

7. Agroforestry & CAP Monitoring

EURAF Policy Briefing No 7. Sep 20; Gerry Lawson (policy@euraf.net). 10.5281/zenodo.7953230.



EURAF is an NGO, established in Paris on 16/11/2012, with a French Registration number of [W343014937](#), and a Transparency Register ID of [913270437706-82](#). It aims "to promote the adoption of agroforestry practices across Europe by supporting efforts to develop awareness, education, research, policy making and investments which foster the use of trees on farms". It has a network of 31 affiliated entities in 23 countries.

Of the failings of the post-2022 CAP, the proposed monitoring methodology is the biggest disappointment. How can Member States have full subsidiarity and flexibility in policies if the tools used to monitor the impacts of their interventions are not fit for purpose? This Briefing reviews the proposals.

Public attention has focused on the challenges posed by the targets contained in the Farm to Fork and Biodiversity Strategies, but an equally serious issue is that Member States refuse to use the hugely-detailed power of modern remote sensing technology, and the uniquely detailed information in IACS/LPIS databases to report on the observable impact of each measure in different territories and regions? Instead of focusing on what new technology can bring us, Agricultural Ministers have sought to reduce the number, frequency and potency of the — already weak — indicators proposed by the Commission.

The draft Strategic Plan Regulation proposed three types of indicator. "Result Indicators" and "Output Indicators" will be reported annually¹ and "Impact Indicator" will only be used at the end of the CAP period, and possibly in a mid term review. Output indicators are little more than a list of the number of farmers or the land area affected by specific "interventions", they are therefore "book-keeping" indicators. This briefing will look at the failings and potential of Result Indicators and Impact Indicators.

Result Indicators

Result indicators are to be included in the Annual Performance Reports of Member States. This Annual report is intended to show *"the realised output and expenditure as well as distance to targets set for the whole period, expressed as values of Result Indicators"*. Nevertheless, these indicators mainly show progress in implementing interventions which member states **hope** will contribute to the EU Specific Objectives. We need to look to the "Impact Indicators" for measurements which actually **demonstrate** the specific impacts of different interventions.

Result indicators are clearly valuable however, and EURAF notes with concern some of the changes proposed by Agricultural Ministers in the AgriFish Council (Table 1). This particularly so with the deletion of R29 - **"Preserving landscape features - share of agriculture land under commitments for management landscape features including hedgerows"**. Also, in Result Indicator 17, it must also be made clear that the creation of new areas of agroforestry is **not** "afforestation", since the land remains classified as "agriculture". AgriFish have introduced ambiguity by rewording this as "share of land cover² supported for afforestation, (including agroforestry) and reforestation". Finally, Report Indicators should include all relevant expenditure in a given area - include those which are outside the CAP but are covered by Chapter 2 of the EU Guidelines for State aid in the agricultural and forestry sectors [1].

This leads to EURAF's three recommendations on indicators

- 1. Result indicator 17 should read "Afforested and agroforested land. Share of the LPIS Reference Area which is supported for afforestation, reforestation and agroforestation".**

¹ The draft SP Regulation indicates that Result Indicators should report **only on interventions supported by the CAP**. In the forestry arena (Measure 8 of current RDPs. Three member states (Ireland, Finland, the Netherlands) and three German Lander finance their forestry programmes from their "own resources" (even though there is co-funding by EU regional programs). And will not report ANY forestry-related statistics - like R.17.

² Land Cover is defined in Annex II.2 of the INSPIRE Directive 2007/2/EC as "Physical and biological cover of the earth's surface including artificial surfaces, agricultural areas, forests, (semi-)natural areas, wetlands, water bodies". This Indicator should be focused on farmland - hence the suggested use of "reference area" - defined in Article 18 of Regulation 1782/2013 as "a geographically delimited area retaining a unique identification as registered in the GIS in the Member State's [farmland] identification system"

2. **Result Indicator 29 - Preserving Landscape Features - is a vital indicator and its removal by the AgFish Council should be reversed.**
3. **Result indicators should be reported annually and should include interventions outside the CAP which are covered by EU State Aid to Agriculture and Forestry Guidelines.**

Table I *Result Indicators* relevant to the 3 Specific Objectives on Environment and Climate Change.

| EU Specific Objective | Result Indicator (Commission June 2018 proposal) | Result Indicator (AGRIFISH June 2020 <i>proposal</i>) |
|---|---|--|
| Contribute to climate change mitigation and adaptation, as well as sustainable energy | R.12 Adaptation to climate change: Share of agricultural land under commitment to improve climate adaptation | R.12: Mitigation and Adaptation to climate change: share of Utilised Agricultural Area (UAA) land and/or livestock units (LU) supported to reduce ammonia and GHG emissions, maintaining/ enhancing carbon storage, including commitments to improve climate change adaptation (with breakdown by mitigation and adaptation). |
| | R.13 Reducing emissions in the livestock sector. Share of livestock units under support to reduce GHG emissions and/or ammonia, including manure management | merge into R12 |
| | R.14 Carbon storage in soils and biomass. Share of agricultural land under commitments to reducing emissions, maintaining and/or enhancing carbon storage (permanent grassland, agricultural land in peatland, forest, etc.) | merge into R12 |
| | R.15 Green energy from agriculture and forestry. Investments in renewable energy production capacity, including bio-based (MW). | R.15 Green energy from agriculture and forestry, and from other renewable sources. Supported investments in renewable energy production capacity, including biobased (Megawatt). |
| | R.16 Enhance energy efficiency. Energy savings in agriculture | R.16a Investments related to climate. Share of farms benefitting from CAP investment support contributing to climate change, mitigation and adaptation, and to renewable energy or biomaterials production. |
| | R.17 Afforested land. Area supported for afforestation and creation of woodland, including agroforestry | R.17 Afforested land. Share of land cover supported for afforestation, (including agroforestry) and reforestation. R.17a Investment support to the forest sector Total investment to improve the performance of the forestry sector. |
| | R.18 Improving soils. Share of agricultural land under management commitments beneficial for soil management | R.18 Efficient resource management. Share of Utilised Agricultural Area (UAA) under management commitments contributing to efficient management of natural resources such as water, soil and air. |
| Foster sustainable development and efficient management of natural resources such as water, soil and air | R.19 Improving air quality. Share of agricultural land under commitments to reduce ammonia emission | Delete- include in R18 |
| | R.20 Protecting water quality. Share of agricultural land under management commitments for water quality | Delete - include in R18 |
| | R.21 Sustainable nutrient management Share of agricultural land under commitments related to improved nutrient management | Delete - include in R18 |
| | R.22 Sustainable water use. Share of irrigated land under commitments to improve water balance. | Delete - include in R18 R.22a Environmental performance in the livestock sector: Share of livestock units (LU) under supported commitments to improve environmental sustainability |
| | R.23 Environment/climate - related performance through investment. Share of farmers with support in investments related to care for the environment or climate | R.23 Investments related to environment: Share of farmers benefitting from CAP investment support related to care for natural resources |
| | R.24 Environment/climate performance through knowledge Share of farmers receiving support for advice/training related to environmental- climate performance | R.24 Environmental/climate performance through knowledge: number of persons benefitting from advice, training, knowledge exchange supported by the CAP related to environmental performance |
| | R.25 Supporting sustainable forest management. Share of agricultural land under commitments to support forest protection and management | Delete |
| Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes | R.26 Protecting forest ecosystems. Share of forest land under management commitments for supporting landscape, biodiversity and ecosystem services | R.26 Protecting forest ecosystems: Share of forest land under sustainable forest management and commitments for supporting landscape, biodiversity and ecosystem services |
| | R.27 Preserving habitats and species. Share of agricultural land under management commitments supporting biodiversity conservation or restoration | R.27 Preserving habitats and species: Share of Utilised aAgricultural Area (UAA) land under management commitments supporting biodiversity conservation or restoration R.27a Investments related to biodiversity: Share of farms benefitting from CAP investment support contributing to biodiversity. |
| | R.28 Supporting Natura 2000. Area in Natura 2000 sites under commitments for protection, maintenance and restoration | R.28 Supporting Natura 2000: Share of Area in total Natura 2000 sites area under Natura 2000 commitments for protection, maintenance and restoration set up and financed under EAFRD. |
| | R.29 Preserving landscape features Share of agriculture land under commitments for management landscape features including hedgerows | Delete |
| | | |

Impact Indicators

There are twelve Impact Indicators addressing the three environmental and climate objectives of the CAP (Table 2). Many of them are Eurostat [“Agri-environmental Indicators”](#) and/or CAP [Context Indicators](#)³ As amended by the AGRIFISH Council in June 2020 the indicators selected are:

- **I.9 Improving the resilience of agriculture to climate change.** Agricultural sector “resilience progress indicator”. *Comment* - this is Context Indicator C.44: based on C.39 (soil organic carbon in agricultural land) and C.40 (soil erosion by water) and is under discussion by an [Expert Group](#). A number of H2020 projects⁴ are working on more comprehensive adaptation indicators than C.44 - and the precise indicators will be defined in an “CAP Delegated Act”.
- **I.10 Contributing to climate change mitigation.** Greenhouse gas (GHG) emissions from agriculture. *Comment* - this is Context Indicator C.45. As with many of the other indicators it should be published at a NUTS3 level.
- **I.11 Enhancing carbon sequestration.** Soil organic carbon in agricultural land. *Comment:* the Context Indicator C.41 is “soil organic carbon on arable land” - this is a better indicator than I11.
- **I.12 Increasing sustainable energy in agriculture.** Production of renewable energy from agriculture and forestry. *Comment:* this is Context Indicator C.43.
- **I.13 Reducing soil erosion.** Percentage of agricultural land in moderate and severe soil erosion. *Comment* - there is a JRC indicator titled [“soil erosion by water”](#) and from JRC/ESDC of [“land susceptibility to wind erosion”](#). I.13 is presumably an amalgamation of these - but combining them seems scientifically pointless, since they measure different things.
- **I.14 Improving air quality.** Ammonia emissions from agriculture. *Comment* - this is an EEA dataset produced periodically and available only at national level (at least from Eurostat).
- **I.15 Improving water quality.** Gross nutrient balance on agricultural land. *Comment* - a European Statistical System dataset produced bi-annually, but data is available on Eurostat only at a national scale
- **I.16 Reducing nutrient leakage.** Nitrate in groundwater. *Comment* - data is taken from well samples and aggregated to average annual values. In Eurostat it is provided only at a national level and is available annually
- **I.17 Reducing pressure on water resource.** Water Exploitation INdex Plus (WEI+). *Comment:* another EEA index - a measure of total fresh water use as a percentage of the renewable fresh water resources (groundwater and surface water) at a given time and place. It quantifies how much water is abstracted and how much water is returned after use to the environment. From Eurostat it is available only nationally.
- **I.18 Increasing farmland bird populations.** Common Farmland Bird Index. *Comment* this is an index produced annually by OECS and Birdlife. From Eurostat it is available only annually, and not for all MS.
- **I.19 Enhanced biodiversity protection.** Percentage of species and habitats of Community interest related to agriculture with stable or increasing trends. *Comment:* this is Context Indicator C36. Community interest is defined by Annex II and IV of the EU Habitats directive. Data seems to be reported only every five years and is reported within a country only by very broad biogeographical regions.
- **I.20 Enhancing provision of ecosystem services.** Share of UAA covered with landscape features. *Comment.* *Landscape features can be increasingly identified semi-automatically using satellite information. It is alarming that AGRIFISH propose deleting this as an annually reported “result indicator”*

As can be seen, many of the above indicators are not available annually. Some are available only at a national level or at the level of regions. Few of them are suited to fine-scale monitoring the impact of specific interventions

³ [C.31](#) Land cover [C.32](#) Less Favoured Areas - Areas of Natural Constraint [C.33](#) Farming intensity [C.34](#) Natura 2000 area [C.35](#) Farmland birds index (FBI) [C.36](#) Conservation status of agricultural habitats [C.37](#) HNV farming [C.38](#) Protected forest [C.39](#) Water abstraction in agriculture [C.40](#) Water quality [C.41](#) Soil organic matter in arable land [C.42](#) Soil erosion by water [C.43](#) Production of renewable energy from agriculture and forestry [C.44](#) Energy use in agriculture, forestry and food industry [C.45](#) Emissions from agriculture 2017 06/2020

⁴ At least the following: SUREFARM, RECAP, FACCE-MACSUR, SustainFarm, HNVLink, CLIM4CROP, COACCH, ERA4CS, ESMERALDA, INSPIRATION, LANDMARK, LARMAR, MAES, OK Net Arable, PLACARD, PRIMAVERA, SAGRIS, SMARTQUA, SOILCARE.

on: climate change adaptation/mitigation, efficient management of natural resources, or biodiversity and ecosystems services.

There are many projects and publications which suggest new environmental indicators which can be used to assess the impact of the CAP [2–20]. More than 200 are listed in Eurostat's Environmental Indicator Catalogue (ref). There are 28 agri-environment indicators (ref and ref) Many indicators now use remote sensing data, which is regularly updated, particularly using the multi-spectral remote sensing opportunities presented by the European SENTINEL Satellites (ref). Much greater use can also be made of data on landscape features collected through annual farm returns in the IACS/LPIS systems [21–26] . Which leads to EURAF's final recommendation on monitoring.

- 4. The proposed CAP Impact Indicators are largely unsuitable in timescale or spatial scale to measure the impact of specific interventions on the environment or on climate change. These do not need to be defined in the Strategic Plan Regulation, since they can be laid out in a Delegated Regulation. It is recommended, as a matter of urgency, that a broadly-based working group should be formed to agree to a new set of CAP high-spatial-resolution Impact Indicators, which can be collected annually and made available publicly.**

References

1. European Commission. European Union Guidelines for State aid in the agricultural and forestry sectors and in rural areas 2014 to 2020. European Commission; 2014 Jan. Report No.: 2014/C 204/01.
2. Moxey A, Whitby M, Lowe P. Environmental Indicators for a Reformed CAP: Monitoring and Evaluating Policies in Agriculture. 1998 [cited 27 Sep 2020]. Available: <http://dx.doi.org/>
3. Untenecker J, Tiemeyer B, Freibauer A, Laggner A, Luterbacher J. Tracking changes in the land use, management and drainage status of organic soils as indicators of the effectiveness of mitigation strategies for climate change. *Ecol Indic.* 2017;72: 459–472.
4. Palma JHN. Integrated assessment of silvoarable agroforestry at landscape scale. Wageningen Universiteit. 2006. Available: <http://edepot.wur.nl/121834>
5. Casanoves F, Chain-Guadarrama A, Martínez-Salinas A. Field Test Report on Agri-environmental Indicators (AEIs): towards a Sustainable Agriculture. Global Strategy; 2018. Report No.: Technical Report Series GO-36-2018.
6. Temme AJAM, Verburg PH. Mapping and modelling of changes in agricultural intensity in Europe. *Agric Ecosyst Environ.* 2011;140: 46–56.
7. Kempen M, Elbersen BS, Staritsky I, Andersen E, Heckelet T. Spatial allocation of farming systems and farming indicators in Europe. *Agric Ecosyst Environ.* 2011;142: 51–62.
8. Hijbeek R, Cormont A, Hazen G, Bechini L, Zavattaro L, Janssen B, et al. Do farmers perceive a deficiency of soil organic matter? A European and farm level analysis. *Ecol Indic.* 2017;83: 390–403.
9. Peco B, Malo JE, Oñate JJ, Suárez F, Sumpsi J. Agri-environmental indicators for extensive land-use systems in the Iberian Peninsula. *Environmental indicators and agricultural policy.* pp. 137–156. doi:10.1079/9780851992891.0137
10. Lütz M, Felici F. Indicators to identify the agricultural pressures on environmental functions and their use in the development of agri-environmental measures. *Regional Environmental Change.* 2009. pp. 181–196. doi:10.1007/s10113-008-0061-9
11. Hřebíček J, Trenz O, Vernerová E, Others. Optimal set of agri-environmental indicators for the agricultural sector of Czech Republic. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis.* 2013;61: 2171–2181.
12. Burton RJF, Schwarz G. Result-oriented agri-environmental schemes in Europe and their potential for promoting behavioural change. *Land use policy.* 2013;30: 628–641.
13. Hansen B, Alrøe HF, Kristensen ES. Approaches to assess the environmental impact of organic farming with particular regard to Denmark. *Agric Ecosyst Environ.* 2001;83: 11–26.
14. Brouwer F, Crabtree B. *Environmental Indicators and Agricultural Policy.* CABI; 1999.
15. Cortignani R, Dono G. CAP's environmental policy and land use in arable farms: An impact assessment of greening practices changes in Italy. *Sci Total Environ.* 2019;647: 516–524.
16. Maes J, Teller A, Erhard M, Grizzetti B, Barredo JI, Paracchini ML, et al. Mapping and Assessment of Ecosystems and their Services (MAES). European Union; 2018. doi:10.2779/055584
17. Hart K, Baldock D, Tucker G. Ideas for defining EU environmental objectives and monitoring systems for a results-oriented CAP post 2020. IIEP, WWF Deutschland.; 2018. Available: <https://ieep.eu/uploads/articles/attachments/93d92d25-76a2-48c4-957e-86c96f10b75e/IIEP%20-%20CAP%20Performance%20Delivery%20for%20WWF%20-%20final%20130218.pdf?v=63686429823>
18. Pe'er G, Bonn A, Bruehlheide H, Dieker P, Eisenhauer N, Feindt PH, et al. Action needed for the EU Common Agricultural Policy to address sustainability challenges. *People Nat (Hoboken).* 2020;2: 305–316.
19. Pe'er G, Zinngrebe Y, Hauck J, Schindler S, Dittrich A, Zingg S, et al. Adding some green to the greening: Improving the EU's Ecological Focus Areas for biodiversity and farmers. *Conservation letters.* 2017;10: 517–530.
20. Cole LJ, Kleijn D, Dicks LV, Stout JC, Potts SG, Albrecht M, et al. A critical analysis of the potential for EU Common Agricultural Policy measures to support wild pollinators on farmland. *J Appl Ecol.* 2020;57: 681–694.
21. Barbottin A, Bouty C, Martin P. Using the French LPIS database to highlight farm area dynamics: The case study of the Niort Plain. *Land use policy.* 2018;73: 281–289.
22. Trantionova M, Darmovzalova I, Brokl M, Ausfíć J. Potential of Landscape Features for Implementation of Green Direct Payments in Czech Farmed Landscape. 2017. Available: <https://papers.ssrn.com/abstract=3102893>
23. Levavasseur F, Martin P, Bouty C, Barbottin A, Bretagnolle V, Théron O, et al. RPG Explorer: A new tool to ease the analysis of agricultural landscape dynamics with the Land Parcel Identification System. *Comput Electron Agric.* 2016;127: 541–552.
24. Kerselaers E, Levin G. Applying LPIS data to assess loss of agricultural land – experiences from Flanders and Denmark. *Geografisk Tidsskrift-Danish Journal of Geography.* 2019. pp. 17–29. doi:10.1080/00167223.2018.1537797

25. Grandgirard D, Zielinski R. Land Parcel Identification System (LPIS) Anomalies' Sampling and Spatial Pattern. JRC Scientific and Technical Reports. 2008. Available:
https://www.researchgate.net/profile/David_Grandgirard/publication/273767151_Land_Parcel_Identification_System_LPIS_Anomalies_sampling_and_spatial_pattern/links/550bd8360cf2855640973855.pdf
26. Jesko Zimmermann, Réamonn M. Fealy, Kevin Lydon, Eva M. Mockler, Phillip O'Brien, Ian Packham, et al. The Irish Land-Parcels Identification System (LPIS)—Experiences in ongoing and recent environmental research and land cover mapping. *Biol Environ Proc R Ir Acad* . 2016;116B: 53–62.