. Agri-environmental data.

In addition, DG AGRI manages the Farm Accountancy Data Network, a survey that is very closely linked to the EASS, while not officially being European statistics.

1.4. Stakeholder analysis

The main stakeholders of this project are the customer DGs, in particular DG AGRI in the context of its need for agricultural statistics to develop, implement, monitor and evaluate the Common Agricultural Policy, DG CLIMA, DG ENV, JRC, DG REGIO, and DG SANTE.

The other main stakeholders are the National Statistical Institutes (NSIs) and the farmers, who are the data providers. They need to be able to provide the data required with manageable deadlines, volume and at acceptable levels of difficulty. The NSIs wish to have the flexibility for omitting low-prevalence data from the collection process and be able to use as much as possible administrative sources and low-burden data collection systems.

There are in addition other stakeholders: researchers in all fields touching on agriculture, organisations that take part in the debate on policies linked to farming, the private sector both up- and downstream from agriculture and in the agri-food sector, the public interested in finding out more about who is producing the food they eat and many others.

There have been a number of stakeholder events on agricultural statistics, starting with a CEIES seminar in 2004 that led to certain changes in the legislation, albeit not as far reaching as suggested.

1.5. New data needs

New policy priorities often lead to new data needs, especially on environmental aspects of agriculture, as summarised in Commission Communication COM(2006) 508 final on "Development of agri-environmental indicators for monitoring the integration of environmental concerns into the common agricultural policy". Eurostat therefore launched a project to identify the data needs related to agri-environmental interactions. The results[3] of the project have been confirmed by both users and producers of agricultural statistics, and are also utilised by OECD and FAO.

Following these actions, a series of seminars were organised in the framework of the Standing Committee on Agricultural Statistics (SCAS). These seminars were aimed at identifying and discussing the most pertinent questions related to the future of agricultural statistics, with participants not only from NSIs and user DGs of the Commission, but also from Farmers' Unions, research centres and private companies.

In addition, in 2014 Eurostat asked the main Commission users of agricultural statistics for their most important needs for statistics. A similar request was sent to the EEA in 2015. Most of the statistical data presently collected by Eurostat have been confirmed as still needed, with some very limited exceptions. In addition, new needs have been specified (see Annex II).

At an international level, one of the outcomes of the 2007 International Statistical Institute Conference on Agricultural Statistics was a consensus regarding the challenges of applying statistics to issues in agricultural development. Not only was a lack of direction identified regarding agricultural data requirements posed by the Millennium Development Goals (MDG) and other emerging issues such as the use of food for biofuels, and the environment and food security; but a general decline in the overall quality and availability of agricultural statistics was visible. These concerns were discussed during the 2008 meeting of the United Nations Statistical Commission (UNSC). The discussion led to the formation of a working group assigned to draft a strategic plan to improve agricultural statistics. The working group, under the guidance of the United Nations Statistics Division (UNSD), included the World Bank, the United Nations Food and Agriculture Organization (FAO), Eurostat, the United States Department of Agriculture (USDA), and the International Statistical Institute (ISI). Using input from the working group and other stakeholders, the World Bank with the help of heads and representatives of national statistical offices and ministries of agriculture from 27 countries, the FAO, IMF, Eurostat, OECD, and the USDA prepared a paper discussed at the 2009 meeting of the UNSC, which concluded that a global strategy was needed to improve agricultural statistics. The technical content and strategic directions of the Global Strategy were endorsed by the 41st session of the UNSC. The final strategy document contains a minimum list of agricultural statistics that must be seen as valid also for the EU member states, and subsequently it is logical that Eurostat takes a coordination role.

[3] http://ec.europa.eu/eurostat/web/products-statistical-working-papers/-/KS-RA-11-005

Summary of key needs identified by the Commission services:

- Number and structure of farms and the core variables of agricultural production
- Production, area harvested and planted, yields
- Producer prices (both output and input, including land prices and rents)
- Exports and imports
- Stocks of core crops
- Number, production, producer prices of core livestock
- Land cover and use
- Organic farming
- Areas irrigated and quantity of water withdrawn for agricultural irrigation
- Fertilizers in quantity and value
- Pesticides in quantity and value
- Feed in quantity and value
- Age and sex of farmers, family and workforce
- Working time and other gainful activities of farmers and their family members
- Indicators and data on new greening elements (crop diversity; permanent grassland including environmentally sensitive grassland; ecological focus area);
- Geo-referenced information in order to combine in an efficient way agricultural information with environmental information;
- Data on food supply chains
- Continued collection of base data in order to establish time series, long-term trends etc.

1.6. Future European agricultural statistics system (EASS)

Agricultural statistics forms part of the European Statistical System, where the various parts fit together and make the output more significant than the sum of the parts. For this to function, agricultural statistics need to be able to interact with and be linked to the other components of the European Statistical System.

There are several requirements, many mentioned in Eurostat's Vision 2020, which the EASS needs to meet. Firstly, it needs to deliver the statistical knowledge base needed for the design, implementation, monitoring and evaluation of the Common Agricultural Policy, environmental policy and climate change adaptation and mitigation policies. The effectiveness of the EASS is first and foremost measured against this requirement. The EASS has to be involved in the data needs identification and prioritizing process in order to safeguard the functioning resources and to keep the system efficient.

The EASS needs to interact and be linked to several other statistical domains. Agriculture is a part of primary production together with forestry, fishing, hunting and gathering. The statistics on primary production would benefit from being considered as one statistical system. The primary production is based on land and water so the land use/cover statistics and primary production statistics need to fit together seamlessly. The above-mentioned statistics should be analysed together from the point of view of the statistical system components (data needs, data collection methods etc.) and future statistical systems should clearly define their relations to each other.

Agricultural practices have a major impact on environment and climate change. The statistics on agricultural production, production methods and land use are crucial for several types of environmental statistics (e.g. soil, water and air quality, biodiversity). The impact of crop and animal production (e.g. ruminants, leaking nutrients, role of permanent grasslands) on the

carbon cycle is very important but not yet fully understood. Agricultural products and by-products are also becoming increasingly important as bio-energy source. Agricultural statistics system needs to be connected to environmental statistics, indicators and accounts and energy statistics.

As described in Eurostat's Vision 2020, the EASS must be more agile and responsive to user needs, which evolve in line with policy changes. Key variables have been identified during the long history of the EASS and the resulting time series need to be preserved. Journalists, NGOs, researchers in this complex field, all need to access the information they require in different ways. International cooperation is important; the EASS must collaborate with and contribute to the developments of especially the statistical activities of the FAO and OECD.

In this context it is important to note that while the main focus in the strategy is agricultural statistics, the agricultural policies are requiring not only statistics on agricultural holdings and production, but are also relying on most other domains of European statistics.

1.7. Key principles

The EASS needs to be efficient. As Eurostat's Vision 2020 states, resources are getting scarcer at all levels of the system while the needs tend to expand and become more complex. The efficiency needs to be safeguarded by some key principles.

The most important one is to **re-use as much as possible the existing administrative, statistical and other data.** Big data are so far scarce in agriculture. However, the Integrated Administration and Control System (IACS) that is the most important system for the management and control of payments to farmers under the CAP is an administrative register that is used by many NSIs as a source of data for surveys or as a validation tool. Eurostat and DG AGRI have cooperated in improving the use of this tool by organising a Task Force with representatives of both administrators and statisticians from a number of Member States in order to identify actions to ease the use of this register. The Task Force concluded, i.a. that statistical needs should be taken into account in the design phase of any national or European administrative database. In addition, IACS is part of several pilot studies to explore using administrative data for agricultural statistics. These pilots are run in the framework of ESS.VIP.BUS.ADMIN, a project on administrative data sources that implements one of the five key areas of the ESS Vision 2020 (new data sources).

ICT and other new technologies (e.g. big data, researched based innovations) have to be integrated into the statistical system. A key requirement for this is that **unique identifiers** are introduced and that **GIS-information** is included in as many data collection exercises as possible. Only then can data warehouses or similar databases be set up to ensure easy combination of data to allow greater efficiency and lower burden on respondents.

Common concepts and definitions should be used across statistical domains. The present definition of an agricultural holding is linked to the production of agricultural products and therefore the range applied in agricultural statistics is very wide, from households producing some vegetables and fruit in their kitchen gardens to units with thousands of hectares.

Different thresholds are applied in the Member States[4], with some including virtually all rural households with bigger kitchen gardens while others exclude the smallest holdings. This is accepted in the present legislation. It will be necessary to analyse what kind of **statistical units** should be covered by agricultural statistics, and whether the coverage should be different depending on the use. This approach should be described in a common framework, and then reflected in the various statistical regulations. When linking administrative data with agricultural statistics, a good understanding of the respective units is essential.

The effectiveness (fitness-for-purpose) and efficiency of data collection methods need to be assessed against the data needs and the quality criteria. This means identifying whether the information needed can be provided by using already existing data in models, as bases for estimates, or if expert estimations can be used. In case data collection from farms is required, are there already existing surveys that can be easily adapted to take on board new needs, or are non-statistical sources available? Are the phenomena to be surveyed changing fast or slowly, are there possibilities to decrease frequency to save resources? What is the geographical level at which the data are needed? These and other questions need to be answered so that data collection can be designed optimally.

The EASS needs a solid shared basis for linking the existing statistical domains. The shared basis consists of **common definitions, units and understanding of relevant dimensions**. It is also important to share the validation rules and practices, quality assurance, reporting and dissemination principals in line with the ESS Vision 2020.

The EASS requires a **pro-active, broad-minded and efficient governance structure**, which represents, integrates and balances the interests of the data users and data providers in the ESS context. The pro-activeness and reactiveness are important features as agricultural policy is evolving and the system needs to be adapted in order to stay relevant. The governance needs to support the multi-dimensional and diverse reality of agriculture and agricultural statistics. The governance vision has to be broad enough for enabling the best possible balancing between various statistical domains for optimizing the trade-offs, permeability and overall efficiency of the ESS.

Good governance is crucial for safeguarding an adequate knowledgebase for sound agricultural policy making at national and European level. The **regular periodic performance assessment of the EASS** is important for guaranteeing its fitness for purpose. The governance should be responsible for self-assessments but cross-domain peer-reviews and external expertise are also useful.

1.8. Indicator pyramid

Raw data/statistics

Statistics is playing a central role at all stages of the life-cycle of political decision-making, from setting the stage, through preparation of decisions and setting targets to implementation monitoring and evaluation. The impact of a lack of reliability in the evidence base is huge, European policy makers can succeed only if the decisions are based on reliable statistical evidence.

[4] http://ec.europa.eu/eurostat/statistics-explained/index.php/Farm_structure_survey_-_thresholds

Especially in the first parts of the political processes, a lot of statistical analyses are needed in order to identify the playing field, to take stock of the actual situation and analyse where the policy should lead and how to get there.

Accounting systems

The monitoring and evaluation of the common agricultural policy also requires comparable, up-to-date and reliable information on the economic situation of agriculture, and more specifically on changes in agricultural income. The **Economic Accounts for Agriculture** are a basic tool for analysing the economic situation of a country's agriculture and make a valuable contribution to the calculation of the national accounts.

In addition, there is a need to describe and analyse the relationship between the environment and the economic activities of agriculture, forestry and fisheries, primary activities that are dependent upon the environment and the resources and services it provides and, at the same time, have both positive and negative impacts on the local and surrounding environment. Understanding these relationships supports a broader knowledge of the nature and impact of the production of agricultural, forestry and fisheries products, and provides information for the analysis of food security; environmental condition and sustainability of food, fibre and material production; and issues related to rural incomes and employment. The solution for this is the **System of Environmental-Economic Accounting for Agriculture, Forestry and Fisheries (SEEA AFF)**, presently being developed in the framework of the SEEA Central Framework. It provides the framework to account for (a) physical flows of various natural inputs, products and residuals (e.g. water, energy, emissions, waste); (b) stocks and changes in stocks of individual environmental assets (e.g. timber resources, fish resources, water resources, soil resources, land); and (c) economic transactions that can be considered environmentally related (e.g. environmental taxes, subsidies and similar transfers, environmental protection expenditure, production of environmental goods and services).

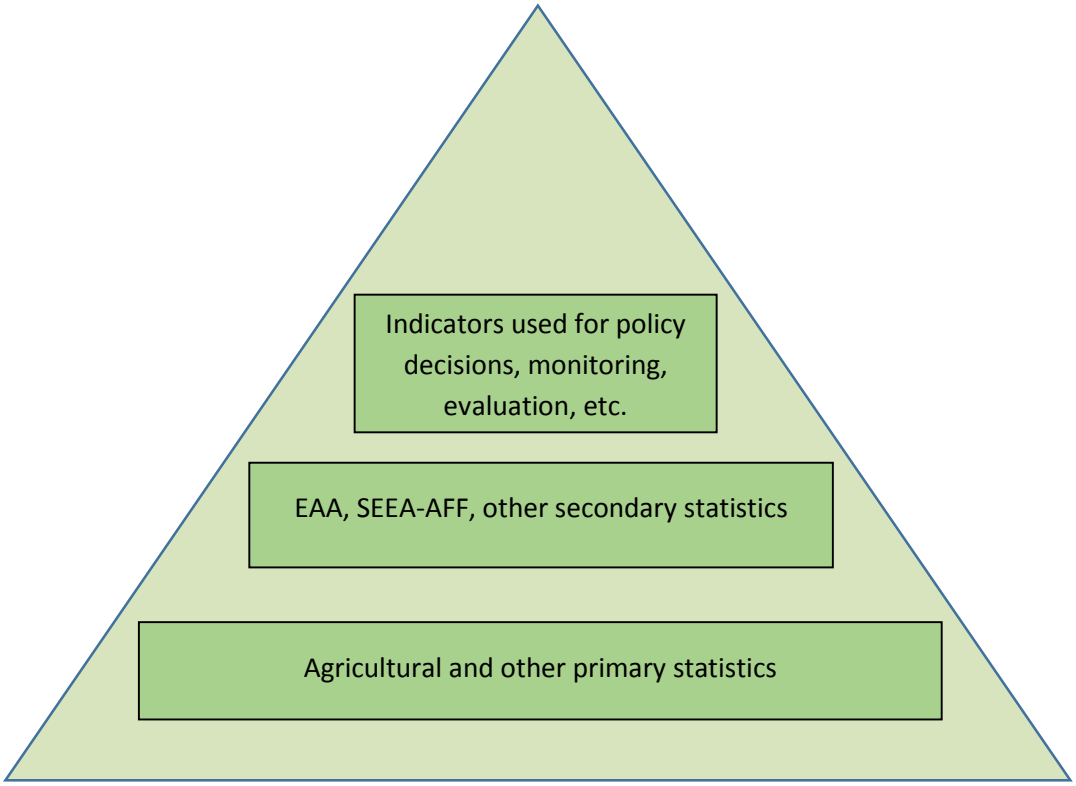
Indicators

In order to support decisions, and especially the follow-up of them, this means that for monitoring and evaluation, various indicators are used, often, but not always, based on statistical data. In agricultural statistics, the most obvious indicators are the ones allowing for the assessment of the progress, effectiveness and efficiency of the common agricultural policy (CAP) against its objectives[5]. These indicators include context, impact, result and output indicators. The CAP legislation states that the Commission shall use, to the extent possible, information already made available by Member States via existing tools for information exchange, among those information made available to Eurostat.

Even though indicators and accounting systems are important tools for policy makers, it must be kept in mind that they cannot be compiled without harmonised statistical information of good quality and coherence. If this is not the case, the indicators and accounts cannot be trusted to accurately reflect the situation the same way in all Member States, even less across regions. The backbone for a good European policy is thus the existing of a European statistical system, providing the data needed for the various purposes.

[5] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0834&qid=1420815878772&from=EN

Policy makers need a broad spectrum of data that can be used to analyse the impact of their policies. To better serve the needs of policy makers, the provision of **more complex data sets, including data matching and modelling techniques**, should be explored. Close cooperation between user DG's analytical units and Eurostat is therefore important to allow identifying better the needs and providing multi-domain data that can deliver valuable statistical evidence for multi-dimensional policy fields such as agriculture.



1.9. Integration with other statistical domains

Where appropriate and possible, the needs for improved agricultural and rural statistics should be explored by taking into account other statistical domains outside the traditional realm of agricultural statistics, especially concerning the use of labour force (both own family and salaried), the production of agricultural products without intention of marketing but for own consumption only (subsistence production), information on living conditions in rural areas agricultural prices including food price chains, and an overall classification of economic and social data according to urban/rural status. Market-oriented farms are included in several countries in business registers. Food security requires a close collaboration between agricultural statistics and trade and production statistics. In addition, considering that agriculture is based on the production on land, forestry statistics and land use/land cover statistics must be closely linked, as well as ensuring that the Inspire regulation requirements are taken into account. These potential integration steps should be better exploited in the collection of agricultural statistics. The possible linkages between agricultural statistics and other statistical domains need to be carefully analysed for finding the most optimal way of structuring and producing European statistics. This will require adaptations of existing ESS

statistical surveys to better take into account the overall data needs in order to reach a global reduction of the burden of statistics.

European regulations on Business Registers contain references to agricultural businesses, and should be used as a starting point for further developments in agricultural statistics. As described above, the introduction of a unique identifier for agricultural holdings would make it possible to combine data from administrative registers and other sources and from various statistical surveys, not necessarily in the agricultural domain, with each other, thus greatly reducing the burden on respondents while significantly increasing the available data. Such a unique identifier would best be settled in a Farm Register linked to the Business Register, but with a completely different minimum threshold. Analyses of the 2010 census data show that the Business Register minimum threshold of 20 employees cannot be applied on farms, as there are in many countries very few, if any, agricultural enterprises meeting that requirement. However, when setting up a Farm Register framework, the link to the Business Register must be assured by including the main contents of that register.

1.10. Validation

The statistical data within the EASS must be produced and transmitted to Eurostat in an efficient manner allowing a reduction in the different steps in the process without reducing the quality of the data produced. An important part of this is the validation, i.e. the processes used to establish whether data conforms to specific criteria. The way the agricultural statistics have developed during the years has not made possible to streamline the cross-time and cross-domain validation in the data transmission to Eurostat. While it is clear that the different data flows in agriculture cover different aspects of the production, and that thus the data cannot be the same, it is still possible to better explain the reasons for the differences and to minimise them where appropriate.

Within the overall work in the ESS, a Common Data Validation Policy in the different statistical domains is planned to be introduced. This policy will include in particular a distribution of validation tasks along the Member State - Eurostat production chain. The project pays special attention to both horizontal (between domains) and vertical (with Member States) integration:

- Horizontal integration between business and horizontal units is to be achieved through the development of a common language for validation rules (common terminology for the description of validation levels, a common validation syntax) and its use, together with common validation tools in the statistical domains.
- Vertical integration between Eurostat and Member States is to be achieved through sharing validation rules in the common validation language and distributing validation responsibilities, ensuring the coherence between data files and the integrity of the data held in the ESS.

This work will be greatly reinforced by the introduction of common elements in agricultural statistics, which will reduce the inconsistencies between the domains and make it easier for the users to understand the reasons for apparent discrepancies between data sets, while at the same time reduce the burden for NSIs as the same terminology, definitions, scope, etc., will be used. In addition, the introduction of a common validation syntax and improved data transmission tools where validation rules can be integrated will free resources for focussing on validation that is on a more methodological level.

2. COMMON FEATURES OF AGRICULTURAL STATISTICS

2.1. Shared dimensions

Agriculture is simultaneously an economic activity providing the food and to a growing extent also energy supply to humankind, a physical activity depending on and shaping the physical environment at a very large scale and a socio-cultural activity very deeply rooted in European societies. Agricultural statistics must serve the information needs linked to all aspects of agricultural activities.

There are three main dimensions which the agricultural statistics have to cover[6]:

- **economic** dimension of agriculture consists of the production, markets and income of farmers. It also encompasses land, labour, and capital that enter into the production process and the outputs that result from it.
- **environmental** dimension of agriculture consists of the sector's role as a user of natural resources—principally land, soil nutrients and water—and as a provider of environmental services, while on the other hand the sector's contribution to the environmental pollution.
- **social** dimension of agriculture and rural development deal both with vulnerability issues (food security) and the living conditions and quality of life of farmers and rural households in larger context.

Issues such as dimensions of agriculture and the different themes must be addressed in a common manner across agricultural statistics. It is important that the user understands which part of agriculture is reflected in the statistics.

2.1.1. Economic dimension

Agriculture is an economic activity where the inputs include natural sources (solar energy, land, water, animals and plants), products from other industries and services (fertilizers, pesticides, energy, know-how etc.) and labour. The outputs consist of food, feed, other animal and crop products (e.g. leather), renewable biomass energy and more difficultly measurable ecosystem and socio-cultural services (e.g. carbon sequestration, landscape).

The inputs and outputs are exchanged in the markets where the price mechanism regulates its functioning. Key elements are the amount of production, prices of inputs and puts and the income of farmers. There are good ways of measuring the production and traditional commodity and service markets but more work needs to be done for developing appropriate tools to measure less tangible outputs, such as ecosystem and socio-cultural services. Agricultural statistics need to measure all aspects of economic dimension and deliver timely information on all interlinked economic aspects of agriculture.

2.1.2. Environmental dimension

The relationship between agriculture and environment is very complex. Agriculture depends 100% on environment as it is part of primary production derived directly from biological processes. It impacts the environment on a wide front: climate, air, soil, land, water and biodiversity. The impacts are both detrimental and beneficial to environment. Agricultural statistics need to depict correctly the inter-links and give as realistic picture of the magnitude

of impacts as possible. Agro-environmental statistics are relatively new area of agricultural statistics. The methodology and data sources are mixed and often not the same as those traditionally used in agricultural statistics. As the impacts are very complex, research, scientific measurements and modelling are often the most suited tools for developing a sound basis for agro-environmental statistics.

The importance of the environment dimension cannot be overestimated. Collecting reliable statistical information on the two-way impact of agriculture on the climate change is a huge challenge for the agricultural statistics. The environmental dimension of agricultural statistics will likely be one of focus areas of the agricultural statistics in the next 10 years backed up by a large number of emerging policy and data needs.

2.1.3. Social dimension

The social dimension is on one hand linked to the vulnerability (both environmental and economic) and on the other hand to living conditions of farming and in a wider sense, rural population. The vulnerability is a result of the mixture of environmental and economic risks. The extreme weather conditions which have become more common with the climate change and the increasing production of biofuels in agricultural sector have increased the changes in the production level and thus made the process more volatile. This has an impact on both the food security and on the livelihood of farming population.

The social dimension covers also the living conditions of farmers and rural population. The decreasing income level combined with new responsibilities stemming from various policies make farming at smaller scale less profitable and thus threatens the traditional family farming as a way of living. The educational and gender aspects are also part of the social dimension.

Both aspects of social dimension have not been in the focal areas of traditional agricultural areas but will surely gain in importance in the future. Agricultural statistics need to open up towards social statistics for consolidating well the social dimension of agricultural statistics.

The needs for data on the different dimensions vary, and it would not be efficient to collect data intended for analyses on these dimension axes in each statistical theme. These aspects must be properly described centrally, to allow statisticians and data users to understand for which uses the data are aimed and fitted for. Also the statistical themes themselves diverge so much from each other that it is appropriate to properly describe them, if only to explain the potential breadth of agricultural statistics, not necessarily to indicate that all data should be collected.

2.2. Concepts and definitions

In order to make a coherent picture of agriculture we need to combine the different dimensions into one global system where the data are coherent and comparable. The only way of doing this is to ensure that concepts and definitions are aligned.

2.2.1. Scope and statistical design: Market-oriented versus small-scale farming

The farms can be represented along a main axis, distinguishing between, on the one end-of-scale, market oriented farming and, on the other end, small-scale farming. On the one side, market-oriented farming are deemed to refer to holdings, often legal entities, with rationalised

management, professional, large, sensitive to the market signals, while on the other side, subsistence farming, small family farms, are understood to be resilient to the short-term changes in the market, multifunctional, able to be run in remote areas, i.e. with limited level of resourcing. It is, however, important to note that in the EU most farms, also the market-oriented ones, are based on the notion of the traditional family farm and are not very large in size[7].

The market-oriented farms are sensitive to the economic conditions, especially prices. They are basically driven by the profit or at least the income. Their two main strategies are specialisation or a balance mix of complementary orientations. Farms may be specialised not only towards production of a limited panel of products, but it may also be towards market or policy opportunities (e.g. organic farming, IG, subsidy supported activity, etc.). Market-oriented farms produce most of the marketable agricultural products.

Small-scale farming is important from a social point of view, as it enables the involved households to produce for their own needs. They are small-scale (agricultural area, livestock, labour force, economic size), rely mostly on family labour force, kitchen gardens, direct sales of possible surplus, and often require additional income from other sources. The farmers are often elderly. Their strategies are either survival, keeping agricultural activity at the same limited level, or development, with progressive migration towards market farming. It is important to distinguish households with only kitchen gardens from small-scale farms.

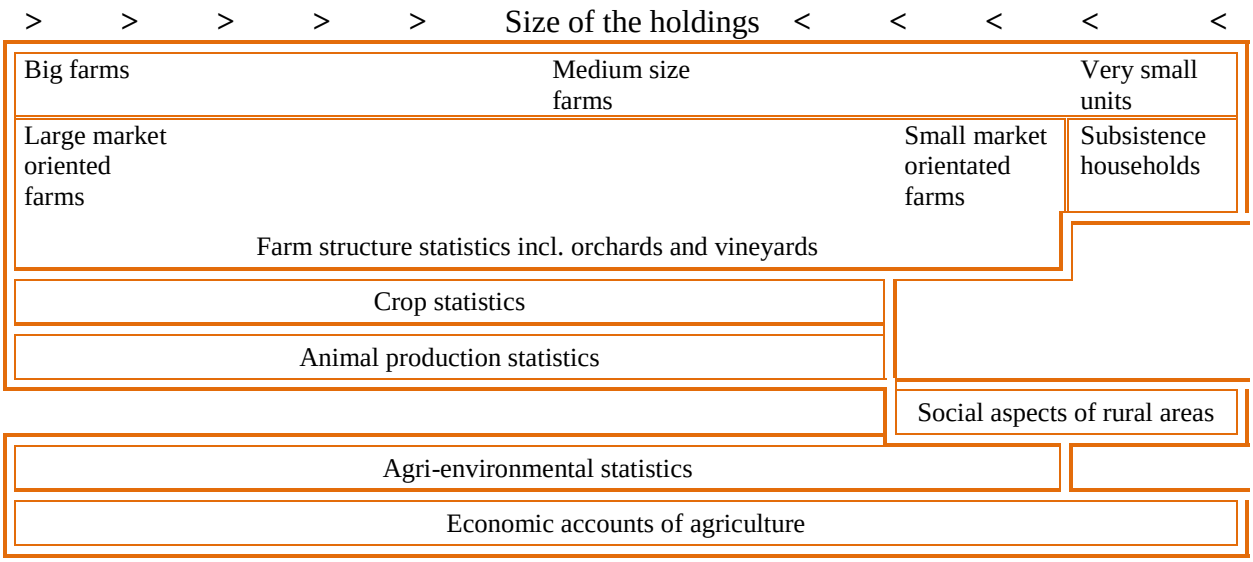
From a policy point of view, the major part of market-oriented farming is the target for Pillar I of Common Agricultural Policy (CAP), i.e. market policy, whereas the small-scale-farms, most likely located in rural areas, are supported by Pillar II, rural development policy.

Most agricultural economic activity is concentrated in the larger or market-oriented farms, this group creates the base scope of the related statistics, regarding production (input and output) and marketing of the agricultural products (and services). Most of these farms are subject to mandatory reporting and likely to feed administrative registry. Up to now only annual statistics were suitable for such data sources, but the development of electronic questionnaires with automated validation makes the processes faster and administrative information can also be used for monthly statistics. At the time being, sample with strata referring to the largest units is a cheap way to collect monthly information.

The agri-environmental statistics directly related to the production process (input and output) can be covered by the same approach.

On the other side of the axis, the needs for rural development policies and some social aspects of agriculture are well represented in small market-oriented farms and subsistence households. These numerous statistical units are suitable for sampling with a low sampling rate, limiting burden on the respondents, perhaps partially with a less detailed questionnaire or a completely separate survey. In any case, clearly defined thresholds must be defined in order to allow better understanding from users on what population is included in each statistics. These thresholds must be drafted in close collaboration with the FADN network.

Finally, some statistics refer to the whole framework of farms and the sample design takes into account the size dimension, whatever size it refers to. Mixed data sources are used for feeding the data for such surveys.



2.2.2. Unit and identifier

The traditional picture of an agricultural holding is the small family farm with both crops and animal husbandry, run by a husband and wife team with help from the family. This image is still today surprisingly valid, even though the average size of the farm has grown considerably from the past. However, the present definition of an agricultural holding needs to be amended, as described above. Without a proper approach described in a common framework, and then reflected in the various statistical regulations, there is a big risk that the resulting statistics are not coherent, and describe various universes. In addition to the agricultural holdings, data can also be collected from up- and downstream enterprises, and from intermediate units, i.e. units producing certain services in agriculture.

The use of administrative registers is not straightforward, as it is in the interest of the farmers to optimise his/her enterprise structure according to the systems. This means that there might be several enterprises on what from a management point of view is one entity, or vice versa, identifying "virtual" farms in the registers is quite complicated.

Furthermore, especially the environmental dimension of agricultural statistics requires linking the agricultural production to the spot, as the negative and positive impacts of agriculture on the environment is local. Considering the growing farm size, localising production grows increasingly difficult. Splitting farms into localised units would therefore be an improvement that could be potentially considered.

The surveys in agriculture, and the various administrative registers with potential use as data sources, could be managed much more efficiently than today if common identifiers would be introduced. This would make it possible to introduce a building block approach in agricultural statistics, which would mean that data would be collected in the manner best suited for the purpose, and would then be reused by combining with other data sources or surveys. It would also make it possible to introduce a data warehouse methodology. The

identifier must be the same in all agricultural statistics, and ideally be used also in administrative applications. This task must be carried out in close collaboration with the Business Register.

3. CURRENT ARCHITECTURE OF AGRICULTURAL STATISTICS

The backbone of agricultural statistics is the decennial **Agricultural Census**, also required by the FAO, and the related **Farm Structure Surveys (FSS)**. The FSS is the only statistical source covering the widest range of farms, which fits with its purpose to act as pivot reference for all the agricultural statistics. The FSS have, over the last 5 decennia, been used as a base for the other agricultural statistics and the produced statistics are highly appreciated by policy makers. As the legal basis for the Farm Structure Surveys (Regulation 1166/2008) will expire after the survey in 2016, it is most urgent to develop the new legislative framework for the farm surveys for the future, starting with the agricultural census 2020 and the foreseen surveys in the years between 2020 and 2030 (next agricultural census).

From a statistical point of view, all types of farms are of interest for the FSS, the numerous small farms can be well represented with a lower sampling rate, and the larger (especially regarding their economic size) ones are often covered by exhaustive strata. The small-scaled farms tend to be under the current FSS threshold in many countries. The FSS is the only statistical source covering the widest range of farms, which fits with its purpose of pivot reference for all the agricultural statistics.

Statistics on **agricultural production** target those farms that make a significant contribution to total production, which can be very different across Member States. Use of administrative sources is promoted and well-developed in these domains, and modelling and forecasting take part to the statistical process.

Agricultural price statistics refer to market signals and therefore represent that part of production that is put on the market.

Regarding **agricultural accounts**, coverage of the agricultural industry is important. Coherence of the scopes of price and volume indices and of labour input is a core issue for producing accurate income indicators.

For **agri-environmental statistics**, a complete view remains important for state indicators like the nutrient balance sheets. Here modelling is at the core of the statistical process.
Finally, a part of the statistical surveys can be replaced by other data sources in an efficient manner if the related farms can be well targeted. The burden on numerous farms may be reduced if data collection is transferred to the agro-industry sector buying their products. Here distinguishing between production for delivery and for direct sales or own consumption is an axis for efficiency of the statistical process.

4. WHAT NEEDS TO BE MEASURED IN THE FUTURE?

The political context of European agricultural statistics is the general context of the Common Agricultural Policy and other related policies (e.g., environmental; climate; regional development; trade). For the CAP 2014-2020, a monitoring and evaluation framework has

been developed with indicators which are largely based on statistical data[8]. Where data gaps exist for these indicators, they need to be filled as a matter of priority.

The scope of agricultural statistics could be widened to include aspects of forestry, fisheries, and land and water use, as the related economic, social, and environmental issues faced by policy makers relate to all areas. Because of the fundamental relationship between agriculture and land, the geospatial aspect of land is an important element of the scope of agricultural statistics. The geospatial scope for agricultural statistics should focus on the use of land for agriculture and forestry and could be embedded in the broader scope of land cover and -use statistics.

Forestry and agroforestry relate both to the production of forest products and to the interface between forestry and agriculture as an area of environmental impact. Forestry statistics could also be integrated in the agricultural statistical system with clearer references to primary production on agricultural holdings while further information on the wood industry would be part of forestry statistics.

Aquaculture has its place together with agricultural statistics, as its primary production is actually closer to the other animal production than to fishery, when referring to the production processes and or to the markets of the their products, implying feeding, regular stocking, protecting, and raising organisms through one or more life cycles.

4.1. Classification of statistical requirements

Statistical requirements do not only contain the actual statistical variables required by the users, but also a number of other descriptive elements. They are for instance main indicators, required source variables, identifiers, location, units, formats, code lists, flags, quality factors, processing data/structural metadata, explanations, descriptions, etc. The statistical requirements cover statistics intended to be used as measurements and other information intended to guarantee quality of the measurements. Plausibility and coherence must be guaranteed by further measurements.

Some specific issues must be dealt with in more detail:

Frequency. The necessary frequency of the data collections depends on the volatility of the subject of the statistics and the need for measuring this volatility. Agricultural processes are closely linked to seasons and to biological processes. This means that forecasting a production that can be destroyed very quickly due to weather conditions is difficult. The strain on frequency therefore depends very much on the expected use of the data.

Geographical level, particular zoning. The geographical level must be defined either referring to the NUTS only or combining it with a threshold or another criterion (like for livestock, country with at least 3 million pigs). The particular zonings must be defined as aggregates of NUTS (less favoured areas or other particular areas of specific interest).

[8] **Commission Implementing Regulation (EU) No 834/2014 of 22 July 2014 laying down rules for the application of the common monitoring and evaluation framework of the common agricultural policy**

5. CONSTRAINTS

The Strategy for Agricultural Statistics for 2020 and beyond is drafted, approved and implemented in a complex organisational environment which sets the constraints for actions, composed of Eurostat, the NSIs and Ministries of Agriculture in the Member States, and data users, especially Commission DGs. The constraints are of different nature; some are linked to resources and others to organisational and governance issues.

Resource based constraints. Due to the specific situation in the context of the agricultural strategy work, the most important resources are **human resources** and **time**, both imposing serious constraints on the work. **Time** is a key constraint as the legislative basis for the Farm Structure Survey will expire after 2016, and it is crucial that an agricultural census is organised in 2020. This means in practice that the new legislative basis for structural statistics must be in place at the latest in 2018. As structural statistics is the backbone of the strategy work, the year 2018 needs to be considered as the main milestone in the strategy work. This means that the legislative proposal needs to be transmitted to the European Parliament and Council by mid-2016 taking into account the time needed to get the draft legislation through the whole adoption process.

Devising any successful strategy needs a lot of thinking, planning, assessing, drafting and negotiating. The subsequent phase in which the strategy in transformed into legislative measures will also be very resource intensive (impact assessment, legislative process, negotiations, etc.). The resource implications will not finish with the adoption of the new legislation. The implementation of the new strategy implies preparing delegated and implementing legislation, rewriting Handbooks and other instructions, retailoring the IT-tools, validation rules etc. All agricultural statistics domains need to be represented in the strategy work.

Resources are not only needed in Eurostat but also in in the Member States and in the data user DGs. Most of the strategy options recommend the tightening of co-operation between agricultural statistics and other statistics (e.g. business, social, rural and environmental statistics). The co-operation would save overall resources and improve the coherence of statistical domains in the long run but would require a lot of work and adjustments in the short run. The resource availability and degree of openness towards co-operation are additional potential constraints.
Member States as data providers play a crucial role in the formulation, acceptance and implementation of the new strategy. The Member States' capacities need to be taken carefully into account in the strategy formulation. Analysing potential efficiency gains through modernization is one of the key tasks together with justified data needs.

6. POSSIBLE SCENARIOS FOR IMPLEMENTING THE RESULTS OF THE WORK ON THE STRATEGY FOR AGRICULTURAL STATISTICS

Developing a full legislative set (basic act and implementing acts) with an appropriate impact assessment and an exhaustive proposal for co-financing of the future farm surveys system which needs to be partly in place (including Commission legislation) before 2018 will require an initial choice between different potential scenarios.

The highest priority is preparing the legal basis for the agricultural census in 2020 and the subsequent farm structure surveys. These are still considered as the backbone of agricultural statistics and their continuation must be assured and enhanced at all cost.

Four different scenarios are described below, in increasing order of preference after the initial feasibility and impact considerations of Eurostat.

6.1. Scenario 1: "No EU action on structural data of agriculture"

If no action is taken, the result would be that the current Regulation (EC) No 1166/2008 will expire and the collection of the relevant data will remain at the discretion of Member States. Continuing the data collection on a voluntary basis (gentlemen's agreements) would compromise the collection and quality of data and would be a setback to systems already in existence for several decades. In addition, the other agricultural statistics legislation would remain in place and an opportunity to integrate and develop a coherent statistical policy would be missed.

6.2. Scenario 2: "No change: prolongation of the FSS Regulation (EC) No 1166/2008"

This scenario is the renewal of the current FSS Regulation (EC) No 1166/2008 which ends in 2018. This would mean that the current system, in force since 1966, would continue without integrating changes necessary as dictated by policy needs and by the new statistical policy of production and Vision. The other agricultural statistics legislation with the drawbacks as described above would remain in place. It would be a lost opportunity for the EU.

6.3. Scenario 3: "Framework regulation on the whole sector of agricultural statistics"

Scenario 3 would imply the creation of a completely new legal framework for all agricultural statistics. All legislation related to agricultural statistics would be integrated into one single framework regulation. The framework regulation would include common objectives and definitions and would also specify, in general, the required statistical outputs. The delegated and implementing acts would settle the exact content of each sub-domain of agricultural statistics. This option has many advantages; it presents, however, a serious drawback with regard to timing: the FSS legislation, (at a minimum), would have to be in place before end 2018 to ensure the agricultural census 2020, and under current circumstances it does not appear realistic to embark on such a sector-wide reform of legislation.

6.4. Scenario 4: "Two step integration of agricultural statistics".

Scenario 4 would safeguard the continuation and modernisation of the structural statistics on agriculture by introducing stepwise two new legal frameworks: Integrated Farm Statistics (IFS) to be in place before end 2018 to ensure the farm census 2020 and another framework on Statistics on Agricultural Input/Output (SAIO) to be adopted and in place before 2022. This presents all the advantages of scenario 3 and neutralises the drawback of the time element of that scenario, which is essential for the successful implementation of the initiative.

Further considerations:

The framework regulations will contain elements such as periodicity, scope, precision and quality requirements whilst technical elements such as the specific variables, etc., will be covered by appropriate delegated/implementing acts. In order to safeguard the coherence between the farm and aggregated data, a common scope must be integrated into both framework regulations and a shared technical and methodological documentation on definitions and classifications must be created.

As the **Economic Accounts for Agriculture** are considered satellite accounts to the national accounts and macro-economic by nature their integration into the new framework regulations is not being proposed, but rather to remain subject to independent legislation, to be modernised at its own accord.

The proposed regulations will be limited to the minimum required to achieve their objectives and will not go beyond what is necessary for that purpose. Additionally, the free choice of data sources in accordance with national laws and principles, together with the possibility of using available administrative and other recognised data sources should reduce the financial and administrative burden on respondents, national, regional or local authorities and on citizens.

Step 1) Framework Regulation for Integrated Farm Statistics (IFS)

The IFS is based on the idea of having a limited core set of variables to be surveyed as a census in 2020 and as a sample survey in 2023 and 2026, several modules to be surveyed at different frequencies than the core variables and with lower quality requirements, and satellite lists that would be quite flexible and easier to change, but also carried out at different frequencies and with even lower quality requirements.
The IFS legal architecture would consist of the main regulation including the core variables, population, frequency and quality criteria. The modules, satellites and definitions would be in delegated/implementing acts.

This framework regulation will replace the following statistical regulations:

- Farm Structure Surveys (1166/2008)
- Permanent crop statistics (Orchards and Vineyards surveys) (1337/2011)

In addition, parts of Agro-Environmental statistics (presently not under legislation), where data should be collected at farm level (such as irrigation, manure, nutrient use and livestock management), will be integrated into this framework regulation.

Step 2: Framework Regulation for Statistics on Agricultural Input/Output

Another **Framework Regulation for Statistics on Agricultural Input/Output (SAIO)** is foreseen, consisting of aggregated crop and animal production statistics, agri-environmental statistics on fertilisers, nutrient balances and pesticides and potentially agricultural price statistics. All these data are aggregated statistics with no micro data transmission to Eurostat, unlike the IFS. They deal with agricultural outputs (crop and animal production and prices) and inputs (prices seeds, fertilizers, pesticides, feed, etc.). The data can be collected from farms, administrative sources, intermediates (dairies, slaughterhouses, etc.), wholesale entities and market organisations and often include a certain amount of expert estimations.

7. COSTS/BENEFITS

The most obvious risk of **not** having appropriate agricultural statistics at European level lies in the misallocation of the budget for the Common Agricultural Policy, which amounts to 58 billion Euro per year. Policy decisions taken on the basis of incorrect or incomplete information will attract criticism and put the whole policy in jeopardy. For farmers, this would mean losing a significant part of their income. The impact assessment for the CAP 2014-2020 analyses the effects of a drastic reduction of the CAP budget and concludes that phasing out of direct payments would lead to strong restructuring in the sector and much larger and more capital intensive farms. Production intensification in the most fertile regions and land abandonment in less advantageous areas would have negative environmental consequences. Focusing policy on rural development-type environmental measures would alleviate these problems, but would not contribute to enhancing the sustainability of agriculture. Phasing out of direct payments would lead to failure of many agricultural holdings and would put additional pressure on the viability of rural areas with higher unemployment and migration[9].

While agricultural statistics alone are not sufficient in guaranteeing the continuation of the CAP, they are a necessary ingredient for any future policy development.

The costs and benefits are therefore based on the assumption that agricultural statistics are needed, the identified options are analysed for the different approaches.

Scenario 1: If no action is taken in due time, the result would be that the current Regulation 1166/2008 will expire while the other statistical legislation remains as it is with the drawbacks as described above.

Benefits: Although the apparent benefits for the Member States would be more flexibility in determining the surveys and requirements, the costs of no action would be immense for EU policy implementation, reputation and results.

Costs: the Commission would not have the tools to carry out the necessary ex-ante and ex-post evaluations of the CAP because no harmonised farm-level data would be collected and published by Eurostat after 2016. Further EU policy developments would be jeopardised. EU Member States, on the other hand, have commitments with international organizations such as the FAO and OECD to provide structural data on agriculture, which means that they would have to conduct such surveys themselves with a high risk of losing the coordinated and harmonised approach the ESS has created throughout the years. In addition, efforts made to date to streamline the flows of information would be wasted. This would represent a waste of resources [time, finance, human] and would lead to an increase of the burden on Member States as Eurostat would no longer provide the data to the EU and international organisations. Other agricultural statistics would subsequently be negatively impacted by the lack of harmonised survey data normally expected

Scenario 2 is the renewal of the present FSS Regulation (EC) No 1166/2008 without content related changes while the other statistical legislation would remain as it is with the drawbacks as described above.

[9] http://ec.europa.eu/agriculture/policy-perspectives/impact-assessment/cap-towards-2020/report/full-text_en.pdf

Benefits: The farm surveys would be continued as well as the co-financing of the national surveys.

Costs: It would be a significant "lost" opportunity with a negative impact on EU policies. Continuing with the same approach for structural statistics applied since 1966, since updated but without significant modernisation, means that the current outdated and rigid framework would in practice completely exclude the possibility of collecting any new data much needed to fulfil new requirements such as those linked to environmental and social issues. The opportunity to improve the integration and interaction within agricultural statistics and with other statistical domains would be lost. The incoherence between agricultural/rural data collected in the different statistical domains (agriculture, environment, society, businesses, etc.) would provide neither the consistency across domains nor an integrated approach and the benefits and economies of the expected synergies. The immediate costs to the Member States would remain the same as present in a short term, but would not allow the benefits of synergies and integration. The same applies for the Commission.

Scenario 3 would imply the creation of a completely new legal framework for all agricultural statistics. All legislation related to agricultural statistics would be integrated into one single framework regulation in a very short time period as legislation needs to be in place before 2018 to ensure the next farm census in 2020.

Benefits: The Framework Regulation would include the objectives, common definitions and would also specify in general terms the required statistical outputs. The delegated and implementing acts would specify the exact content of each sub-domain of agricultural statistics, allowing a full harmonisation and modernisation of agricultural statistics. The option would establish important key aspects to be applied to all agricultural statistics and elaborate a common integrated approach for all domains in agricultural statistics. It would ensure consistency and integration of various statistical processes and ultimately burden reduction on respondents and compilers.
The benefits to the Member States are difficult to assess at this stage, but with the increased integration it may be assumed that resources can be saved and that burden can be reduced in comparison with the present overall costs of agricultural statistics.

Costs: This approach contains an important drawback in terms of timing. The legislation should be in place before end 2018 in order to allow the 2020 farm census. This is not feasible. The risk of having very complex, and long negotiations both in Eurostat Expert groups and Committees and in the European Parliament and Council is very high. As Regulation (EC) No 1166/2008 comes to an end in 2018, this option would put at risk the continuation of the series of farm structure surveys and decennial censuses on agriculture that form the backbone of agricultural statistics.

Scenario 4 introduces a new legal basis for the Integrated Farm Statistics (IFS) and a new legal basis for Statistics on Agricultural Input/Output.

Benefits: This two-step approach maintains all the benefits of Option (iii) and mitigates the timing constraints that option (iii) presents at this stage.

The IFS (first step) is based on the idea of having a limited core set of variables to be surveyed as a census in 2020, and as a sample survey in 2023 and 2026. The new approach

would allow the Member States to reduce significantly the sample sizes, and to set up their surveys in a more flexible manner than before. Those Member States with a large number of subsistence rural households would be able to cut down the size of the surveys quite significantly, thus making additional savings to those that would be obtained through progress in technology.

The Framework Regulation for Statistics on Agricultural Input/Output (SAIO) (second step) is foreseen to consist of aggregated crop and animal production statistics, agri-environmental statistics on fertilisers, nutrient balances and pesticides and potentially agricultural price statistics. They deal with agricultural outputs (production and prices) and inputs (prices, fertilizers and pesticides). The data can be collected from farms, administrative sources, intermediates (dairies, slaughterhouses, etc.), wholesale entities and market organisations and often include a certain amount of expert estimations. The introduction of a coherent framework would notably allow for the development of an appropriate and integrated architecture of basic acts and delegated/implemented acts as well as better planning of the surveys, and would allow combining databases into data warehouses as well as achieving better coherence between domains.

Costs: The main additional costs for both the Commission and MS would result from adapting the present survey legislation, from adapting the survey methodology and from making changes to the IT systems. These costs would be recuperated by the MS from the savings in the actual carrying out of the surveys

8. RISK ANALYSIS

The main risks are linked to the legislative procedures. They are becoming increasingly complicated and lengthy, requiring a large number of documents to be produced before any project can even be approved to start.

This means that resources are needed to in parallel producing the necessary documents and taking the actions required for the initial planning phase (Evaluation, Impact Assessment, Strategy Document), and starting the legislative processes including drafting all the technical, methodological and legislative documents required. For the project at hand this is even more important than for many others, as the new legislation is required to be in place at a certain time, otherwise risking a serious break in the availability of data.

The highest risk is thus linked to the potential lack of human resources, both in the Commission and in the NSI's. The risk can be mitigated by allocating enough resources to the project. There are no contingency measures possible, if enough resources are not available, the project risk failing.

DGAS and ESSC will have to accept both the conclusions drawn in the Strategy paper and the suggested legal framework. There are risks involved here, especially linked to the legal framework, due to the conceived risks involved, especially regards burden. This can be best mitigated by ensuring that the proposals are very clear on what will be potentially included in agricultural statistics in the future and what is not planned to be added.

A project like this can also have an impact on the continuity of agricultural statistics, as both NSI's and Eurostat will in parallel have to carry out the normal production of statistics and to

adapt the present systems to the new one. This can cause continuity impacts, both in data availability and time-series. This risk is not easy to mitigate, as this would require new resources, but is worth taken, as it is expected that the result of the project will benefit both producers and users of agricultural statistics.

There is also a risk that the new data will not be compatible with the old ones. This is an obvious problem that is difficult to assess. The impact can be partly mitigated by analysing FSS data with the aim of simulating the threshold impacts on the latest census data.

Further risks will be identified and analysed at a later stage.

9. NEXT STEPS AND KEY MILESTONES

It is necessary to prioritise the actions and concentrate initially on the development of the Framework Regulation for Integrated Farm Statistics together with related implementing/delegated acts, given the limited time from now until 2018.
The Framework Regulation for Statistics on Agricultural Input/Output will be developed partially in parallel but the target date is later, 2022, The Commission internal Impact Assessment (IA) procedures have been launched in the second quarter 2015, to allow enough time for preparing this lengthy process. The IA is expected to take at least one year. It is expected that Eurostat can benefit from the work already carried out in other IAs, adapting to the specific situation in agricultural statistics.

In parallel, the IFS regulation would be drafted as it is important to provide early input to the DGAS (Director Group on Agricultural Statistics) and the appropriate Working Groups as well as to the ESSC, and to prepare the delegated and implementing acts that Member States will certainly require at an appropriate stage. The work on following-up on the Strategy would also continue.

Schematic timeline:

2015, first half year:

- Finalise the design of the overarching strategy.
- Launch the Impact Assessment on the future legal framework for agricultural statistics

2015, second half:

- Continue work on the Impact Assessment
- Prepare the IFS Framework regulation and related implementing/delegated acts;

2016:

- Prepare the IFS Framework regulation proposal and related implementing/delegated acts, launch the legal process in EP/Council;
- Finalise Impact Assessment
- Launch the work on preparation of the IT tools and infrastructure for the IFS

2017:

- Follow the IFS Framework regulation in EP and Council and related implementing/delegated acts;
- Launch the Impact Assessment on SAIO Framework regulation;

- First drafts of SAIO Framework regulation and related implementing/delegated acts.

2018:
- IFS Framework regulation - finalise legislative work and methodological documentation;
- Finalise Impact Assessment on SAIO Framework regulation;
- Continue the work on the SAIO Framework regulation related implementing/delegated acts.
- Launch the adaption of the business process, IT tools and infrastructure for SAIO

2019
- IFS Framework regulation – finalise methodological documentation;
- Launch the legislative procedures on SAIO Framework regulation in EP/Council and continue working on the related implementing/delegated acts.

2020
- Follow the legislative procedures on SAIO Framework regulation in EP and Council.

2021
- Launch the legislative procedures for the delegated/implementing acts on SAIO Framework regulation.

2022
- Follow the legislative procedures for the delegated/implementing acts on SAIO Framework regulation.

2023
- End of the project.

10. ACTIONS ALREADY CARRIED OUT

The need for better integration between the different themes in agricultural statistics has been known for quite some time, and actions have been undertaken. When preparing the recent legislation both in structural and production statistics the variables and related definitions have been discussed and prepared to be harmonised where possible. In addition codes are being harmonised, to allow increased cross-domain use of different data sets.

Validation of incoming data uses data already received for verifying the trends and to describe potential discrepancies. Eurostat tries in cooperation with Member States to identify potential sources for the differences and to describe the reasons in the meta-data of the statistics.

ANNEX I: PRESENT ESS DATA SETS IN AGRICULTURAL STATISTICS

a. Structural data

Agricultural census: every 10 years
Farm structure surveys: every 3 years

b. Agri-monetary data

Economic Accounts for Agriculture: annual
Agricultural Labour Input Statistics: annual
Unit value statistics for agricultural products: annual
Selling prices of agricultural products: annual
Price indices of agricultural products: annual
Agricultural Prices - Land (including rent): annual

c. Crop production data

Crops from arable land - Area and Yield: annual
Permanent crops from arable land: Annual
Vegetables, melons, strawberries: Annual
Agricultural Land use: Annual
Supply Balance Sheets – Wine: annual
Crops products: supply balances sheets: annual
Early estimates for Crop production
Early estimates for Fruit and Vegetables

d. Organic farming data

Certified registered organic operators: annual
Certified organic crop area and production: annual
Certified organic livestock, animal products and aquaculture: annual
Manufacturing of organic products: annual

e. Permanent crop statistics

Structure of orchards and vineyards: every 5 years

f. Animal products and livestock data

Livestock Survey - Cattle - May/June: Annual
Livestock Survey - Cattle - November/December: Annual
Livestock Survey - Cattle – Regional: Annual
Livestock Survey - Pigs - May/June: Annual
Livestock Survey - Pigs - November/December: Annual
Livestock Survey - Pigs – Regional: Annual
Livestock Survey - Sheep & Goats - November/December: Annual
Livestock Survey - Sheep & Goats – Regional: Annual

Slaughterings in slaughterhouses: Monthly
Slaughterings other than in slaughterhouses: Monthly

Slaughterings other than in slaughterhouses: Annual

Gross Indigenous Production – Cattle: Sub-annual
Gross Indigenous Production – Pigs: Sub-annual
Gross Indigenous Production - Sheep & Goats: Sub-annual

Activity of Hatcheries: Monthly
Trade of Chicks: Monthly
Structure of Hatcheries: Annual

Milk collection - Table A: Monthly
Milk production - Table B: Annual
Milk questionnaire: Annual
Milk on farms - Table C: Annual
Structure of Dairies - Collection Centres by volume of annual milk collection: every 3 years
Milk Protein Contents - Table H: Annual
Milk regional collection - Table I: Annual

g. Agri-environmental data

Sales of pesticides: Annual
Use of pesticides: every 5 years
Fertiliser statistics: annual
National level Gross Nitrogen Balances: annual
National level Gross Phosphorus Balances: annual

ANNEX II: SUMMARY OF PRESENT DATA COLLECTION AND NEW NEEDS IN THE EU (*NOT EXHAUSTIVE*)

Indicator type	Item	Description	Survey/ source	Needs	Level	Frequency
Farm level information						
Processing	**Location**	Accurate geo-reference of the holding	IFS	All kinds of analyses, a "must".	Holding	Every 10 years
		Rounded geo-reference of the holding	IFS	All kinds of analyses, a "must".	Holding	2-3 year intervals
		Parcel geo-reference	IFS	Possible alternative approach	Parcel	
Axis	**Type of unit**	Household, holding	IFS	Social or economic analyses	Holding	2-3 year intervals
	Legal status	Natural person/ juridical person/ common land	IFS	All kinds of analyses	Holding	2-3 year intervals
	Main purpose of the production of the holding	Producing for market or for own consumption				
	Utilised agricultural area	Total area				
Coherence	**Total area of the holdings**		IFS	All kinds of analyses	Holding	2-3 year intervals
Source	**Land use types**	Arable crops, temporary grasses, permanent crops, permanent grassland, wooded area, etc	IFS	All kinds of analyses	Holding	2-3 year intervals
			SAIO	Land use changes	Region	Annual
	Constraints on agricultural activity	LFA, mountain area	IFS	All kinds of analyses on needs for support	Holding	2-3 year intervals
		Ecological focus area				
Completeness	**Other areas on farms**	Non-agricultural land on the holding	IFS	All kinds of analyses	Holding	2-3 year intervals

Indicator type	Item	Description	Survey/ source	Needs	Level	Frequency
			SAIO		Region	Annual
Farm activities						
Organic farming						
Source	**Organic farming: area UAA**	Area under organic farming: total, converted, under conversion	IFS	All kinds of analyses on organic farming Response Economic strategy New market	Holding	2-3 year intervals
	Organic farming	General description				
	Production factors (areas, livestock	Per crop, livestock category, fish species	SAIO		National	Annual
			?		Region	
	Production	Per crop, animal product, fish	SAIO		National	Annual
	Processing	Volume				
	Operators	Number				
Production assessment and forecast						
Source	**Production factors**	Areas per crop, grassland, number of livestock	IFS	All kinds of analyses Production models GNB Forecast changes	Holding	2-3 year intervals
		of clover and mixture	IFS		Holding	2-3 year intervals
		Potential: Unutilised agricultural area	IFS		Holding	2-3 year intervals
	N-balance	N,P excretion by livestock , biological N fixation per crop	SAIO	GNB	Region	Annual
	Structure of production units	Structure of rearing, of hatcheries, of dairies	IFS	All kinds of analyses Changes in the sector	Holding	2-3 year intervals
			SAIO		Plant	annual
			SAIO		Plant	Every 3rd year

Indicator type	Item	Description	Survey/ source	Needs	Level	Frequency
		Structure of plantations (fruit, olive, grapes) ,and density and age	IFS		Region	Every 5 years
		Wine growers	IFS		Region	Every 5 years
	Production at various stages	Area sown/planted, harvested area under grass, grazed	SAIO	All kinds of analyses Early estimate Forecast Nowcast	Region	Annual
		Detailed livestock	SAIO		Region	Semi-annual
		Laying hens	SAIO		Country	Annual
		Placing of chicks Cows‘ milk collection + products obtained	SAIO		Country	Monthly
		Yields	SAIO		Region	Annual
Main indicators	**Production achieved**	Annual and permanent crops	SAIO	All kinds of analyses Production index SBS Trends in medium term	Region	Annual
		Grassland	SAIO		Region	Annual?
		Main slaughter	SAIO		Region	Monthly
		Other slaughter	SAIO		National	Annual
		Cows’ milk	SAIO		Region	Annual
		All milks	SAIO		National	Annual
		Eggs	SAIO		Country	Annual
		Production index (volume)	Agri-monetary		Regional	Annual
		Other production mushrooms	IFS		Holding	2-3 year intervals
	Production forecast	Early estimates	SAIO	Market monitoring All kinds of analyses	Region	Monthly
		GIP meat Processed products (dairy products, wines)	SAIO		National	Once or twice a year
	Supply balance	For main annual crops, wine	SAIO	All kinds of analyses	Country	Annual

Indicator type	Item	Description	Survey/ source	Needs	Level	Frequency
	sheets	External trade of chicks		Assessment of efficiency, of needs		Monthly
		Availabilities and use of milk				Annual
Source	**Selling prices of production**	Absolute price	SAIO	All kinds of analyses Output estimate	Country	Quarterly
		Price index	SAIO		Country	Quarterly
	N and P content	Crop products, animal products, grassland production, clover and mixture	SAIO	Material Balance Sheets Nutrient flows	Country	5 year intervals
Farm management level						
Indicator	**Energy crops**	Area	IFS	All kinds of analyses	Holding	2-3 year intervals
	Farm income	Indicators A and B	Agri-monetary	Headline indicator for CAP	Country	Annual
Source	**Farm work**	Work for agricultural production	IFS	All kinds of analyses	Holding	2-3 year intervals
		Labour input	Agri-Monetary	Reference unit	Country	Annual
	Structure of farm labour force	By gender, age, working time class	IFS	All kinds of analyses Profitability, viability, Social and economic analyses, Competitiveness, Strength and weaknesses, Changes Rural Development	Holding	2-3 year intervals
	Family labour force	By gender, age, working time class, Family link OGAs, main or not				
	Farm management	The holder, the manager				
		Educational level				
		Support for rural development				

Indicator type	Item	Description	Survey/ source	Needs	Level	Frequency
	Diversification	Other activities directly related to the holding Share in final output				
	Viability	Land tenure				
Source/ indicators	**Water management**	Irrigable, irrigated area	IFS	All kinds of analyses	Holding	2-3 year intervals
		Per main crops	IFS	All kinds of analyses	Holding	10 year intervals
		Irrigated areas per crop	SAIO	Annual estimates on irrigation and water use	Region	Annual
		Irrigation methods	IFS	All kinds of analyses on water use	Holding	2-3 year intervals
		Source of irrigation water				
		Volume of water used in agriculture	SAIO	CAP impact and context indicator; all kinds of analyses on water use	Region	
	Soil management	Tillage methods	IFS	All kinds of analyses on soil	Holding	2-3 year intervals
		Soil coverage				
		Crop rotation				
	Manure management	Application techniques	IFS	All kinds of analyses on farm effluents Air emissions	Holding	2-3 year intervals
		Import/ export				
		Manure storage system for cattle, pigs, poultry				
	Animal management	Housing systems for cattle, pigs, poultry	IFS	All kinds of analyses	Holding	2-3 year intervals
		Grazing system for each grazing livestock	IFS	Air emissions	Holding	5 year intervals
Source	**Pesticides**	Sales	SAIO	All kinds of analyses on pesticides	Country	Annual
		Use by agriculture by crop				Every 5th year

Indicator type	Item	Description	Survey/ source	Needs	Level	Frequency
	Fertilizers	Use N, P, K	SAIO			
		Use per detailed type of N-fertiliser	SAIO			
	Other N input	Atmospheric N deposition	SAIO			
	Price of input	Changes in price of input	Agri-monetary	Gross margin	Country	Quarterly

ANNEX III: NOTE FROM DG AGRI ON KEY ISSUES

Please note that this note was written based on an early version of a possible scenario. This explains the titles and acronyms used.

EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR AGRICULTURE AND RURAL DEVELOPMENT

Directorate E. Economic analysis, perspectives and evaluation; communication
E.3. Economic analysis of EU agriculture

Brussels,

NOTE TO THE FILE

Subject: **The future of agricultural statistics – key questions related to data needs and preliminary answers**

What are the key elements for a **System of Farm Surveys (SoFS)** towards 2020 and beyond?

- ⇨ A **core** set of variables that is asked every time that a survey is carried out (either as a census or as a sample survey);
- ⇨ **Modules** that focus on certain thematic aspects from the current list of FSS variables that are needed either at lower frequency or for smaller samples than the core, but which can be directly linked to the core survey results;
- ⇨ **Satellites** that focus on special and well-defined topics that were not traditionally part of the FSS. The results of the satellites shall be directly linked to the variables of the core farm surveys at the level of individual holding

Do we need an agricultural census?

- ⇨ Yes, because it is our only way to get an update on the agricultural population (including livestock) in the EU. Many countries use the census to update their agricultural registers.
- ⇨ Everybody else is doing a census (the US, Canada and Australia even do it every 5 years).
- ⇨ The census could eventually be replaced by an obligation to maintain an agricultural register in all Member States. This seems to be unfeasible at the moment.

Does the agricultural census have to include all variables currently covered in the FSS (list of variables for FSS 2016)?

- ⇨ No. The census should describe the population on the basis of key variables. More detailed information can be targeted to different groups of holdings.

Which are the key variables needed in the census / core survey?

The census would cover the core variables, namely:

- ⇨ General characteristics of the holding (location; legal personality; land ownership)

- ⇨ Land use (including whether or not organic)
- ⇨ Irrigation yes/no; total irrigable area
- ⇨ Livestock
- ⇨ Labour (people; AWU; gender; age; working time; training)
- ⇨ Percentage of output generated by OGA (needed for FADN clustering)

Variables not needed in the census / core survey?:

- ⇨ Irrigation methods and water sources (targeted module)
- ⇨ OGA of the holding and of the labour force (targeted module)
- ⇨ Soil and manure management practices (targeted module)
- ⇨ Support for Rural Development

Possible topics for SoFS modules:

- ⇨ Involvement of holding members in other gainful activities on agricultural holdings in EU (non-farm work on the holding and work outside the holding) and types of other gainful activities of the labour force of agricultural holdings in EU (directly related to the holding)
- ⇨ The measures concerning support for Rural Development benefiting agricultural holdings in EU
- ⇨ Soil Management practices applied in agricultural holdings in EU
- ⇨ Irrigation practices on agricultural holdings in EU
- ⇨ Equipment used for production of renewable energy in agricultural holdings

Possible topics for SoFS satellites:

- ⇨ Nutrient use on agricultural land
- ⇨ Livestock management

Can we separate very small holdings from more market-oriented ones in the SoFS?

- ⇨ The idea behind this question is to define "agriculture" in the sense of "commercial agriculture". While FADN is limited to the market-oriented holdings, we need to maintain an overview of all types of agriculture. That's why small holdings should be included in the census and sample surveys.
- ⇨ However, the type of information required from small holdings is not necessarily identical with that required from big holdings.
- ⇨ Core variables (those included in the census) should be obtained from all farms above the minimum threshold, which should be determined in terms of Standard Output. For thematic modules and satellites, it should be possible to select samples that focus on holdings either above or below a higher threshold (in line with the political relevance of the information).

How does the system of farm surveys link with other elements of agricultural statistics?

- ⇨ **Agricultural production statistics** (animal and crop production) as well as the **structure of orchards and vineyards and the annual organic farming statistics**: Member States should be allowed and able to use data collected for the production statistics / permanent crops statistics / organic farming statistics in the system of farm

surveys. For this to work, definitions need to be identical and farm identification numbers should be compulsory.

- ⇨ agricultural accounts and prices: no obvious link (other than harmonized definitions and possibly reference periods).

How does the system of farm surveys link with the FADN?

- ⇨ A unique farm identification number is urgently needed in order to be able to link holdings covered by the FADN with holdings covered in Eurostat farm surveys. In Eurostat survey years, all structural information would thus have to be collected only once and could be shared with the FADN data collectors. This could also address the need to add additional variables to the FADN by transforming them into satellite survey in the SoFS.

How does the SoFS link with administrative data sources?

- ⇨ Member States should be encouraged to use administrative data sources wherever possible.
- ⇨ Member States should be encouraged to establish farm registers.
- ⇨ Efforts should be made to harmonise definitions and reference periods across data sources.

Financial support to Member States:

- ⇨ This should be broadly proportionate to the burden on administrations and respondents, taking into account
  - The number of holdings to be surveyed (loosely applied already)
  - The number of variables that apply to each country (e.g., Mediterranean countries grow a much wider variety of crops than Scandinavian countries, thus their questionnaire is longer and their compensation should be higher) (new suggestion)
- ⇨ Countries should be able to receive grants for the setting up of farm registers.

Next steps:

- ⇨ Revisit the proposal for the FSS towards 2020 developed in 2012 and finalise it in time for the census in 2020;
- ⇨ If necessary, draft framework regulation for agricultural statistics;
- ⇨ Simplify permanent crops statistics;
- ⇨ Scrutinize other parts of agricultural statistics for simplification potential, without excluding new data needs.