

Defining forests and agroforests in the EU

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EURAF is an NGO, established in Paris on 16/11/2012, with - French Registration [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.

Summary

Policy Briefing #15 (v5) welcomes the EU Deforestation Regulation (EUDR), noting that it excludes current areas of agriculture and agroforestry. However the EUDR Guidelines place too much faith in the ability of satellite data to distinguish forests from agriculture. We therefore stress the importance of land-use and cadastral registers, and the need to use the methods for deforestation reporting already developed by all signatories to the UN Framework Convention on Climate Change (UNFCCC) as part of their Land Use, Land-Use Change and Forestry (LULUCF) inventories. **The section in the EUDR Guidelines which says the satellite information should "prevail over" land-registries should be removed and replaced with clear reference to existing LULUCF methods.** We demonstrate the importance of this with data from Extremadura in Spain, showing that only 20% of the "forest" identified through EU-JRC satellite records is recognised as forest in the Spanish land-use-registry (SIGPAC). An additional point is that new data on afforestation and agroforestation in the EU is not well recorded. We suggest that public and private sector planting should be integrated in the EU MapMyTree portal, which in turn can form part of the upcoming EU carbon removals registry, and national Land Parcel Identification Systems (LPIS). "Forests" should be defined as in Annex II of the EU LULUCF Regulation. "Agroforests" can in turn be defined as **"parcels classified as agriculture, including boundaries, with more than 5% tree-cover, or with tree-planting or management which is intended to exceed 5% cover. Shrubs may also be present"**.

1. Definition of "Forest"

There are two definitions of "forest" used in international treaties and reporting: a) the UN Framework Convention on Climate Change (UNFCCC) definition which is based on the 2001 Marrakesh Accord ([FCCC/CP/2001/13/Add.1](#)), and which englobes all national definitions worldwide. It is used for UNFCCC-LULUCF¹ UNFCCC-REDD+² and UN Clean Development Mechanism (CDM) reporting, b) the FAO definition, used for 5-yearly reporting of forest-statistics in the FAO Forest Resource Assessment ([FRA-2020](#)). The UNFCCC definition is used in the EU LULUCF Regulation ([2018/841](#)) for GHG reporting by Member States; the FAO definition is used in the EU Deforestation Regulation ([2023/1115](#)), and is also included in the draft of the EU Forest Monitoring Regulation. The FAO forest definition was also quoted EU Rural Development Regulation ([1305/2013](#)), but it also included the option for **"A Member State or region to choose to apply a forest definition based on existing national law or inventory system"**

a) The UNFCCC Forest Definition

UNFCCC Marrakesh Accord 2001 defines Forest as a minimum area of land of 0.05-1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10-30 per cent with trees with the potential to reach a minimum height of 2-5 metres at maturity in situ. A forest may consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground or open forest. Young natural stands and all plantations which have yet to reach a crown density of 10-30 per cent or tree height of 2-5 metres are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest.

All countries in the world use this definition to report their Greenhouse Gas emissions. These reports are made annually for UNFCCC Annex I countries, and bi-annually for Annex II countries. Part of these GHG reports is the identification of areas of "forestland", "cropland", "grassland", "wetland", "settlement" and "otherland" and

¹ Methodologies described in the [EEA LULUCF Handbook v2](#) (2024)

² Methodologies described in the UNFCCC [Warsaw Framework](#)

publication of a matrix of changes between these six categories. This matrix therefore **already records deforestation** and the 2020 UNFCCC national GHG inventories could have been used by the EU Deforestation Regulation to record baseline levels of forest cover in 2020 (qv). This would have helped cement a move to "wall to wall" identification and publication of land use parcels in UNFCCC reporting, and would have avoided the need to create a parallel EUDR-JRC land parcel recording system. The UNFCCC forest definitions of EU member States are shown in Table 1.

b) FAO Forest Definition

The FAO definition of forest has been in use since 1998 ([FAO 2005](#)) and countries are expected to use it in their returns to the FAO 5-yearly Forest Resource Assessments, alongside two other categories "Other Wooded Land" and "Other Land With Tree Cover". Responses from countries to the latter categories are incomplete both globally

(EURAF [Policy Briefing #25](#)) and for EU Member States (EURAF [Policy Briefing #15](#)). They are further limited by setting a minimum block size of 0.5ha, which means that smaller areas of Trees outside Forests, like copses, tree lines and windbreaks are not recorded.

Member State	Area (ha)	Tree crown cover (%)	Tree height (m)	Minimum width (m)
Malta	1,0	30	5	
Spain	1,0	20	3	25
Portugal	1,0	10	5	20
Hungary	0,5	30	5	10
Estonia	0,5	30	2	
Belgium	0,5	20	5	
Netherlands	0,5	20	5	30
Denmark	0,5	10	5	20
Finland	0,5	10	5	20
France	0,5	10	5	
Italy	0,5	10	5	
Luxembourg	0,5	10	5	
Sweden	0,5	10	5	10
Greece	0,3	25	2	
Slovakia	0,3	20	5	
Cyprus	0,3	10	5	
Slovenia	0,25	30	2	
Romania	0,25	10	5	20
Lithuania	0,1	30	5	10
Ireland	0,1	20	5	20
Latvia	0,1	20	5	20
United Kingdom	0,1	20	2	20
Bulgaria	0,1	10	5	
Germany	0,1	10	5	
Croatia	0,1	10	2	
Poland	0,1	10	2	10
Austria	0,05	30	2	10
Czech Republic	0,05	30	2	20

Table 1: - threshold values used in the definitions of "forest land" in UNFCCC reports by EU Member States (Annex 2 LULUCF Regulation 2018/841)³. The box shows the definition used in the quinquennial FAO-Forest Resource Assessment and proposed for all MS in the EU Forest Monitoring Regulation.

FAO Definition of Forest (FAO-FRA 2020): Land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.⁴

The EU Deforestation Regulation repeats this forest definition, and addresses the meaning "predominantly agricultural use" in Section 11 of its Guidance Document ([link](#)).

Section 11.1 - Introduction. confirms that products cannot be placed on the market if they have been produced from land deforested after December 2020. Deforestation means the conversion of forest to **agricultural** use - whether human

induced or not.

Section 11.2 - Classification of conversion of forest. contains the statement "The classification of an area as 'deforested' is based on the **objective criterion** of whether the forest has been converted for a specific use and purpose, which is **independent from the legally registered use and geographical boundaries of the plot of land, or from the question of who or what is at the origin of the deforestation**".

³ The revised LULUCF Regulation (2023/839) introduced changes in the national definitions of "forest" in 3 countries - resulting in a recalculation of GHG emissions from land use categories in for every year back to 1990: a) **Spain:** minimum area remains at 1.0 ha, and tree height at 3m, but the minimum tree crown cover will decrease from 20% to 10% from the 2028 inventory onwards; b) **Slovenia:** minimum forest area will remain at 0.25ha, but tree height will increase from 2m to 5m and crown cover threshold will decrease from 30% to 10%; c) **Finland:** minimum forest area will decrease to 0.25ha, while tree crown cover will remain at 10% and tree height at 5m.

⁴There are further details including: inclusion of temporarily unstocked land, roads, firebreaks, protected areas, windbreaks wider than 20m, abandoned abandoned shifting cultivation land, mangroves, rubberwood, cork oak, christmas trees, bamboo and palms provided that land use, height and canopy cover criteria are met, excludes tree stands in agricultural production systems, such as fruit tree plantations, oil palm plantations, olive orchards and agroforestry systems when crops are grown under tree cover. Note: Some agroforestry systems such as the "Taungya" system where crops are grown only during the first years of the forest rotation should be classified as forest.

This statement is hard to understand in a EU context since legally registered land use, such as the CAP LPIS or Forest Inventory are the true legal measure of **land use** - not a map of estimated **land cover** derived from remote sensing and arbitrary forest thresholds. Section 11.2 also clarifies for the purpose of the EUDR that "*conversion of forest into areas of urban infrastructure such as electricity lines, roads, cities and settlements, for non-agricultural industrial sites, or for renewable energy purposes does not count as deforestation*".

Section 11.3 - Definition of forest. This section repeats the FAO definition of forest from Article 2 (4) of the EUDR. It is disappointing that the categorisation of land in national forest inventories, rural cadastres, agricultural payments systems and GHG inventories are largely ignored and replaced by an evaluation based on remote sensing and an arbitrary forest size or crown cover thresholds. Most EU Member States use sophisticated inventories to identify "forest land" and include factors such as afforestation payments, strip-width, period under forestry and legal status. Few of which are available from remotely-sensed data.

Section 11.4 - Definitions of "agricultural use".

a) Clarification of the "purpose of agriculture":

- Three eligible "agricultural cases" are listed - agricultural plantations, set-aside and rearing of livestock
- Eight land use categories are then added: a) land under temporary crops, b) land under temporary meadows and pastures, c) set-aside land, or land under temporary fallow; d) land under permanent crops; e) land under farm buildings and farmyards, f) short rotation forest crops, g) short-rotation coppice and h) "landscape elements".
- Measures not considered to be conversion to agriculture are: a) prevention of the spread of invasive plants if accompanied by a management plan, b) minimisation and mitigation of the risk of forest fires, c) erection of structures (permanent and non-permanent) to house animals, d) restoration and subsequent conservation management of ecosystems of high biodiversity value as part of a management plan, e) deploying renewable energy e.g. solar panels.

b) Clarification of "predominant agricultural use". Agriculture is considered "**predominant**" in the following, non-exclusive, cases:

- *Seasonal (e.g. summer grazing) or temporary silvopastoral grazing in tree covered areas which do not fall into the category of primary forests (e.g. in semi-natural pastures or in natural pastures with changing tree cover).*
- *If due to climatic conditions (e.g. temporary snow cover) silvopastoral or agrisilvicultural practices are limited to a certain period of the year, they can be considered the predominant use.*
- *Establishing protective groups of trees for various environmental or biodiversity purposes on a predominantly agricultural use (e.g. grazing) area, even if the area reaches the thresholds of the 'forest' definition.*

Agriculture is considered to be "**non predominant**" in the case of "*small-scale production of side products (e.g. coffee), and occasional extensive or occasionally small-scale grazing in forests as long as the production and related activities do not have detrimental effect on the habitat of the forest*"

c) Clarification of "agricultural plantations". The following are considered as agricultural use:

- land with tree stands in agricultural production systems where the main product is agricultural such as fruit tree plantations, oil palm plantations, olive orchards, rubber trees;
- agroforestry systems where crops are grown under tree cover.

d) Clarification of "agroforestry systems"

The quoted FAO definition of 'agroforestry'⁵ is "*a collective name for land use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc) are deliberately used on the same land management unit as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence. In agroforestry systems there are both ecological and economic interactions between the different components. There are two basic agroforestry systems: simultaneous and sequential. Simultaneous systems have trees and crops or animals growing together on the same piece of land, while in sequential systems crops and trees take turns in occupying most of the same space, minimising their competition Agroforestry can also refer to specific forestry practices that complement agricultural activities, such as by improving soil fertility, reducing soil erosion, improving watershed management, or providing shade and food for livestock. Recital (37) recalls that FAO definitions do not consider agroforestry systems as forests, but agricultural use and that they encompass various situations such as those where crops are grown under tree cover, as well as agrisilvicultural, silvopastoral and agrosilvopastoral systems*".

⁵ FAO 2003. Multilingual Thesaurus on Land Tenure. Chapter 7. Land in an agricultural, pastoral and forestry context.

The guidelines are therefore clear that **land which is primarily in agroforestry use cannot be referred to as "forest"**.

e) Clarification of land use in case of multiple land use types in the same area and the use of land registries and cadastral maps. This section makes 3 points:

- *In the assessment of whether a certain plot of land constitutes forest, **the actual forest properties should prevail over the designation in land registers and cadastral maps.** For demonstrating agricultural use in the past, land registers and cadastral maps can be further elements to complement the satellite data.*
- *Forest management plans and registers of designated forest areas can be of use when determining whether the area is a forest without current tree cover, particularly in cases where the area is temporarily unstocked without tree cover due to forest management practice, natural disaster, or the first years of afforestation.*
- *The EU Forest Observatory ([link](#)) provided by the Commission is a free to use tool for all stakeholders to determine the global forest cover of 2020. However, the Observatory is non-exclusive, non-mandatory and carries no legal value. **Public and private stakeholders can use any maps that they see fit for the purpose of their due diligence exercise or checks.***

The final bullet was a late insertion in the Guidelines. EURAF welcomes its flexibility but feels that the first bullet should also have been corrected. Satellite data on "actual forest properties" (sic) **should not automatically "prevail"** over the legal designation of land use in land registers and cadastral maps. It should be replaced with a mention of LULUCF methods.

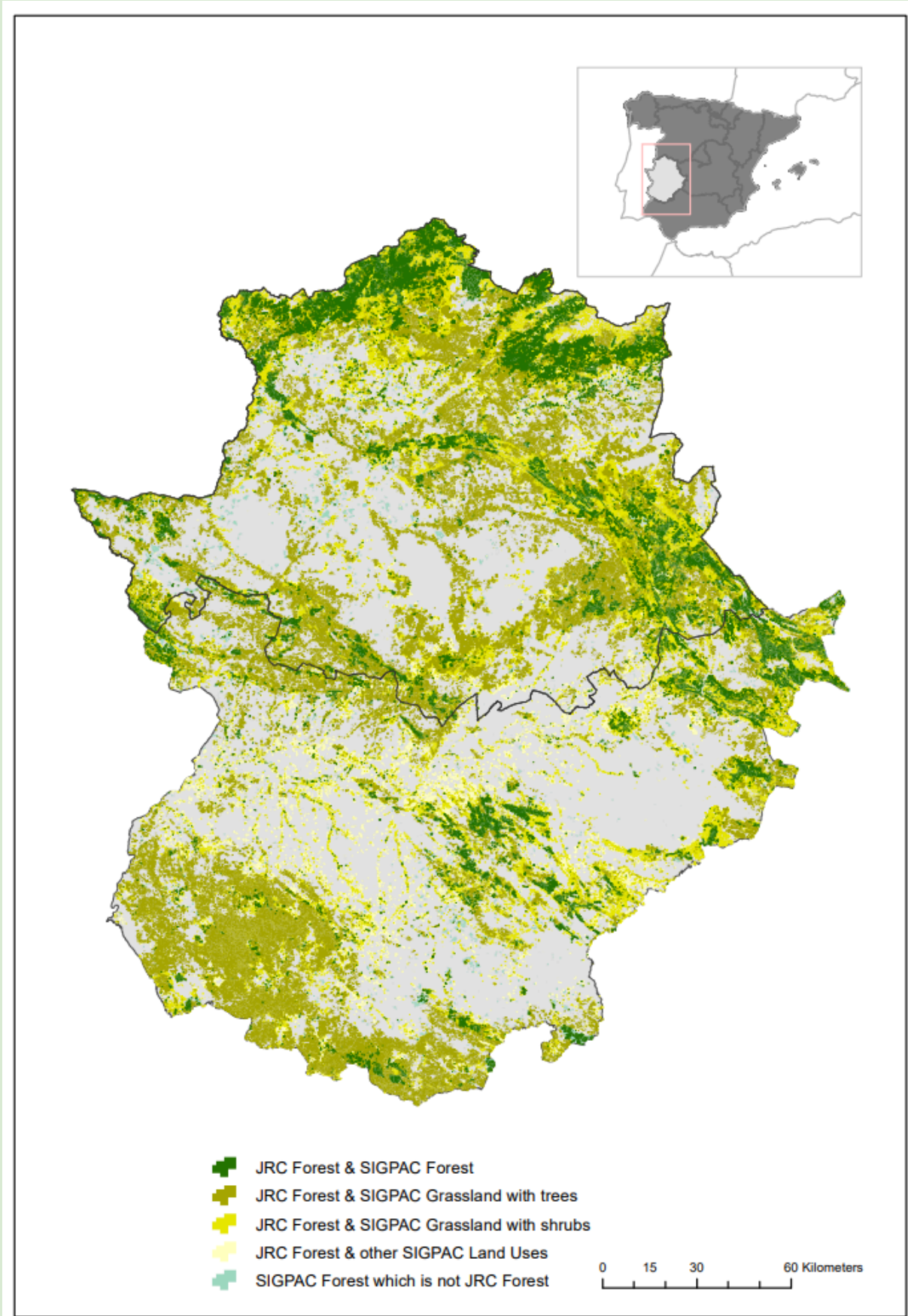
To demonstrate this, we compared satellite information from the EU Forest Observatory with data from the Spanish version of the EU Land Parcel Identification System (LPIS), which in Spain is called SIGPAC. This shows the agricultural land uses which are in receipt of agricultural area payments, and which, by definition, are "agriculture".

Total areas in the Region of Extremadura are given in Table 2 and the land use map in Figure 1. The comparison showed that only 20.7% of the "forest" land identified by the JRC is also recognised by SIGPAC, whereas 41.5% was permanent pasture with trees, 21.1% was permanent pasture with shrubs and 16.7% was other land uses. **This indicates the urgent need for corrections to the JRC data to remove agroforestry areas. The statement in the EUDR Guidelines that information from satellite data, with arbitrary forest thresholds, should "prevail over land registers and cadastres" is clearly incorrect.**

Table 2. Area (ha) identified as "forest" in the EU Forest Observatory for Extremadura and the distribution of this total forest area (968,437 ha) between 5 Land Use categories identified in the Spanish Land Parcel Identification System (SIGPAC)

Uso de Suelo (ha)	JRC Bosque	JRC No Forestal	Total
SIGPAC Bosque	200,902	79,607	280,509
SIGPAC Pastizal con árboles (PA)	401,975	748,305	1,150,280
SIGPAC Pastizal con arbustos (PR)	204,386	580,468	784,854
SIGPAC Pastizal (PS)	14,392	398,161	412,553
SIGPAC Otros (combinados)	146,782	1,388,441	1,535,224
Total	968,437	3,194,983	4,163,421
Uso de Suelo (%)	JRC Bosque	JRC No Forestal	Total
SIGPAC Bosque	20.7%	2.5%	6.7%
SIGPAC Pastizal con arboles (PA)	41.5%	23.4%	27.6%
SIGPAC Pastizal con arbustos (PR)	21.1%	18.2%	18.9%
SIGPAC Pastizal (PS)	1.5%	12.5%	9.9%
SIGPAC Otros (combinados)	15.2%	43.5%	36.9%
Total	100.0%	100.0%	100.0%

Figure 1 The Spanish autonomous region of Extremadura showing the pixels (deep green) which are mapped as forest in both the JRC Forest Observatory and in the Spanish Land Parcel Information (SIGPAC), and the types of SIGPAC agricultural land uses which are also mapped as "forest" by the JRC.



2. Definition of “Agroforestry” and related Indicators

Article 4 of the CAP Strategic Plan Regulation ([2021/2115](#)) indicates that

*‘Agricultural area’ shall be determined in such a way as to comprise arable land, permanent crops and permanent grassland, including when they form **agroforestry systems** on that area....”*

To clarify this sentence, all Member States were asked in the CAP Implementing Regulation [L/458/463](#) Article 4.1 to provide their own definitions of what agroforestry means in the context of arable land, permanent crops and permanent grassland. They did this in Section 4.1.2 of their Strategic Plans and the definitions are collated in EURAF [Policy Briefing #22](#). While the definitions are useful, they are not framed in a way that can be used in remote sensing, since they are usually expressed as a maximum and (sometimes) minimum number of trees/ha, without indicating the whether these densities refer to seedlings or mature trees, or what the crown-cover thresholds are. Rules for permitted tree densities in agroforestry measures are sometimes given in Eco Schemes (CAP Article 31), Investment Measures (CAP Article 73) or Agro-Environment-Climate Measures (CAP Article 70), but again these rules only identify the initial planting densities of small trees.

A further complication arises since almost all CAP Strategic Plans⁶ also recognise a category of tree cover called "Landscape-Features". The CAP Implementing Regulation ([L/458/463](#) - Article 3.1) again asked Member States to give dimensions for these landscape features, and to indicate which count towards the area thresholds for "Good Agricultural and Environmental Condition 8 (i.e. "GAEC-8") (see [Policy Briefing #21](#)). These "landscape features and non productive areas" can be selected from the following indicative list ...noting that "land lying fallow" is a non productive area and the remainder are landscape-features.

*“land lying fallow, **hedgerows, individual or groups of trees, trees rows, field margins, patches, buffer strips, ditches, streams, small ponds, small wetlands, stonewalls, cairns, terraces, cultural features, other**”, and “for each type of landscape feature and non-productive areas selected by Member States they should indicate the minimum size and weighting factors or conversion factors used for the calculation of the minimum share of landscape features and non-productive areas in arable land according to their contribution to the biodiversity objective, where applicable”.*

Three CAP indicators⁷ are relevant to agroforestry and landscape-features. The first two (R.17, O,16) relate to areas of agroforestry which are established or maintained using CAP budgets. The third (I.21) applies to all areas which are identified and mapped by Member States and landowners as being "landscape-features"⁸. This raises another complication, in that there are "official" landscape-features which are fully identified and mapped in the Geospatial Aid Application (GSAA) Systems of Member States and "unofficial" landscape features, which exist on the ground but have not been formally declared by landowners or tenant farmers. The total area of "woody" landscape features (irrespective of GSAA statistics) has been identified in reports by the European Environment Agency ([EEA 2024](#)), and the total area of landscape features by the EU Joint Research Centre ([JRC 2024](#)), using subsampling methods. Article 14.7 of the Nature Restoration Regulation ([2024/1991](#)) invites Member States to develop a more detailed methodology for "high diversity landscape features" than used by the EEA or JRC, and do this by 19.8.25. This effort is complicated by the differences in the definitions of CAP "landscape features" and NRR "high diversity landscape features". Guidance for Member States on these improved measurement methods has been produced by DG ENV, but has not been released by the Commission. EURAF suggests that Member States should superimpose the most recent Copernicus Tree Cover Density data at 10 metre pixel resolution onto LPIS/IACS parcel shapefiles: thus creating a parcel by parcel woody landscape-feature index, including trees on boundaries.

Result Indicator 17 *"Afforested land: area supported for afforestation, agroforestry and restoration, including breakdowns"* It is further indicated in the Result Indicator Fiche (version 19) that very few Member States provide

⁶ All CAP Strategic Plans, with the exception of Finland and Sweden have identified woody landscape features.

⁷There is a fourth indicator - Result Indicator 34 (expenditure for the preservation of landscape features), but this seems to have no relation to landscape features in the context of GAEC8, since its description says “all schemes for climate, environment and animal welfare (Article 31)”, “environmental, climate-related and other management commitments (Article 70)” and “sectoral types of interventions (e.g. actions under restructuring and conversion of vineyards)”

⁸ In some cases the Member States map these on the GSAA/LPIS systems of farmers and farmers are asked to confirm the boundaries. In other cases the farmers themselves must add sketch them onto paper copies of farm maps.

the breakdown specified in the Implementing Act, i.e. 17.1 afforested area, 17.3 restored area, 17.3 agroforestry area, 17.4 woody landscape features created. Clarity is given by the Fiche that landscape features (17.4) are to be included within the area of agroforestry (17.3).

R.17 Methodology. *The total number of hectares as well as its breakdown into the following four subcategories of area (hectares) of the first establishment and maintenance are counted when the beneficiary receives the first payment: 1. **Afforested area**. 2. **Restored area**. 3. **Agro-forestry area** (this sub-indicator measures the entire area supported under the intervention that includes the whole agroforestry system - both cultivated agricultural areas and areas under the planted landscape features) 4. **Landscape features created** (this sub-indicator measures only area of planted wooded landscape features. To simplify measurement, Member States may use conversion factors consistent with the design of the agroforestry intervention). The total equals the sum of afforested area, restored area, agroforestry area and the area of landscape features created when not already counted under agroforestry. These areas are accounted for over the whole programming period.*

However, only 14 Member States have included targets for R.17 in their CAP Strategic Plans. There are now 7 Member States - Ireland, Netherlands, Finland, Sweden, Luxembourg, France and Germany (mainly) which have removed forest related expenditure from their CAP Strategic Plans, and therefore have not given targets for any forest indicators. These exceptions mean that forestry and agroforestry data will be under-reported in CAP statistics. **It is therefore important for the 7 "opt-out" countries to include R.17, R.34, O.15 and O.16 within their returns under the FMR.**

Output Indicator 16 - "Number of hectares or other units under maintenance commitments for afforestation and agroforestry" ([Fiche](#))

O.16 Methodology. *The total number of hectares (forestry) or other units (such as trees) covered by maintenance commitments for afforestation and agroforestry specified in the CAP Strategic Plans for which a payment was made in the Financial Year concerned. The number of hectares (forestry) under commitments. If commitments are paid per other units than hectares, the covered number of hectares should nevertheless be accounted in the aggregate.*

Member states do not have to distinguish in O.16 between afforestation and agroforestation, nor indicate for how many years the payments are made.

Impact Indicator 21 - "Share of agricultural land covered with landscape-features ([Fiche](#))"

I.21 Methodology. *This indicator aims to estimate the area covered by landscape features in agricultural land. **Landscape features may include linear elements (e.g. hedgerows) and patches (e.g. trees, woodland, etc.), water & wet spots (ponds, water bodies, streams, etc.); moderately managed areas (e.g. field margins), etc.** Landscape features support biodiversity and ecosystem services. Therefore, they provide many benefits to agro-ecosystems and the wider environment, including habitat provision, mitigation of soil erosion, improvement of soil fertility, water flow regulation, watercourses protection, climate change mitigation and adaptation. This indicator consists of 2 specific indicators: 1. **The share of agricultural land covered with landscape features (I.21)**, and 2. **An elaborated index of landscape elements structure (under development).** **Possible Sources I.21:** a) Copernicus Land Monitoring Service **fed with LPIS/IACS**. Copernicus is the European Union's Earth Observation Programme. b) Land use/cover Area frame statistical Survey (LUCAS-landscape features module).*

The inclusion of "mineral soils and agroforestry" as the first of three carbon farming methodologies suggested ([5th Expert Group Meeting](#)) as part of the EU Carbon Removals Certification Framework ([CRCE](#)) reinforces the need for an objective definition of agroforestry which is capable of being monitored by a combination of satellite imagery and land-parcel shapefiles from the CAP GSAA/LPIS systems. The latter has already been identified in the CRCE as the backbone of the EU carbon farming registry, and parcel-level data storage is integral to the Farm Sustainability Tool (FaST) for information on soils and fertiliser applications. Member States have a commitment to make national versions of FaST available to all farmers by the end of 2024 (Article 15.4 of the CAP Strategic Plan

Regulation 2021/2115 - [link](#)). Access to open GSAA/LPIS data is also an integral part of the upcoming EU GreenData4All Initiative ([link](#)).

Comprehensive identification of agroforestry is also crucial for LULUCF reporting to the UN Framework Convention for Climate Change (UNFCCC). In these reports each MS identifies six land use categories (forestland, cropland, grassland, wetland, settlements and other) and produce annual estimates of changes in land area between these categories and the GHG emissions due to these changes and emissions from on the unchanged lands. This data is sent annually to the UNFCCC, together with recalculations back to 1990 if methods change. Member States are obliged in the revised LULUCF Regulations (2023/839) to use a geospatial aid application which identifies the location of agricultural and non agricultural parcels receiving CAP payments. In IPCC terms this is "wall to wall" identification of land parcels (see EEA LULUCF [Handbook](#)). It is increasingly important that the location and emissions of agroforestry parcels (i.e. woody vegetation on grassland or cropland) can be accurately reported by Member States, and that this national reporting should link to the location and impact of voluntary and statutory carbon farming schemes.

The 2018 Land Use Land Use Change and Forestry Regulation ([2018/841](#)), as amended in 2023 ([2023/839](#)), committed Member States to collectively achieve a net Greenhouse Gas (GHG) emissions target of -310Mt CO₂e in 2030, and to include a roadmap to reach these agreed annual national targets by amending their National Energy and Climate Plans (NECPs), national CAP Strategic Plans and Forest Strategies. A DG CLIMA evaluation of planning by MS for these targets in their revised NECPs was published on [18.12.23](#), indicating that ***Almost all Member States need to improve their monitoring, reporting and verification to ensure the robustness and policy integration enhancements of the revised legislation.***

The 2030 -310 MtCO₂e net emission target is very ambitious and clearly cannot be delivered by forestry alone. The European Environment Agency (EEA) confirms that it is one of the 5 (from 30) Environmental Action Programme Targets for 2030 which are "very unlikely" to be achieved. EURAF noted this in its [Policy Briefing #26](#), and showed that a combined annual planting programme of 1 million ha annually of afforestation and agroforestation would be needed to achieve a 2040 net-zero target in the AFOLU sector, and that this is at least ten times greater than current plans.

EU-DG-CLIMA and the Joint Research Centre (Korosuo et al., 2021) have reviewed "Forest Reference Levels" used in GHG Reporting from Forest Land, and Member States have compared the LULUCF metric "forest remaining forest" in annual GHG reporting consistently matches that reported from national forest inventories (European Commission, 2020). This detailed review of national forest inventory methods and results shows that the forest definitions used in UNFCCC statistics are those which should be used to assess estimates of "deforestation", rather than the globally-averaged definition used by the FAO. The JRC has also supported the UNFCCC Global Stocktake of nationally reported GHG emission data, with large differences becoming apparent between FAO-Forest Resource Assessment (FAO-FRA) and UNFCCC estimates of both forest areas and net-emissions (Grassi et al., 2022, 2023).

Proposed definitions: "Forests" should be defined as in Annex II of the EU LULUCF Regulation (2018/841). "Agroforests" can in turn be defined as "parcels classified as agriculture, including boundaries, with more than 5% tree-cover, or with tree-planting or management which is intended to exceed 5% cover⁹. Shrubs may also be present"

3. Definition of "Trees outside Forests"

All Member States report to the 5-yearly FAO Forest Resource Assessment (FAO, 2020). MS are broadly consistent in the way they report forest land, however they vary greatly in their use of the two FAO categories of Other Wooded Land (OWL)¹⁰ and Other Land With Tree Cover (OLTC)¹¹. Even with inconsistent data, the sum of OWL

⁹ 5% is the crown cover threshold used in the FAO definition of "Other Wooded Land".

¹⁰ Land not classified as "Forest", spanning more than 0.5 hectares; with trees higher than 5 metres and a **canopy cover of 5-10 percent**, or trees able to reach these thresholds in situ; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.

¹¹ Land classified as "other land", spanning more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 metres at maturity.

and OLTC indicates that **around 16% of EU tree cover is outside of forest land** (Table 2). Both measures only include blocks bigger than 0.5ha: inclusion of smaller areas of tree-cover **would give a much higher total estimate**.

Country	Forest Land ('000 ha)	Other Wooded Land ('000 ha)	Other Land with Tree Cover ('000ha)	%Trees outside Forest (OWL+OLTC)
2020 returns ('000 ha)				
Austria	3899.15	130.24	13.08	3.5%
Belgium	689.3	32.9	31.47	8.5%
Bulgaria	3893	24	13.2	0.9%
Croatia	1939.11	618.09	50	25.6%
Czechia	2677.09	0	200.25	7.0%
Cyprus	172.53	213.57	0	55.3%
Denmark	628.44	36.95	2.67	5.9%
Estonia	2438.4	94.44	3.6	3.9%
Finland	22409	746	9	3.3%
France	17253	843	206	5.7%
Germany	11419	0	400	3.4%
Greece	3901.8	2634.72	1000	48.2%
Hungary	2053.01	200	82.24	12.1%
Ireland	782.02	65.74	0.67	7.8%
Italy	9566.13	1865.84	2718.37	32.4%
Latvia	3410.79	107.8	182.61	7.8%
Lithuania	2201	62.1	19.5	3.6%
Luxembourg	88.7	2.7	0	3.0%
Malta	0.46	0.07	4.7	91.2%
Netherlands	369.5	0	21.55	5.5%
Poland	9483	0	0	0.0%
Portugal	3312	1543	0	31.8%
Romania	6929.05	15.57	0	0.2%
Slovakia	1925.9	20.41	0	1.0%
Slovenia	1237.83	27.42	288	20.3%
Spain	18572.17	9381.82	3902.36	41.7%
Sweden	27980	2364	0	7.8%
Total	159231.4	21030.4	9149.3	15.9%
Switzerland	1269.11	74.92	301.69	22.9%
United Kingdom	3190	20	24	1.4%

Table 2 - Returns by EU Member States to the FAO Forest Resource Assessment 2020, showing that **Trees outside Forests** comprise at least 16% of the tree-covered land. However this only looks at blocks bigger than 0.5 ha - the real area of ToF will be much larger

The FAO FRA-2020 data was used by Forest Europe together with Pan-European Indicators of Sustainable Management, to evaluate the financial and environmental impact of Europe's forests (2020). However, the FAO-FRA data is voluntary and **often incomplete**.

As indicated in the draft Forest Monitoring Regulation, modern remote sensing technologies can contribute greatly to forest monitoring. Once forest areas are consistently defined, the Trees outside Forests on "grassland", "cropland", "wetland" and "settlements" can be consistently identified for GHG estimation (Brandt et al., 2020; GFOI, 2020; Malkoç et al., 2021).

The overwhelming need is to ensure that the EU Forest Monitoring Regulation complies with the UNFCCC methodology used for LULUCF estimation - specifically the IPCC "2019 Refinement of the 2006 Guidelines for National GHG Inventories" ([link](#)). These documents,

together with the Marrakesh Accords ([link](#)), should be referred to in the EU FMR.

4. How much Agroforest is there in Europe?

"Trees outside Forests" encompass not only trees in agroforestry systems, but also urban trees. In aggregate, across Europe, we are talking about billions of extra trees. The EU [Biodiversity Strategy](#) made a promise to 3 billion "extra" trees across Europe, and these are being recorded in the "[Map my Tree](#)" database. This DG ENV database collects data from planting organisations on whether trees are planted in forest land (reforestation), agricultural land (agroforestry) or in settlements (urban forestry).

The EU definition of agroforestry is "a land use system in which trees are grown in combination with agriculture on the same land" (Reg 1305/2013), and the European Agroforestry Federation clarifies that: "Agroforestry practices include all forms of association of trees and crops (silvoarable systems) and/or animals (silvopastoral systems), on a parcel of agricultural land, whether in the interior of the parcel or on its edges (hedges)". All EU Member States have now provided their own definitions of agroforestry for use in arable, permanent-grassland and permanent-crop areas (see EURAF [Policy Briefing #22](#)). Landscape Features, as defined in GAEC-8 of the Strategic Plan Regulation include "groups of trees, lines of trees, hedges and individual trees), mapping and reporting of these is to be carried out by Member States as described in Indicator Fiche I.21 ([ref](#)) of the CAP Performance Monitoring and Evaluation Framework (see EURAF [Policy Briefing #21](#))

According to the estimates of den Herder et al. (2017), using the LUCAS database, the total area under agroforestry in the EU 27 is about **15.4 million ha**, which is equivalent to about 3.6% of the EU territorial area and 8.8% of the utilised agricultural area. There is evidence that the intensity of grazing in silvopastoral areas in the EU

has become **less intense** over the past 20 years (Rubio Delgado et al., 2023), but there is no apparent decrease in the area of permanent pasture (see EURAF [Policy Briefing #29](#)).

Several studies have quantified the extent of agroforestry:

- **Reisner et al** (2007) focused on silvoarable agroforestry, taking data on soil, climate, topography, and land cover to identify target regions where: (i) productive growth of trees (*Juglans spp*, *Prunus avium*, *Populus spp*, *Pinus pinea*, and *Quercus ilex*) could be expected and where (ii) silvoarable systems could potentially reduce the risk of soil erosion, nitrate leaching and increase landscape diversity.¹² They showed that silvoarable systems could grow productively on 56% of arable land in Europe (i.e. 90.79 Mha),¹³ with a bigger figure if more tree species are included.
- **Aertsens et al.** (2013) assumed that agroforestry was possible on half of EU arable land (90 Mha) and permanent pastures (50 Mha), and recommended including an additional 17.8 M kilometres of hedges into the EU.
- **Kay et al** (2019) estimated priority areas for agroforestry, classified by biogeographical regions, and calculated detailed environmental pressures on 100 x 100 m pixels across Europe. Areas with more than 4 (pastures) or 5 (arable areas) environmental pressures were selected as “priority areas”. So these are the areas in Europe with the worst environmental problems. They estimated that priority target area for new and regenerated agroforestry by 2030 would occupy 12.8 Mha¹⁴. The same dataset, which excludes protected areas (Natura 2000, Ramsar) and areas with existing agroforestry, has been analysed to identify areas (pixels) with only ONE environmental pressure. This produced an area of 119,890 million ha (arable 95.89 Mha, permanent grassland 24.00 Mha).
- **Den Herder et al** (2020), as a contribution to the EU Forest Strategy Impact Assessment, produced detailed tree cover density maps for agricultural land in the EU. They used the Copernicus Tree Cover Density (2015) system¹⁵, the Corine Land Cover database (2018), and Natura 2000 databases to map areas of low-tree-cover on agricultural land across Europe and showed that 169 million ha² of European agricultural land¹⁶ had 0% tree cover in 2015. An area of 171 million ha of agricultural land had less than 1% tree cover, and 190 million ha had less than 10% tree cover. They emphasised the need to focus the planting of Europe's three billion additional trees on these areas of ultra low tree crown cover.¹⁷ These estimates have been updated using Copernicus 2018 data (EURAF Policy Briefing #26)

5. EU Forest Monitoring Regulation

EURAF welcomed the draft FMR and supports improved monitoring of forests and trees-outside-forests, particularly for LULUCF and CRCF purposes. The indicators in Annex I are excellent¹⁸. Those in Annex II¹⁹ need significant consultation with MS and industry. EURAF notes that there are large areas of grassland recorded in national LPIS systems which meet the FMR's definition of “forest”, yet are legally classified as grassland and are in receipt of CAP BISS payments. The legal indicator of “forest land” is provided by national forestry laws, national cadastres and LULUCF reporting. Imposing a single EU “forest” definition in the FMR will complicate LULUCF reporting (EURAF Policy Briefing [#17](#)).²⁰ An alternative approach is to develop integrated rural cadastres which merge forest inventories and CAP-LPIS agricultural geostatistics, as has been done superbly in the Spanish SIGPAC system, partly to meet the needs of the LULUCF Regulation. EURAF has developed a pilot project proposal to support research on how to extend this integrated rural cadastre to other MS.

¹² **Environmental risks** were present on about 40% of the European arable land

¹³ **Arable land** - covers 61.2% of EU27 utilised agricultural area (161.787 Mha), permanent grass 30.1% (50.137 Mha), permanent crops 7.5% (12.120 Mha)

¹⁴ **The UK and Croatia** are excluded - Judging from neighbouring countries, an additional Priority area of 0.1 Mha could be added for Croatia.

¹⁵ **Tree Cover Density** data is provided by CORINE in a range from 0-100% for the 2012 and 2015 reference years. The data is available as raster data in European projection (EPSG: 3035) with 20 and 100m resolution. For our assessment we used the data with 100m resolution as we were interested in large areas with little or no tree cover. For our assessment we first constructed a map showing tree cover density in “agricultural areas”. We then examined different thresholds for “no or very low tree cover” (0%, <1%, <2%, <5%, <10%).

¹⁶ **EEA-39 - Including EFTA members and EU Candidate States (inc. Turkey).** This map will be replaced with EU-27

¹⁷ See updates using Copernicus crown-cover-density data from 2018 in EURAF [Policy Briefing #26](#)

¹⁸ a) Forest area, b) tree cover density, c) forest type, d) forest connectivity, e) defoliation, f) forest fires (events, burnt-areas, severity, post-fire erosion, post-fire recovery) g) wildfire risk assessment, h) tree cover disturbances.

¹⁹ a) Forest available for wood supply or not available for wood supply; b) growing stock volume per ha; c) net annual increment per ha; d) stand structure; e) tree species composition and richness; f) European Forest Type; g) removals; h) deadwood; f) location of forest habitats in Natura 2000 sites; j) abundance of common forest birds; k) location of primary and old-growth forests; l) protected forest areas; protected forest areas; m) production and trade of wood products; n) forest biomass for bioenergy.

²⁰ EURAF Policy Briefing [#15](#) has been updated with an example from Spain of the huge errors possible when “forestry” is identified in a database which does not exclude areas which are “predominantly agriculture”.

6. EU Deforestation Regulation

The EU Deforestation Regulation (EUDR) ([2023/1115](#)) comes into effect on 30/12/2024, although Parliament will vote in November on a delayed ‘phase-in’ for 12 months. It imposes strict rules of due diligence to all companies wishing to place affected products on the European market, or to export them. It also applies to all EU Member States. Products must be deforestation-free, produced in accordance with relevant local legislation, and covered by a due diligence statement (with geospatial location information). Products covered are: cattle, cocoa, coffee, oil palm, soya, wood, and rubber. EURAF supported the [joint statement](#) of European forestry primary producers, and notes that further clarification is awaited on the application of the EUDR to agroforestry areas. It shares the concern of researchers at CIFOR-ICRAF and Wageningen University that the regulation’s implementation and reporting requirements risk excluding the most vulnerable commodity producers in the global South from various markets. The main problem is a gap between a forest definition that excludes agroforestry and the tree-cover-based maps that are presented as if they are forest and that erroneously imply a high deforestation risks for pre-2021 agroforestry farms ([van Noordwijk et al. submitted](#)). Sufficient clarity has not been added by the latest version of the EUDR Guidance Notes, as discussed in [Supplementary Material](#) to the above paper. It is hoped that the EU will move towards “multilaterally agreed definitions” with countries worldwide, as agreed in a recent joint Ad Hoc Joint Task Force on the EUDR with Malaysia and Indonesia ([link](#)). EURAF stresses that only a small minority of developing countries²¹ use the FAO reporting thresholds in their national inventories of “Forest”, and hopes that the multilateral definitions agreed will conform with those used in annual or bi-annual reporting of GHG emissions and land use change under the auspices of the UN Framework Convention for Climate Change.

7. Recommendations

1. Trees outside Forests (ToF) are greatly under-reported and should have been included in the “Forest Monitoring Regulation”, with recommendations based on modern methodologies using Copernicus, LUCAS, LPIS and cadastral datasets.
2. Greenhouse gas emissions reporting by Member States should estimate the impact of trees in cropland, grassland and settlements in addition to forests - the revised LULUCF Regulation expects MS to use the best available spatially explicit reporting methods, and specifically mentions the CAP Geospatial Aid Application. Member States should follow this guidance in their annual GHG reporting.
3. Seven EU Member States (IE, NL, FI, SE, LU, FR, DE (most Lander) fund forestry from their ‘own resources’, and do not provide forestry related indicators and targets in the CAP Performance, Monitoring and Evaluation Framework (PMEF). These indicators (R.17, R.34, O.15 and O.16) should nevertheless be used by these countries in the new Forest Monitoring Regulation.
4. The Forest Monitoring Regulation should refer to definitions of “forest” supplied by Member States to the UNFCCC, and the LULUCF Regulation, rather than the more rigid and less realistic global definition used by the FAO in its Forest Resource Assessment.
5. The MapMyTree database, established to monitor the three billion “additional” trees established under the initiative announced in the EU Biodiversity Strategy and the Forest Strategy, should include publicly funded plantations and clearly differentiate trees established on forest, agricultural or settlement land.
6. MS should use the fact that agroforestry parcels are excluded from the EUDR definition of “forest” to integrate their forestry and agricultural land-parcel registries into single national databases which identify the LULUCF categories of forestland, cropland, grassland, wetland, settlements and other land. Agroforestry parcels would be identified as sub-categories of cropland or grassland with tree-cover or planned tree-cover in excess of 5%

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²¹Only 4 (Cambodia, Philippines, Korea, Togo) of the 48 UNFCCC non-Annex I countries have forest definitions which correspond to the EUDR, and only 1 (Norway) of the non-EU UNFCCC Annex I countries. Only 5 EU Member States apply the EUDR definition nationally (DK, FR, IT, LU, SE).

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