Draft list of Context indicators for the PMEF
27 November 2018

Please find the set of the Context and related Impact indicators fiches for the discussion in the expert group meeting on 27 November 2018.

All fiches have been revised/checked.
Minor updates were made to the CCIs fiches presented on the 19 September (e.g. source code update or clarifications added).These updates are highlighted in yellow. More substantial updates will be flagged during the meeting.

New fiches have been added for C.16, C.21, C.23, C.26, C.36, C.37, C.38, C.40, C.41, C.43, C.44, C.46, and C.47. Out of the context indicators, only C.45 is still pending.

Context indicators

	Indicator No. PMEF	Indicator No. CMEF (current)	Indicator name
Population	**C.01**	**C.01**	Population numbers
	C.02	**C.04**	Population density
	C.03	**C.02**	Age structure of the population
Total area	**C.04**	**C.03**	Total area
	C.05	**C.31**	Land cover
Labour market	**C.06**	**C.05**	Employment rate (*)
	C.07	**C.07**	Unemployment rate
	C.08		Employment
		C.11	By sector By type of region
		C.13	By economic activity
Economy	**C.09**	**C.08**	GDP per capita (*)
	C.10	**C.09**	Poverty rate (*)
	C.11		Gross value added
		C.10	By sector
		C.10	By type of region
			In agriculture
		R.03_PI	For primary producers (*)
Farms and farmers	**C.12**	**C.17**	Agricultural holdings (farms)
	C.13	**C.22**	Farm labour force
	C.14	**C.23**	Age structure of farm managers
	C.15	**C.24**	Agricultural training of farm managers
	C.16		New farmers (*)
Agricultural land	**C.17**	**C.18**	Agricultural area
	C.18	**C.20**	Irrigable land
	C.19	**C.34**	Farming in Natura 2000 areas
	C.20	**C.32**	Areas facing natural and other specific constraints (ANCs)
	C.21		Agricultural land covered with landscape features (*)
Livestock	**C.22**	**C.21**	Livestock numbers
	C.23		Livestock density
Agricultural and farm income	**C.24**	**C.25**	Agricultural factor income (*)
	C.25	**C.26**	Agricultural entrepreneurial income
			per AWU (*)
			compared to average economy (*)
	C.26		Farm net value added
			by type of farming (*)

			by region (*)
			by farm size (*)
			in Areas facing natural and other specific constraints (*)
	C.27	**C.28**	Gross fixed capital formation in agriculture
Agricultural productivity	**C.28**	**C.27**	Total factor productivity in agriculture (*)
	C.29		Labour productivity
		C.14	in agriculture
		C.15	in forestry
		C.16	in the food industry
Agricultural trade	**C.30**	**I.06**	Agricultural imports and exports (*)
Other gainful activities	**C.31**	**C.30**	Tourism infrastructure
Farming practices	**C.32**	**C.19**	Agricultural area under organic farming
	C.33	**C.33**	Farming intensity
	C.34	**R.09_PI**	Value of production under EU quality schemes (*)
Biodiversity	**C.35**	**C.35**	Farmland birds index (FBI) (*)
	C.36		Percentage of species and habitats of Community interest related to agriculture with stable or increasing trends (*)
Water	**C.37**		Water use in agriculture (*)
	C.38		Water quality
		C.40	Gross nutrient balance – nitrogen (*)
		C.40	Gross nutrient balance – phosphorus
			Nitrates in ground water (*)
Soil	**C.39**	**C.41**	Soil organic matter in arable land (*)
	C.40	**C.42**	Soil erosion by water (*)
Energy	**C.41**	**C.43**	Production of renewable energy from agriculture and forestry (*)
	C.42	**C.44**	Energy use in agriculture, forestry and food industry
Climate	**C.43**	**C.45**	Greenhouse gas emissions (*)
	C.44		Index of farm resilience, Adaptation potential to climate change (*)
	C.45		Direct agricultural loss attributed to disasters
Air	**C.46**	**C.45**	Ammonia emissions (*)
Health	**C.47**		Antimicrobials sales in food producing animals (*)
	C.48		Risk and impacts of pesticides (*)

Context indicators which incorporate CAP impact indicators are marked with an asterisk (*).

FICHE CONTENTS

Indicator Name	*Title of the indicator used in the commission implementing regulation/guidance documents*
Definition	*Concise definition of the concept, including if the indicator already exists, e.g. Agri-environmental indicator (AEI), EUROSTAT indicator. If appropriate, include the methodology/formula for establishment of the indicator*
Unit of measurement	*Unit used to record the value (e.g. ha, tonnes, €, %)*
Data source	*Identification of existing data sources (e.g. EUROSTAT identifying relevant data set, Farm Accountancy Data Network (FADN), European Environmental Agency, etc.)*
References/location of the data	*Links (other references) to data sources (e.g. in EUROSTAT specifying exact tables, FAO, World bank) AEI definitions, regulations establishing indicators, etc.*
Data collection / dissemination level	*Identification of the geographical level at which the data is available and at which level the indicator should be established*
Frequency	*Frequency at which the indicator is collected/calculated*
Timeliness	*How old are the data when they become available*
Comments/caveats	*Comments concerning interpretation of the indicator for monitoring and evaluation purposes and its caveats, if appropriate*

UPDATED

INDICATOR C.01	CURRENT CMEF: C.01
Indicator Name	**Population numbers**
Definition	This indicator refers to the **population on 1st of January of any given year: total and by type of region (predominantly rural, intermediate and predominantly urban).**
Unit of measurement	Number of population
Data source	Eurostat – Demography and migration Eurostat – Demography statistics by other typologies
References/location of the data	National data: Table Population change - Demographic balance and crude rates at national level [demo_gind] and at regional level (NUTS3) [demo_r_gind3] National data, by typology: table Demographic balance and crude rates by other typologies [urt_gind3]
Data collection / dissemination level	EU, national (NUTS 0) by type of region (predominantly rural, intermediate and predominantly urban)
Frequency	Annual
Timeliness	1 year
Comments/caveats	The distribution of population by type of region has been calculated using the Commission's urban-rural typology, which classifies NUTS 3 regions into predominantly rural, intermediate and predominantly urban. Some Member States have only some areas, or data for some areas: - MT and LU – only urban area, - CY – only intermediate area, - SI – only rural and intermediate area, - No distinction between rural and intermediate areas: BE 2000-2003, CZ 2000, PL 1995-2009

UPDATED

INDICATOR C.02	CURRENT CMEF: C.04
Indicator Name	**Population density**
Definition	This indicator is calculated as the **annual average population** divided by the **land area** and refers to the number of inhabitants per km^2. It is provided at the country level (national and regional) and by typology (predominantly rural, intermediate and urban regions).
Unit of measurement	Population/km^2
Data source	Eurostat – Demography and migration Eurostat – Demography statistics by other typologies
References/location of the data	National and data: Table: Population density by NUTS 3 region [demo_r_d3dens] National data, by typology: table Population density by other typologies [urt_d3dens] Most recent urban-rural typology: ec.europa.eu/eurostat/web/rural-development/methodology
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1, 2 and 3) by type of region (predominantly rural, intermediate and predominantly urban)
Frequency	Annual
Timeliness	1 year
Comments/caveats	The distribution of population by type of region has been calculated using the Commission's urban-rural typology, which classifies NUTS 3 regions into predominantly rural, intermediate and predominantly urban. Total area (including inland waters) is used when land area is not available. All tables at regional level include data at national level. Starting with the year 2016, the population density included in the table [demo_r_d3dens] is computed using the area data included in the table [reg_area3]. National and regional data by type of region calculated as demo_r_gind3 / demo_r_d3area and classified according to the Commission's urban-rural typology. Most recent urban-rural typology: ec.europa.eu/eurostat/web/rural-development/methodology

UPDATED

INDICATOR C.03	CURRENT CMEF: C.02
Indicator Name	**Age structure of the population**
Definition	This indicator refers to the age structure of the EU population **on 1st of January of any given year by broad age groups (less than 15 years / from 15 to 64 years / 65 years or over), total and by type of region (predominantly rural, intermediate and predominantly urban).**
Unit of measurement	Number of population
Data source	Eurostat - Demography and migration Eurostat - Demography statistics by other typologies
References/location of the data	National and regional data: Table Population on 1 January by broad age group, sex and NUTS 3 region [demo_r_pjanaggr3] National data, by typology: Table Population by sex and age groups on 1 January [urt_pjanaggr3] Alternatively, there is more detailed data age structure of the population by NUTS 3 regions starting with the year 2014: data by 5-year age group are available in the table [demo_r_pjangrp3].
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1, 2 and 3) by type of region (predominantly rural, intermediate and predominantly urban)
Frequency	Annual
Timeliness	1 year
Comments/caveats	The age structure by type of region has been calculated using the Commission's urban-rural typology, which classifies NUTS 3 regions into predominantly rural, intermediate and predominantly urban.

UPDATED

INDICATOR C.04	CURRENT CMEF: C.03
Indicator Name	**Total area**
Definition	This indicator refers to the **total area (including inland waters) and the distribution by type of region (predominantly rural, intermediate and predominantly urban)**.
Unit of measurement	km^2
Data source	Eurostat - Demography and migration Eurostat - Demography statistics by other typologies
References/location of the data	National data: Users should use total area figures from table [reg_area3] (data until 2015) National data, by typology: Table Area of the regions by other typologies [urt_d3area] Regional data: Table: Area by NUTS 3 region [demo_r_d3area] Regional data, by typology:
Data collection / dissemination level	EU, national (NUTS 0)and regional (NUTS 1, 2 and 3)
Frequency	Annual
Timeliness	1 year
Comments/caveats	In case of missing data, land area has been used instead of total area. The table [demo_r_d3area] table has data only up to 2015 and no updates will be done. Eurostat disseminated a new dataset on area [reg_area3] which should be considered as reference.

UPDATED

INDICATOR C.05	CURRENT CMEF: C.31
Indicator Name	**Land Cover**
Definition	The indicator measures the area in the different categories of land cover: - **total agricultural area (agricultural area and natural grassland);** - **total forest area (forest area and transitional woodland-shrub);** - **natural area;** - **artificial area;** - **other area (includes sea and inland water).** Land cover is the actual distribution of forests, water, desert, grassland and other physical features of the land, including those created by human activities. Land use, on the other hand, characterises the human use of a land cover type. The discussion will continue on the data source to be used: CORINE Land Cover (CLC) or LUCAS (Land Use/Cover Area frame statistical Survey).
Unit of measurement	% of total area
Data source	**CORINE Land Cover (CLC) 2012** **LUCAS 2015 2018**
References/location of the data	European Environment Agency http://www.eea.europa.eu/data-and-maps/data/corine-land-cover-2006-raster-3 http://land.copernicus.eu/pan-european/corine-land-cover/clc-2012/view LUCAS Eurostat: https://ec.europa.eu/eurostat/web/lucas/data/database https://ec.europa.eu/eurostat/web/lucas/overview
Data collection / dissemination level	Regional (NUTS 2).
Frequency	CORINE Land Cover: 6 years LUCAS every 3 years
Timeliness	CORINE Land Cover: 3 years (e.g. CLC 2012 available in 2015). LUCAS: 9 months (e.g LUCAS 2015 published October 2016)
Comments/caveats	

INDICATOR C.06	CURRENT CMEF: C.05
Indicator Name	**Employment rate**
Definition	**Employed persons aged 15-64 years and 20-64 years[1] as a share of the total population of the same age group in thinly populated areas (used as proxy for rural areas)**: Employed persons are all persons aged 15-20 years and over who, during the reference week, worked at least one hour for pay or profit or were temporarily absent from such work. Employed persons comprise employees, self-employed and family workers. Population covers persons aged 15-20 years and over living in private households. This comprises all persons living in the households surveyed during the reference week. This definition also includes persons absent from the households for short periods (but having retained a link with the private household) owing to studies, holidays, illness, business trips, etc. Persons on compulsory military service are not included. **Methodology**: The rural employment rate is calculated at national level using Labour Force Survey (LFS) data aggregated by degree of urbanisation. This degree of urbanisation classifies the territory (Local Administrative Units (LAU)) into rural areas, towns and suburbs and cities. The rural employment rate of each Member State would then correspond to the employment rate of rural areas; this rate could be compared with the employment rates in the other two types of areas or with the employment rate for the whole country. Additionally, employment rates could also be calculated for men and women and even for other age groups, if needed for a better analysis.
Unit of measurement	Total and in each type of area: - % of total population of the same age class and sex
Data source	Eurostat – Labour Force Survey Eurostat – Degree of urbanisation
References/location of the data	Employment rates are calculated by DG AGRI using the following tables: National data, by degree of urbanisation: table lfsa_pgauws (DG AGRI calculation) Regional data, by degree of urbanisation: tables lfst_r_lfe2emp and lfst_r_lfsd2pop
Data collection / dissemination level	LFS data are collected at LAU level (LAU2), with a sample defined to be significant at NUTS 2 level and at national level. by degree of urbanisation (rural areas, towns and suburbs, cities)
Frequency	For the LFS: annually, in the second half of the year. For the aggregates by degree of urbanisation: depending on the availability of the new data.
Timeliness	1 year
Comments/caveats	Although the use of the degree of urbanisation has been selected as the most appropriate for the indicator "rural employment rate", the urban/rural typology is the one to be used when the information is available at NUTS level 3 (for example, for the indicator "Rural GDP per capita").

[1] In the programming period 2007-2013, the employment rate was calculated for the age group of 15-64 years. In the Europe 2020 strategy, reaching an employment rate of 75% of the population aged 20-64 years is one of the five headline targets to be achieved; however, in rural areas the employment of people below 20 is also an important indicator. Thus it is proposed to keep both age groups, which is also Eurostat's approach.

	A change in the methodology to classify local areas from 2012 onwards has produced a break in Eurostat series by type of area (table **lfsa_pgauws**).

INDICATOR C.07	CURRENT CMEF: C.07
Indicator Name	**Unemployment rate**
Definition	This indicator provides the number of **unemployed persons aged 15-24 years (youth unemployment rate) and 15-74 years (total unemployment rate) as a share of the total economically active population of the same age class: total and in the thinly-populated areas.** Unemployed persons comprise persons who were (all three conditions must be fulfilled simultaneously): 1. without work during the reference week, 2. available for work at the time, 3. actively seeking work. Economically active population is employed plus unemployed.
Unit of measurement	Total and in the thinly-populated areas: - % of total active population of the same age class
Data source	**Eurostat – Labour Force Survey** **Eurostat – Degree of urbanisation**
References/location of the data	National data, by degree of urbanisation: table lfsa_pgauws (DG AGRI calculation, see comments) Regional data (NUTS 1 and 2): table lfst_r_lfu3rt Regional data, by degree of urbanisation: tables lfst_r_lfu3pers and lfst_r_lfp2act
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2) by degree of urbanisation (rural areas, towns and suburbs, cities)
Frequency	Annual
Timeliness	1 year
Comments/caveats	For the unemployment rate by type of area, the degree of urbanisation classification, which classifies Local Administrative Units (LAU2) into thinly populated areas (rural areas), intermediate density areas (towns and suburbs) and densely-populated areas (cities), is used. Unemployment rates by degree of urbanisation have been calculated by DG AGRI using the variables 'Unemployed persons' and 'Active population' from the table lfsa_pgauws. A change in the methodology to classify local areas from 2012 onwards has produced a break in Eurostat series by type of area (table lfsa_pgauws). The age classes 15-74 and 15-24 are used both for national and regional tables.

UPDATED

INDICATOR C.08	CURRENT CMEF: C.11
Indicator Name	**Employment** **by sector and by type of region**
Definition	This indicator shows **total employment and distribution by sector (primary, secondary, tertiary) and by type of region (predominantly rural, intermediate and predominantly urban).**
Unit of measurement	Total employment: - 1000 persons For each sector: - % of total employment In each type of region: - % of total employment
Data source	Eurostat – National and Regional Economic Accounts
References/location of the data	National data: table nama_10_a10_e Regional data: table nama_10r_3empers National data, by typology: table Employment by NACE Rev. 2 activity and other typologies [urt_10r_3emp] Most recent urban-rural typology: ec.europa.eu/eurostat/web/rural-development/methodology
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1, 2 and 3) by type of region (predominantly rural, intermediate and predominantly urban)
Frequency	Annual
Timeliness	1 year (national data) and 3 years (regional data)
Comments/caveats	Sectors in NACE rev.2: Primary sector = branch A (agriculture, forestry and fishing); Secondary sector = branches B-E + F (industry + construction); Tertiary sector = branches G-I + J + K + L + M-N + O-Q + R-U. The distribution of employment by type of region has been calculated using the Commission's urban-rural typology, which classifies NUTS 3 regions into predominantly rural, intermediate and predominantly urban.

INDICATOR C.08	CURRENT CMEF: C.13
Indicator Name	**Employment by economic activity**
Definition	The indicator gives **total employment in agriculture, forestry, the food industry and in tourism in absolute terms** and also as a **share of total employment**. The absolute change and the annual growth of employment at national level are also calculated in general as a three-year average. If the available data allow, the calculation of five-year averages is also possible. The Labour Force Survey (LFS) is the main data source for the domain employment. The EU LFS is a large household sample survey providing quarterly results on labour participation of people aged 15 years and over (16 years and over in Spain, Italy and the United Kingdom, 15-74 years in Estonia, Latvia, Hungary, Finland, Sweden and Denmark). In the Eurostat LFS database (according to the NACE rev.2 divisions) agriculture corresponds to "crop and animal production, hunting and related activities" (A01), while forestry means "forestry and logging" (A02), the food industry is equal to "manufacture of food products" (C10) and "manufacture of beverages" (C11) and "manufacture of tobacco products" (C12), tourism corresponds to "accommodation" (I55) and "food and beverage service activities" (I56).
Unit of measurement	1000 persons and % of total employment
Data source	Eurostat – Labour Force Survey
References/location of the data	Eurostat website, Labour Force Survey: lfsa_egan2 and lfsa_egan22d Regional data: lfst_r_lfe2en2 for totals; employment by economic activity on special request to Eurostat
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2)
Frequency	Regional data at NUTS 2 level are published as annual averages of quarterly data. The calculation of the indicator is made on a yearly basis.
Timeliness	1 year
Comments/caveats	

UPDATED

INDICATOR C.09	CURRENT CMEF: C.08
Indicator Name	**GDP per capita**
Definition	**Gross Domestic Product (GDP)** per capita in predominantly rural regions, in **Purchasing Power Standard (PPS)**[2] The PPS per inhabitant in rural areas can be compared to the PPS per inhabitant at national level (without distinction by type of region) or to other aggregations (EU-15, EU-N13). In particular, the following indicators are calculated by Eurostat: • PPS per inhabitant in rural, intermediate and urban areas • PPS per inhabitant in percentage of the EU average for rural, intermediate and urban areas.
Unit of measurement	PPS (for the simple reporting of absolute values) % (for comparison of values from rural areas to those of other areas or to the EU average)
Data source	Eurostat – National and Regional Economic Accounts Eurostat — Rural development statistics
References/location of the data	National data: table nama_10_gdp, nama_10_pc, prc_ppp_ind, demo_gind Regional data: table nama_10r_3popgdp, nama_10r_3gdp National data, by typology: table Gross domestic product (GDP) at current market prices by other typologies [urt_10r_3gdp] Most recent urban-rural typology: ec.europa.eu/eurostat/web/rural-development/methodology
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1, 2 and 3) by type of region (predominantly rural, intermediate and predominantly urban)
Frequency	Annual
Timeliness	1 year (national data) and 3 years (regional data)
Comments/caveats	As an average, this indicator does not measure the distribution of income within a given geographical area. Furthermore, non-monetary exchanges (production for self- consumption; public goods and externalities; barter; unpaid family labour) are not taken into account but can be substantial in some sectors (especially in agriculture) and regions.

[2] The Purchasing Power Standard, abbreviated as PPS, is an artificial currency unit. Theoretically, one PPS can buy the same amount of goods and services in each country. However, price differences across borders mean that different amounts of national currency units are needed for the same goods and services depending on the country. PPS are derived by dividing any economic aggregate of a country in national currency by its respective Purchasing Power Parities.

UPDATED

INDICATOR C.10	CURRENT CMEF: C.09
Indicator Name	**Poverty rate**
Definition	**The indicator is defined as the share of population at risk of poverty or social exclusion in thinly populated areas (rural areas)**, as defined in the classification of the degree of urbanisation (DEGURBA). It is calculated as the percentage of people who are at risk of poverty or severely deprived or living in a household with low work intensity over the total population. The at-risk-of-poverty rate is the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income after social transfers (http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:At-risk-of-poverty_rate). The degree of rural poverty (share of population at risk of poverty) can be compared to the overall EU-28 average, to the respective national average and/or to the average for intermediate and/or urban areas in a Member State or in the EU-28 (choice to be made according to the policy objective).
Unit of measurement	Total and in the thinly-populated areas: - % of total population
Data source	Eurostat – Survey on income and living conditions (SILC) Eurostat – Degree of urbanisation
References/location of the data	National data: table ilc_peps01 Regional data: table ilc_peps11 (regional data are not available for some MS) National data, by degree of urbanisation: table ilc_peps13
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2) by degree of urbanisation (rural areas, towns and suburbs, cities)
Frequency	Annual
Timeliness	2 years
Comments/caveats	The indicator is available by degree of urbanisation (Eurostat explanation): 1. Densely populated area (cities): at least 50 % lives in high-density clusters; in addition, each high-density cluster should have at least 75 % of its population in densely-populated local administrative units (LAU2); 2. Intermediate density area (towns and suburbs): less than 50 % of the population lives in rural grid cells and less than 50 % live in high-density clusters; 3. Thinly-populated area (rural area): more than 50 % of the population lives in rural grid cells.

UPDATED

INDICATOR C.11	CURRENT CMEF: C.10 (SECTOR AND TYPE OF REGION) & R.03_PI (PRIMARY PRDUCER)
Indicator Name	**Gross value added (GVA)** ***by sector, by type of region, in agriculture and for primary producers***
Definition	**Total Gross Value Added (GVA)** (at basic prices)**,** distribution **by sector** (primary, secondary, tertiary) and **by type of region** (predominantly rural, intermediate and predominantly urban); and **Gross Value Added (GVA) in agriculture** and **by primary producers** (share of the primary production (agriculture) on the total value added generated by different participants of the food chain (primary production, food manufacturing, food distribution and food service activities) GVA is defined as the value of output less the value of intermediate consumption. Output is valued at basic prices, GVA is valued at basic prices and intermediate consumption is valued at purchasers' prices.
Unit of measurement	Total GVA: - EUR million For each sector: - EUR million and % of total GVA For type of region: - EUR million and % of total GVA For agriculture: - EUR million For primary producers: - EUR million and % of total GVA
Data source	Eurostat – National and Regional Economic Accounts, Economic accounts for agriculutre and Structural Business Statistics
References/location of the data	National data, table nama_10_a10 Regional data: table nama_10r_3gva National data, by typology: table Gross value added at basic prices by other typologies [urt_10r_3gva] For agriculutre and primary producers: Gross value added at basic prices + subsidies on production -other taxes on production (table Economic accounts for agriculture - aact_eaa01) ' Available at: http://ec.europa.eu/eurostat/web/products-datasets/-/aact_eaa01 Value added of the food and beverages manufacturing (food manufacturing) Manufacture of food products (C10) + beverages (C11) + tobacco products (C12) (table Annual enterprise statistics for special aggregates of activities (NACE Rev. 2) - sbs_na_sca_r2) Available at: http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database Value added of the food and beverages distribution (food distribution)

	Agents involved in the sale of food, beverages and tobacco (G4617) + Wholesale of food, beverages and tobacco (G463) + Retail sale in non-specialised stores with food, beverages or tobacco predominating (G4711) + Retail sale of food, beverages and tobacco in specialised stores (G472) + Retail sale via stalls and markets of food, beverages and tobacco products (G4781) (table Annual detailed enterprise statistics for trade (NACE Rev. 2 G) - sbs_na_dt_r2) Available at: http://ec.europa.eu/eurostat/web/structural-business-statistics/data/database Value added of the food and beverages consumer services (food service activities) Food and beverage service activities (table Annual detailed enterprise statistics for services (NACE Rev. 2 H-N and S95) - sbs_na_1a_se_r2)' Most recent urban-rural typology: ec.europa.eu/eurostat/web/rural-development/methodology
Data collection / dissemination level	For sectors and type of regions: EU, national (NUTS 0) and regional (NUTS 1, 2 and 3) by type of region (predominantly rural, intermediate and predominantly urban) For agriculture and primary producers: EU and national
Frequency	Annual
Timeliness	1 year (national data, GVA in agriculture) and 3 years (regional data, Structural Business Statistics)
Comments/caveats	Sectors in NACE rev.2: Primary sector = branch A (agriculture, forestry and fishing); Secondary sector = branches B-E + F (industry + construction); Tertiary sector = branches G-I + J + K + L + M-N + O-Q + R-U. The distribution of GVA by type of region has been calculated using the Commission's urban-rural typology, which classifies NUTS 3 regions into predominantly rural, intermediate and predominantly urban. For the primary producers: The whole food manufacturing is covered as well as the food distribution of three products (food, beverages, tobacco). However, the share is still an over-estimate, as the value-added of the primary production includes also other products (e.g. textiles and bio-industries outlets, which have been excluded, when possible, in the rest of the food chain added value). Additionally, the food distribution covers all possible channels (both retail and wholesale) as their importance on sales in individual Member States differs. Food and beverages distribution - from 2011, EU-28 is the sum of reported EU-28 values for respective distribution channels. The discrepancy between the sum of individual MS and EU-28 originates in rounding of the EU aggregate, to make it impossible to recalculate confidential data. The same applies to the food and beverage service activities.

UPDATED

INDICATOR C.12	CURRENT CMEF: C.17
Indicator Name	**Agricultural holdings (farms)**
Definition	This indicator consists of five sub-indicators: • Number of agricultural holdings • Agricultural size of the holdings - in utilised agricultural area (UAA) size classes • Economic size of the holdings - in standard output (SO) classes • Labour force - in persons and in annual work units (AWU) • Average size of the holdings - physical (UAA), economic (standard output), labour in persons and AWU The first four sub-indicators provide basic information on the total number of farms, ha of UAA, EUR of SO and the total number of persons employed or AWU for each EU Member State. Quantities are presented in absolute figures and serve as a basis for the calculation of the fifth sub-indicator.
Unit of measurement	Farms: number of farms UAA: number of ha Labour force: number of AWU, number of persons Average physical farm size: ha/farm Average economic farm size: EUR/farm Average labour force size: person/holding; AWU/holding
Data source	Eurostat – Farm Structure Survey (FSS)
References/location of the data	For number of farms, for the physical size (ha of UAA) and for the economic size of farms (SO): [ef_kvaareg] For the labour force size: [ef_olfreg] For regional data: [ef_kvecsleg] and [ef_olfreg]
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2)
Frequency	FSS: full census every 10 years, intermediate surveys 2/3 times in-between.
Timeliness	1.5 years (not from the beginning of the reference year, but from the end!))
Comments/caveats	

UPDATED

INDICATOR C.13	CURRENT CMEF: C.22
Indicator Name	**Farm labour force**
Definition	The indicator shows the **labour force directly employed by the agricultural holding and working regularly, in persons and in Annual Work Units (AWU).** The farm labour force of the holding includes all persons having completed their compulsory education (having reached school-leaving age) who carried out farm work on the holding during the 12 months ending on the reference day of the survey. All persons of retirement age who continue to work on the holding are included in the farm labour force. Total and by sex for the different categories of farm labour force: • regular labour force: ➢ family labour force (sole holders working in the farm + members of the sole holder's family working in the farm) ➢ non-family labour force • non-regular labour force (only AWU)
Unit of measurement	1000 persons or AWU
Data source	Eurostat – Farm Structure Survey (FSS)
References/location of the data	For national and regional data and labour focre by sex: [ef_m_farmang]For farm work breakdown: [ef_olfaa] For regional data by farm work: [ef_olfreg]
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2)
Frequency	FSS: full census every 10 years, intermediate surveys 2/3 times in-between.
Timeliness	2-3 years
Comments/caveats	Due to the high share of part-time work in agriculture, labour input can be better assessed in terms of AWU than in terms of persons.

UPDATED

INDICATOR C.14	CURRENT CMEF: C.23
Indicator Name	**Age structure of farm managers**
Definition	The indicator shows the **total number of managers in different age categories and also the percentage of managers who are younger than 40 years.** The indicator also provides information on the **ratio between young farm managers (less than 40 years) and farmers of 55 years or older**. The manager of the holding is the natural person responsible for the normal daily financial and production routines of running the holding concerned. The holder is the natural person, group of natural persons or legal person on whose account and in whose name the holding is operated and who is legally and economically responsible for the holding, i.e. who takes the economic risks of the holding. The manager and the holder can be the same person.
Unit of measurement	Number of managers, % of total farm managers, ratio of young managers to elderly
Data source	Eurostat – Farm Structure Survey (FSS)
References/location of the data	National and regional data: [ef_m_farmang]
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2)
Frequency	FSS: full census every 10 years, intermediate surveys 2/3 times in-between.
Timeliness	2-3 years
Comments/caveats	

INDICATOR C.15	CURRENT CMEF: C.24
Indicator Name	**Agricultural training of farm managers**
Definition	The indicator provides information on **the share of farm managers who have attained basic and full education levels in agriculture.** **The indicator also shows the share of young farm managers (below 35 years) in total with the different levels (basic and full) of agricultural training acquired by them.** The different categories of agricultural training are defined as follows: • Only practical agricultural experience: experience acquired through practical work on an agricultural holding. • Basic agricultural training: any training courses completed at a general agricultural college and/or an institution specialising in certain subjects (including horticulture, viticulture, sylviculture, pisciculture, veterinary science, agricultural technology and associated subjects). A completed agricultural apprenticeship is regarded as basic training. • Full agricultural training: any training course continuing for the equivalent of at least two years full time training after the end of compulsory education and completed at an agricultural college, university or other institute of higher education in agriculture, horticulture, viticulture, sylviculture, pisciculture, veterinary science, agricultural technology or an associated subject. In the case of Italy, the definition of "training in agriculture" does not correspond to the content described above. It refers rather to the general education level of the farmer. According to the Italian definition: - practical experience means: the farmer has completed no type of education (primary school, secondary education, higher education); - basic training means: the farmer completed at least primary education, but did not complete agricultural higher education; - full training means: the farmer has completed higher or tertiary education at an agricultural college/university/college-level institute/vocational school..
Unit of measurement	Number of managers at each level of agricultural training and as percentage of total farm managers
Data source	Eurostat – Farm Structure Survey
References/location of the data	National data: [ef_mptrainman] Regional data: on special request to Eurostat
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2)
Frequency	FSS: full census every 10 years, intermediate surveys 2-3 times in-between.
Timeliness	2-3 years
Comments/caveats	

NEW FICHE

INDICATOR C.16	NEW (SIMILAR TO CURRENT I.21)
Indicator Name	**New farmers**
Definition	To be able to measure the evolution of number of new farmers including new young farmers.
Unit of measurement	Number of new farmers Number of new young farmers
Data source	Eurostat
References/location of the data	The Integrated Farm Statistics Regulation (EU) 1091/2018 will provide data for the following variables: • a number of new entrant (including young) farmers who has received financial support for this purpose under the common agricultural policy (CAP) in the previous 3 years • The year in which the manager of the agricultural holding took up this role • The year of birth of the manager of the agricultural holding
Data collection / dissemination level	National and EU level aggregation (on the basis of the number of Member States which delivered data).
Frequency	Data will become available every 3-4 years.
Timeliness	2-3 years
Comments/caveats	

UPDATED

INDICATOR C.17	CURRENT CMEF: C.18
Indicator Name	**Agricultural area**
Definition	The indicator is expressed as **the total utilised agricultural area (UAA) in absolute terms (ha) and as the share of UAA in different categories of land use.** According to the definition applied in the Eurostat database, **these categories of land use are** as follows: • **Arable land** • **Permanent grassland** • **Permanent crops** • **others**
Unit of measurement	Number of ha; % of total UAA
Data source	Eurostat – Agricultural production – Crop production
References/location of the data	National and regional data:[apro_cpsh1]; [apro_cpshr]
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2)
Frequency	Annual
Timeliness	1 year
Comments/caveats	Codes for land use: main area (MA), arable land (ARA), permanent grassland (J0000) and permanent crops (PECR). Others: calculation UAA minus (ARA + J0000 + PECR)

UPDATED

INDICATOR C.18	CURRENT CMEF: C.20
Indicator Name	**Irrigable area**
Definition	The indicator shows **the total irrigable land** and is expressed in hectares (ha) and as percentage of the Utilised Agricultural Area (UAA). 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 on the holding. . Crops under glass and kitchen gardens, which are assumed to be generally irrigable and irrigated, are not considered. Utilised Agricultural Area consists in the total area taken up by arable land, permanent grassland, permanent crops and kitchen gardens.
Unit of measurement	Ha and %
Data source	Eurostat - Farm Structure Survey (FSS), Survey on Agriculture Production Methods (SAPM) 2010.
References/location of the data	National and regional data: table ef_poirrig
Data collection / dissemination level	National (NUTS 0) and regional (NUTS 1 and 2)
Frequency	FSS is carried out as a sample survey every 3 or 4 years, the Survey on Agricultural Production Methods (SAPM) is a one off survey carried out in 2010.
Timeliness	2-3 years (Eurostat, Survey on Agricultural Production Methods).
Comments/caveats	Because of the varying factors affecting water abstraction in agriculture, irrigated areas change from year to year depending on the weather conditions, while irrigable areas are used instead to present irrigation trends, showing the expectation on farmers for the need for irrigation..

INDICATOR C.19	CURRENT CMEF: C.34
Indicator Name	**Farming in Natura 2000 areas**
Type of indicator	**Environment**
Definition	This indicator consists of 3 sub-indicators : ● **% of territory under Natura 2000** ● **% of UAA under Natura 2000** ● **% of forest area under Natura 2000** This indicator provides information on the preservation of the natural environment and landscape and on the protection and improvement of natural resources. Under Natura 2000, a network of areas is designated to conserve natural habitats and species of wildlife which are rare, endangered or vulnerable in the European Union. The Natura 2000 network consists of sites: • designated by Member States as Special Protection Areas (SPA) under the Birds Directive (Council Directive 79/409/EEC of 2 April 1979), • proposed by Member States as Sites of Community Importance (pSCI) and later designated as Special Areas of Conservation (SAC) under the Habitats Directive (Council Directive 92/43/EEC of 21 May 1992). For the Special Protection Areas designated under the Birds Directive, the responsibility for designation lies entirely with the Member States. The Commission (DG Environment) has to be informed when new areas are designated or existing areas are modified. The information received on new or revised areas is passed on to the European Environment Agency (EEA), which regularly produces consolidated versions of the SPA database for the whole EU. For the proposed Sites of Community Importance, which will in the future be Special Areas of Conservation under the Habitats Directive, there is a three-stage process that starts with a proposal by Member States. The proposals are transferred to the Commission, which evaluates with the European Topic Centre on Biological Diversity (ETC_BD) whether or not the proposed sites ensure sufficient protection and, on the basis of that evaluation, asks the Member States to propose more sites whenever necessary. The EEA regularly (once a year) compiles all the information received into a single EU database. The lists of sites foreseen in the Habitats Directive are divided into nine bio-geographic regions (Pannonian, Boreal, Continental, Atlantic, Alpine, Macaronesian, Black Sea, Steppic and Mediterranean) within the territory of the Union. The first list for the Macaronesian region was agreed in December 2001. The second list was adopted in December 2003 for the Alpine region, followed in 2004 by the lists for the Continental and Atlantic regions. The list for the Boreal region was adopted in 2005, and the list for the Mediterranean region in 2006. The lists for the Steppic and the Black Sea regions were adopted in 2008. Natura 2000 sites include different types of European ecosystems. Some sites are in coastal areas or in open marine waters, some contain lakes or are riverine, and many include forest and farmland. For calculating an improved version of this indicator, geo-referenced information is required. The data sets used consist of the Natura 2000 Spatial Dataset and the CORINE Land Cover (CLC) raster dataset. Although CLC categories do not fully correspond to the statistical definitions of agricultural area (UAA) or forests, the overlay of the two data sets allows an accurate geographical estimation of land use data inside Natura 2000 sites. To reduce and explain the discrepancies with other surveys and national inventories, the estimation of the UAA and forest includes separately the CLC classes "Natural grassland" and "Transitional woodland –shrubs". CLC classes are aggregated to estimate: - Total farmland (UAA): CLC classes 2xx and 321 - Forest area : CLC classes 31x and 324

	Please note that the situation regarding Natura 2000 sites is constantly evolving and therefore the data represent only a snapshot of the situation at a reference date. The figures relating to the area coverage of Natura 2000 sites have been obtained by GIS analysis performed by DG Environment and the EEA.
Unit of measurement	% of area under Natura 2000
Data source	Natura 2000 Barometer Statistics Report (release version End2016 – 2017-02-02) Natura 2000 data CORINE Land Cover (CLC)
References/location of the data	Natura 2000 Barometer statistics https://www.eea.europa.eu/themes/biodiversity/document-library/natura-2000/natura-2000-network-statistics/natura-2000-barometer-statistics/statistics/barometer-statistics Natura 2000 data - the European network of protected sitehttps://www.eea.europa.eu/data-and-maps/data/natura-8 https://www.eea.europa.eu/data-and-maps/figures/natura-2000-birds-and-habitat-directives-8 CORINE Land Cover (CLC) https://www.eea.europa.eu/data-and-maps/data/natura2000-clc-by-nuts
Data collection / dissemination level	Regional (NUTS 2).
Frequency	Natura 2000: every year CORINE Land Cover: every 6 years
Timeliness	Natura 2000: 1 year CORINE Land Cover: 3 years.
Comments/caveats	

UPDATED

INDICATOR C.20	CURRENT CMEF: C.32
Indicator Name	**Areas facing natural and other specific constraints - ANCs**
Definition	The characterisation of agricultural areas designated as areas facing natural or other specific constraints provides useful information on the environment in which the policy is implemented. The indicator measures the **share of agricultural area in different categories of areas facing natural or other specific constraints (ANCs)** (ex-LFAs as they were defined in the period 2007-2013): • Mountain areas (incl. areas north of the 62nd parallel) (ex-LFA mountain); • Areas, other than mountain areas, facing significant natural constraints (ex-LFA intermediate); • Other areas affected by specific constraints (ex-LFA specific). Article 32 of Regulation (EU) No 1305/2013 defines the areas facing natural or other specific constraints, which are eligible for payments to farmers. They are classified according to three categories, each of which describes a specific cluster of natural or other specific constraints affecting agricultural production in the area concerned. The area designations and other requirements for ANCs have changed in comparison to the programming period 2007-2013 and to Regulation (EC) No 1698/2005 and Regulation (EC) No 1257/99, which are repealed. While no revision of the designation of mountain areas or areas affected by specific constraints is foreseen in Regulation (EU) No 1305/2013 (apart from the possibility to apply the combination of biophysical criteria for the designation of areas affected by specific constraints), areas facing natural constraints other than mountain (former LFA intermediate) should be delimited according to eight biophysical criteria, as defined in Annex III of Regulation (EU) No 1305/2013, covering climate, poor soil productivity and steep slopes. Each (sub)criterion has a predefined threshold, e.g. slopes with a gradient of 15% (or more) which identifies the trigger for the area to be considered as severely constrained from the agricultural production point of view. Measurement of constraint(s) takes place at the level of Local Administrative Units (LAU) 2 (which corresponds to municipality level in most Member States) or at the level of clearly delineated, contiguous local units. The latter should have a definable economic and administrative identity. Farming in the respective local unit can be considered as being constrained if constraints are present on at least 60 % of the local unit's agricultural area. The new legislation also stipulates the mechanism of fine-tuning, i.e. for excluding those administrative units where a constraint has been documented but it has been overcome by investments or by economic activity. The fine-tuning exercise is a part of the designation exercise. New data on ANCs are reported by Member States within the programming period 2014-2020.
Unit of measurement	% of the utilised agricultural area (UAA)
Data source	DG Agriculture and Rural Development: data are reported by Member States during the programming period 2014-2020. ESTAT should provide this data again in new FSS/IFS.
References/location of the data	DG Agriculture and Rural Development on request.
Data collection / dissemination level	National, regional. Areas facing natural constraints, other than mountain: Data are reported at the level of LAU2 or another LAU (a number of Member States use different administrative units for the delimitation of these areas).

	Areas affected by specific constraints: Data collection may be carried out at the level of area designation. In case the designation is carried out according to the "combination of biophysical criteria", as defined in the third paragraph of Article 32(4) of Regulation (EU) No 1305/2013, the data collection level should be LAU2 or another clearly delineated local unit.
Frequency	Data available at present: At the moment data on LFAs are from 2005 (and from 2007 in the case of BG and RO).
Timeliness	
Comments/caveats	So far the data series were disrupted. ESTAT should provide this data in new FSS/IFS.

NEW FICHE

INDICATOR C.21	NEW (SIMILAR TO CURRENT I.20)
Indicator Name	**Agricultural land covered with landscape features**
Definition	This indicator aims to describe landscape features in agricultural landscape in support of biodiversity and ecosystem services. Landscape features supply many benefits to agro-ecosystems and the wider environment, including for habitat provision, soil erosion and fertility, water quality and quantity, climate change mitigation and adaptation.
Unit of measurement	As % of the total agricultutal area (Could be complemented with some statistics to reflect on spatial arrangement of features)
Data source	2 possible sources: Copernicus Land Monitoring Service fed with LPIS/IACS. Copernicus is the European programme for monitoring the Earth. Land use/cover Area frame statistical Survey (LUCAS).
References/location of the data	• Copernicus Land Monitoring Service high resolution layers (https://land.copernicus.eu/pan-european/high-resolution-layers) • LUCAS (https://ec.europa.eu/eurostat/statistics-explained/index.php/LUCAS_-_Land_use_and_land_cover_survey)
Data collection / dissemination level	As it will build on detailed maps and/or samples, national (NUTS 0) and regional (NUTS 2) could be collected
Frequency	Small Woody Features: starting from 2015, updates are currently planned every three years, i.e. for 2018, 2021, 2024, 2027, etc. New products with more landscape features (under assessment) may be ready in 2020. LUCAS: Starting from 2009, updates are in principle planned every 3 years. However, 2018 has not been implemented.
Timeliness	Around 1 year
Comments/caveats	[Indication capacity] There is abundant literature on the relationship between landscape features and biodiversity and ecosystem services. However, these relationships are very complex. The challenge is to find a combination of features that can be used as a proxy and implemented in all EU countries, considering the diversity of landscapes, biogeographic and socio-economic conditions. This indicator would provide a valuable proxy, although not a linear correlation with specific biodiverisity or ecosystem services' features. [Readily available?]: The indicator is conceptually under development and therefore not available. It shodul be made available however in 2020 Detecting landscape features with Copernicus is promising. Small woody features are available and ready for use and can be used as a first proxy to mapping landscape features; development of additional landscape features' layers (e.g. water spots, hedges) is planned. The indicator could therefore be built following a stepwise approach, adding more layers as they are available, and updated retrospectively. [Downscaling] Because the Copernicus Small Woody Features product is a detailed spatially explicit wall-to-wall mapping, it can be used at all possible

	scale levels (from local to national and pan-European). LUCAS can also be downscaled to the required level, but the number of points per region would need to be assessed. [Quality:] An issue to test is the capacity of the proposed options (LUCAS, Copernicus) to detect actual landscape change, considering the estimated accuracy to be 80%. [Baseline:] Baseline could be set to 2021. Copernicus SWF is available from 2015; LUCAS is available from 2009.

UPDATED

INDICATOR C.22	CURRENT CMEF: C.21
Indicator Name	**Livestock units**
Definition	This indicator gives **the total number of livestock units (LU) of the holdings with livestock**. LU is a reference unit which facilitates the aggregation of livestock from various species and ages. LU coefficients are used instead of the actual number of animals in order to make comparable aggregations of different animal categories.
Unit of measurement	Number of LU
Data source	Eurostat – Farm Structure Survey (FSS)
References/location of the data	For national and regional data: [ef_m_farmang] and [ef_lsk_main]
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2)
Frequency	FSS: full census every 10 years, intermediate surveys 2/3 times in-between.
Timeliness	2-3 years
Comments/caveats	For the coefficients used to calculate the LU in the FSS 2010, see Annex I of Commission Regulation (EC) No 1091/2018: http://data.europa.eu/eli/reg/2018/1091/oj 1091/2018

NEW FICHE

INDICATOR C.23	NEW
Indicator Name	**Livestock density**
Definition	This indicator consists of **2 sub-indicators**: 1. Total livestock density - LSU/ha of utilised agricultural area (UAA): it measures the stock of animals (cattle, sheep, goats, equidae,pigs, poultry and rabbits) converted in livestock units (LSUs) per hectare of utilised agricultural area (UAA). 2. Grazing livestock density (grazing LSU/ha of fodder area): it measures the stock of grazing animals (cattle, sheep, goats and equidae) per fodder area (consisting of fodder crops grown on arable land as well as permanent grassland). It is the ratio of the number of livestock units (LSUs) (converted from the number of animals using standard coefficients) per hectare of fodder area.
Unit of measurement	Number of LSU
Data source	Eurostat – Farm Structure Survey (FSS)
References/location of the data	For national data: [ef_kvftaa] For regional data: [ef_kvftreg]
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2)
Frequency	FSS: full census every 10 years, intermediate surveys 2/3 times in-between.
Timeliness	2-3 years
Comments/caveats	LSU (or sometimes as LU), is a reference unit which facilitates the aggregation of livestock from various species and age as per convention, via the use of specific coefficients established initially on the basis of the nutritional or feed requirement of each type of animal

INDICATOR C.24	CURRENT CMEF: C.25
Indicator Name	**Agricultural factor income**
Definition	**Agricultural factor income** measures the remuneration of all factors of production (land, capital, labour) regardless of whether they are owned or borrowed/rented and represents all the value generated by a unit engaged in an agricultural production activity. It corresponds to the **net value added at factor cost.** Value of agricultural production - variable input costs (fertilisers, pesticides, feed, etc.) - depreciation - total taxes (on products and production) + total subsidies (on products and production) **= agricultural factor income (net value added at factor costs)** **The indicator consists of two sub indicators:** **A. Agricultural factor income per annual work unit (AWU)**. It measures the income generated by a farm (as defined above) per annual working unit, where an AWU in agriculture corresponds to the work performed by one person who is occupied on an agricultural holding on a full-time basis. For this indicator, total (paid and unpaid) AWU are used. B. The **index of agricultural factor income per AWU** is already available in Eurostat's Economic Accounts for Agriculture as **Indicator A.** This index is particularly suited for showing developments over time.
Unit of measurement	A. EUR (in real terms)/AWU B. Index 2010 =100
Data source	A. Eurostat, Economic Accounts for Agriculture and Agricultural Labour Input Statistics B. Eurostat, Economic Accounts for Agriculture
References/location of the data	**Agricultural factor income:** *Economic accounts for agriculture - values at real prices (aact_eaa04)* • Production value at basic price • Factor income: code 26000 **Agricultural labour input:** *Agricultural Labour Input Statistics: absolute figures (1 000 annual work units) (aact_ali01)* **Index of agricultural factor income/AWU (Indicator A):** *Economic accounts for agriculture - agricultural income (indicators A, B, C) (aact_eaa06)*
Data collection / dissemination level	A. EU, national (NUTS 0) and regional (NUTS 1 and 2) – where data are available B. EU and national (NUTS 0)
Frequency	Annual
Timeliness	1 year
Comments/caveats	Agricultural factor income is best suited for evaluating the impact of changes in the level of public support (i.e. direct payments) on the

	capacity of farmers to reimburse capital, pay for wages and rented land as well as to reward their own production factors. In this context one should note that the proportion of own and external production factors varies in some cases significantly between and within Member States and that the remuneration of own and external production factors is often unequal at farm level. Regional data are not available for all Member States.

UPDATED

INDICATOR C.25	CURRENT CMEF: C.26
Indicator Name	**Agricultural entrepreneurial income**
Definition	Agricultural entrepreneurial income[3] measures the income derived from agricultural activities that can be used for the remuneration of own production factors, i.e. non-salaried (= family) labour, land belonging to the agricultural holding and own capital. It is obtained by deducting wages, rent and interest payments from agricultural factor income (see C. 25). Value of agricultural production - variable input costs (fertilisers, pesticides, feed, etc.) - depreciation - total taxes (on products and production) + total subsidies (on products and production) **= agricultural factor income (net value added at factor costs)** - wages - rents - interest paid **= agricultural entrepreneurial income** In the case of family farms (sole proprietorships), entrepreneurial income represents, on the one hand, the compensation of the work performed by the agricultural holder (and the work of non-salaried family members) and, on the other hand, the income remaining with the enterprise, without it being possible to separate these two components. It is, therefore, a mixed income. A. Agricultural entrepreneurial income per unpaid annual work unit (AWU) is expressed in absolute terms or as an index. Agricultural entrepreneurial income is divided by non-salaried AWU in order to show the level, in absolute terms, of agricultural entrepreneurial income for the farm holder and members of his/her family.The index of agricultural entrepreneurial income per unpaid AWU can be obtained directly from Eurostat's Economic Accounts for Agriculture as Indicator B. This indicator presents the changes in net entrepreneurial income over time, per non-salaried AWU. B. Furthermore, agricultural entrepreneurial income per unpaid AWU is compared with the average wages in the economy. The components of the indicator are: - **Agricultural entrepreneurial income** (in real and current prices) - **AWU in agriculture,** which corresponds to the work performed by one person who is occupied on an agricultural holding on a full-time basis. A distinction is made between salaried and non-salaried AWU, which together make total AWU. In order to compare this "family farm income" with the average wages in the economy, AWUs in agriculture need to be converted into number of hours worked: a standard conversion factor of 1800

[3] See also Annex I Chapter V Agricultural Income Indicators of Regulation (EC) No 138/2004 of the European Parliament and of the Council of 5 December 2003 on the economic accounts for agriculture in the Community.

	hours per AWU and per year is used. - **Gross wages and salaries in all NACE activities** at current prices in cash and in kind. Wages and salaries in cash include the values of any social contributions, income taxes, etc. payable by the employee, even if withheld and actually paid directly by the employer on behalf of the employee. - The **total number of hours worked per employee in all NACE activities**.
Unit of measurement	A: EUR (in real terms)/AWU Index 2010 =100 B: %
Data source	Eurostat – Economic Accounts for Agriculture Eurostat – Agricultural Labour Input Statistics Eurostat – National Accounts
References/location of the data	**Agricultural entrepreneurial income:** *Economic accounts for agriculture - values at current prices (aact_eaa01)* *Economic accounts for agriculture - values at real prices (aact_eaa04)* • Production value at basic price • Entrepreneurial income: code 31000 **Agricultural labour input**: *Agricultural Labour Input Statistics: absolute figures (1 000 annual work units) (aact_ali01)* **Index of agricultural entrepreneurial income/non-salaried AWU (Indicator B):** *Economic accounts for agriculture – agricultural income (indicators A, B, C) (aact_eaa06)* **Wages and salaries:** *National Accounts by 10 branches - aggregates at current prices: gross wages and salaries (nama_nace10_c)* **Employment:** *National Accounts by 10 branches - employment data (nama_nace10_e)*
Data collection / dissemination level	A. EU, national (NUTS 0) and regional (NUTS 1 and 2) – where data are available B. EU and national (NUTS 0)
Frequency	Annual
Timeliness	1 year
Comments/caveats	It has to be borne in mind that these income aggregates are not indicators of total income or of the disposable income of households employed in agriculture, because the latter, in addition to their purely agricultural incomes, may also have income from other sources (non-agricultural activities, remuneration, social benefits, and income from property). In other words, agricultural entrepreneurial income must not be regarded as farmers' income. Moreover, this measure of income relates to the income generated by agricultural activities (as well as inseparable non-agricultural secondary activities) over a given accounting period, even though in certain cases the corresponding revenues will not be received until a later date. It does not, therefore,

	constitute the income effectively received in the course of the accounting period itself. Figures should be interpreted with care owing to conceptual differences between the measurement of farmers' income from agricultural activities and average wages in the economy, and to the lack of reliable data on full-time equivalent labour statistics for the total economy for some Member States. The indicator farm household income cannot be calculated as there is no methodology or data in Eurostat for this purpose. Regional data are not available for all Member States. The comparison of agricultural entrepreneurial income with average wages in the economy cannot be done at regional level.

NEW FICHE

INDICATOR C.26	Current CMEF: not covered
Indicator Name	**Farm net value added**
Definition	**Farm net value added (FNVA)** is the portion of agricultural output value that can be used to remunerate the fixed factors of production (labour, land and capital), whether they are external or family-owned factors. As a result, agricultural holdings can be compared regardless of the family/non-family nature of the factors of production used. It is calculated as follows: Value of agricultural production + Pillar I and Pillar II payments + any national subsidies + VAT balance - intermediate consumption - farm taxes (income taxes are not included) - depreciation. **= Farm Net Value Added** The value is calculated per annual work unit (AWU) in order to take into account the differences in the scale of farms and to obtain a better measure of the productivity of the agricultural workforce. The indicator consists of 4 sub-indicators: • **By type of farming** • **By region** • **By farm size** • **In areas facing natural and other specific constraints** For the grouping according to type of farming and economic size, the general types of farming (TF8) and economic size class (ES6) definitions, as implemented in the Farm Accountancy Data Network (FADN), will be used (see http://ec.europa.eu/agriculture/rica/diffusion_en.cfm#sg). **TF8** — **ES6 grouping** 1 Fieldcrops — 2 000 - < 8 000 EUR 2 Horticulture — 8 000 - < 25 000 EUR 3 Wine — 25 000 - < 50 000 EUR 4 Other permanent crops — 50 000 - < 100 000 EUR 5 Milk — 100 000 - < 500 000 EUR 6 Other grazing livestock — >= 500 000 EUR 7 Granivores 8 Mixed
Unit of measurement	**Euro per AWU**
Data source	**FADN sample survey of farms**
References/location of the data	SE425 in the FADN public database
Data collection / dissemination level	**National and by FADN division (similar to NUTS 2)**

Frequency	Annually
Timeliness	2-3 years
Comments/caveats	

UPDATED

INDICATOR C.27	CURRENT CMEF: C.28
Indicator Name	**Gross fixed capital formation in agriculture**
Type of indicator	**Sectorial**
Definition	The indicator measures **producers' investments, deducting disposals, in fixed assets during a given period plus certain additions to the value of non-produced assets** realized by the productive activity of producer or institutional units (ESA 2010 definition). Therefore, GFCF is a key element for future competitiveness. It is measured in absolute terms and as a percentage of Gross Value Added (GVA) in agriculture.
Unit of measurement	EUR million (in current prices); % of GVA in agriculture.
Data source	Eurostat – Economic Accounts for Agriculture (EAA), National Accounts
References /location of the data	National data: table aact_eaa01 (aact_eaa05 and aact_eaa07 were used to calculate GFCF at constant prices) Regional data: table nama_10r_3gva (GVA in agriculture, forestry and fishing) and nama_10_2gfcf
Data collection / dissemination level	National (NUTS 0) Regional (NUTS 1 and 2)
Frequency	Annual
Timeliness	1 year
Comments /caveats	GFCF variables for table aact_eaa01: Production value at basic price; 34000 Gross fixed capital formation (excluding deductible VAT); variables for table nama_10r_2gfcf: Agriculture, forestry and fishing. GVA variables for table aact_eaa01: Gross value added at basic prices; variable for table nama_10r_3gva: Agriculture, forestry and fishing. There are differences between national and regional data since the former is based on the Economic accounts for agriculture and the latter is related to the National Accounts (ESA 2010).

UPDATED

INDICATOR C.28	CURRENT CMEF: C.27
Indicator Name	**Total factor productivity in agriculture**
Definition	**Total factor productivity (TFP) compares total outputs relative to the total inputs used in production of the output. As both output and inputs are expressed in term of volume indices, the indicator measures TFP growth.** The change in production and input volumes is measured over a defined period (2005=100). To aggregate the different output (and input) volume indices, the production (and input) values are used as weights. This allows capturing the relative importance between outputs, or inputs. **TFP reflects output per unit of some combined set of inputs: an increase in TFP reflects a gain in output quantity which is not originating in from an increase of input use.** As a result, TFP reveals the joint effects of many factors including new technologies, efficiency gains, economies of scale, managerial skill, and changes in the organization of production. TFP index is defined as the ratio between an Output Index (i.e. the change in production volumes over a considered period) and an Input Index (the corresponding change in inputs/factors used to produce them). Output and input indices are calculated as weighted averages of changes in produced quantities and in input quantities respectively, where the weights are represented by the production value of the various products and the expenditure for each of the four considered production factors (intermediate inputs, land, labour, capital). Depending on the type of average applied and the chosen reference period for the weights, the TFP indicator assumes different analytical forms. Laspeyres indices are defined as arithmetic means with weighting factors referring to the time 0 (base year), while Paasche indices are harmonic means with weighting factors referring to the time t (current year). In formula, the TFP Laspeyres index is given by: $TFP_0^t\_L = \frac{O_0^t\_L}{I_0^t\_L} =$ $\frac{\left(\frac{q_{1t}}{q_{10}} * w_{10} + \frac{q_{2t}}{q_{20}} * w_{20} + \ldots + \frac{q_{nt}}{q_{n0}} * w_{n0}\right) / \left(w_{10} + w_{20} + \ldots + w_{n0}\right)}{\left(\frac{i_{1t}}{i_{10}} * x_{10} + \frac{i_{2t}}{i_{20}} * x_{20} + \ldots + \frac{i_{rt}}{i_{r0}} * x_{r0}\right) / \left(x_{10} + x_{20} + \ldots + x_{r0}\right)}$, while TFP Paasche index is defined as: $TFP_0^t\_P = \frac{O_0^t\_P}{I_0^t\_P} =$

	$$\frac{\left(\left(\frac{q_{10}}{q_{1t}} * w_{1t} + \frac{q_{20}}{q_{2t}} * w_{2t} + ... + \frac{q_{n0}}{q_{nt}} * w_{nt}\right) / \left(w_{1t} + w_{2t} + ... + w_{nt}\right)\right)^{-1}}{\left(\left(\frac{i_{10}}{i_{1t}} * x_{1t} + \frac{i_{20}}{i_{2t}} * x_{2t} + ... + \frac{i_{r0}}{i_{rt}} * x_{rt}\right) / \left(x_{1t} + x_{2t} + ... + x_{rt}\right)\right)^{-1}},$$ where q_{jt} and i_{kt} are respectively the quantity of product j and factor k at time t, while w_{jt} and x_{kt} are the weights of product j and factor k within the agricultural sector. Finally, the geometrical average of the Laspeyres and the Paasche index gives the Fischer index, which benefits from the most suitable statistical properties. In formula, the TFP Fisher index is computed as follows: $$TFP\_F = \sqrt{TFP\_L * TFP\_P}$$
Unit of measurement	Index (3-year moving average)
Data source	The **Economic Accounts for Agriculture (EAA)** from Eurostat. The volume indices calculated by Eurostat are Laspeyres indices and changes in volume are measured using the weightings for the preceding year to guarantee the weightings are relatively up-to-date (see Reg. N° 138/2004). They correspond to the term q_{lt}/q_{l0} of the equations displayed above. Precise indicators chosen in the EAA: - Change in output volume ($q_{lt}/q_{l0)}$: Volume Indices, n-1 = 100, Production value at producer price (aact_eaa05) - Output weights: Real price in Euro, 2010 = 100, Production value at producer price (aact_eaa04) - Change in input volume ($i_{lt}/i_{l0)}$ for every input except land and labour cost: Volume Indices, n-1 = 100, Production value at basic price (aact_eaa05) - Input weights: Real price in Euro, 2010 = 100, Production value at basic price (aact_eaa04) - Volume index for labour costs: Change in Total labour input measured in 1000 AWU (aact_ali01) - Correction of the weight for labour costs to cover the family labour costs: the compensation of employees is divided by the share of paid labour also directly available from the EAA (aact_ali01) - Volume index for land costs: Change in Total UAA available in the EAA (apro_cpp_luse). Complementary data is required from: - the **Farm Structure Survey (FSS - Eurostat)** to assess the share of rented land (in order to correct the weight of land by including the own land) ef_mptenure).. - the **Agricultural Production Data – Crop Products** (**Eurostat**) for the volume index of the UAA (apro_cpp_luse). - the **Farm Accountancy Data Network** to estimate the national average depreciation rate.
References/location	Eurostat: EAA, APRO, ALI, FSS; FADN

of the data	
Data collection / dissemination level	National (NUTS 0)
Frequency	Annual
Timeliness	1 year
Comments/caveats	The climatic conditions affecting crop yields have strong impact on the crop output and as a consequence on the indicator. Therefore a moving average over 3 years is to be calculated to smooth the weather effect. The level of detailed information required to compile the indices (especially for the Paasche Index) does not allow for calculating long time series and complicates the calculation for the EU aggregates. The length of the time series varies according to MS. There are breaks in time series and data is missing for some years, especially in the Agricultural Production Data. The methodology to value the fixed capital consumption seems to vary over time. Concerning the labour input any change in accounting rules has been normally smoothed. Nevertheless this volume index is to be checked very carefully because the TFP indicator is very sensitive to any variation in labour input. The calculation of regional values is not possible due to the lack of data at such detailed geographical level.

INDICATOR C.29	CURRENT CMEF: C.14
Indicator Name	**Labour productivity in agriculture**
Definition	Labour productivity in agriculture is expressed as **total Gross Value Added (GVA) in agriculture at basic prices per Annual Work Unit (AWU).** GVA is defined as the value of output less the value of intermediate consumption. Output is valued at basic prices, GVA is valued at basic prices and intermediate consumption is valued at purchasers' prices. The basic price is defined as the price received by the producer, after deduction of all taxes on products but including all subsidies on products. GVA per AWU provides comparable data on labour productivity and allows for comparison between sub-sectors and countries. **A three-year average mitigates short-term fluctuations. Labour productivity in agriculture is then calculated as the ratio of the averages**: (three year average GVA) / (three year average labour force).
Unit of measurement	EUR/AWU
Data source	Eurostat - Economic Accounts for Agriculture (EEA) Eurostat - Agricultural Labour Input Statistics
References/location of the data	EEA for GVA values at current prices: aact_eaa01 EEA for GVA values at constant prices: aact_eaa03 Agricultural Labour Input Statistics for AWU values: aact_ali01
Data collection / dissemination level	EU and national (NUTS 0)
Frequency	Annual
Timeliness	1 year
Comments/caveats	Due to the lack of available regional data, this indicator can only be calculated at national level.

INDICATOR C.29	CURRENT CMEF: C.15
Indicator Name	**Labour productivity in forestry**
Definition	Labour productivity in forestry is expressed **as total Gross Value Added in forestry at basic prices per Annual Work Unit (AWU).** The forestry sector corresponds to division 02 in NACE rev. 1.1 (Forestry and logging). GVA is defined as the value of output less the value of intermediate consumption. Output is valued at basic prices, GVA is valued at basic prices and intermediate consumption is valued at purchasers' prices. The basic price is defined as the price received by the producer, after deduction of all taxes on products but including all subsidies on products. GVA per AWU provides comparable data on labour productivity and allows for comparison between sub-sectors and countries. A **three-year average mitigates short-term fluctuations. Labour productivity in forestry is then calculated as the ratio of the averages**: (three-year average GVA)/(three-year average employment).
Unit of measurement	EUR/AWU
Data source	Eurostat
References/location of the data	Eurostat - Economic accounts for forestry and logging [for_eco_cp] Eurostat - Annual work units in forestry and logging [for_awu]
Data collection / dissemination level	EU and national (NUTS 0)
Frequency	Annual
Timeliness	2-3 years
Comments/caveats	Due to the lack of available regional data this indicator can only be calculated at national level and not for all Member States.

INDICATOR C.29	CURRENT CMEF: C.16
Indicator Name	**Labour productivity in the food industry**
Definition	Labour productivity in the food industry is expressed as total **Gross Value Added (GVA) in the food industry per person employed.** GVA is defined as the value of output less the value of intermediate consumption. Output is valued at basic prices, GVA is valued at basic prices and intermediate consumption is valued at purchasers' prices. The food industry sector corresponds to NACE rev.2 = Manufacture of food products; beverages and tobacco products (C10+C12). **A three-year average mitigates short-term fluctuations. Labour productivity in the food industry is then calculated as the ratio of the averages**: (three-year average GVA)/(three-year average number of persons employed).
Unit of measurement	EUR/person
Data source	Eurostat - National Accounts Eurostat - Labour Force Survey
References/location of the data	National Accounts: table nama_10_a64 Labour Force Survey: table lfsa_egan22d
Data collection / dissemination level	EU and national (NUTS 0)
Frequency	Annual
Timeliness	2 years
Comments/caveats	Due to the lack of regional data, this indicator can only be calculated at national level.

UPDATED

INDICATOR C.30	CURRENT CMEF: I.06
Indicator Name	**EU agricultural trade**
Definition	**Sub-indicators:** • **Total agri-food trade value** • **Agricultural trade balance (total and separate for agricultural food and feed products, food preparations and beverages, non-edible)** • **Agri-food exports (total and separate for agricultural food and feed products, food preparations and beverages, non-edible)** • **Agri-food imports (total and separate for agricultural food and feed products, food preparations and beverages, non-edible)** The indicator is calculated by Directorate-General for Agriculture and Rural Development (DG AGRI) yearly on the basis of EUROSTAT Comext data, using the definition of agricultural products developed internally by DG AGRI unit A.1 and used in DG AGRI publications on agri-food trade (cf. https://ec.europa.eu/agriculture/trade-analysis/statistics_en).
Unit of measurement	Billion EUR
Data source	Data: EUROSTAT COMEXT database Information on product coverage/categories: https://ec.europa.eu/agriculture/trade-analysis/statistics_en
References/location of the data	COMEXT database – declarant: EU28, partner: extra-EU28, trade flow: export and import; Combined Nomenclature codes as defined in DG AGRI agricultural trade statistics publications; trade regime: 4
Data collection / dissemination level	Availability at MS level Indicator at EU level
Frequency	Data availability: monthly Indicator calculation: yearly
Timeliness	Year Y is available Feb Y+1
Comments/caveats	

UPDATED **INDICATOR C.31**	CURRENT CMEF: C.30
Indicator Name	**Tourism infrastructure**
Definition	Tourism infrastructure in rural areas is measured as **the number of bed places in tourist accommodations in absolute values and as a share of total bed places by degree of urbanisation.** From 2012, data are collected at NUTS 2 level, according to Regulation (EU) No 692/2011 concerning European statistics on tourism and repealing Council Directive 95/57/EC. Under this regulation, **data are collected according to the following degrees of urbanisation:** 1. Densely-populated area (cities/large urban area) 2. Intermediate urbanized area (towns and suburbs/small urban area) 3. Thinly populated area (rural area) According to the definitions of urban areas used in Europe (in line with the United Nations Population Division (UNPD)), urban areas correspond to densely populated and intermediate density areas while rural areas equal thinly populated areas.
Unit of measurement	Total number of bed places by degree of urbanisation and % of national total
Data source	Eurostat – Tourism statistics According to Regulation (EU) 692/2011 of the European Parliament and of the Council, the data is available from 2012 onwards.
References/location of the data	For national data: table tour_cap_natd For regional data: table tour_cap_nuts2d
Data collection / dissemination level	EU, national (NUTS 0) and regional (NUTS 1 and 2)
Frequency	Annual and monthly. Annual for regional data.
Timeliness	1 year
Comments/caveats	Collective tourist accommodation establishments include hotels, holiday and other short-stay accommodation, camping grounds, recreational vehicle parks and trailer parks (NACE r.2 divisions I551-I553). When the number of bed places in one category of establishment is missing, the sum of available data is provided. The number of bed places in an establishment or dwelling is determined by the number of persons who can stay overnight in the beds set up in the establishment (dwelling), ignoring any extra beds that may be set up by customer request. The term bed place applies to a single bed, double bed being counted as two bed places. The unit serves to measure the capacity of any type of accommodation. A bed place is also a place on a pitch or in a boat on a mooring to accommodate one person. One camping pitch should equal four bed places if the actual number of bed places is not known. Countries can apply a data collection threshold (to reduce burden on administrations and on smaller SMEs). In practice, most countries exclude establishments offering less than 10 (some countries: 20) bed-places from the scope of observation. The structure of accommodation (in terms of size/capacity) of the establishments ca be different in cities and in countryside, with the first having more relatively big chain hotels and the latter having more small family businesses. It should be pointed out that this could affect the indicator (= underestimating the absolute infrastructure as well as its share in total).

INDICATOR C.32	CURRENT CMEF: C.19
Indicator Name	**Agricultural area under organic farming**
Definition	The indicator shows **the number of hectares under organic farming and the share of area under organic farming in the total utilised agricultural area (UAA).** The area under organic farming is classified as follows: • fully converted to organic farming • under conversion to organic farming • total fully converted and under conversion to organic farming Farming is considered to be organic if it complies with the relevant EU legislation. The area defined refers to the Utilised agricultural area excluding kitchen garden as from the "Organic crop area by agricultural production methods and crops". It might not be strictly comparable with the definition of UAA (only area of main crops) in the crop production statistics. Data on the area under organic farming at regional level come from the FSS.
Unit of measurement	Ha and %
Data source	Eurostat – Organic farming Eurostat – Crop production
References/location of the data	Organic data: org_cropar_h1 until 2011, org_cropar from 2012 onwards UAA: apro_cpsh1
Data collection / dissemination level	EU, national (NUTS 0)
Frequency	annual.
Timeliness	1 year
Comments/caveats	There are differences between national and regional data because the former is collected by Eurostat and the latter is based on the Farm structure survey (FSS). Variables for table ef_mporganic: AGRAREA_HA (ha: Utilised agricultural area), A_3_2_1_HA (ha: Organic farming – certified), A_3_2_2_HA (ha: Farming system - Conversion to organic farming), A_3_2_3_HA (ha: Organic farming (incl. in conversion)).

UPDATED/CHANGE

INDICATOR C.33	CURRENT CMEF: C.33
Indicator Name	**Farming intensity**
Definition	**Farm input intensity** is expressed as the **utilised agricultural area (UAA) managed by farms with low, medium and high input intensity, as percentage of total UAA.** The input intensity of a farm can be defined as the level of inputs used by the farm per unit of production factor (in general land). Intensification is defined as the increase in farm intensity, while extensification describes the opposite trend. Farms are classified into intensity categories according to an estimate of input volume per hectare of UAA. The inputs considered are fertilizers, pesticides, other crop protection products and purchased feed. This approach allows covering both crop and livestock productions. The volume of inputs used (per hectare) is estimated by dividing input expenditures (per hectare) by the input price index for the year and country in question. This results in input expenditures per hectare in constant national input prices. Fertiliser expenditure (purchased fertilisers and soil improvers) is divided by the fertiliser price index in the country of the same year in order to estimate the volume used. Similarly, crop protection expenditure (plant protection products, traps and baits, bird scares, anti-hail shells, frost protection) is divided by the pesticide price index in the country of the same year. Purchased feed cost is also divided by the feed price index in the country of the same year. The result is thus expressed in constant inputs prices (Euro per ha). The method allows not only to deduct inflation, but also the fluctuation of input prices. Thus it estimates the trend in the volume of inputs used per hectare. However, it does not capture differences in input prices between countries and the differences in prices within each category of inputs (for example between a pesticide A and a pesticide B). Therefore it does not give the exact volume of inputs used for a specific country and year. In a second step, each farm is classified according to its average level of input use per ha. The thresholds have been set in such a way that the UAA in the EU is equally divided into the three categories for the first year of the analysis (2004 for the EU-25). If it is higher than 350 constant EUR per ha (the threshold separating the highest from the middle category), the farm is qualified as having high intensity. When it is below 155 constant EUR per ha (the threshold separating the middle from the lowest category), it is classified as having low intensity. Otherwise, it is considered to have medium intensity. These levels do not pretend to represent any real borders of extensive and intensive farming. They are just set in a pragmatic way to study the developments in farming intensity. To properly interpret the results of this indicator, an "average level of intensity" in the country can also be calculated. Intensification in a country with very low intensity does not mean the same for the environment than intensification in a country with high intensity. That is the purpose of the variable, "average input expenditures per hectare in constant input prices". It is not the ideal measurement of intensity; however, it is the best estimate that we can obtain until now from the available data.
Unit of measurement	1. % of total UAA. (The variable "average level of intensity" per country or region is expressed in "Euro per ha in constant input prices").
Data source	- The main data source is DG AGRI - Farm Accountancy Data Network (FADN). - Eurostat - Price indices of the means of agricultural production, input.

References/location of the data	- DG AGRI - Farm Accountancy Data Network (FADN). Name of current variables defined in the FADN: SE295 Fertilizers; SE300 Crop protection; F64 to F67 Purchased feedstuffings, SE025 Utilised Agricultural Area: http://ec.europa.eu/agriculture/rica/; https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp - Eurostat - Price indices of the means of agricultural production, input (2010 = 100) - annual data (apripi10ina). Products: 203000 - FERTILISERS AND SOIL IMPROVERS, 204000 - PLANT PROTECTION PRODUCTS AND PESTICIDES, 206000 - ANIMAL FEEDINGSTUFFS.
Data collection / dissemination level	1. National (NUTS 0), regional (NUTS 2); primary data refer to FADN regions.
Frequency	Annual
Timeliness	2 years
Comments/caveats	The same methodology is applied to the agri-environmental indicator 12 Intensification/Extensification http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicators

INDICATOR C.34	CURRENT CMEF: R.09_PI
Indicator Name	**Value of production under EU quality schemes** compared to total value of agricultural and food production
Definition	Value of production under the quality schemes PDO and PGI (Council Regulation (EC) No 510/2006 compared to total agricultural and food production. Value of production is measured in sales value (in EUR).
Unit of measurement	%
Data source	External study commissioned by the Commission. The 2008 study covered the years 2005, 2006, 2007 and partly 2008. The 2012 study covered the period 2005-2010. A new study is planned covering the period until 2017.
References/location of the data	Data (the value of production) are located in the Member States with the producers under PDO and PGI schemes.
Data collection / dissemination level	Data are available at the producer's level. Their availability depends on the readiness of producer to provide them. There is no systematic data collection established EU wide but some Member States have national data collections. Indicator will be established at EU level, based on an estimation provided by a study.
Frequency	Every four years
Time lag	Approximately 2 years
Comments/caveats	Given the lack of a clear definition of quality, the EU PDO/PGI schemes were taken as a proxy for quality production. The indicator could be biased in case some producers (notably the larger ones) do not provide data. So far this is the only method to obtain data; Member States are reluctant to ensure a systematic data collection of the value of production under PDO and PGI schemes.

INDICATOR C.35	CURRENT CMEF: C.35
Indicator Name	**FARMLAND BIRD INDEX**
Definition	The indicator is intended as a barometer of change for the biodiversity of agricultural landscapes in Europe. Birds are high in the foodchain and therefore are considered good indicators for the overall state of biodiversity. The farmland bird index is a composite index that measures the rate of change in the relative abundance of common bird species that are dependent on farmland. Member States select their own species set, following guidelines from the European Bird Census Council (EBCC). The species basket is different for each Member State, because of their distribution ranges and their different relevance concerning different agricultural habitats in the EU. Population trends are derived from the counts of individual bird species at census sites and modeled as such through time. In the absence of other biodiversity monitoring networks, producing this indicator takes profit of the existing networks of birdwatchers. Population counts are carried out by a network of volunteer ornithologists coordinated within national sampling schemes. Other indicators: An EU aggregated indicator is used in a number of reporting frameworks,: ○ Agro-environmental indicator (AEI) 25: Population trends of farmland birds; http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_population_trends_of_farmland_birds ○ SDGs – Biodiversity: Common Birds Index (Eurostat). http://ec.europa.eu/eurostat/web/sdi/indicators/natural-resources For producing the EU aggregate index, a list of selected species is used (the so-called "EU list of species", currently consisting of 39 species). The national indices for these species are combined into a European index, by using a weighting factor accounting for the national proportion of the total European population, as described in an Atlas of birds. Then the methodology described below is followed for calculating the index.
Unit of measurement	The index is calculated with reference to a base year, when it is set at 100%. Trend values express the overall population change over a period of years.
Methodology	The index for each Member State should be calculated based on the national species list. An index is first calculated for each species independently. The indices for the set of species are then combined on a geometric scale to create a multi-species aggregate index. National indices are compiled by each Member State using common software and methodology. A software modelling tool carrieds out the modelling work for estimating the index. For more detailed information on the methodology: https://pecbms.info/methods/, and the Eurostat indicator metadata.
Data source(s)	• EBCC/RSPB/BirdLife/Statistics Netherlands: the European Bird Census Council (EBCC) and its Pan-European Common Bird Monitoring Scheme (PECBMS), http://www.ebcc.info/pecbm.html Eurostat does not receive any of these data directly from the Member States: • National index: Eurostat, as of 2018, receives data from the OECD, which receives data from national offices who are part of the PECBMS network. • European index: data are transmitted to Eurostat and published in the

	statistics database: Environment/Biodiversity.
References/location of the data	Location of the data: Eurostat, Environment statistics, Biodiversity: • Table env_bio2: national farmland bird index. • Table env_bio3: EU farmland bird index. References: • Eurostat: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agri-environmental_indicator_-_population_trends_of_farmland_birds • EBCC/PECBMS : European Birds Census Council/ Pan-European Common Bird Monitoring Scheme http://www.ebcc.info/pecbm.html • AEI 25 "Population trends of farmland birds"
Data collection level	National, some Member States are not covered. See caveats section. EU level aggregation (on the basis of the number of Member States which delivered data every year. E.g.: in 2008 only 15 Member States delivered data; for the 2014 EBCC/PECBMS updates data is available for 25 EU Member States, from 1990 to 2012).
Frequency	Annual (In principle, these data are updated on a yearly basis at national and EU level. Ability to provide updates of indicators at national level depends on the capacity of the national data providers). Data availability in early 2015: 2008 national data, EU aggregates 2012. For a small number of Member States data are available from 1980 and cover different periods depending on data availability in each Member State.
Timeliness	1-3 years (to check)
Comments/caveats	[Indication capacity]: the interpretation of index in terms of causality between agricultural activities and the trend of the farmland bird populations has to be very cautious. There is abundant literature on the impact of agricultural activities on farmland birds, but there are many other factors affecting the status of their populations, and the relative importance of these factorsalong time is not well understood. There is also a number of methodological caveats that need to be addressed to properly use and interpret this indicator, concerning the methodologies used for the national birds monitoring schemes. The fluctuations between model runs show that small rises or falls in the indicator should be regarded as artifacts. It is best to look only at the trends from the defined baseline. [Readily available?]: 25 EU countries are currently covered. The quantity and quality of data at national level, and the support of national authorities toward these monitoring schemes, are other challenges under analysis. Ability to provide updates of indicators at national level depends on the capacity of the national data providers. [Downscaling] In principle the index can be estimated at national and EU level. Further downscaling would be possible only if sufficient regional coverage be ensured, which for the moment is not the case. [Quality:] he amount of sampling plots/transects and the statistical representativity of birdwatchers widely varies at regional, national and EU levels, potentially affecting the quality of national indices. It is unclear how comprehensive data are (i.e. covering the full territory) when considering the national level.

	There is need to clarify methodological aspects on how the indicator is calculated. Input and output are explicit, but not the methodological details how the information is procesed. As for the time series, the number and type of species chosen from the selected common list by each country should remain stable over time unless solid justification is provided. [Baseline:] The baseline year needs to be defined. In Eurostat's database, data are presented with four different bases: 1990, 2000, the latest year available and the national base year. For SDGs the first year in the time series with sufficient points has been established to be year 2000.

NEW FICHE

INDICATOR C.36	NEW
Indicator Name	**SPECIES AND HABITATS OF COMMUNITY INTEREST RELATED TO AGRICULTURE WITH STABLE OR INCREASING TRENDS**
Definition	This indicator assesses the conservation status trends of those habitats and species of Community interest, i.e. listed in the relevant Habitats Directive annexes, that are considered to be strongly linked to agro-ecosystems. Species and habitats of Community interest are those in danger of disappearance in their natural range, rare or endemic, or characteristic of one or more of the EU biogeographical regions; these species and habitats are listed in the annexes of the Habitats Directive. The existence and long-term survival of some of these habitats and species is strongly linked to the presence of certain agricultural ecosystems; their conservation status is influenced by the management of agricultural systems, the practices implemented, land abandonment, intensification and conversion into other land uses. The Habitats Directive does not explicitly identify species and habitats dependent on agro-ecosystems. The species and habitat composition will vary between biogeographical regions and between Member States.The lists of species and habitats (one per Member State with indication of the relevant biogeographical regions) will be elaborated taking into account the works of inter alia from Halada et al. (2011), Roscher et al. (2015) and European Commission (2014), and then validated by the Member States. For both, species and habitats, the overall assessment of conservation trend is as follows: 'improving +', 'deteriorating ', 'stable =', 'unknown x'.
Unit of measurement	Percentage of assessments with a stable or improving conservation status trend.
Methodology	*I.19 = Number of assessments that indicate an improving or stable trend / Total number of assessments* Number of assessements: depends on total number of species and habitats, and on the number of biogeographical regions where they are represented (e.g. a species present in 2 biogeographic regions will have two assessments).
Data source(s)	Member States regularly report in accordance with Article 17 of the Habitats Directive on the status and trends of habitats and species of Community interest.
References/location of the data	Data is reported to the European Environment Agency (EEA) by MS. The EEA would carry out the necessary calculations.
Data collection level	The impact indicator is foreseen to be applied at the level of the Member States (NUTS 0). Values are assessed at the biogeographical level of each Member State, in such a way that results can be aggregated at the level of the Member States and the EU.
Frequency	Member States report every six years taking the developments over the six-year period into consideration. Next reports due in 2019 (for 2013-2018), 2025 (2019-2024) and 2031 (2025-2030).
Delay	Producing the indicator is estimated to take 6-12 months from reporting time. Delivery time will depend on the reporting timeliness by Member States.
Comments/caveats	[Indication capacity]

	Assessing the conservation status and its trend of species and habitats of Community interest dependent on agriculture will contribute to reflect on the impact of agriculture in maintaining and restoring important components of the EU biodiversity. However: a) there is a variable time lag between changes in agricultural production pattern and the impact on habitats and species, which depend on agro-ecosystems; b) Other factors, such as climate change and invasive species and other huiman pressures, influence the development of those species and habitats; The methodological analysis to come up could still analyse the possibility to add birds species which would be usefull for for arable lands where no habitats and only few Habitats Directive species are defined by the Directive. [Readily available?]: The indicator is under development and therefore not yet available. Significant conceptual progress achieved will be followed by full development and testing. It should be ready by 2020. Possibilities for some weighting factors in the formula (e.g. to reflect representativeness of habitats/species) are being considered. [Downscaling] The indicator could be scalable by biogeographic regions. Options for downscaling at NUTS2 level have to be analysed. [Quality:] The simplicity of this indicator is a strong asset and the focus on trends make it robust. Due to the fact that Member States apply different approaches to collect the data (complete inventories, sampling, expert opinion), the level of accuracy of the data set provided by Member States will vary. It is therefore proposed to study the possibility of developing an index based on the 'Method used' as reported by Member States for most of the data. Such an index could be used to provide contextual information on the robustness and relevance of the impact indicator. [Baseline:] Reporting by Member States does not fit with the CAP timing; the baseline would be set at the beginning of the funding period, and then using the reporting dates (2019-2025-2031). There would persist a gap between the period reported and the CAP implementation period. The mid-term evaluation of the indicator can be problematic due to the legal 6-year frequency of reporting obligations by MS.

NEW FICHE

INDICATOR C.37	
Indicator Name	**Water use in agriculture**
Definition	The WATER EXPLOITATION INDEX PLUS (WEI+) 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. It is an advanced version of the WEI. The WEI+ addresses regional and seasonal aspects of water scarcity. In addition, it also takes water use (water abstraction minus water returned) into account. It identifies areas (e.g. sub-basins or river basins) prone to water stress due to exceeding water abstraction and use on a seasonal scale in relation to the resources available.
Unit of measurement	WEI+ is expressed as a percentage of water use over the renewable water resources available. < 20% = non-stressed area; > 20% = under stress; 40% = severe stress and clearly unsustainable resource use.
Methodology/ formula	**WEI+** $= \frac{\text{Water use}}{\text{Renewable water resources (RWR)}}$ RWR= Outflow + (Abstraction – Return) + Change in storage Change in storage= Water in (Lakes + Reservoirs) – Water out (Lakes + Reservoirs) Water use= Abstraction – Return (all economic sectors covered) As an impact indicator for the CAP, two sub-indicators could be derived from the WEI+: - **A sub-indicator expressing the relative pressure of agriculture compared to other economic sectors**, at national level and on an annual basis. - **A sub-indicator expressing the change over time in the volume of water used by agriculture**, at national level and on an annual basis. More details on the calculation and units of measurement are being developed.
Data source	- **WISE SoE 3** - **Eurostat and OECD joint Questionnaire on Inland Waters** - **National Statistical Offices** (on ad-hoc basis, not part of formal data collection by the EEA) - **E-OBS gridded dataset** (on hydro-climatic variables) - **'Return'**: The average water return rate, which is implemented in the WEI+, is estimated to be 30%, based on the existing literature. This is considered adequate for assessments at European scale.
References/location of the data	- **WISE SoE 3:** https://rod.eionet.europa.eu/obligations/184 - **Eurostat and OECD Joint questionnaire** https://ec.europa.eu/eurostat/documents/1798247/6664269/Data+Collection+Manual+for+the+OECD_Eurostat+Joint+Questionnaire+on+Inland+Waters+%28version+3.0%2C+2014%29.pdf/f5f60d49-e88c-4e3c-bc23-c1ec26a01b2a - **National Statistical Offices**: on MS nat. stat. offices website

	- **E-OBS gridded dataset:** https://www.ecad.eu/download/ensembles/download.php https://www.knmi.nl/over-het-knmi/about
Data collection level	- WISE SoE 3: MS level, River Basin District or Sub Unit level. - Eurostat and OECD joint Questionnaire: MS level - National Statistical Offices: aggregated data at MS level
Frequency	The updating frequency will be carried out when demanded. Result will depend on updating frequency of data sources. - WISE SoE 3: annual on MS level or monthly/ seasonal/ annual River Basin District (RBD) or Sub Unit (SU) level. All on voluntary basis. - Eurostat and OECD joint Questionnaire: annual at MS level - National Statistical Offices: no formal consultation/reporting process. - E-OBS gridded dataset: published daily, then aggregated to monthly scale.
Timeliness	
Comments/caveats	[Indication capacity] It must be noted that the WEI+ is originally conceptually not meant to be an indicator for policy monitoring; it sets environmental conditions in relation to pressures from sectors. It allows estimating the pressure a sectors exerts on the natural water resources, compared to other sectors. For both sub-indicators it should be further explored how much a comparison between years is conceptually reasonable when considering the level of gap filling. The "WAT 006- Water use intensity for crop production" indicator developed by EEA could be used as supplementary information to compare water inputs with the gross value added of crop production.*[Readily available?]:* Under development and not fully available. Next steps: - Q1 2019: WEI+ will be available at MS level (currently, at River Basin district and sub-basin level). *[Downscaling*] There are different options to present the information of the WEI+: - at MS level on annual resolution, or - at finer spatial and temporal scales i.e. RBD or SU level on seasonal resolution. Both options come with pros and cons, notably on the interpretation of the results. For evaluation purposes, all the above ways to express the indicator could be useful. *[Quality:]* Some caveats remain: - WISE SoE 3: holds large gaps in the data coverage particularly on water abstraction and water use for irrigation. Since 2010, the reporting rate of Member States on the water abstraction for irrigation has been dramatically decreasing. No or very low reporting together with large breaks in the time series on water abstraction for agriculture from some MS. - Similar to the streamflow data which needs large gap filling to be implemented with the Joint Research Centre (JRC) LISFLOOD data. - Eurostat and OECD Joint questionnaire: data presents large temporal and spatial gaps in time series. That limits to provide robust overview on the

	irrigation pressure on renewable water resources. - National Statistical Offices: minor benefit as websites are in national languages and it is difficult to find data sets and also definitions are very diverse. - "Return": Some of Member States have reported data on this variable during the last data-reporting stream in 2018 but it is still far from being sufficient. *[Baseline:]*

NEW FICHE

INDICATOR C.38	
Indicator Name	**WATER QUALITY** **GROSS NUTRIENT BALANCE ON AGRICULTURAL LAND - nitrogen**
Definition	The indicator represents the potential threat to water quality of nitrogen surplus or deficit in agricultural soils. The Gross nutrient balance on agricultural land represents the total potential threat to the environment stemming from nitrogen and phosphorous surplus or deficit in agricultural soils. The **gross nutrient balance for nitrogen** will be used, as it provides an indication of potential water pollution due to nitrogen surplus in agricultural soils. It links the agricultural activities with the environmental impact and identifies the factors that determine the nitrogen surplus. Mineral and organic fertilisers introduce nitrogen to the soil while harvesting of crops, removal of residues and run-off remove nitrogen from the soil. A lack of nitrogen may cause degradation in soil fertility and erosion, while an excess may cause surface and groundwater (including drinking water) pollution and eutrophication. Nitrogen balance surpluses are monitored for the purposes of the Water Framework Directive and for the Nitrates Directive. The following indicator already exists: Agri-environmental indicator 15 Gross Nitrogen Balance: Potential surplus of nitrogen on agricultural land, http://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_gross_nitrogen_balance The indicator is part of the Resource Efficiency Scoreboard, the Agri-environmental indicators, and the SDG indicators.
Unit of measurement	kg N/ utilised ha/ year (some countries prefer to use the fertilised areas, i.e. have removed rough grazings).
Data source	Statistical Office of the European Union (Eurostat), based on data reported by the countries (only available for those countries that report). Data come from multiple sources including the consumption of mineral fertilisers and seeding and plant material, livestock population and manure import and exports, use of other organic fertilizers in agricultural production, atmospheric deposition, biological nitrogen fixation, crop and fodder production and crop/fodder residues removal or burning, and areas of various types of crops. The land types included are arable land, permanent crops and permanent grassland. Further, coefficients are required, among other to estimate nutrient excretion per livestock and fodder yields. The EU-28 aggregate is also estimated.
References/location of the data	Eurostat: Gross nutrient balance (aei_pr_gnb) http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=aei_pr_gnb&lang=en https://ec.europa.eu/eurostat/cache/metadata/en/t2020_rn310_esmsip2.htm
Data collection level	National, covering all countries of the EU Data at national level and annual national balances can mask important regional or monthly variations.
Frequency	Data are annual.

	Indicator is updated every two years.
Delay	> T+2 years New data points are disseminated within 3 years after the reference year.
Comments/caveats	[*Indication capacity*] As the indicator integrates the most important agricultural parameters with regard to potential nitrogen surplus, it is a robust measure for nutrient leaching risk, directly linked with agriculture. However, the indicator is only indirect; it shows the potential risks, depending on local soil conditions and farm management practices, rather than the actual water quality trends. The indicator is captive of the methodologies used to calculate coefficients and the availabilities of national coefficients, plus the recalculation of coefficients when national practices change. The use of Tier 1 approaches may prevent tracking progress and policy effectiveness. With no work on the coefficients, the only changes recorded are related to changes in production. Data are not comparable between countries, but the trends are. *[Readily available?]:* The indicator is already available 2004-2015 for EU-28. As of reference year 2016, it will be available for all EU MS who submit the necessary data to Eurostat, currently around 17 countries. *[Downscaling*] In the future, it could be considered how to make data available at regional (NUTS 2) level, using JRC modelling data, or with MS data when they have them aviailable. *[Quality:]* The indicator is produced according to the high-level quality standards of European Statistics. Details on accuracy can be found in the metadata of the source datasets. There is high uncertainty in some coefficients used. For a more accurate measure of nitrogen leaching risk, total ammonia emissions (see I14) could be subtracted from the Gross Nitrogen Balance. *[Baseline:]*

INDICATOR C.38	CURRENT CMEF: C.40
Indicator Name	**WATER QUALITY** **GROSS NUTRIENT BALANCE – phosphorus**
Definition	**Gross Phosphorus Balance (GNB-P)**: Potential surplus of phosphorus on agricultural land (Gross Phosphorus Surplus). The gross nutrient balance provides an estimate of the potential water pollution. It represents the total potential threat of phosphorus surplus in agricultural soils to the environment. When P is applied in excess, it can cause surface and groundwater (including drinking water) pollution and eutrophication.
Unit of measurement	kg P/ ha/ year.
Data source	Statistical Office of the European Union (Eurostat), based on data reported by the countries (only available for those countries that report).
References/location of the data	Eurostat: Gross nutrient balance (aei_pr_gnb) http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=aei_pr_gnb&lang=en https://ec.europa.eu/eurostat/cache/metadata/en/t2020_rn310_esmsip2.htm
Data collection level	National, covering all countries of the EU
Frequency	Data are annual. Indicator is updated every two years.
Delay	> T+2 years New data points are disseminated within 3 years after the reference year.
Comments/caveats	

INDICATOR C.38	**CURRENT CMEF: C.40**
Indicator Name	**WATER QUALITY** **-NITRATES IN GROUNDWATER**
Definition	Nitrate pollution is indicated by current values and trends in nitrate concentrations in groundwater and rivers, expressed in mg NO3/l for groundwater and mg N/l for rivers. This indicator shows the potential impact of agriculture on groundwater quality due to pollution by nitrates. It consists on an index measuring the % of groundwater monitoring sites with nitrates' concentration (NO3-mg/l) over 50 mg/l for groundwater. It makes a linkage with the Nitrates Directive (91/676/EEC) aiming to control nitrogen pollution and requiring Member States to identify groundwaters that contain more than 50 mg/l nitrate. The following related indicators already exist, but there might be some differences with I.16: - Agri-environmental indicator 27.1 Water quality – Nitrates in freshwater: nitrate pollution of water. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Agri-environmental_indicator_-_nitrate_pollution_of_water - CSI 020 Nutrients in freshwater (European Environment Agency). Concentrations of nitrate in rivers and groundwater. https://www.eea.europa.eu/data-and-maps/indicators/nutrients-in-freshwater/nutrients-in-freshwater-assessment-published-6 Indicator I.15 Gross Nitrogen Balance on agricultural land, supplements this water quality indicator.
Unit of measurement	% of groundwater stations above the concentration threshold (50 mg NO3/l)
Data source	Data from the Nitrates Directive reporting system (DG environment): national and river basin level. European Environment Agency (EEA) – Nutrients in freshwater: Data voluntarily reported by Member States (EEA Member Countries) via the WISE/SOE (State of Environment) data flow annually. (Potential supplement)
References/location of the data	Location of data: EEA website, based on data reported to EIONET: Waterbase_rivers, Waterbase_groundwaters, CSI020 , http://www.eea.europa.eu/data-and-maps/indicators/nutrients-in-freshwater References: - European Environment Agency (EEA): WISE-SoE Water Information System for Europe – State of Environment - Council Directive 91/676/EEC concerning the protection of waters against pollution by nitrates from agricultural sources.
Data collection level	- National and river basin level
Frequency	- Member States have obligation to report every 4 years. - Data from the European Environment Agency: annual but voluntary, could supplement.
Delay	Data from the European Environment Agency: Data available 1 ½ year later
Comments/caveats	[Indication capacity]:

	- It is acknowledged that agriculture is a main contributor to diffuse nitrates pollution. It is difficult to distinguish the contribution of agriculture compared to other influencing factors (in particular wastewater). - Inter-annual variation in hydrology may give rise to variation in river nitrate concentrations, but this does not affect long-term trends. - Legacy problem (long period of residence). There could be a significant time lag between the application of nitrogen fertiliser and changes in agricultural practices and the nitrate content in groundwater, depending on the hydrogeological conditions (may be up to 40 years). [Readily available?]: An indicator (AEI 27.1) is available, but has not been updated since 2009, needing checking on the sources of information (unofficial MS's reporting) used for its estimation. The current AEI 27.1 is built as follows: for groundwater, groundwater monitoring station data are used for the current situation and groundwater bodies for the time series and trend analysis. However, the density and the stability of the monitoring station networks varies among Member States. [Downscaling]: Nationally averaged groundwater nitrate concentrations are all below the Nitrates and Drinking Water Directives limit of 50 mg NO_3/l. National aggregation masks considerable variation at the scale of individual groundwater monitoring stations (e.g. approx. 13 % of groundwater monitoring stations across Europe, in 2009, exceeded the 50 mg NO3/l limit). [Quality]: The sampling frequency and density of stations monitored varies between countries. Similarly, the computation of the percentage of stations above the limit of 50 mg NO3/l is not meaningful if the stations location and sampling frequency is not spatially representative, or changes from one year to another. According to reports on Nitrates Directive: 'efforts are needed to ensure that the turnover of monitoring stations does not affect the accuracy of water quality trends'. The data provided via WISE-SoE Groundwater might be for the future combined with the data coming from the Nitrate Directive (which reflect more the impact of agriculture). DG Environment and EEA are together with Member States (MS) working on a streamlining of the different MS reporting on water quality including coordination of WISE-SOE and Nitrate Directive reporting. [Baseline:]

INDICATOR C.39	
Indicator Name	**Soil organic matter in arable land**
Definition	The indicator estimates the **total organic carbon content in agricultural soils**. Soil organic carbon, the major component of soil organic matter, is extremely important in all soil processes. Organic matter in the soil is essentially derived from residual plant tissues, while microbial, fungal and animal contributions constitute a small part of its total amount. Microbes, fungi and animals decompose organic matter more or less efficiently depending on temperature, moisture and ambient soil conditions. The annual rate of loss of organic matter can vary greatly, depending on cultivation practices, the type of plant/crop cover, drainage status of the soil and weather conditions. There are two groups of factors that influence inherent organic matter content: • natural factors (climate, soil parent material, land cover and/or vegetation and topography), • and human-induced factors (land use, management and degradation) de Brogniez, D., Ballabio, C., Stevens, A., Jones, R. J. A., Montanarella, L. and van Wesemael, B. (2014). The indicator is expressed as an estimate of the total Soil Organic Carbon stocks in topsoil (0-20 cm) of EU Member States. Also the mean Soil Organic Carbon concentration per Member State is calculated, though solely for orientation purposes since it has very limited scientific meaning given the high variability of Soil Organic Carbon concentration in different areas.
Unit of measurement	**Total Soil Organic Carbon Content in agricultural land**: megatonnes (Mt); **Mean SOC concentration in agricultural land:** g/kg.
Methodology/Formula	The LUCAS Land Use and Coverage Area provides a pan-European soil component measuring the soil organic carbon content in more than 20.000 topsoil (0-20 cm) samples. The calculation is based on the map of topsoil organic carbon content of Europe elaborated by the Joint Research Centre of the European Commission. It is generated using a generalized additive model[4] from the estimates of the first European harmonized geo-references topsoil (0-20 cm) database, which arises from the Land Use/Cover Area frame statistical Survey(LUCAS). https://onlinelibrary.wiley.com/doi/full/10.1111/ejss.12193
Data source(s)	• Joint Research Centre (JRC Ispra) – Map of Topsoil Carbon Content of Europe based on Land use/cover Area frame statistical Survey (LUCAS). The dataset (2015), consisting on 27.000 top-soil samples across Europe, provides maps for Topsoil Soil Organic Carbon in EU-25 that are based on LUCAS 2009 soil point data through a generalized additive model[5]. The LUCAS soil Component was extended to Bulgaria and Romania in 2012. The maps produced are freely available for download from the European Soil Data Centre website http://eusoils.jrc.ec.europa.eu/.

[4] European Journal of Soil Science, January 2015, 66, 121-134

[5] https://esdac.jrc.ec.europa.eu/content/topsoil-soil-organic-carbon-lucas-eu25

	• Other sources: potential sources available at national level (studies, surveys, reports), models and estimations.
References/location of the data	• European Soil Data Centre (ESDAC) - https://esdac.jrc.ec.europa.eu/ • Other sources: national studies, surveys, reports
Data collection level	National (NUTS 0)
Frequency	Every 3 years, corresponding to frequency of LUCAS sampling. Currently, datasets for 2009-2012 and 2015 are available and completed, while data of 2018 campaign are under analysis.
Timeliness	The estimated delay from soil sampling to publication of results is two years.
Comments/caveats	[Indication capacity] Assessing the soil organic carbon is essential as this is a basis for all soil processes. However it can vary highly depending on natural (climate, land cover, soil parent material, etc.) and human induced factors such as land use and management. It is important that the uncertainty associated with the predicted values is understood by the end-users and should encourage careful use and interpretation of the spatial values. [Readily available?]: The indicator is available. [Downscaling] The indicator could be downscaled to NUTS 2 level. Sufficiency of soil samplimg plots per region should be checked. [Quality:] The map produced gives the most up-to-date general picture of topsoil organic carbon content at the European Union scale. The assessment is based on LUCAS survey which provides harmonised and comparable statistics across the EU. Results of LUCAS survey are subject of multi-steps quality assurance system. This method is not intended to be a substitute for national scale or local maps that are based on more detailed spatial information. [Baseline:] The Commission is currently analysing the LUCAS Soil Organic Carbon data comparing LUCAS 2015 data with previous data sets (LUCAS 2009 and 2012). This analysis will provide more information on the soil organic carbon trends in arable land and grassland in particular and this could serve as baseline or if available, the results of the LUCAS survey of 2018. (It should be considered that there are 3 years delay between sampling and publication.)

NEW FICHE

INDICATOR C.40	CURRENT CMEF: C.42
Indicator Name	**Soil erosion by water** **Percentage of land in moderate and severe soil erosion on agricultural land**
Definition	This indicator consists of **2 sub-indicators**: 1) **Estimated rate of soil loss by water erosion**; 2) **Estimated agricultural area affected by a certain rate of soil erosion by water**. (expressed as share of the total agricultural area). These subindicators assess potential soil loss by water erosion processes (rain splash, sheetwash and rills) and identify the agricultural areas susceptible to a rate of soil erosion considered unisustainable, within the following thresholds: (moderate i.e. >5 t/ha/year to severe and severe i.e. >10 t/ha/year). The two soil erosion sub-indicators have been produced by the Joint Research Center of the European Commission (JRC-Ispra), on the basis of an empirical computer model. Assessments of soil erosion are based on the output of an enhanced version of the Revised Universal Soil Loss Equation model (named RUSLE2015) (JRC-Ispra) which was developed to evaluate soil erosion by water in the European Union[6]. The model provides an estimate of soil erosion by water on the basis of scientific knowledge, peer review published manuscripts, technical judgment and input datasets. RUSLE2015 improves the quality of estimation by introducing updated (2010), high-resolution (100m) and peer-reviewed input layers of rainfall erosivity, soil erodibility, slope steepness and slope length, Land Cover and management and the support practices applied to control erosion. The Rainfall Erosivity was calculated based on high-resolution temporal rainfall data (5, 10, 15, 30 and 60 minutes) collected from 1,541 well-distributed precipitation stations across Europe. The Soil erodibility is estimated for the 20,000 field sampling points included in the Land Use/Cover Area frame (LUCAS) survey. The Slope Steepness and Slope Length have been calculated using the latest Digital Elevation Model (DEM) at 25m. Only soil erosion resulting from rains plash, overland flow (also known as sheetwash) and rill formation are considered. Soil loss caused by gully erosion is not predicted by RUSLE. The total area of agricultural land has been defined on the basis of 2012 Corine Land Cover (CLC) classes and includes the area of arable and permanent crops, pastures and permanent grasslands. Estimated data on soil erosion are published following a qualitative assessment and compared with EIONET country estimates (available for 9 countries) showing that the model output matches general erosion patterns across Europe. A quantitative validation is foreseen to take place against field measurements on long-term erosion plots. The following indicators also exists: • Agro-environmental indicator (AEI) 21 – Soil erosion. https://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_soil_erosion • Eurostat is publishing a full data set on soil erosion from JRC, including all levels of erosion, and an SDG/resource efficiency scoreboard indicator which is the severe soil loss >10 tonnes per ha https://ec.europa.eu/eurostat/statistics-explained/index.php?title=SDG_15_-_Life_on_land_(statistical_annex)#Estimated_soil_erosion_by_water

[6] Panos et al. "The new assessment of soil loss my water erosion in Europe', Environmental and Science Policy 54(2015) 438-447

Unit of measurement	1) t/ha/year (Estimates of soil loss by water erosion in Europe are expressed in t ha^{-1} $year^{-1}$ for cells of 100m x 100m for the EU) 2) % (and ha) agricultural areas affected by moderate and severe soil erosion
Data source(s)	• Joint Research Centre (JRC) – European Soil Data Centre (ESDAC); • Input data sources used for the model: LUCAS Topsoil 2009, European Soil Database, Corine Land Cover 2006/2012, Rainfall Erosivity Database in Europe (REDES), Copernicus Remote Sensing, Eurostat Statistics, Digital Elevation Model (DEM), Good Agricultural Environmental Conditions (GAEC), Lucas Earth Observations 2009/2012 • Potential sources available at national level (studies, surveys, reports) can be explored and used.
References/location of the data	Joint Research Centre (JRC) • European Soil Data Centre (ESDAC) http://esdac.ec.europa.eu Eurostat • http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=aei_pr_soiler&lang=en (full data set) • https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=sdg_15_50&plugin=1 (indicator table) National studies, surveys, reports.
Data collection level	National (NUTS 0) and regional (NUTS 2-3) level (based on 100m cell – model output).
Frequency	Every 3 years (to check).
Timeliness	3 years delay between sampling and publication.
Comments/caveats	[Indication capacity] Assessing the state and total soil erosion is important as soil degradation results in loss of soil fertility, loss of carbon and biodiversity, lowers the water retention capacity and makes distruption of gas and nutrient cycles. Soil erosion rates may change due to change in land cover or soil management (farming) practices (e.g. soil cover, reduced tillage, contour farming, terraces, grass margins). To evaluate significant changes in soil erosion over time it should be noted that an analysis over a time period of at least 10-15 years would be necessary (e.g. comparing the current situation to the 2000s by retrospectibve modelling and time series). The time interval of 6 years (e.g. 2000-2006-2012 for which data are available) is limited and differences are primarily due to changes in land cover (as indicated by Corine Land Cover data). Therefore, any conclusion must be drawn with caution. [Readily available?]: The indicator is available. [Downscaling] The results of the soil erosion indicators are aggregated at NUTS 3 and NUTS 2 level and Member State level. [Quality:] The soil erodity is estimated for the 20 000 field sampling points inclided in the Land Use/Cover area frame (LUCAS) survey. LUCAS provides harmonised and comparable statistics across the EU. Results of LUCAS survey are subject of multi-steps quality assurance system. [Baseline:] An update of the soil erosion dataset to be published by JRC in early 2019, based on data from LUCAS 2015 & Farm Structure Survey 2016 could be used as baseline.

NEW FICHE

INDICATOR C. 41	
Indicator Name	**INCREASE SUSTAINABLE ENERGY IN AGRICULTURE** **Production of renewable energy from agriculture and forestry**
Definition	The indicator is a composite indicator of renewable energy from agriculture and forestry. This indicator measures: • the production of renewable energy from agriculture and forestry, • % share of this in the total primary energy production of renewable energy It is broken down by sector: • Production of renewable energy from agricultural biomass • Production of renewable energy from forestry biomass The **production of renewable energy** from **agricultural biomass** is calculated by summing the amount of energy from the following: • Biodiesel from oilseeds crops • Bioethanol from starch/sugar crops • 2nd generation biofuels (from non-food cellulosic materials) • Agricultural biogas (livestock manure and energy crops, waste and residues) • Where available, energy crops for electricity or heat (including short rotation coppice) • Where available, Agricultural crop residues for electricity or heat **Production of renewable energy from forestry biomass** covers: The forest biomass for renewable energy production, calculated by summing the amount of energy from: • Wood provided directly from forestry (fuel wood, wood chips, bark, shavings, forest residues) or transformed from any of the above (pellets, briquettes etc.) • forest-based industry by- and co-products in EU used for energy production (e.g. sawdust, black liquor)
Unit of measurement	**Production of renewable energy from agricultural biomass:** The total production of renewable energy from agriculture is the sum of biodiesel, bioethanol and biogas production, agricultural biomass for heat and power all expressed in ktoe (**kilotons of oil equivalent**). The following conversion factors, from the EUROSTAT[7] should be used. If other conversion factors are used, Member State should report the values. • 1 t biodiesel = 0,86 toe • 1 t bioethanol = 0,64 toe

[7] https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Tonnes_of_oil_equivalent_(toe)

	Production of renewable energy from forestry biomass: Member States can use the reporting obligations under the Governance of the Energy Union Regulation and/or the Progress Reports under the Renewable Energy Directive. Primary energy production from forestry biomass is expressed in ktoe (kilotons of oil equivalent) **Biomass:** All Reporting on biomass used for energy, if available, should be done in 1000 m3 or in 1000 tonnes of dry matter for forestry and 1000 tonnes of dry matter for agriculture.
Data source(s)	Eurostat -Energy statistic Governance of the Energy Union Reporting, especially: • Annex IX • Annex VII, Part 1, paragraph (b) and (g) • Annex VII, Part 1, paragraph (m) (1) for forest biomass • Annex VII, Part 1, paragraph (m) (2) for agricultural biomass for heat and power MS Progress Reports according to Article 22 of Directive 2009/28/EC Complete energy balances - annual data
References / location of the data	Eurostat –Energy Statistics Eurostat – Agri-environemntal indicators Reporting under the Governance of the Energy Union Regulation Progress Reports under the Renwable Energy Directive
Data collection level	National (NUTS 0)
Frequency	Annual
Starting point	Beginning of the CAP programming period
Timeliness	2 years
Comments/caveats	[Indication capacity] The category "energy from agricultural biogas", even though it predominantly covers agricultural biogas, also contains some biogas from municipal solid waste etc. [Readily available] Data are available [Downscaling] MS have the poosbility to provide data at regional level if they are asked. So far, data are available at MS level. [Quality] [Baseline] Baseline can be set at 2020.

INDICATOR C.42	CURRENT CMEF: C.44
Indicator Name	**Energy use in agriculture, forestry and food industry**
Type of indicator	**Environment**
Definition	This indicator measures the **direct use of energy in agriculture, forestry and food processing** The indicator is expressed in various ways: in kilotons, as a share of total final energy consumption and for the direct use of energy in agriculture and forestry as kg of oil equivalent per ha of UAA and forest land. This indicator is based on Eurostat data from the joint IEA/OECD-Eurostat-UNECE questionnaires. There are some limitations of data and sources: • Although energy statistics are of high quality in general, the data on energy consumption by agriculture are of lower quality due to errors and incomplete data. • The indicator only refers to direct use of energy by agriculture. Indirect energy used in agriculture for fertilisers, pesticides, animal feed and agricultural machinery, which are produced using large amounts of energy, is not included. • Data on energy consumption by agriculture from the questionnaires include the use of energy by forestry. Though data on energy consumption by fisheries should be reported separately since 2004, many data on agriculture/forestry, even after 2004, include (part of) energy consumption by fisheries. Energy consumption by agriculture may therefore be overestimated in countries with significant forestry or fisheries sectors. • Data on food processing are taken from the category "Food and tobacco" and therefore include the NACE category "Manufacture of food products, beverages and tobacco products". Data on food processing are thus overestimated.
Unit of measurement	- total in kilotons (1000 tonnes) of oil equivalent, ktoe For agriculture and forestry: - kg of oil equivalent per ha of UAA
Data source	Eurostat.
References/location of the data	Direct use of energy in agriculture and forestry: Eurostat – Energy Statistics TABLE nrg_100a - PRODUCT all products - INDIC_NRG Agriculture/Forestry Direct use of energy in food processing: Eurostat – Energy Statistics TABLE nrg_100a - PRODUCT all products - INDIC_NRG Food and tobacco Final Energy Consumption: Eurostat – Energy Statistics TABLE nrg_100a - PRODUCT all products - INDIC_NRG Final energy consumption UAA: Eurostat TABLE apro_acs_a Crop statistics (from 2000 onwards) Forest area: Eurostat TABLE for_area - INDIC_FO Forests
Data collection / dissemination level	National (NUTS 0).

Frequency	Every year for energy statistics. Every 5 years for forest area (e.g. 2010, 2015). Every year for UAA crop statistics.
Timeliness	2 years
Comments/caveats	Germany has not reported data on direct use of energy in agriculture/forestry.

NEW FICHE

INDICATOR C. 43	**CURRENT CMEF: C.45**
Indicator Name	**GHG EMISSIONS FROM AGRICULTURE**
Definition	This indicator is composed of two sub-indicators presenting all anthropogenic emissions from agriculture, except for fuel combustion emissions and sewage emissions. It presents the cumulative value of the two sub-indicators: **Indicator 1) Non-C02 GHG emissions from agriculture** Aggregated annual emissions of methane (CH4) and nitrous oxide (N2O) from agriculture reported by Member States under the 'Agriculture' sector of the national greenhouse gas inventory submitted to the United Nations Framework Convention on Climate Change. That sector 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). More in detail, the Governance of the Energy Union, that will enter into force from 2021 onwards, will require MS to report Non-CO2 emission related parameters for: (a) Livestock: dairy cattle [1000 heads], non-dairy cattle [1000 heads], sheep [1000 heads], pigs [1000 heads], poultry [1000 heads] (b) Nitrogen input from application of synthetic fertilizers [kt nitrogen] (c) Nitrogen input from application of manure [kt nitrogen] (d) Nitrogen fixed by N-fixing crops [kt nitrogen] (e) Nitrogen in crop residues returned to soils [kt nitrogen] **Indicator 2) CO2 GHG emissions and removals of agriculture soils** Aggregated annual emissions and removals of carbon dioxide (CO2) from cropland and grassland, reported by Member States under the 'Land Use, Land Use Change and Forestry Regulation' (LULUCF) sector of the national GHG inventory to the UNFCCC. It should cover all carbon pools as defined in the LULUCF Regulation. This indicator doesn't include Emissions of CO2 from the energy use of agricultural machinery, buildings and farm operations, which are included in the 'energy' inventory under UNFCCC, or emissions from production of inputs.
Unit of measurement	Tonnes (Kilotonnes or Milliontonnes) of CO2 equivalents per year. Relative emissions are reported as a percentage of the emissions in the reference year 1990. Specifically for CO2 emissions, the change in net emissions is repoted as a % change to the average net emissions in the base period from 2005 to 2009, as defined in LULUCF Regulation.
Methodology/formula	Sum of emissions from above mentioned cathegories. Member States calculate emissions by source category using standard methodologies (2006 guidelines of the Intergovernmental Panel on Climate Change - IPCC) according to a common reporting framework agreed under the UNFCCC. All GHGs are accounted on the basis of their global warming potential (GWP) over a 100 year time period. GWP values are taken from IPCC Fourth Assesment Report (2007): CO2= 1; CH4= 25; N2O = 298. Geospatial data sources should be used for meeting IPCC approach 3 for LULUCF, such as services from the Copernicus programme, IACS/LPIS, LUCAS and others compliant with the INSPIRE directive. According to the LULUCF regulation, Annex I Member States have to report on the following carbon

	pools: above-ground biomass, below-ground biomass, litter, deadwood, soil organic carbon, HWP. Tier 2 methodologies (country-specific emission factors) are required for category carbon pools, while tier 3 (emission models) are encouraged.
Data source(s)	The inventory is based on on national submissions to the UNFCCC and to the EU Monitoring Mechanism of CO2 and other GHG emissions and removals within the area covered by EU Member States (i.e. domestic emissions taking place within EU territory) - Monitoring Mechanism Regulation (EU No 525/2013), reported annually. The requirements for monitoring and reporting under the Effort Sharing Regulation and LULUCF Regulation should be used. It is compiled and held by the European Environment Agency (EEA) and the European Topic Centre for Air Pollution and Climate Change Mitigation (ETC/ACM).
References/location of the data	**1) GHG emissions from agriculture** • Annual EU GHG inventory • CH4 and N2O emissions from agriculture are provided in CRF Tables which includes standard reporting table (SRT) **2) CO2 GHG emissions and removals of agriculture soils** • CO2 emissions from agricultural soils are recorded in CRF Tables—European Environment Agency (EEA), which includes standard reporting table (SRT) for sector 4 (LULUCF). • The reporting also has to take into account the MS compliance report as specified in the Article 14 of the LULUCF Regulation. The full set of data on GHG emissions and removals, sent by countries to the UNFCCC and the EU GHG Monitoring Mechanism (EU Member States) is available at the EEA webpage: National emissions reported to the UNFCCC and to the EU Greenhouse Gas Monitoring Mechanism —European Environment Agency (EEA). The web-based tool EEA GHG viewer provides access and analysis of the data contained in the annual EU's GHG inventories since 1990. The EEA GHG data viewer shows emission trends for the main sectors and allows for comparisons of emissions between different countries and activities. This data set can be consulted at: http://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer Data are also published in the original format in which they were submitted to the UNFCCC: https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018 The same data are also published in the UNFCCC database: http://di.unfccc.int/time_series and the Eurostat database: http://ec.europa.eu/eurostat/product?mode=view&code=env_air_gge
Data collection level	Member States
Frequency	Data collected annually
Timeliness	Y- 2
Comments/caveats	[Indication capacity] IPCC guidance allows countries to report GHG emissions

	and removals according to different tiers. For most agriculture and LULUCF emissions and removals, tier 1 is based on the use of activity data (e.g. agricultural production statistics) and global emission factors. Tier 2 follows the same approach but applies nationally defined emission factors. Tier 3 involves the use of models and higher order inventory data tailored to national circumstances. Methodologies for GHG emission estimates should follow IPCC guidance, but need not be identical across Member States. In particular, when using lower tiers, GHG emission estimates do not capture the effects of all mitigation measures that are supported by the CAP. That would require a high level of stratification of activity data, and corresponding information on emission factors, which often is not available. As a result, GHG emission estimates, in particular in the 'agriculture sector' (non-CO2 gases) may not reflect the impact of all measures put in place and have a high level of uncertainty. However, the bulk of emissions and removals is captured by low-tier methods. For example, the bulk of emissions in relation to agricultural soils is caused by the cultivation of organic soils and the conversion to grasslands. According to the LULUCF regulation, Annex I Member States have to report on the following carbon pools: above-ground biomass, below-ground biomass, litter, deadwood, soil organic carbon, HWP. However MS can decide not to include certain carbon pool provided that carbon pool is not a source (Article 5.4 of the LULUCF Regulation). For each of these carbon pools Member State can chose a different Tier level. [Readily available] Data are already submitted by MS. The European Union, as a party to the UNFCCC, reports annually on GHG inventories from the years 1990 to (t-2) for emissions and removals within the area covered by its Member States (i.e. domestic emissions taking place within its territory) [Downscaling] Member States are encouraged to improve GHG inventories towards higher tiers, in accordance with the 2006 IPCC Guidelines for National Greehouse Gas Inventories, considering the cost-effectivness, which would allow demonstrating the effects of technological improvements. Higher tiers would better reflect the possibility to downscale for inferences at more local levels. It is recognised that data constraints limit the level of information in some Member States for this indicator. The situation should improve over time as inventories become better developed. [Quality] Main problem is linked to the fact that MS can use different tiers, linked to the availability of more specific data and coefficients, for example with high spatial resolution and sufficient detail on mitigation measures. Thematic resolution can also be very important, e.g. animal sub-categories, different farming systems etc. [Baseline] Relative net emissions are reported as a percentage of the emissions in the reference year 1990.

NEW FICHE

INDICATOR C.44	**NEW**
Indicator Name	**Index of FARM RESILIENCE**
Definition	The improving farm resilience is a composite index of 5 impact indicators, selected on the base of their relevance to the resilience to climate change of the farming sector. The main purpose of this diffusion index is to summarize overall trends of selected components toward increasing farm resilience. It compares the difference between the proportion of the components that registered negative growth during the programming period and those that registered a positive growth in the same period. Positive numbers imply that most indicators increases. The absolute value of the differences between two periods are adjusted pedending on its positive or negative contribution to resilience. Throught its components it captures the economic, biophysical, landscape and resource use dimensions. **COMPONENTS:** **- I.3 Reducing farm income variability: evolution of agricultural income** The stability of farm-level income provides an indication of farm resilience to shocks (economic or climatic). Farmers' choices of business activities and practices affect their capacity to face climate change and extreme weather events. Moreover, a stable income can also enable farm investments geared towards risk reduction. **- I.11 Enhancing carbon sequestration: increase the soil organic carbon** A higher level of soil organic carbon increases crop resilience to climate change through several biophysical mechanisms: better water retention, better nutrient retention, reduced soil compaction, higher soil biodiversity. **- I.20 Enhanced provision of ecosystem services: share of UUA covered with landscape features** Landscape features can also contribute to increased resilience and protection against extreme weather events, for example by reducing the speed of winds, protecting against pest and diseases through biodiversity, providing shelter for grazing livestock, mitigating heat through vegetation, increasing biodiversity at farm level, supporting pollination, or offering options for farm income diversification. **- I.13 Reducing soil erosion: Percentage of land in moderate and severe soil erosion on agricultural land** Soil being a limited resource, a reduced soil erosion enhances farm resilience. Moreover, farming practices preventing soil erosion typically also mitigate the effects of extreme events such as flooding or intense precipitations. **- I.15 Reducing pressure on water resource: Water Exploitation Index Plus (WEI+)** Water availability pressure is directly linked to the resilience against

	drought and changing rainfall patterns. The water exploitation index plus (WEI+) illustrates pressure on renewable water resources of a defined territory (river basin, sub-basin etc.) in a given period (e.g. seasonal, annual) as a consequence of water use for human activities). It expresses water stress conditions[8].
Unit of measurement	Index, between -1 and 1
Methodology/formula	Selected components have different units of measurement. Before adding them up they hence need to be transformed into dimensionless figures. The proposed methodology is presented below. *e = evaluation year; o = starting year.* **COMPONENTS and RATIONALE for the formula** **- I.3 Reducing farm income variability: evolution of agricultural income** Rationale for the formula: data on farm income is available every year, it is already used for the ***R.02_PI Variabilility of farm income*** of the current CAP. Independently of how the I.3 will be defined, this component should detect decreases of income compared to an average income with the calculation of a Coefficient of Variation (CV). The component for the composite indicator will be calculated as $(CV_{CAPpost2020} - CV_{CAPcurrent}) / CV_{CAPcurrent}$, then expressing the change of the CV compared to the time o ($CV_{CAPcurrent}$). All yearly differences from the average >0, should be considered as 0, as a stable income is also positive for resilience. The average values for the calculation of the **CV** of the two programming periods are their respective income averages. **- I.11 Enhancing carbon sequestration: increase the soil organic carbon** Rationale for the formula: An increase in I.11 indicates a stronger potential resilience. This component for the composite indicator I.09 will be calculated as the difference between the evaluation year ($I.11_e$) and the starting year ($I.11_0$), compared to the start of the programme ($I.11_0$). **- I.20 Enhanced provision of ecosystem services: share of UUA covered with landscape features** Rationale for the formula: (*the fiche of this impact indicator for the CAP post-2020 is still under definition. The current* ***R.13_PI Share of EFA in agricultural land*** *can be used in the meanwhile for the description of the rationale).* Expressed in % of UAA. An increase in I.20 indicates a stronger potential resilience. This component for the composite indicator I.09 is calculated as the ratio between the difference $I.20_e$ and $I.20_0$, compared to the start of the programme ($I.20_0$). **- I.13 Reducing soil erosion: Percentage of land in moderate and severe soil erosion on agricultural land** Rationale for the formula: The indicator is expressed as the share of land subject to moderate and severe soil erosion. An increase in I.13 indicates

[8] The WEI+ provides a measure of the total water use (water abstraction minus water returned) as a percentage of the renewable freshwater resources for a given territory and time scale. It identifies areas (e.g. sub-basins or river basins) that have high abstraction levels on a seasonal scale in relation to the resources available and that are therefore prone to water stress. WEI+ values are given as percentages, i.e. water use as a percentage of renewable water resources.

	a weakened resilience. This component for the composite indicator I.09 is calculated as the ratio between the difference $I.13_e$ and $I.13_0$, and the starting value $I.13_0$. **- I.15 Reducing pressure on water resource: Water Exploitation Index Plus (WEI+)** Rationale for the formula: I.15 is expressed as a percentage. An increase in I.15 indicates weakened resilience. The component for the composite indicator I.09 is calculated as the ratio between the difference $I.15_e$ and $I.15_0$, and the value at the start of the programme $I.15_0$. *Improved farm resilience index* **=** $\mathbf{[-((CV_{CAPpost2020} - CV_{CAPcurrent}) / CV_{CAPcurrent}) + ((I.11_e - I.11_o)/I.11_o) + ((I.20_e - I.20_0)/ I.20_0)) - ((I.13e - I.13_0)/I.13_0)) - ((I.15_e - I.15_0)/I.15_0))]/5}$
Data source	See the individual selected impact indicators
References/location of the data	See the individual selected impact indicators
Data collection level	See the individual selected impact indicators
Frequency	See the individual selected impact indicators (the lowest frequency would be for the I.11 Enhancing carbon sequestration).
Delay	Same of the impact indicator component with the longest delay, which would be the **I.11 Enhancing carbon sequestration.**
Comments/caveats	[Indication capacity] An increase in the value of indicator I.9 would indicate an increased resilience of the sector. The magnitude of the increase will only give an indication of the direction of the resilience of the sector. Even if not quantifying an overall status of the resilience, this approach is widely accepted to describe trend and can be considered as a progres indicator. [Readily available] Linked to the components [Downscaling] Linked to the components [Quality] Linked to the components [Baseline] This indicator rely on the possibility to compare the change agaist a starting period. For this reason, for all component considered it will be necessary to have a starting value. The starting year and the evaluation year can be different for components. For each component, the closer year to the startgin and the final year with available data should be selected.

NEW FICHE

INDICATOR C. 46	CURRENT CMEF: C.45
Indicator Name	**AMMONIA EMISSIONS FROM AGRICULTURE**
Definition	This indicator measures total annual ammonia emissions (NH_3) from agriculture, considering manure management, as well as application of fertilizers and manure to soils. Categories include[9]: **Manure management** • 3B1a - Manure management - Dairy cattle • 3B1b - Manure management - Non-dairy cattle • 3B2 - Manure management – Sheep • 3B3 - Manure management – Swine • 3B4a - Manure management – Buffalo • 3B4d - Manure management – Goats • 3B4e - Manure management – Horses • 3B4f - Manure management - Mules and asses • 3B4gi - Manure mangement - Laying hens • 3B4gii - Manure mangement - Broilers • 3B4giii - Manure mangement – Turkeys • 3B4giv - Manure management - Other poultry • 3B4h - Manure management - Other animals **Application to soil** • 3Da1 - Inorganic N-fertilizers (includes also urea application) • 3Da2a - Animal manure applied to soils • 3Da3 - Urine and dung deposited by grazing animals
Unit of measurement	Kilotonnes of NH_3 per year. % compared to 2005.
Data source(s)	The Member States report their total national emissions of NH_3 every year to the European Commission via the Member States national scale emission data (EEA) reportedunder the existing requirements from the Directive on the reduction of national emissions of certain atmospheric pollutants (2016/2284/EU)[10], and collected at the European Environment Agency. The reported data is available through the EEA's website.
References/location of the data	Annual data on ammonia emissions from agriculture is available at the EEA's website. The information, broken down by Member State and sub-category, is also provided through the web-based tool "Air pollutant emissions data viewer (NEC Directive)" https://www.eea.europa.eu/data-and-maps/dashboards/necd-directive-data-viewer-1 . It also shows overall ammonia emission trends over time, and allows for comparisons between Member States.
Data collection level	Member States
Frequency	Data collected annualy

[9] The codes used refer to the so-called NFR codes used for reporting under the UNECE Convention on Long Range Transboundary Air Pollution (LRTAP)

[10] The Directive on the reduction of national emissions of certain atmospheric pollutants (2016/2284/EU), also referred to as the (new) NEC, , came into force in 2016 and sets national emission reduction targets for SO_2, NO_x, NMVOC, $PM_{2.5}$ and NH_3, for 2020 and 2030.

Timeliness	One year (Member States shall report on the emissions in year Y no later than February of year Y + 2). Projections covering 2020, 2025, 2030 and where available 2040 and 2050, shall be reported by the Member States to the EEA on a biennial basis.
Comments/caveats	[Indication capacity] Data are able to show emission trends over time and compare trends among among Member States, and the distance to National Emission Ceilings[11] (NEC). Also, it is able to show differences in the subcategories, such as identifying main sources within the agricultural sector within a country. [Readily available] Data are already submitted by MS every year. [Downscaling] National emission reporting (NECD; Gothenburg Protocol) follows recommendations of the 2016 EMEP/EEA air pollutant emission inventory guidebook, with 3 Tiers: Tier 1 (standard emission factors), Tier 2 (based on Total Ammonia Nitrogen (TAN) flows), Tier 3 (more sophisticated approaches, modelling, which can include spatial information on the implementation of specific abatement measures). Evaluation of impacts of air pollution of NH3 emissions, requires spatial information in conjunction with models. Science based gridded emission inventories, and gridded inventories from some MS are available. Satellite observations of NH3 provide new opportunities to derive spatial informationderive spatial information. [Quality] The use by MS of Tier 1 approaches may prevent tracking progress and policy effectiveness when using MS inventory information. Improvements such as on manure spreading methods or in productivity of milk, should be detected. Along with inventory MS submit an Informative Inventory Report (IIR). To link NH3 emission improvement to CAP, detailed information on which measures have been implemented, implementation rate (# livestock or m2 of UAAUAA affected) are necessary, as well as improvement in emission factors. [Baseline] Data on emissions of air pollutants, including ammonia, are available for every year, giving the possibility to define baselines. Collection of these data is required under the reporting regime in the Directive on the reduction of national emissions of certain atmospheric pollutants (2016/2284/EU) and will not add any additional administrative burden for Member States. Air Quality Directive consider the % of reduction from 2005. The same year can be proposed for the impact indicator.

[11] The absolute national emission ceilings will be replaced by (relative) national reduction targets in 2020.

NEW FICHE

INDICATOR C.47	NEW
Indicator Name	**Antimicrobials sales in food producing animals**
Type of indicator	**Health**
Definition	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. - Data available per calendar year for any given year by MS [12] - Provided by total sales veterinary medicinal products containing antimicrobial substances - Per species of food-producing animals
Unit of measurement	Sales of antimicrobial substances, (product package level), corrected by a Population Correction Unit (PCU);
Data source	European Surveillance of Veterinary Antimicrobial Consumption (ESVAC) project, started by the European Medicines Agency (EMA) upon a request from the EC in 2009 to develop a harmonised approach for the collection and reporting of data on the use of antimicrobial agents in animals from EU Member States. Data is collected on a voluntary basis on sales of antimicrobial veterinary medicinal products (VMP) at package level from the EU Member States (MSs), EEA countries and Switzerland.
References/location of the data	- EU Action plan on antimicrobial resistance 2017 https://ec.europa.eu/health/amr/sites/amr/files/amr_action_plan_2017_en.pdf - ESVAC interactive database https://bi.ema.europa.eu/analyticsSOAP/saw.dll?PortalPages - ESVAC Annual Reports http://www.ema.europa.eu/ema/index.jsp?curl=pages/regulation/document_listing/document_listing_000302.jsp#annual
Data collection / dissemination level	EU-MS, European Economic Area (EEA)
Frequency	Annual, from 2010 onwards
Timeliness	2 years
Comments/caveats	- One of the three pillars of the new European One Health Action Plan against AMR (2017) includes as key objective making the EU a best practice region in the fight against AMR, consolidating surveillance of AMR and antimicrobial consumption. - Long term objective is the responsible and prudent use of antimicrobials (prevention/reduction) - Stratification factors are used to calculate use data from the sales data according to target species for the different VMPs with more than one target specie; this is a pilot project within 5 MS, to be developed in the future. - Once the new Regulation on veterinary medicinal products is to be applied (end 2021), all MS are obliged to deliver data on sales and use of antimicrobials at farm level[13] in a stepwise approach for different species[14]

[12] Malta did not contribute to the recent published data till 2017, ESVAC is till now a voluntary project

[13] Article in New Veterinary Medicinal Product Regulation: "Member States shall collect relevant and comparable data on the volume of sales and the use of antimicrobial medicinal products used in animals, to enable in particular the direct or indirect evaluation of the use of such products in food-producing animals at farm level …"

[14] Article in New Veterinary Medicinal Product Regulation: „Member States shall be allowed to apply a progressive stepwise approach regarding the obligations set out in this Article."

NEW FICHE

INDICATOR C.48	NEW
Indicator Name	**Risk and impacts of pesticides**
Type of indicator	**Health**
Definition	This indicator refers to the Hazard-based harmonised indicator of risk associated with pesticides, managed by DG Sante and based on Eurostat Statistics on the placing on the market of pesticides, available at EU and MS level. Sales data collected by Eurostat are categorised and weighted based on the properties of the active substances, resulting in a harmonised, EU wide indicator. NB: All references to pesticides refer to plant protection products only. Biocides are included in the term pesticides, but data on biocides are not included in this indicator.
Unit of measurement	Index based on annual volumes of active substances placed on the market Baseline: Index 100 calculated as average for the period 2011-2013
Data source	Eurostat – Statistics on the placing on the market (sales) of pesticides (Agri-environmental indicator 6. Consumption of pesticides) Calculation method and weighting defined in Annex IV to the Directive 2009/128/EC
References/location of the data	Eurostat statistics on sales (factsheet) available at https://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_consumption_of_pesticides Methodology for categorisation and weighting still under discussion in DG SANTE The indicator at EU level should be calculated by Eurostat and published by the Commission. The indicator at MS level should be calculated and published by each MS
Data collection / dissemination level	EU, national (NUTS 0)
Frequency	Annual (The baseline is based on a 3 year average, but not the values for subsequent years)
Timeliness	2 years (20 months in the latest proposal by DG SANTE)
Comments/caveats	The indicator is based on of the quantities of active substances sold in pesticides each year Active substances are classified in 4 groups and 7 categories according to Annex IV to the Directive 2009/128/EC. A weighting is developed for each group: volume sold of active substances are multiplied for the respective weightings in order to calculate a harmonised index which can be monitored over time.