Sintetic
SINGLE ITEM IDENTIFICATION FOR FOREST PRODUCTION, PROTECTION AND MANAGEMENT

D6.6

WHITE PAPER on SINTETIC contribution addressing the EUDR 16298/22 EU legislation requirements.

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List of abbreviations

Acronym / Abbreviation	Meaning / Full text
API	Application Programming Interface
CAs	Competent Authorities
DDS	Due Diligence Statement
EU	European Union
EU CSW-CERTEX	European Union Central Component of EU SWE-C
EUDR	The European Union Deforestation-free Regulation
EU SWE-C	European Union Single Window Environment for Customs
EUTR	European Union Timber Regulation
FAQ	Frequently Asked Questions
FLEGT	Forest Law Enforcement, Government and Trade
FPIC	Principle of Free, Prior and Informed Consent
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
IMU	Internal Navigation Systems
IS	Information System
OJEU	Official Journal of the European Union
SME	Small and Medium Enterprise
UN	United Nations

Background note of the EUDR and SINTETIC

The European Union Deforestation-free Regulation (EUDR) is one of the key element of the EU Green Deal and of a broader EU strategy to protect the world's forests[1]. The EUDR follows up actions already brought forth by the EU Timber Regulation and by the Forest Law Enforcement, Government and Trade (FLEGT) Regulation although this new regulation covers a broader set of additional commodities, including cocoa, coffee, soy, palm oil, rubber and cattle.

The new Regulation will require any company importing or exporting these commodities from the EU to prove the products are deforestation-free. This applies to any company, regardless of whether they are EU-based or not, and for legal and illegal sources of deforestation in Europe and overseas. Companies wishing to import or export these products will be required to perform proper due diligence. The EU deforestation-free regulation suggests including the following three key steps:

- Gather geographic information (e.g. satellite imagery) on the plot of land the commodities were sourced from;
- Assess the risk of non-compliance to the EU deforestation-free regulation; and
- Mitigate risks to negligible levels.

Traceability systems for logs are crucial for monitoring, verifying, and ensuring that timber is harvested in a manner that is legal and sustainable. These systems can play a significant role in preventing illegal logging, supporting law enforcement, promoting sustainable forest management and empowering consumers and companies to make environmentally responsible decisions. This, in turn, helps to combat deforestation.

The SINTETIC project addresses the requirements of the EU Deforestation Regulation (EUDR) by implementing advanced technologies to enhance traceability systems and providing transparency throughout the supply chain, sustainability and compliance in timber harvesting and supply chains - making it possible for companies and governments to ensure that illegal or unsustainable wood does not enter the EU market.

Companies are increasingly held accountable for the environmental impact of their supply chains. SINTETIC develops a traceability system that can help businesses demonstrate their commitment to sustainability and responsible sourcing, which can be crucial for their reputation and customer relations especially when companies are located in so called "high risk countries". Additionally, the detailed records provided by SINTETIC traceability systems can be used as evidence in legal cases against illegal logging. Companies can bring evidence on the entire journey of the harvested timber.

SINTETIC traceability system includes geolocation and digital records, similar to a block chain allowing real-time monitoring of the ongoing logging activities. This, together with the illegal logging system alert, can help authorities to quickly identify and address illegal logging operations while discouraging illegal logging as the risk of being caught and penalized increases when logs are monitored/traced. SINTETIC offers additionally the possibility to combine traceability with remote monitoring satellite images in order to boost compliance to the new Regulation.

[1] Deforestation and forest degradation are major causes of climate change and biodiversity loss, two key environmental challenges of our time. They are responsible for about 10-20% of global CO2 emissions annually

EUDR: Entry into force and date of application

Officially adopted on the 31st of May 2023 and cited in the Official Journal of the European Union (OJEU) on the 9th of June, the EU Regulation on Deforestation-free Products[2] (EUDR) **entered into force on the 29th of June 2023.**[3]

This date does not coincide with the application date, as the main provisions of the EUDR **shall apply from 30th December 2024 (for SMEs, from 30th June 2025**)[4]. The stated rationale for this deferred application of provisions (also known as the "transitional period") is among others to provide those subjected to the regulation's obligations "a reasonable period of time to adapt to the new requirements". [5]

Notably, the EUDR clarifies that, for those **timber and timber products** that were produced before the EUDR's entry into force (before 29.06.2023) and that were placed on the market from the EUDR's date of application (from 30.12.2024), **the** currently applicable **EU Timber Regulation**[6] (EUTR) **shall continue to apply until the 31st of December 2027.**[7]

In October 2024, the European Commission proposed an extra 12 months of phasing-in time for the EUDR's application to enable a smooth implementation from the start. The proposal needed to be approved by the European Parliament and the Council of the EU, and means that the main provisions of the EUDR shall apply from 30th December 2025 (for SMEs, from 30th June 2026). Consequently, timber and timber products produced before 29.06.2023 and placed on the market from the new date of application (from 30.12.2025), the EUTR shall continue to apply until 31st December 2028.

Also in October 2024, the European Commission published additional documents aimed at further supporting the EUDR implementation, including an updated version of the Frequently Asked Questions (hereafter the most recent version of the FAQ), a Guidance document, a Communication on a Strategic Framework for International Cooperation Engagement on Deforestation - including also general principles on the methodology for benchmarking the deforestation and forest degradation risks of producing countries, as well as a factsheet clarifying the EUDR obligations of SMEs.

It is also worth noting that, although not clearly stipulated in the most recent version of the FAQ and the Guidance, the European Commission has explained in direct engagement with stakeholders the legal status of derived timber products, which is dependent on the first placement on the market of the commodity. Therefore, if the logs are placed on the Union market before the EUDR's entry into application, derived products made with such wood are not subject to the provision of the EUDR. They are, however, subject to the EUTR. However, if the wood is placed on the market after the EUDR's entry into application, both the wood and its derived products are subject to the provisions of the EUDR.

[2] Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010. The EUDR was published in the EU Official Journal on 9 June 2023 and entered into force 20 days later on 29 June 2023.22 The main obligations will be applicable in December 2024, 18 months after the entry to force of the EUDR.
[3] Article 38.
[4] Article 38.
[5] Recital 47.
[6] Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market.
[7] Article 37.

In December 2024, the European Parliament and the Council of the European Union approved the European Commission's proposal to postpone the EUDR's date of application by one year during interinstitutional negotiations (also known as "trilogue"). After completing the remaining formalities around the official adoption of the Commission's proposal, the n**ew date of application of the EUDR will be 30th December 2025**.

Background and stated objectives

The EUDR's Recitals section provides insights into the background and objectives of this piece of legislation. It is noted that **deforestation and forest degradation** – described as important drivers of global warming and biodiversity loss - **is taking place at an alarming rate**[8]. A strong link between these phenomena **and the expansion of agricultural production** dedicated to producing several high-demand commodities and products is also underlined[9].

More significantly, it is pointed out that **the EU "*imported and consumed one third of the globally traded agricultural products associated with deforestation*** *between 1990 and 2008*", and that, "*even if the relative share of Union consumption is decreasing*, ***Union consumption is a disproportionally large driver of deforestation***". Therefore, the EU intends to take action to minimize its negative impact, including **by influencing the global market**, in addition to **its own supply chains**[10].

[8] Recital 2.
[9] Recitals 12, 16, 17.
[10] Recital 18.

Subject matter, scope and main definitions

The EUDR lays down rules regarding the a) placing and making available on the EU market and b) export from the EU of relevant products (explicitly listed in **Annex I**[11]) containing, having been with or having been made using the following seven relevant commodities: **cattle, cocoa, coffee, oil palm, rubber, soya and wood**.

The EUDR provisions apply to EU-based operators, traders and their authorized representatives, as well as to competent authorities (CAs) and customs authorities of the EU Member States; certain provisions also apply to the EU Commission (secondary legislation and reviews). For our purposes, the focus will be on the obligations of operators and traders (hereafter collectively referred to as economic operators).

By '**operator'**, the EUDR means "*any natural or legal person who, in the course of a commercial activity, places relevant products on the market or exports them*"[12]. Instead, '**trader'** means "*any person in the supply chain other than the operator who, in the course of a commercial activity, makes relevant products available on the market*"[13]. Notably, traders that are not SMEs ('non-SME traders') incur the same obligations as operators that are not SMEs ('non-SME operators').[14]

Closely linked to the definition of operator is that of '**placing on the market'**, which refers to "*the first making available of a relevant commodity or relevant product on the Union market*"[15]. Similarly, the '**making available on the market**' by traders refers to "any supply of a relevant product for distribution, consumption or use on the Union market in the course of a commercial activity, whether in return for payment or free of charge".[16]

The **twofold goal** of the EUDR rules is to[17]:

1. Minimize the contribution of the EU to global deforestation and forest degradation;
2. Reduce the EU contribution to greenhouse gas emissions and global biodiversity loss.

By '**deforestation'**, the EUDR means "*the conversion of forest to agricultural use, whether human-induced or not*". As such, non-agricultural activities inducing the conversion of forest, such as infrastructure or housing, are excluded from the scope[18].

'**Forest degradation'** means "stru*ctural changes to forest cover, taking the form of the conversion of a) primary forests or naturally regenerating forests into plantation forests or into other wooded land or b) primary forests into planted forests*"[19]. While the EUDR does make a conceptual and legal a distinction between plantation forests[20]

[11] For the commodity "wood", examples of relevant examples include, inter alia: fuel wood, wood charcoal, wood in the rough, saw n wood, particleboard, plywood, carpentry, furniture, etc.
[12] Article 2.
[13] Article 2.
[14] Article 5.
[15] Article 2.
[16] Article 2.
[17] Article 1.
[18] Article 2.
[19] Article 2.
[20] Article 2 (11): 'plantation forest' means a planted forest that is intensively managed and meets, at planting and stand matur ity, all the following criteria: one or two species, even age class, and regular spacing; it includes short rotation plantations f or wood, fibre and energy, and excludes forests planted for protection or ecosystem restoration, as well as forests established through plan ting or seeding, which at stand maturity resemble or will resemble naturally regenerating forests.

and planted forests[21] (with plantation forests being a specific variety of planted forests), the conversion of primary forests into either of the two leads to the same result, namely to forest degradation.

The inclusion of forest degradation into the EUDR appears to be linked to an intention to preserve remaining primary forests and naturally regenerating forests, which are described as having a different biodiversity composition and providing different ecosystem services compared to plantation forests and planted forests. Indeed, primary forests are described as "unique and irreplaceable".[22]

The core of the EUDR consists of the prohibition to place, make available on the EU market or export from the EU the relevant commodities / products, unless all the following conditions are fulfilled[23]:

- They are **deforestation-free**;
- They have been produced **in accordance with the relevant legislation of the country of production**;
- They are covered by a **due diligence statement**.

Deforestation-free

'**Deforestation-free**' means that "the relevant products contain, have been fed with or have been made using, relevant commodities that were produced **on land that has not been subject to deforestation after 31st December, 2020**"[24].

Notably, the second part of the definition of 'deforestation-free' includes the forest degradation ban and makes explicit that its introduction in the EUDR is linked primarily to wood harvesting: "*in the case of relevant products that contain or have been made using wood, that* ***the wood has been harvested from the forest without inducing forest degradation after 31st December 2020*****"**. According to the most recent version of the FAQ, the reference to 'inducing' creates a causal link between the wood harvesting and the process of forest degradation. This means that, even though forests may be impacted by other processes, including climate change, disease outbreaks, fires, etc., these potential forms of forest degradation are out of the EUDR's scope. The EUDR only addresses forest degradation driven by the forestry activities associated with wood harvesting and subsequent regeneration of the forest.

The 31st December 2020 is the so-called "cut-off date" and it was established to avoid an acceleration of activities that may have led to deforestation or forest degradation during the period in which the EUDR was undergoing the legislative procedure steps.[25]

While the notions of deforestation and forest degradation are defined by the EUDR, the assessment of whether activities may have causes any of the two is very complex in practice, as both phenomena are dynamic. Simply put, it is extremely difficult for economic operators, especially downstream operators in the forestry sector, to know at the moment of acquiring harvested wood, what will happen in the future with the sourcing areas.

On this topic, the most recent version of the FAQ provides that, if products were sourced from an area where harvesting activities had not induced forest degradation in the period prior to submitting a due diligence statement

[21] Article 2 (10): 'planted forest' means forest predominantly composed of trees established through planting and/or deliberate seeding, provided that the planted or seeded trees are expected to constitute more than 50 % of the growing stock at maturity; it includes coppice from trees that were originally planted or seeded.
[22] Recital 15.
[23] Article 3.
[24] Article 2.
[25] Recital 46.

(more details about the due diligence and due diligence statement below), then these products are compliant with the EUDR. This implies, however, that all the relevant information had been considered by the operators when exercising due diligence, including information about the post-harvesting plans for the plot of land. If indeed due diligence was properly exercised and the relevant products were compliant when they were placed on the market, then events that occur after the placement on the market of the product will not change its compliant status (neither the status of derived products).

The SINTETIC project introduces an advanced all-weather monitoring system to detect illegal logging, leveraging data from the Copernicus satellite constellation, with adaptability to higher-resolution satellites. This system integrates satellite data with ground-truthing solutions sourced from legal forest operations monitored through a dedicated machine control system. Ground-truthing data, collected via harvesters and chainsaw operator apps adhering to the StanForD format, includes precise timestamps, geographic positions and tree dimensions, offering real-time insights. These data support model training, enabling the system to distinguish between legal operations and unexpected land cover changes, thus advancing the state of the art in forest monitoring and law enforcement support.

The detection model, developed using machine learning, employs parametric harmonic regression functions of NDVI from Sentinel-1 and Sentinel-2 observations. It identifies small forest variations, validated with SAR data, by comparing seasonal changes across years. By synchronizing with Sentinel satellite refresh rates, the system detects discrepancies consistent with known forest operations. Alerts are semi-automatically generated to pinpoint unexpected changes, classified for their probability of illegal logging while filtering out legal activities. This comprehensive approach ensures precise and timely alerts for law enforcement, offering an innovative and efficient tool for combating illegal deforestation.

RESULT

Illegal logging satellite detection

APPLICATION

Early warning solution for the detection of forest cover changes based on free Copernicus data. Applicable to control illegal logging but also to monitor natural hazards (e.g. wildfire or gales)

Figure 1: SINTETIC Result - Illegal logging satellite detection

Relevant legislation of the country of production

'**Relevant legislation of the country of production**' means "*the laws applicable in the country of production concerning the legal status of the area of production in terms of*:

- *land use rights;*
- *environmental protection;*
- *forest-related rules, including forest management and biodiversity conservation, where directly related to wood harvesting;*
- *third parties' rights;*
- *labour rights;*
- *human rights protected under international law;*
- *the principle of free, prior and informed consent (FPIC), including as set out in the UN Declaration on the Rights of Indigenous Peoples*;
- *tax, anti-corruption, trade and customs regulations*".[26]

As can be observed, the elements falling under relevant legislation of the country of production are varied and multiple. Therefore, the legal aspect of the EUDR is significantly wider than that of the EUTR.

Due diligence statement

The most important EUDR obligation for economic operators is the extensive due diligence procedure (see more details below), the result of which is summarized by the above-mentioned "**Due Diligence Statement**" (DDS). The DDS will contain the information set out in Annex II[27] of the regulation and it will be made available in electronic format by economic operators to the CAs and downstream in the supply chain via the so-called "Information System" (see more details below). By submitting a DDS, economic operators are assuming responsibility for EUDR compliance.[28]

Independent of their position in the supply chain (upstream or downstream), **economic operators have the obligation to submit their own DDSs prior to placing on the market/making available on the market** (hereafter commercializing) relevant commodities or products. The extent of their due diligence obligations, however, will differ depending on their position in the supply chain. For example, when commercializing relevant commodities and products that have already undergone due diligence and are accompanied by DDSs submitted upstream, downstream economic operators may **simply refer to these existing DDSs in their own DDSs, after having ascertained that due diligence was properly carried out.**[29]

According to the most recent version of the FAQ and the Guidance, this ascertainment may not necessarily imply having to systematically check every single DDS submitted upstream; instead, downstream economic operators could comply with this provision by verifying that upstream operators have an operational and up-to-date due diligence system in place, including adequate and proportionate policies, controls, and procedures to mitigate and manage effectively the risks of non-compliance of relevant products, to ensure that due diligence is properly and

[26] Article 2.
[27] Examples of information to be collected include, inter alia: information about the operator and the economic activity, about the commercialized product, about the country of production, the reference number of any existing due diligence statements, the statement of assuming compliance with the EUDR, etc.
[28] Article 4.
[29] Article 4.

regularly exercised. Similarly, the results of an independent audit conducted on the due diligence system of upstream operators could be used. In any case, however, downstream operators retain legal responsibility for the relevant commodities and products they commercialize.

The EUDR foresees an even stronger **due diligence exemption for SME operators**. This category of economic operator is not required to either conduct due diligence or submit their own DDS when commercializing relevant commodities and products accompanied by DDSs submitted upstream. They must only collect from their suppliers the reference numbers of the already submitted DDSs and provide them to CAs upon request. However, this derogation does not apply to those relevant commodities and products placed by the SME operators for the first time on the market, which have therefore not been subjected to any prior due diligence[30]. This simplification for SME operators has also been confirmed in the most recent FAQ and the Guidance.

Finally, the **due diligence obligations falling on SME traders** consist only of collecting basic commercial information from suppliers[31]. As such, SME traders are entirely disconnected from the system around the submission and transfer of DDSs.

Due diligence procedure

As from the 30th December 2024, a company that places relevant products on the EU market will need to first upload a Due Diligence Statement to their competent national authority, through the dedicated Information System established by the European Commission.

To comply with the EUDR, relevant commodities and products can be commercialized only when accompanied by DDSs stating that **no or only a negligible** (deforestation or forest degradation) **risk was found**[32]. '**Negligible risk**' means "*the level of risk that applies to relevant commodities and relevant products, where, on the basis of a full assessment of product-specific and general information, and, where necessary, of the application of the appropriate mitigation measures, those commodities or products show no cause for concern as being not in compliance with Article 3, point (a) or (b)*".[33]

Reaching such a conclusion will be the result of an extensive, **three-step due diligence procedure**: information collection, risk assessment and risk mitigation. This process needs to be conducted prior to each first placement on the market or export (unless exporting relevant commodities or products already accompanied by DDSs, as clarified above).[34]

Article 9 of the EUDR enlists the type of **information to be collected** by economic operators when exercising their due diligence obligations. The most complex task is expected to be the collection and downstream transfer of information containing the **geolocation of all plots of land** where relevant commodities were produced, as well as the **date or time range of production**[35]. The goal here is to ensure the strict and full traceability of relevant commodities to their originating plot of land in order to avoid the introduction of non-compliant material at any of the stages of the supply chain. The EU defines the time range of harvest as the "duration of the relevant harvesting operations". The European authorities can use satellite imagery to determine whether harvesting took place on the plot land during the specified period.

[30] Article 4.
[31] Article 5.
[32] Article 4.
[33] Article 2.
[34] Article 8.
[35] Article 9.

Ensuring strict and full traceability is extremely difficult for downstream operators, if not impossible, due to subsequent and frequent mixing of commodities of different origin occurring down in the supply chain. However, compliance with the EUDR entails dealing only with EUDR-compliant material. This compliance can be ensured by upstream operators, who are placing commodities for the first time on the market. The EUDR strictly forbids the introduction of non-compliant material downstream, rendering superfluous the requirement for strict and full traceability by downstream operators.

The most recent version of the FAQ seems to acknowledge the challenge and the questionable benefit of strict and full traceability obligations of downstream operators, and it seeks to simplify them. For example, in the situation of EUDR-compliant goods coming from multiple places of production, which are then mixed into the same silo, stack, pile, tank, etc. (hereafter generically termed 'silo'), the downstream economic operator submitting a DDS can declare all the places of production of all the good that entered the silo since it was last empty. If the silos are never emptied (this is often the case of sawmills), the downstream economic operator submitting a DDS must declare all the places of production of all the goods that entered the silo during a period of time that ensures that commodities of unknown place of production are not mixed up in the process. For instance, this could be safely done by declaring the geolocation of all previous goods that entered the silo up to a minimum of 200% of the silo capacity, provided that the silo works in first-in first-out system.

Moreover, confidentiality concerns have been raised regarding the transfer of geolocation information through the supply chain, in particular via the Information System, as such data can relatively easily reveal sensitive commercial information such as the list of suppliers. As a possible remedy to this concern, the most recent version of the FAQ and the Guidance stipulates that operators and traders will be able to decide whether the geolocation information contained in their DDSs will be accessible and visible for downstream operators via the Information System.

The SINTETIC project is digitalization the forest sector by integrating cutting-edge technologies to establish a comprehensive, item-level traceability system. This innovative approach tracks timber from the standing tree till the final board, ensuring precise identification and high-quality assessment at every stage of the value chain. The system combines advanced technologies, including optical sensors, Radio Frequency Identification (RFID) and X-ray computed tomography. RFID tags, although cost-effective for high-value timber, are complemented by a punching code system, which is inexpensive and easy to apply for lower-value logs/trees. The logs marked with the punching system or the RFID or both enter the sawmills and are scanned using high-precision X-ray tomography, generating 3D images that optimize the cutting pattern but also creates a unique "fingerprint identities" for each board. Subsequent identification stages use optical vision scanners and printed bar/QR codes, enabling seamless traceability and transparency in the supply chain.

The SINTETIC digital infrastructure, supported by a secure Geodatabase, integrates data from multiple sources along the timber supply chain. It enables real-time data acquisition, secure transmission, and storage, facilitating services such as product certification, timber inventory optimization and tackling illegal logging by the full traceability. This system also addresses confidentiality concerns by securely storing geolocation data, protecting sensitive commercial information within the supply chain. SINTETIC offsets traceability costs by promoting a quality-oriented supply chain and maximizing yields, while modelling tree reactions to climate, silviculture, and threats like pests and drought. Moreover,

the Geodatabase supports compliance with EU Forest Regulations by enabling direct document uploads to the EUDR portal automatizing bureaucracy.

Through its multifaceted innovations, SINTETIC pushes the forest sector beyond state-of-the-art practices, integrating satellite detection, digital tools and advanced tracking technologies into a flexible and unified solution. This system not only enhances the productivity and health of forests but also strengthens monitoring against illegal logging. The traceability network is pivotal for fostering sustainable forest management and ensuring accountability across the value chain. By bridging data from forests to retail, SINTETIC establishes a transparent, efficient and secure timber supply chain, contributing significantly to environmental conservation and regulatory compliance.

RESULT

Entire value chain traceability system for forest products (mechanical and manual)

APPLICATION

The traceability system, based on physical marking of roundwood (single logs) and deployed with a simplified data platform allows stock management, product invoicing and enables a highly precise certification of forest products, including georeferencing of origin.

Figure 2: SINTETIC Result - Entire value chain traceability system for forest products (mechanical and manual)

RESULT

Identification and traceability system for sawn wood

APPLICATION

This system when deployed within the primary processing industry allows:

- Accurate traceability of resources along all log transformation steps
- Link the final product (such as long-lasting structural components) to the unique tree standing in the forest

Figure 3: SINTETIC Result - Identification and traceability system for sawn wood

Article 10 specifies criteria to be considered by the **risk assessment** step of the due diligence procedure. Examples include:

- The risk rating assigned to the country of production via the country benchmarking (more details below);
- The presence of forests in the country of production;
- The presence of indigenous peoples in the country of production and their consultation in good faith;
- The prevalence of deforestation and forest degradation in the country of production;
- Concerns in relation to the country of production, such as the level of corruption, lack of law enforcement, violations of international human rights, armed conflict or presence of sanctions;
- Conclusion of the meetings of the Commission expert groups supporting the EUDR implementation.

The SINTETIC project leverages cutting-edge LiDAR technology to enhance forestry applications, particularly forest inventory, monitoring, and carbon accounting. By integrating LiDAR sensors with forest-operating machines through advanced laser scanning, Inertial Navigation Systems (IMU) and GNSS positioning, SINTETIC delivers an innovative prototype solution. This system enables real-time data collection and processing for optimizing log bucking operations in the field, inventorying trees remaining in the plot post-harvest, monitoring harvest damages on the ground and the remining trees and creating a precise CO_2 inventory. It will be able to distinguish between commercial stems for extraction and crown, branches and deadwood, enabling accurate calculations of CO_2 fluxes and stocks. By integrating this data with information gathered along the entire value chain up to final timber products, SINTETIC develops a precise CO_2 calculator, providing forest owners with a powerful tool for carbon credit calculation. Fully compatible with the SINTETIC Geodatabase, these datasets support comprehensive analytics for forest management, sustainability and supply chain optimization.

Figure 4: SINTETIC Result - On-board LiDAR scanning for value recovery optimization and forest inventory

In its efforts to support forest monitoring activities for various regulatory purposes, including for EUDR compliance, the European Commission set-up the EU observatory on deforestation and forest degradation, which consists of several instruments:

- Global forest mapping and monitoring
- Production and trade of commodities
- Global land use carbon fluxes
- EU tools for forest monitoring.

Global forest maps for year 2020 are produced from a combination of existing global spatial layers, e.g. on land cover, land use and tree height. For example, the map on global forest cover (GFC 2020) aims at representing the state of forest cover by the 31st December 2020, the EUDR's cut-off date. The global land cover from the ESA World Cover project serves as one baseline layer to define the extent of tree cover for year 2020 at 10m spatial resolution. In 2024, GFC 2020 was improved by integrating user feedback and new or revised spatial data layers. There is also a preliminary version of a global map of forest types for year 2020 (GFT 2020), showing a spatial representation of forest categories in line with the definition of forest degradation as set out in the EUDR. A consolidated version of GFT 2020 map will be released in 2025.[36]

Article 10 also clarifies that **wood products covered by a valid FLEGT license** shall be deemed to comply with the legality aspect of the EUDR. As such, due diligence obligations remain applicable to prove no or negligeable risk of deforestation.

Unless the risk assessment reveals no or only a negligible risk, economic operators must adopt **risk mitigation measures – the third step of the due diligence process – as provided by Article 11**. Examples of risk mitigation measures and procedures include requiring additional information, data or documents and/or carrying out independent surveys or audits. In order to exercise due diligence, economic operators shall establish and keep up to date a "**due diligence system**" - a framework of procedures and measures to ensure that the relevant products they place on the market or export are EUDR-compliant, which must be reviewed at least once a year. Furthermore, non-SME economic operators must **publicly report on their due diligence system**, including on the steps taken by them to fulfil their due diligence obligations.[37]

Simplified due diligence and country benchmarking

Under strict conditions, the EUDR foresees **a simplified due diligence procedure** for economic operators. Specifically, these are not required to undergo step two and three of the due diligence procedure - the risk assessment and the risk mitigation, respectively - when they have ascertained that all the relevant commodities and relevant products were produced in countries classified as low risk, in accordance with Article 29. In this specific case, **economic operators must only exercise step 1 of the due diligence procedure – information collection –** and be ready to demonstrate to CAs that there is a negligible risk of circumvention of the regulation or of mixing with products of unknown origin or origin in high-risk or standard-risk countries.[38]

Indeed, as per Article 29, the EUDR establishes a **three-tier system for the assessment of countries** (or parts thereof), also known as the "**country benchmarking**", resulting in Member States and third countries being classified into one of the following risk categories: **low risk, standard risk, and high risk**. At the time of the EUDR's entry into force, all countries were designated as standard risk. This implies that, until deemed as low risk,[39]

[36] https://forest-observatory.ec.europa.eu
[37] Article 12.
[38] Article 13.
[39] According to Article 29.1 (c), "'low risk' refers to countries or parts thereof, for which the assessment referred to in paragraph 3 concludes that there is sufficient assurance that instances of producing in such countries or in parts thereof, relevant commodities for which the relevant products do not comply with Article 3, point (a), are exceptional"

sourcing relevant commodities and acquiring relevant products from any country must be accompanied by the full due diligence procedure, in effect suspending the simplified due diligence facilitation correctly offered to economic operators. This also implies that, for economic operators, there is no substantial distinction between a standard-risk and a high-risk rating when it comes to their compliance obligations. The EUDR seeks to remedy this by providing that list of low-risk and high-risk countries shall be published via implementing acts no later than the date of its application (30th December 2024).

This is only a partial and a formal remedy because, in practice, economic operators, CAs of Member States, and third country government need to prepare for EUDR compliance well in advance of its date of application and any measures pertaining to the assigned risk are essential to this preparation. As of today, the country benchmarking has not been finalized, despite repeated public requests by various stakeholders towards the European Commission to prioritize the publication at least of the list of low-risk countries.

As a potential remedy to this issue, it its proposal to delay the date of application of the EUDR by one year, the European Commission proposed delaying the deadline for the country benchmarking by only six months (**no later than 30th June 2025**), in order to provide economic operators with the country risk information well in advance before their due diligence obligations start to apply.

The country benchmarking is conducted by the Commission, taking into account the latest scientific evidence and internationally recognized sources. The main assessment criteria underlying the risk assessment include:

- The rate of deforestation and forest degradation;
- The rate of expansion of agriculture land for relevant commodities;
- The production trends of relevant commodities and of relevant products.[40]

Adopted in October 2024, the Annex of the European Commission's Communication on a Strategic Framework for International Cooperation Engagement on Deforestation further develops on the general principles on the methodology for benchmarking the deforestation and forest degradation risks of producing countries.

Following its country benchmarking, The Commission will:

- Formally notify the risk-rated country of its classification intention;
- Invite the concerned country to provide any information deemed useful in that regard;
- Engage in a specific dialogue with all countries that are, or at risk of being classified as, high risk, with the objective of reducing their level of risk.[41]

Information System

As already clarified above, the extensive due diligence process will result in a DDS, to be submitted electronically via the **Information System** (IS)[42], having to be fully operational by the EUDR's date of application. The main purpose of the IS will be to facilitate the transfer of the DDSs both between economic operators and CAs – thereby enabling the latter's controlling obligations, as well as between economic operators throughout the supply chain – thereby facilitating compliance with the due diligence obligations.

[40] Article 29.
[41] Article 29.
[42] IS functionalities listed in Art. 33(2) of the Regulation

The details pertaining to the functioning of the IS will be established by the Commission via an implementing act; the Commission will also provide access to the IS to a wide range of interested actors, in accordance with their individual obligations.[43]

To the satisfaction of economic operators, the IS was officially launched at the start of December 2024, allowing economic operators to familiarize themselves with its functionalities and to contribute to its improvement long in advance of the EUDR's date of application. One such example includes the addition of API, thereby enabling economic operators to directly connect the interface of their own internal logistics software to the IS. At the same time, there are still major concerns regarding the practical day-to-day use of the IS by economic operators, which is why the IS needs to be fully operational, and it must go live well in advance prior to the EUDR's date of application, so that there is enough time to iron out any remaining challenges.

Furthermore, since October 2024, economic operators have been receiving live training from the European Commission on the IS's main functionalities, with further training sessions expected to take place also in the months ahead.

The EU Single Window Environment for Customs (EU SWE-C)[44] is a framework that enables interoperability between customs IT systems and non-customs systems, such as the IS. The central component of EU SWE-C, known as EU CSW-CERTEX system, will interconnect the IS with national customs IT systems and will enable sharing and processing of data submitted to customs and non-customs authorities by economic operators. The Single Window will thus ensure information sharing in real-time and digital cooperation between customs authorities and competent authorities in charge of enforcing non-customs formalities, including in the field of environmental protection.

Functionalities of the Information System:

- Allows filling in and submitting DDS
- Records and verifies DDS data
- Assigns a unique reference ID to the submitted DDS
- Supports Competent Authorities in the performance of Risk Assessment on referenced products, production areas and economic operators in the DDS
- Allows consultation of the DDS by relevant stakeholders
- Registers the outcome of checks on DDS and supports communication between Competent Authorities
- Generates aggregated anonymised datasets as per the regulation requirement.

[43] Article 33. Notably, the Commission shall also provide access to the wider public "to the complete anonymised datasets of the information system in an open format that can be machine-readable and that ensures interoperability, re-use and accessibility".

[44] The EU Single Window Environment for Customs enables interoperability between the customs and non-customs domains to streamline the electronic exchange of documents and information required for the goods clearance process