F2F monitoring framework

Presentation to the Expert Group on General Food Law and Sustainability of Food Systems

19 September 2023

Introduction

European Commission

Outline

- Introduction (why, what and how to monitor)
- Architecture
- Food system sustainability model (overview and core elements)
- Challenges
- Indicators proposed for the dashboard
- Concept of the F2F dashboard
- Closing remarks

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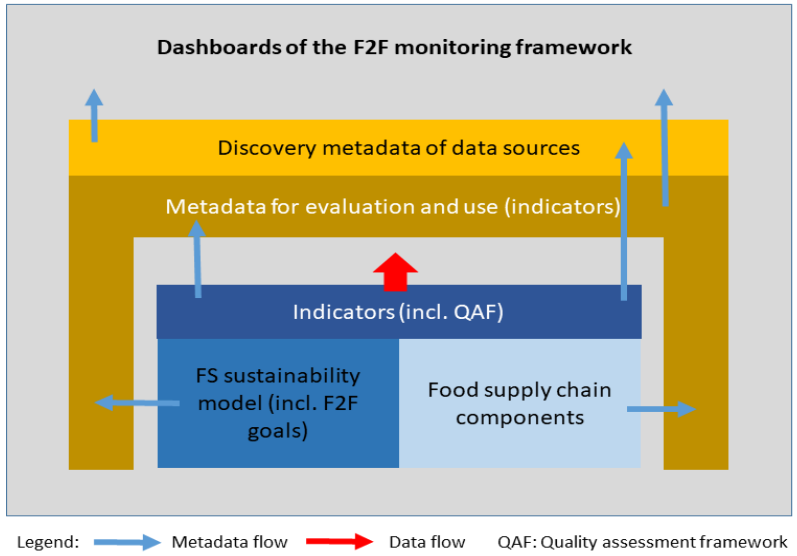
Why and what to monitor?

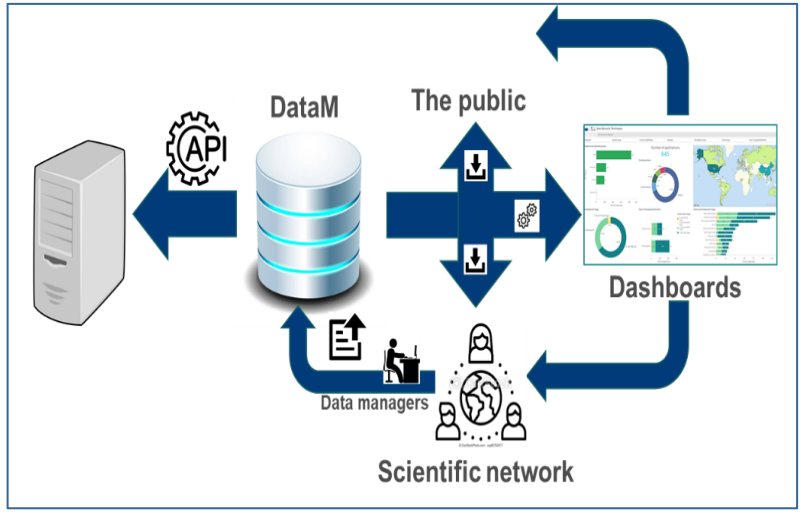
- Communication COM/2020/381: A Farm to Fork Strategy (F2F) for a fair, healthy and environmentally-friendly food system
- [The Commission] “will **monitor the transition to a sustainable food system** so that it operates within planetary boundaries , including progress on the targets and overall reduction of the environmental and **climate** footprint of the EU food system. It will collect data regularly, […] for a comprehensive **assessment** […] on **competitiveness**, the **environment** and **health.**

How to monitor?

- Develop an integrated food system sustainability model to link the targets and objectives of the F2F Strategy to the Food System (FS) model, across the three sustainability dimensions
- Select indicators covering the
  - The elements of the FS sustainability model
  - Components of the food supply chain
- Publish indicators in a dashboard including related metadata

Architecture of the monitoring framework





Indicators for monitoring are

- Harvested from the original sources (with APIs*), or calculated from original data ("reuse existing" principle)
- Linked to the elements of the FS sustainability model
- Linked to the Food supply chain components
- Documented according to the agreed metadata schema
- Evaluated according to the agreed Quality assessment framework (QAF) - min. quality for publishing is required
- Maintained in a database and published in a dashboard on the DataM platform

* API – Application Programming Interface

Food System Sustainability Model

Overview and core elements

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Drivers and contextual aspects

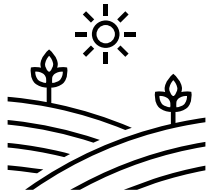
Demographics | Socio-economics | Socio-cultural | Environment

Geo-politics | Technology & Science | Policy | Governance

Food supply chain

Agricultural practices
Genetic resources improvement
Agricultural inputs

Growing, harvesting



Direct supply chain

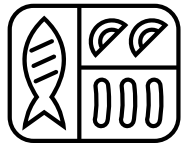
FARMERS & MARKETS

Conventional supply chain

Transforming
Packaging

Storage, wholesale, retail, transport

Cooking, eating



Research, input industry, genebanks

Farmers, fishermen, workers

Food processors, wholesalers, retailers

Food companies, food service, media

Households, institutions, restaurants

Pre-production → Production → Processing → Distribution → Consumption

Food waste and losses management

Pressures & Impacts

Environmental | **Economic** | **Social (incl. health)**

Response

Resilience

Governance *(Farm to Fork Strategy + underpinning policies)*

Core elements of the FS model

Indicators

- Attributes (Name, Definition, Description, Policies, Geographic coverage, Temporal properties, Unit of measure, DPSIR* value, Direction, Indicator value, Uncertainty, Role in the dashboard)
- Metadata elements (Data provider and link, Methodology, Publications and legal references, Condition of use, Data quality score)

Sustainability model

- 3 dimensions (environmental, economic, social)
- 13 thematic areas
- 40 domains (sustainability sub-dimensions)

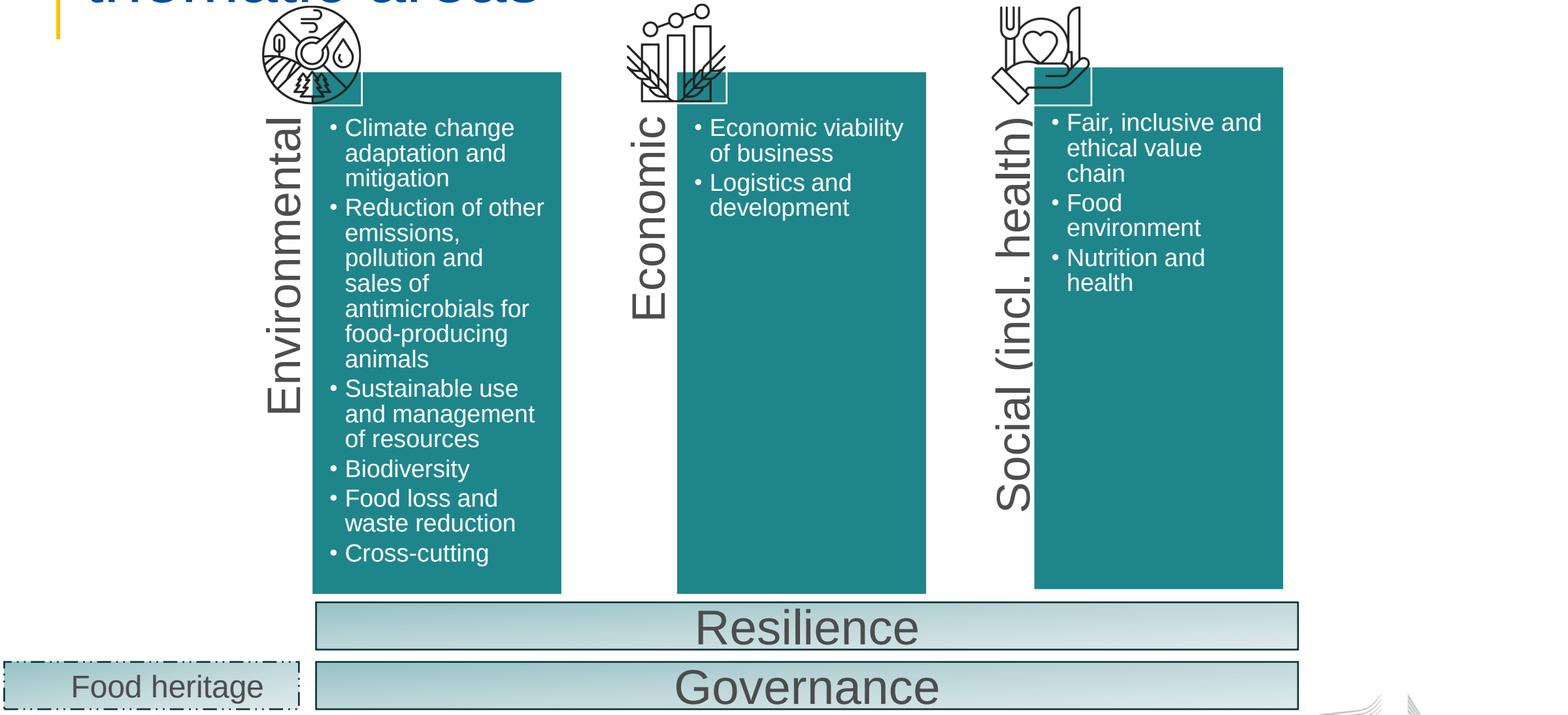
All the domains are linked to one or more objectives of the F2F Strategy (if applicable – some domains are not covered by the Strategy)

Components of the food supply chain

- Primary production (agriculture, aquaculture and fisheries)
- Food processing
- Food distribution
- Food consumption

*DPSIR – value according to the Drivers, Pressure, State, Impact, Response framework

FS sustainability model – dimensions and thematic areas



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FS sustainability model – domains in the environmental dimension

Climate change adaptation and mitigation	Pollution and sales of antimicrobials	Sustainable use and management of resources	Biodiversity	Food loss and waste reduction	Cross-cutting environmental
• GHG emissions	• Pollution • Sales of antimicrobials	• Water use • Soil and land • Blue food • Energy	• Biodiversity conservation and restoration of natural ecosystems • Genetic biodiversity of food production systems	• Food waste and use	• Circular economy • Consumption footprint

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FS sustainability model – domains in the economic dimension

Economic viability of businesses

- Income distribution
- Sectorial growth
- Market power and business structure
- Price
- Trade

Logistics and development

- Technology and digitalization
- Transport, accessibility and infrastructure

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FS sustainability model – domains in the social dimension

Fair, Inclusive and Ethical value chain	Food environment	Nutrition and health
• Inclusion and gender equity • Employment • Poverty • Social protection • Equitable access to capital, technology, land vessels, and markets • Animal welfare	• Consumer food education and literacy • Food marketing and information to consumers • (Sustainable) food availability • (Sustainable) food affordability • Properties of food • Food access	• Nutrition and healthy, sustainable diets • Health impact from diets

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Indicators

- Over 350 indicators collected and documented with metadata in a database (indicator pool);
- Mapped to the FS model (links to one or more supply chain component and sustainability domain);
- Evaluated according to their fitness for the purpose and sustainability of production (geographic and time coverage);
- Categorised according to their designation to the dashboard (headline, secondary, placeholder, pool, duplicate, unfit).

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Criteria for the selection of indicators

- Fitness for the purpose
  - Policy relevance (link to F2F objectives and or the FS in general, support of other EU policies)
  - Sound methodology (data sources, workflow, formula, quality control, maintenance, legal or peer reviewed references)
- Sustainability of indicator production
  - Geographical coverage
  - Temporal coverage (timeliness, update frequency, time series duration)
- Selection done out of 263 existing indicators + 44 placeholders proposed to fill the gaps

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Classification of indicators

- **Headline** measure the most prominent goals of the F2F and the most important sustainability criteria of the food system. They are visible in the dashboard.
- **Secondary** further detail a headline indicator or provide information on other domains without a headline indicator. They are visible in the dashboard.
- **Placeholder** conceptually important indicators that should be become part of the dashboards in the future. They also mark the gaps, where data collection, and/or conceptualisation of the indicator is needed.
- **Pool** indicators of insufficient quality or acceptable quality and lesser importance. They can be activated when there is a new policy priority, or to replace similar indictors in case of quality improvement.
- **Duplicate** (indicators with different name, but with the same data content).
- **Unfit** (not specific for assessing the sustainability of the Food System)

Challenges

- Indicator gaps along the food chain
  - Current selection of indicators does not yet evenly cover the components of the food supply chain in a balanced way. Food processing and food distribution are still insufficiently covered.
- Thematic gaps: Food environment, Aquaculture, Animal welfare, Inclusion and Social protection
- The Commission is aware of the need to address all relevant sectors.
  - Placeholder indicators currently are non-exhaustive. They only indicate next steps in the development, but further work is needed.
- No exact definition of overall FS sustainability and resilience
  - Difficult define a general headline indicator (overall index?)

Indicators proposed for the dashboard

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Environmental dimension

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Climate change adaptation and mitigation

Domain	Indicator	PP	FP	FD	FC
GHG emissions	GHG food system emissions				
	Greenhouse gas emissions from agriculture				
	Net GHGs Emissions from LULUCF sector				
	Fishing-related CO2 emissions per kg of human consumption catch (EU)				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

Note. These are territorial indicators. To include the effect of food/feed import, these indicators can be presented together with Consumption footprint – GHG emission.

Climate change adaptation and mitigation

- GHG food system emissions. This (EDGAR-FOOD) indicator has been developed by the JRC to aid the understanding of the activities underlying the energy demand and use, agriculture and land use change emissions associated with the production, distribution, consumption and disposal of food through the various stages and sectors of the composite global food system.
- Greenhouse gas emission from agriculture includes the following sources of greenhouse gases from agriculture: i. enteric fermentation (CH4); ii. manure management (CH4, N2O); iii. rice cultivation (CH4); iv. agricultural soil management (CH4, N2O, CO2), including burning of field residues, liming and application of C-containing fertilisers.
- Net GHGs Emissions from LULUCF sector measures net carbon removals from the land use, land use change and forestry (LULUCF) sector, considering both emissions and removals from the sector.
- Fishing-related CO2 emissions per kg of human consumption catch (EU) tracks the efficiency of fuel use expressed in terms of CO2-eq emissions by marine capture fisheries = (Fuel consumption*2.64)/(Total weight of landings).

Pollution and sales of antimicrobials for food producing animals

Domain	Indicator	PP	FP	FD	FC
Pollution	Use and risk of chemical pesticides (F2F pesticide reduction target 1)				
	Use of more hazardous pesticides (F2F pesticide reduction target 2)				
	Water quality - Nitrates in groundwater				
	Ammonia emissions from agriculture				
Sales of antimicrobials	Sales of antimicrobials for food producing animals				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Pollution and sales of antimicrobials for food producing animals

- Use and risk of chemical pesticides is based on the quantities of active substances contained in the pesticides which are placed on the market and the hazard properties of these active substances (considering 4 hazard categories)
- Use of more hazardous pesticides is calculated by adding together the quantities of active substances (categorised into Group 3 of Directive 2009/128/EC). These substances are approved as candidates for substitution
- Nitrates in groundwater: percentage of ground water stations with nitrates concentration over 50 mg/l as per the Directive 91/676/EEC
- Ammonia emissions from agriculture: The indicator measures the total amount of ammonia (NH3) emissions as a result of the agricultural production.
- Sales of antimicrobials for food producing animals: This indicator refers to action to improve the response of EU agriculture to societal demands on food and public health such as fighting antimicrobial resistance (AMR), promoting production of safe, nutritious and sustainable food, as well as animal welfare

Sustainable use and management of resources (1)

Domain	Indicator	PP	FP	FD	FC
Blue food	Fishing pressure relative to maximum sustainable yield (trends in F/F_{MSY})				
	Fish stock biomass relative to biomass in 2003 (trends in SSB/SSB2003)				
	Number of fish stocks for which fishing mortality (F) was above/below FMSY				
	Proportion of organic aquaculture production				
Energy	Final energy consumption in agriculture, forestry and food industry				
	Production of renewable energy from agriculture and forestry				
	Biogas production in agriculture				
	Fuel use of fisheries per Kg of fish landed in ports				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Sustainable use and management of resources (1a)

- Fishing pressure relative to maximum sustainable yield (trends in F/FMSY) tracks the median values for F/FMSY over time for the NE Atlantic (52 stocks), Mediterranean and Black Seas (34 stocks) since 2003 to pursue the following CFP goal: restoring and maintaining populations of fish stocks above biomass levels capable of producing MSY.

- Fish stock biomass relative to biomass in 2003 (trends in SSB/SSB2003) tracks the trends in the biomass of assessed fish stocks (reference is 2003, B/B2003) in the NE Atlantic and the Mediterranean & Black Seas to pursue the following CFP goal: stop overfishing.

- The number of fish stocks for which fishing mortality (F) was above/below FMSY fully fulfills the objective of the CFP so as to sustainably fish all fish stocks, while the Fishing pressure relative to maximum sustainable yield (trends in F/FMSY) #0008 only provides the median of F/FMSY for the considered stocks. Once the number of fish stocks for which fishing mortality (F) was above/below FMSY will also cover the Mediterranean Sea (2024?), it will be more relevant than #0008 and be proposed as a headline indicator, together with the CFP (also for policy consistency).

- Proportion of organic aquaculture production is the ratio of two existing and consistent Eurostat indicators: - Organic production of aquaculture products in Tonnes live weights (by country and year) & Aquaculture production in tonnes and value (Tonnes live weights by country and year) Eurostat(FISH_AQ2A)

Sustainable use and management of resources (1b)

- Final energy consumption in agriculture, forestry and food industry. This indicator measures the direct use of energy in agriculture and forestry and in food processing.
- Production of renewable energy from agriculture and forestry. Installed capacity (thermal and electrical) of a specific renewable energy technology (hydropower, solid, liquid and gases biomass, biogas, wind, solar PV, solar thermal, geothermal, and heat pumps), developed with CAP support.
- Biogas production in agriculture. The indicator captures the production of biogases from anaerobic digestion.
- Fuel use of fisheries per Kg of fish landed in ports ports indicates the intensity of fuel use by marine capture fisheries (= Fuel consumption)/(Total weight of landings)

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Sustainable use and management of resources (2)

Domain	Indicator	PP	FP	FD	FC
Soil and land	Soil erosion by water				
	Gross nutrient balance – nitrogen				
	Gross nutrient balance – phosphorus				
	Soil organic carbon in agricultural land				
	Soil sealing in agricultural area				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Sustainable use and management of resources (2)

- Soil erosion by water: this specific indicator assess potential soil loss by water erosion processes (rain splash, sheetwash and rills).
- Gross nutrient balance – nitrogen: presents a link between the agricultural activities responsible for high nitrogen loads and the environmental impact.
- Gross nutrient balance – phosphorus: provides an insight into the links between the use of agricultural nutrients, their losses to the environment, and the sustainable use of soil nutrients resources.
- Soil organic carbon in agricultural land: estimates the total organic matter content in soils on agricultural land.
- Soil sealing in agricultural area: change of agricultural land use in urban, transport and industrial categories.

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Sustainable use and management of resources (3)

Domain	Indicator	PP	FP	FD	FC
Soil and land	Share of agricultural area under organic farming				
	Agricultural land covered with landscape features				
	Land cover - Agricultural areas				
	Land cover - Fishing and Aquaculture areas				
	Utilised agricultural area				
	Consumption of inorganic fertilizers - Nitrogen				
	Consumption of inorganic fertilizers - Phosphorous				
	Crop diversity				
	Land use for food, feed and biofuels				
	Global deforestation index due to EU food consumption (net imports)				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Sustainable use and management of resources (3a)

- Share of agricultural area under organic farming: Existing organically-farmed areas and areas in process of conversion in the total utilised agricultural area UAA)
- Agricultural land covered with landscape features: Landscape features may include linear elements (e.g. hedgerows) and patches (e.g. trees, woodland, etc.), water & wet spots (ponds, water bodies, streams, etc.); moderately managed areas (e.g. field margins)
- Land cover - Agricultural areas: This indicator measures the amount of land used for agricultural purposes ((including natural grassland)) relative to the total land area of a region
- Land cover - Fishing and Aquaculture areas - This indicator measures the Fishing and Aquaculture areas

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Sustainable use and management of resources (3b)

- Utilised agricultural area (UAA): This indicator is expressed as the total UAA in absolute terms (ha) and as the share of UAA in different categories of land use.
- Consumption of inorganic fertilizers – Nitrogen and phosphorous: total amount (in mass - tonnes of N and tonnes of P) of inorganic fertilisers consumed at MS
- Crop diversity: Agro-biodiversity in farming system via Crop diversity on farm and in a region
- Land use for food, feed and biofuels - Agricultural land use devoted to food, feed and biofuel production.
- Global deforestation index due to EU food consumption (net imports): Amount of deforestation area due to the import of food products in EU

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Sustainable use and management of resources (4)

Domain	Indicator	PP	FP	FD	FC
Water use	Water use in agriculture				
	Irrigable area				
	Reclaimed water for irrigation - quality and quantity				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

Water use for food processing

Sustainable use and management of resources (4)

- Water use in agriculture. Water Exploitation Index Plus (WEI+), which provides an estimated measure of the total water use as a percentage of the renewable freshwater resources (groundwater and surface water) for a given territory and time period.
- Irrigable area. Irrigable area is defined as the maximum area which could be irrigated in the reference year using the equipment and the quantity of water normally available
- Reclaimed water for irrigation - quality and quantity. Reuse of treated/purified wastewater for irrigation.

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Biodiversity (1)

Domain	Indicator	PP	FP	FD	FC
Biodiversity conservation and restoration of natural resources	Common Farmland Birds Indicator				
	Consumption Footprint - Food (biodiversity loss)				
	Grassland Butterfly Index				
	Marine protected area coverage				
	Percentage of species and habitats of Community interest related to agriculture with stable or increasing trends				
	General trend of pollinators				
	Impact of fisheries on marine biodiversity				
	Pressure by invasive alien species on ecosystems				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Biodiversity (1a)

- Common Farmland Birds Indicator. Proxy to assess the biodiversity status of agricultural landscapes in Europe.
- Consumption Footprint - Food (biodiversity loss). Quantification of the impacts of food consumption on biodiversity at EU and Member State level.
- Grassland Butterfly Index. Population trends of 17 butterfly species at EU-level.
- Marine protected area coverage. Percentage of marine waters, covered by protected areas
- Percentage of species and habitats of Community interest related to agriculture with stable or increasing trends. Species and habitats of Community interest related to agriculture with stable or increasing trends.

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Biodiversity (1b)

- General trend of pollinators. Percentage of species and habitats of Community interest for wild pollinators species.
- Impact of fisheries on marine biodiversity. Placeholder for a new indicator indicator for fisheries and a marine biodiversity
- Pressure by invasive alien species on ecosystems. Trend in the cumulative pressure exerted by invasive alien species (IAS) measured as the sum of their occurrence in an area (EEA 10 km2 grid), weighted by the extent of the ecosystem potentially affected.

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Biodiversity (2)

Domain	Indicator	PP	FP	FD	FC
Biodiversity of food production systems	Number of animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities				
	Number of plant genetic resources for food and agriculture secured in either medium- or long-term conservation facilities				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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In-situ biodiversity conservation

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Biodiversity (2)

- Number of animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities. (Definition: as in the title of the indicator.)
- Number of plant genetic resources for food and agriculture secured in either medium- or long-term conservation facilities. (Definition: as in the title of the indicator.)

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Food loss and waste reduction

Domain	Indicator	PP	FP	FD	FC
Food waste and use	Food loss and waste				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Food loss and waste reduction

- Amount of food waste for all stages of the supply chain reported by EU Member States, according to the methodology set out in Annex III of Commission delegated decision (EU) 2019/1597.

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Cross-cutting (1)

Domain	Indicator	PP	FP	FD	FC
Circular economy	Manure and soil biodiversity				
Consumption footprint	Consumption footprint – general index				
	Consumption Footprint: Acidification				
	Consumption Footprint: Climate change				
	Consumption Footprint: Eutrophication, freshwater				
	Consumption Footprint: Eutrophication, marine				
	Consumption Footprint: Eutrophication, terrestrial				
	Consumption Footprint: Freshwater ecotoxicity				
	Consumption Footprint: Ionising radiation				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Cross-cutting (2)

Domain	Indicator	PP	FP	FD	FC
Consumption footprint	Consumption Footprint: Human toxicity, cancer				
	Consumption Footprint: Human toxicity, non-cancer				
	Consumption Footprint: Land use				
	Consumption Footprint: Ozone depletion				
	Consumption Footprint: Particulate matter				
	Consumption Footprint: Photochemical ozone formation				
	Consumption Footprint: Resource use, fossil				
	Consumption Footprint: Resource use, minerals and metals				
	Consumption Footprint: Water use				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Cross-cutting

- Manure and soil biodiversity: Manure used in a hectare of agricultural land
- Consumption Footprint: The Consumption Footprint - Food is a set of 16 Life Cycle Assessment (LCA)-based indicators (here reported as single score) whose purpose is to quantify the environmental impacts of food consumption at EU and Member State level. The environmental impacts can be assessed against the Planetary Boundaries.

Economic dimension

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Economic viability (1)

Domain	Indicator	PP	FP	FD	FC
Income distribution	Farmers' income compared to wages in the rest of the economy				
	Agricultural farm income by type of farming, region, by farm size, in areas facing natural and other specific constraints				
	Average salary by sector				
	Employees earnings ratio				
	Income from organic farming				
	Share of remuneration of employees over value added by sector				
Market power and business structure	Gross fixed capital formation in agriculture				
	Share of production marketed by producer organisations				
	Market concentration				
	Fish landings of the EU small-scale fisheries (%)				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Economic viability (1a)

- Farmers' income compared to wages in the rest of the economy: This indicator measures the evolution of agricultural income compared to the general economy. It measures the agricultural entrepreneurial income per unpaid (non-salaried) annual work unit.
- Agricultural farm income by type of farming measure the net income of agricultural farms, defined as total output less inputs plus net public receipts (subsidies less farm taxes).
- Average salary by sector (expressed as % of average salary in the total economy) is a proxy to measure the position of the sector in the overall income distribution
- Employees earnings ratio is the quotient between the average salary and value added per worker by sector
- Income from organic farming measure the income from farms dedicated to organic farming
- Share of remuneration of employees over value added by sector is a measure of income distribution between labour and capital

Economic viability (1b)

- Gross fixed capital formation in agriculture is a key element for future competitiveness, which measures producers' investments, deducting disposals, in fixed assets
- Share of production marketed by producer organisations by four EU quality schemes computed as a comparison to total value of agricultural and food production
- Market concentration aims to measure the concentrations of suppliers, manufacturers, or service providers. A potential lack of competition and thus less market share for smaller players.
- Fish landings shows of EU small-scale vessels show the proportion of fish landings by EU-27 MS from the small-scale fisheries (SSF).

Economic viability (2)

Domain	Indicator	PP	FP	FD	FC
Sectorial growth	Value Added along the food chain				
	Labour productivity of the different sectors of the food chain				
	Economic valorisation of the catch by the EU small-scale fisheries (relative to total fisheries)				
Price	Consumer food inflation				
	Price indices of the means of agricultural production, input				
	Share of household spending on food				
Trade	Agricultural and food products trade balance				
	Balassa Index				
	Import dependency				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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No fisheries or aquaculture data for some of the indicators

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Economic viability (2a)

- Value Added along the food chain shows the gross value added by sector, year and MS.
- Labour productivity of the different sectors of the food chain is the ratio of Gross Value added (GVA) on number of persons employed
- Economic valorization of the catch by the EU small-scale fisheries (relative to total fisheries) = ratio of the SSF proportion of the catch value over the SSF proportion of the catch weight
- Consumer food inflation is expressed as year-on-year variations, comparing the price of every month against the same value for the year before – available for different food categories.
- Price indices of the means of agricultural production, input
- The agricultural price indices provide information on trends in producer prices of agricultural products and purchase prices of the means of agricultural production, which facilitates the price comparison.
- Share of household spending on food helps to monitor households' income as well as food prices to support the F2F strategy of affordable food for the EU citizens.

Economic viability (2b)

- Agricultural and food products trade balance reports on imports and exports (quantity and value), from any partner or partner aggregation (e.g. intra- or extra-EU) of any EU MS.
- The Balassa index measures the degree of specialization of a country's export products. If the Balassa index for a product is more than 1, it means that product involves specialization. If it is less than 1 it means that no specialization is involved in the product.
- Import dependency shows how much of the domestic consumption of selected commodities is covered by imports.

Logistics and development

Domain	Indicator	PP	FP	FD	FC
Technology and digitalization	Rural NGA* broadband coverage				
	Farm modernisation				
	Gross fixed capital formation in fixed intangible assets				
Transport, accessibility and infrastructure	Annual road freight transport by distance class				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

Precision farming

Innovative production systems (e.g. vertical farming)

*NGA – Next Generation Access

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Logistics and development

- Rural NGA broadband coverage shows the share of households with fixed broadband internet connection located in rural areas
- Farm modernization is the quantification of the coverage of interventions providing investment support to restructure and modernize holdings, including to improve resource efficiency.
- Gross fixed capital formation in fixed intangible assets measures producers' investments, deducting disposals, in fixed intangible assets during a given period
- Annual road freight transport by distance class informs on the quantity of agriculture, forestry and fisheries products and F&B and tobacco products that are carried out by road transport over different distance classes.

Social dimension

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Fair, inclusive and ethical value chain (1)

Domain	Indicator	PP	FP	FD	FC
Animal welfare	Organic production of aquaculture products				
	Share of laying hens by farming method				
Employment	Employment by economic activity				
	Young farm managers in agriculture				
	New farm managers and new young farm managers				
	Proportion of young farmers in organic agriculture				
	Number of fishers in the EU small-scale fisheries (passive gears)				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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General animal welfare indicators (stocking densities, share of free-range livestock keeping)

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Fair, inclusive and ethical value chain (1)

- Organic production of aquaculture products: live weight of seafood produced per year and countries from labeled organic aquaculture.
- Share of laying hens by farming method: Share of laying hens according to the farming methods (Cages (enriched), Barn, Free range, Organic)
- Employment by economic activity:total employment in agriculture,the food industry and in food services in absolute terms and also as a share of total employment.
- Young farm managers in agriculture: farm managers (<40 years old) expressed as farm labour force in persons or in Annual Work Units (AWUs)
- New farm managers and new young farm managers: Evolution of number of new farm managers and the number of new young farm managers, including a gender breakdown.
- Proportion of young farmers in organic agriculture: Proportion of young farmers in organic compared to the number of the total young farmers.
- Number of fishers in the EU within the small-scale fisheries defined as a fishing vessel length of less than 12 m using passive gear.

Fair, inclusive and ethical value chain (2)

Domain	Indicator	PP	FP	FD	FC
Inclusion and gender equity	Gender employment gap in the food sector				
	Proportion of women managing farms in agriculture				
Social protection	Accidents at work				
	Placeholder for Improve social protection and housing F2F goal				
	Precarious employment				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Fair, inclusive and ethical value chain (2)

- Gender employment gap in the food sector: difference between the employment rates of men and women aged 20 to 64.
- Proportion of women managing farms in agriculture: indicator calculated based on ESTAT indicator: Farm indicators by age and sex of the manager.
- Accidents at work: The incidence rate of non-fatal or fatal accidents at work is the number of serious or fatal accidents per 100,000 persons in employment for the economic sector "Agriculture, forestry and fishing“.
- Placeholder for Improve social protection and housing F2F goal: Placeholder for the F2F goal "Ensure workers’ social protection and housing conditions; promote socially responsible production methods“.
- Precarious employment: Precarious employment in agriculture, forestry and fishing sector (Percentage of employees with a short-term contract of up to 3 months)

Food environment (1)

Domain	Indicator	PP	FP	FD	FC
(Sustainable) food affordability	Percent of the population who cannot afford a healthy diet				
	Affordability of a healthy diet: Ratio of cost to food expenditures				
(Sustainable) food availability	Ratio plant to total protein supply				
	Average total protein supply				
	Food supply adequacy				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Food environment (1)

- Percentage of the total population who cannot afford afford a healthy diet. A healthy diet is considered unaffordable in a country when its cost exceeds 52 percent of household income. This percentage accounts for a portion of income that can be credibly reserved for food, based on observations that the population in low-income countries spend, on average, 52 percent of their income on food. Available at FAOSTAT

- Affordability of a healthy diet: Ratio of cost to food expenditures: Shows the cost of the lowest cost set of foods that would meet requirements for food-based dietary guidelines, in comparison to total food budget. As the ratio approaches 1, the more unaffordable the healthy diet. As the ratio approaches 0, the more affordable the healthy diet.

- Ratio plant to total protein supply: (as in the name of the indicator). Tracks the contribution of plant sources to total protein supply and a proxy for transition towards plant-based diets. calculated as a three-year average. Derived from FAOSTAT

- Average total protein supply: Grams of protein per person per day that are available in a country's food supply, calculated as a three-year average.Available at FAOSTAT

- Food supply adequacy estimates whether the national food supply is adequately meeting the daily requirements per person (g/capita/day) of the food groups recommended for a healthy diet. Note: Possibly not needed once having better food consumption estimates for food groups to monitor nutrition, healthy diets (placeholder for food consumption indicators).

Food environment (2)

Domain	Indicator	PP	FP	FD	FC
Food access	Prevalence of moderate or severe food insecurity in the population				
Food marketing and information to consumers	Food labelling				
	Food promotion				
Food properties	Nutritional quality of food offer				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Food environment (2)

- Prevalence of moderate or severe food insecurity in the population: limited access to food, at the level of individuals or households, as measured by the Food Insecurity Experience Scale survey module (FIES-SM) of FAO.
- Food labelling: nature and extent of sustainability/health-related food information. No available indicators, to be further discussed
- Food promotion: frequency and level of exposure of population groups (especially children) to food promotions. No available indicators, to be further discussed/explored.
- Nutritional quality of food offer: nutritional quality of processed foods in the EU market. A placeholder supporting the monitoring of food reformulation No available indicators, to be further discussed/explored.

Nutrition and health

Domain	Indicator	PP	FP	FD	FC
Nutrition and healthy, sustainable diets	Prevalence of exclusive breastfeeding among infants 0-5 months of age				
	Placeholder for indicators on food consumption (food groups and other dietary factors)				
Health impact from diets	Prevalence of overweight and obesity among adults				
	Prevalence of overweight and obesity among children (aged 6 to 9 years)				
	Prevalence of overweight and obesity among children (<5 years)				
	Burden of disease attributable to dietary risk factors (Health effects of dietary risks)				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Nutrition and health

- Prevalence of exclusive breastfeeding among infants 0-5 months of age: percentage of children less than six months old who are fed breast milk alone (no other liquids) in the past 24 hours.
- Placeholder for indicators on food consumption: data from national dietary surveys as compiled by EFSA and other sources that estimates actual food groups and nutritional consumption trends (e.g. food groups including fruits, vegetables, legumes, processed meat and red meat, sugar sweetened beverages and other dietary aspects including alcohol and salt consumption). Work in progress.
- Prevalence of overweight and obesity in adults: share of overweight and obese people based on their body mass index (BMI). BMI is defined as the weight in kilos divided by the square of the height in meters.
- Prevalence of overweight and obesity in children (6 to 9 years): overweight in school-age children and adolescents is defined as the percentage of children aged 5-19 years with sex-specific BMI-for-age >+1 SD above the WHO 2007 reference median. Direct measurements data from the WHO European Childhood Obesity Surveillance Initiative
- Percentage of children under 5 years of age who are overweight: defined as weight-for-height more than 2 standard deviations of the WHO Child Growth Standards median) among children aged 0-5 years. WHO modelled data estimates
- Burden of disease attributable to dietary risk factors (Health effects of dietary risks): proportion of disease-specific burden attributable to each dietary risk factor as estimated in the Global Burden of Disease.

Cross cutting thematic areas

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Resilience

Domain	Indicator	PP	FP	FD	FC
Resilience and exposure to shocks	Self-sufficiency rates - commodities				
	Agricultural training of farm managers				
	Combined draught indicator				
	Direct agricultural loss attributed to disasters				
	Share of the top three crops of total agricultural production				
	Utilised agricultural area managed by low-, medium- and high-input farms				
	Fertiliser self-sufficiency rate				
	Agricultural sector resilience progress indicator				
	Crop production stability – annual cereals production resilience				
	Share of local food products				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Resilience (a)

- Self-sufficiency rates – commodities: ratio of domestic production on domestic consumption/use of selected agrifood commodities.
- Agricultural training of farm managers: level of agricultural training such as basic training, practical experience only, full agricultural training.
- Combined draught indicator is used to detect and monitor areas that either are affected by or are at risk of agricultural drought.
- Direct agricultural loss attributed to disasters corresponds to a subset of the Sendai Monitoring Framework indicator C-2 which assesses the direct loss occurring in the agricultural sector as a result of disasters.
- Share of the top three crops of total agricultural production (as in the name of the indicator).

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Resilience (b)

- Utilised agricultural area managed by low-, medium- and high-input farms: hectares and the percentage of utilised agricultural area (UAA) managed by low-, medium- and high-input farms in the EU Member States
- Fertiliser self-sufficiency rate: share of the consumed fertilisers that a MS and the EU produce domestically.
- Agricultural sector resilience progress indicator: improving the resilience of agriculture to climate change.
- Crop production stability – annual cereals production resilience : evolution of production of annual and perennial crops in the main categories.
- Share of local food products: share of food products placed on the market from a distance not exceeding X kilometers (X to be defined).

Governance

- This thematic area is under development. It will provide indicators on the related thematic areas or domains on the FS sustainability model in terms of
  - Strategic planning and policies (support to related research and development, sustainable food procurement, etc.)
  - Accountability (law enforcement, fight against food fraud, illegal and unregulated fishing, etc.)
  - Effective implementation (resources assigned for implementation of policies)
  - Shared vision (participatory processes, e.g. number of parties adhering to relevant initiatives, stakeholders platforms)

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Food heritage

- Aspects under discussion:
  - Number of products by EU quality schemes expressed per category and per scheme shows the number of products that are certified per quality scheme type e.g. PGI, GI per food category e.g. cheese, wine.
  - Globally Important Agricultural Systems: systems included in the register of FAO.
  - Intangible cultural heritage: elements of the UNESCO list related to the food supply chain.

Domain	Indicator	PP	FP	FD	FC
Food heritage	Number of products by EU quality schemes				
	Globally Important Agricultural Systems				
	Intangible cultural heritage				

Headline | Secondary | Placeholder

PP-primary production, **FP** -Food processing, **FD** -Food distribution, **FC** -Food consumption

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Concept of the F2F dashboard

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Concept and properties

- Main communication outlet for the general public
- Two main presentation ways:
  - Interactive graphics with narrative and data visuals
  - Generic dashboard with full-size/no-scroll screens with several interrelated visualizations
- Data views
  - Standard views (browser + map/ barchart, country profiles, heatmap, progress measuring tool, stories and narratives)
  - User-defined views (comparisons, visualisation of selected indictors)

Click on the tabs above the menu to select the top-down approach.

FS model | Objectives | Supply chain component | DPSIR

Search indicators

- **Economic** 14
- **Environmental** 34
  - Biodiversity 1
    - Biodiversity conservation and restoration of natural resources 1
      - Common Farmland Birds Indicator
  - Climate change adaptation and mitigation, GHG emissions 5
  - Cross-cutting environmental 11
  - Food loss and waste reduction 1
  - Reduction of other emissions, pollution and use of antimicrobials in primary production 8
  - Sustainable use, management of resources 8
- **Social** 11

Common Farmland Birds Indicator

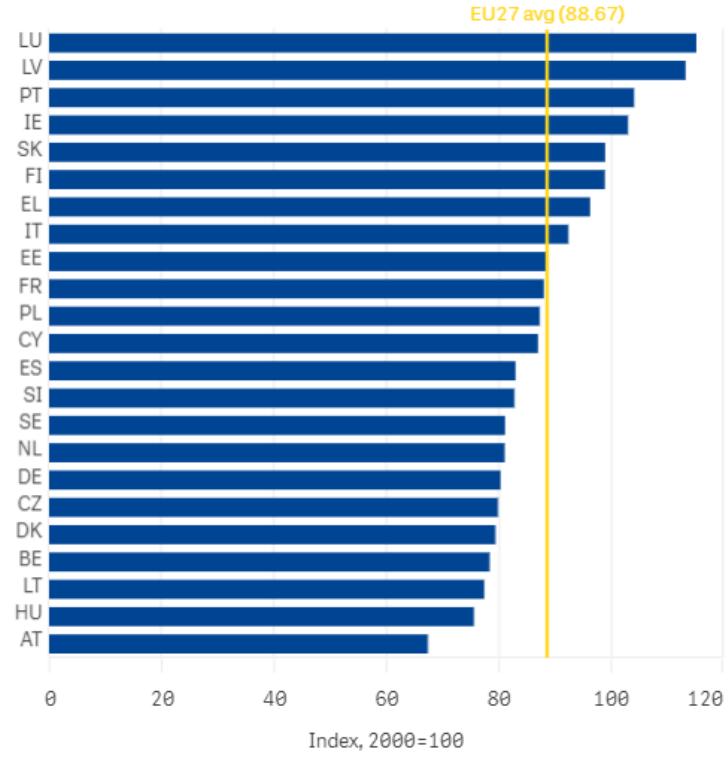
1990 1991 1992 1993 2011 2017 2018 2019 2020

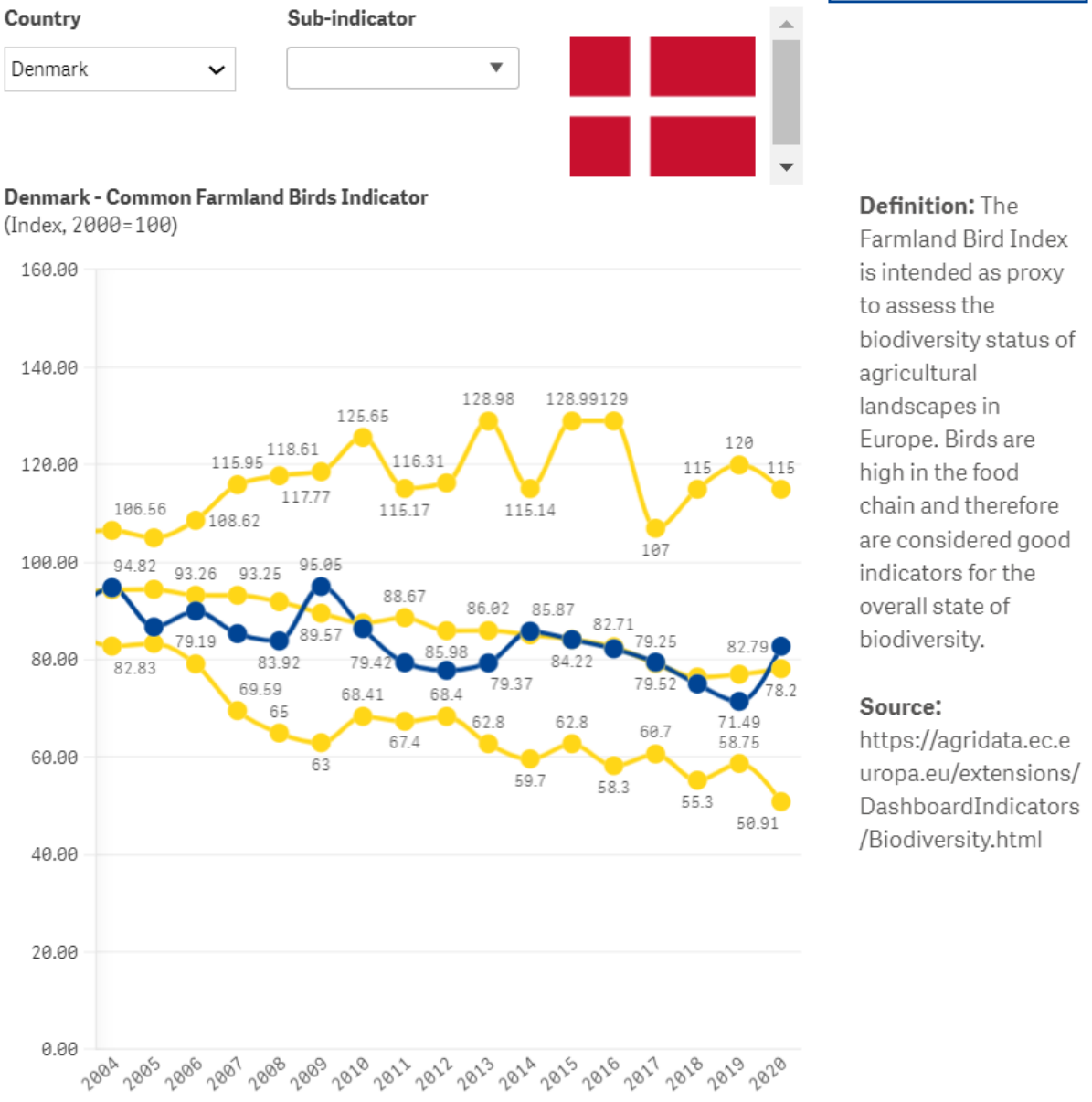
Map | Bar chart

EU-27 (Index, 2000=100)

2.04k

Common Farmland Birds Indicator
2011





Definition: The Farmland Bird Index is intended as proxy to assess the biodiversity status of agricultural landscapes in Europe. Birds are high in the food chain and therefore are considered good indicators for the overall state of biodiversity.

Source: https://agridata.ec.europa.eu/extensions/DashboardIndicators/Biodiversity.html

Country profiles

- In pipeline
  - Comparisons
  - Heatmap
  - Progress measuring tool
  - Stories, narratives behind the figures
  - User defined views

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Closing remarks

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Closing remarks

- The FS sustainability model and the proposed indicators are based on the outcome of the ongoing discussion within the Commission services.
- The FS structure is rather an internal reference than a rigid structure of visualisations in the dashboard.
  - Specific/targeted views can be created with simultaneous displaying of indicators from more than one domain → yet the completeness of the model matters!
- The dashboard will be an adaptive tool, that will be continuously developed (indicators may be replaced, new indicators and data views may be introduced).

Expected outcome of the stakeholder consultation

- Completeness of thematic areas and domains. What is missing?
  - (However, no suggestion for changing the structure of the FS sustainability model, by exception of the role and location of Food heritage.)
- Indication of new data sources for additional indicators
  - (Also think of production sustainability over the time!)
- Contributions/input from stakeholders to address current gaps and improve coverage of all components are welcome!
- Expression of interest for collaboration to elaborate new indicator concepts.

Thank you

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