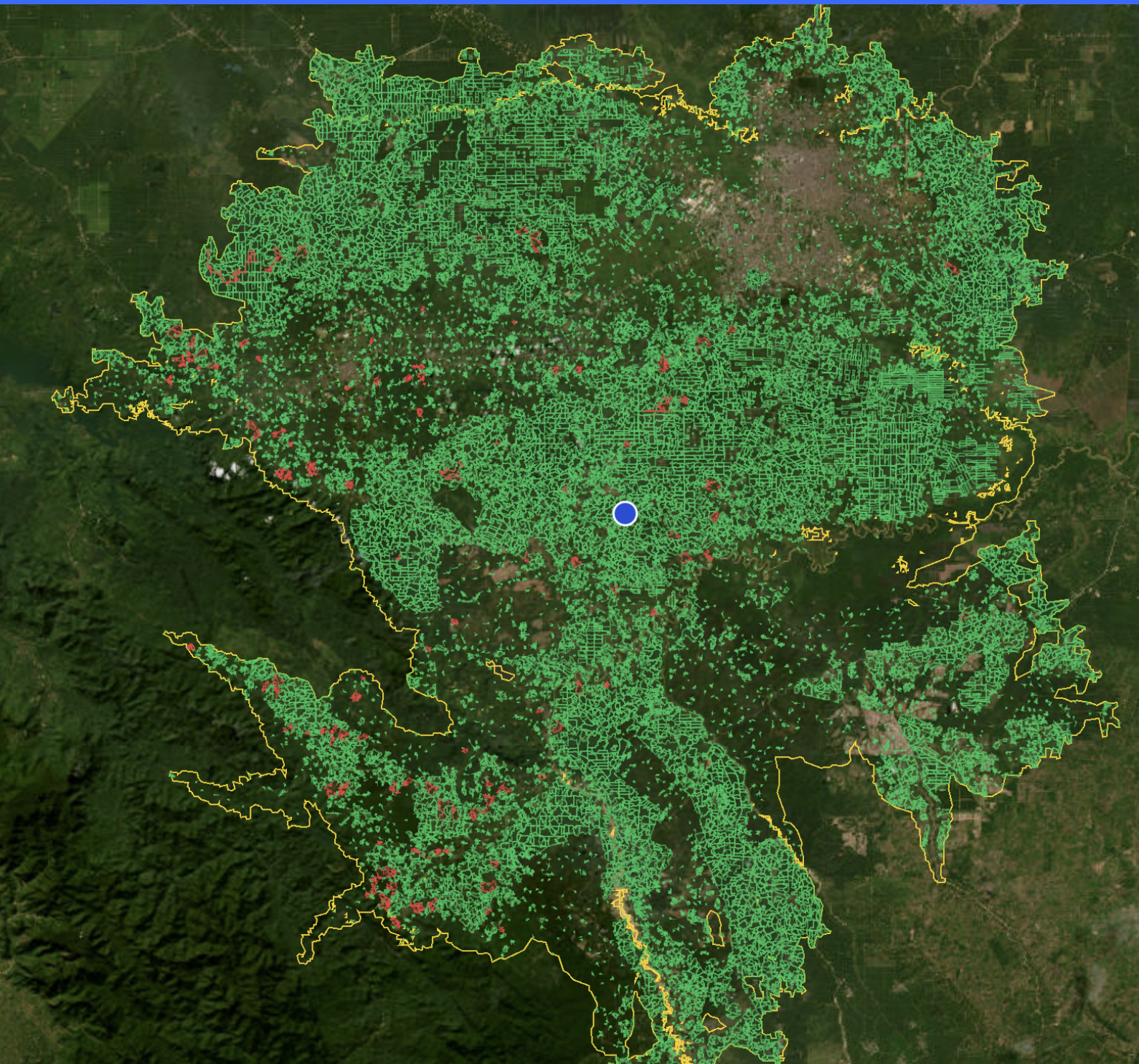


# EUDR Compliance Process

Version 1.0



**Primary audience.** EU operators and traders importing soy, timber, cattle, rubber, coffee, cacao, palm oil and their derivatives.

**Secondary audience.** Member-state competent authorities and inspectors evaluating DDS submissions under Articles 18–24.

**What this document is.** Epoch's interpretation of the law and the practical, "sufficient-effort" approach Epoch applies to compliance, including vertical-specific guidance.

**What this document is not.** Legal advice. For binding interpretation, refer to the regulation itself and to your legal counsel.

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## EXECUTIVE SUMMARY

EUDR (Regulation (EU) 2023/1115, as amended by Regulation (EU) 2025/2650 postponing application to December 2026 for large and medium operators) requires every operator placing soy, timber, cattle, rubber, coffee, cacao or palm oil, or their derivatives, on the EU market to produce a Due-Diligence Statement evidencing that the goods are deforestation-free against the 31 December 2020 cutoff and legally produced. Article 9 defines the information required; Article 10 defines the fourteen risk criteria to evaluate; Article 11 defines the mitigation regime when risk is non-negligible; Articles 23 and 25 govern market access and penalties (up to 4 % of EU-wide turnover).

Epoch operationalises that obligation as a **six-step closed loop**:

1. supplier data submission;
2. real-time risk screening;
3. full-resolution deforestation checks;
4. iterative supplier engagement;
5. continuous audit-trail accumulation;
6. DDS submission to EU TRACES.

The architecture rests on a single load-bearing commitment: **the compliance verdict is always produced by deterministic rules** (pixel-level overlay against named, versioned datasets and a published Article 10 risk-scoring system).

The technical capabilities Epoch contributes:

- **Plot detection within a supply shed.** When only a first-mile aggregation point is provided, Epoch's commodity-detection stack (FDP layers for palm/cocoa/rubber/coffee, GLAD annual soy mapping, Global Pasture Watch for cattle, and harvest-event detection for timber) identifies every target-commodity plot inside the shed directly from satellite imagery (§3.2, §4).

- **Per-commodity supply sheds.** Travel-time isochrones over a friction surface, calibrated with literature-cited defaults per commodity. Operators can override or substitute an administrative-jurisdiction boundary (§4).
- **Six-source deforestation ensemble.** JRC TMF, GLAD-L, GLAD-S2, RADD, OPERA DIST and CCDC, run in parallel against the 31 December 2020 cutoff with per-pixel agreement counts, against a uniformly-applied natural-forest mask combining DeepMind Natural Forests (10 m) and JRC TMF (30 m) (§6).
- **Open-web evidence aggregation.** Article 10.2 (h)(l)(m) signals aggregated automatically from named open-web sources, kept on a separate track from deterministic verdicts (§5.3 Method column).
- **Dataset-version audit trail.** Every deterministic check is logged with the exact dataset versions and satellite imagery acquisitions used, reproducible under audit (§8).

AI-assisted components, the open-web evidence aggregation above, flag risk for review but never decide it. The §5.3 Article 10.2 table labels every criterion as deterministic, LLM-grounded, or operator-supplied so the division of labour is visible at the point each flag is raised.

This document is intended to be legible from both the operator's chair and the regulator's chair. Section 10 is written for competent authorities; Sections 5, 7 and 8 carry "Auditor's view" callouts citing the relevant Articles of the regulation.

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Operators preparing a DDS submission can follow the sections in order. Section 10 is written specifically for competent authorities; "Auditor's view" callouts in §5, §7, and §8 cite the relevant Articles for inspection purposes. Defined terms are explained on first use and gathered in **Appendix D (Glossary)**; source citations are numbered and consolidated under **Sources**.

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## 1. ABOUT THIS DOCUMENT

EUDR places two conditions on every product placed on the EU market. Both must be satisfied.

- **Deforestation-free.** The production plot must not have been converted from forest since 31 December 2020. **Verified per plot** by satellite analysis (§6).
- **Legally produced.** The product must comply with the laws of its country of production. **Verified per supplier, supply base or country** through documentary evidence the operator collects under Article 9.1(h); Epoch's Article 10.2 risk signals (§5.3) flag where to focus.

EUDR Article 9 defines what information must be collected. Article 10 defines fourteen risk criteria that must be evaluated. Article 11 defines what happens when risk is non-negligible. Article 23 restricts market access for non-compliant products; Article 25 caps penalties at 4 % of EU-wide turnover.

Implementing those Articles end-to-end requires geospatial data infrastructure, governance datasets, and analytical methods that few operators are positioned to build in-house, and that few service providers deliver with the rigour the regulation demands. The methodology, though, is only one part of the picture: most of what this document covers is the **process** that wraps around it, capturing the right evidence at the right point in the workflow, coordinating operator and supplier engagement, and keeping the audit trail defensible across the five-year retention period. This document sets out Epoch's process end-to-end, and the standard Epoch holds itself to on every supply base it screens.

### 1.1 What the operator is responsible for

The operator placing the product on the EU market is the **legally accountable party** under EUDR Articles 8–13. The work is split: Epoch operationalises the methodology and the audit trail; the operator brings supply-chain knowledge, evidence Epoch cannot manufacture, and the final-judgement calls the regulator expects from the operator. **The legally binding compliance determination remains the operator's.**

Obligation	What the operator provides	When	What Epoch handles
First-mile data (Article 9 geolocation)	Plot polygons or first-mile aggregation points; knowledge of who supplies whom. If suppliers do not yet hold plot data, the operator must invest in collecting it (farmer apps, mapping providers, supplier onboarding); Epoch can refer providers but does not perform the mapping.	Before first submission per supplier; refresh on sourcing change	Validation, normalisation, geocoding; supply-shed delineation from an aggregation point; commodity-detection stack (FDP, GLAD soy, Global Pasture Watch, harvest-event detection) derives plot polygons from a shed
Article 9 information for TRACES (supplier and customer details, HS code, quantity, country of production, etc.)	Factual values	Per DDS submission	Pre-submission validation against the TRACES schema; structured capture in the audit trail
Legality evidence (Article 9.1(h))	Proof of legality from the supplier or producer covering the <b>full supply base</b> . Primary documents (titles, permits, certifications, audit reports, training records, grievance logs) where available; proxy evidence with a written explanation otherwise. §5.3 Article 10.2 (h)(l)(m) flags <b>prioritise</b> evidence-gathering effort; they do not narrow the obligation.	Per supplier; refresh $\geq$ annually, sooner if aligned with import cadence	Surfaces relevant national laws via the §5.3 Article 10.2 (h)(l)(m) governance + LLM-grounded signals; structures supplier engagement to capture and timestamp the operator's evidence
Supplier engagement on flagged plots	Reach out to suppliers, request plot data or legality docs, review responses, decide exclusion or further evidence. Conversations and relationship pressure are operator-side.	Per flag, on the operator's chosen turnaround	In-platform engagement channel; structured capture of every request, response and upload in the audit trail
Risk determination (Article 10.6, negligible vs. non-negligible)	Final judgement call (legally the operator's)	Per DDS submission	Composite Article 10 risk score, per-criterion contribution breakdown, deforestation verdict, and the Article 10.2 evidence trail to anchor the determination
Article 11 mitigation	Mitigation decision; operational artefacts showing mitigation works in practice (training records, audit-cycle records, grievance log,	Ongoing for non-negligible-risk suppliers; refresh $\geq$ annually	In-platform engagement channel; structured capture of mitigation evidence linked to

Obligation	What the operator provides	When	What Epoch handles
	evidence-of-effect — see §7.3)		supplier and period of effect
Audit-trail retention (Article 12, 5 years)	Legal duty to retain	Continuous	<b>Platform retention for the full 5-year period</b> ; CA event-log export on request
DDS submission to EU TRACES	Legal responsibility for accuracy; sign-off	Per shipment	Submission via Epoch's TRACES integration as authorised representative if appointed

The evidence depth above is risk-proportional, by design of the regulation. Articles 10.6 and 13 calibrate the operator's effort to the Article 10 risk tier (§5.5) and, where applicable, the Commission's Article 29 country benchmark:

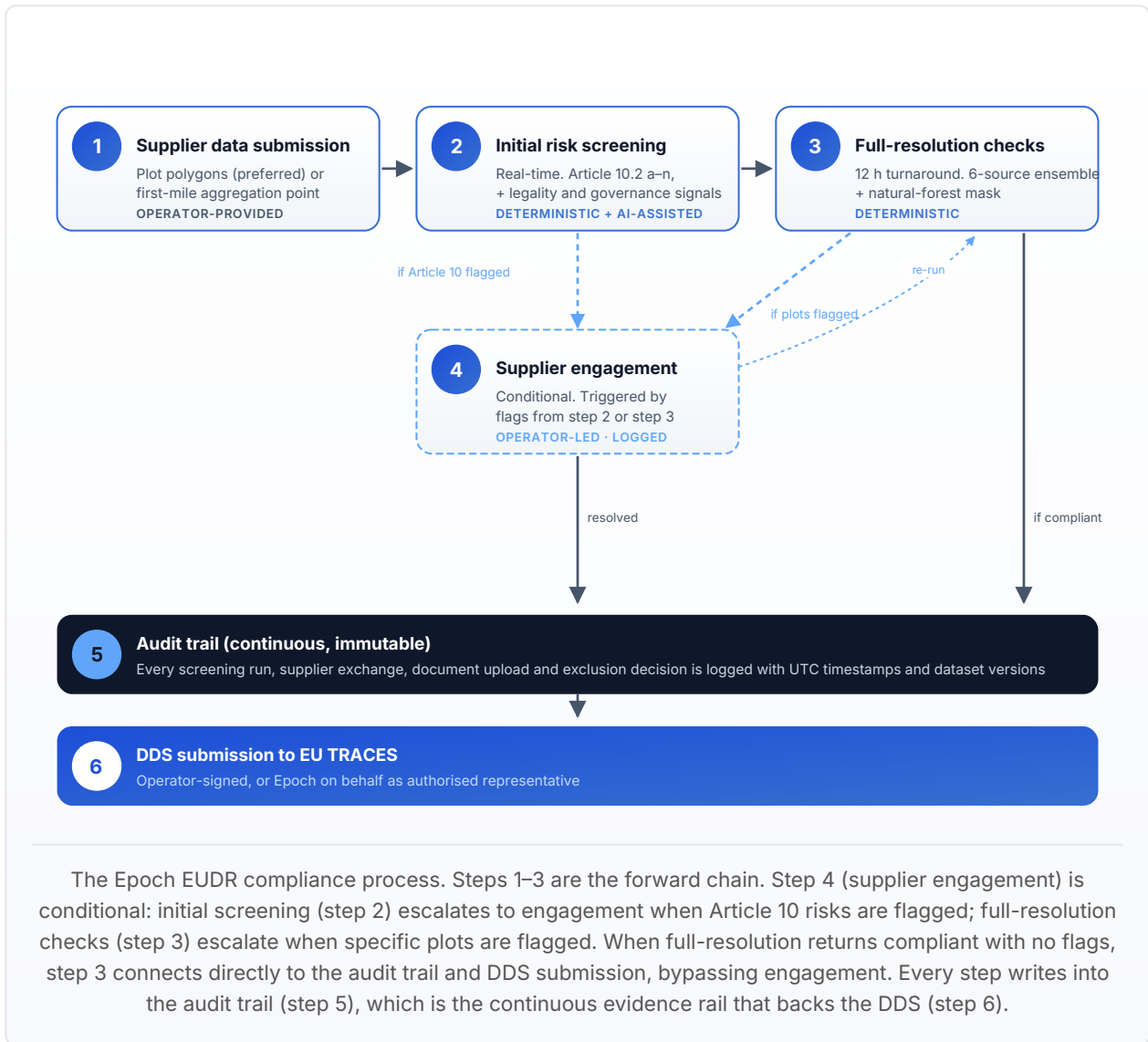
- **Article 9 obligations are not negotiable by risk.** Plot polygons and the Article 9.1 information set are required at the same depth regardless of perceived risk.
- **Articles 10 and 11 are scaled by risk.** The depth of Article 9.1(h) legality evidence, the Article 10 evidence trail (governance, FPIC, certifications), and the Article 11 mitigation artefacts in §7.4 all scale with the §5.5 risk tier. For sources benchmarked low-risk by the Commission under Article 29, **simplified due diligence** under Article 13 lifts the Article 10 / Article 11 burden entirely while keeping Article 9 in place.
- **"Low risk" is the score, not the gut feel.** The operator anchors evidence-depth decisions on the §5.5 composite Article 10 score and the Article 29 benchmark, not on intuition. An inspector who disagrees with a "low-risk, lightweight evidence" call will defer to the score and the data behind it, not the operator's narrative.

§10 is written for competent authorities.

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## 2. PROCESS OVERVIEW

The process is a six-step closed loop. The first three steps move forward; supplier engagement (4) feeds back into the full-resolution checks (3) until every flagged plot is resolved; the audit trail (5) accumulates throughout; and only when the loop is closed does the DDS lodge with EU TRACES (6).



The infographic distinguishes the three classes of work: **deterministic** geospatial and dataset overlays (steps 1, 2, 3), **operator-led** engagement that is logged but not algorithmic (step 4), and the **continuous evidence rail** (step 5) that every other step writes into. AI-assisted components live inside step 2, open-web evidence aggregation for Article 10.2 (h)(l)(m), and never determine compliance verdicts. The next section makes that division of labour explicit before the methodology that depends on it.

### 3. MINIMUM REQUIRED SUPPLIER DATA

**What "plot" means in this document.** A plot is a homogeneous area actively growing (or, for cattle, used to raise) the target commodity, a contiguous patch of palm, soy, coffee, cocoa, rubber, timber stand, or pasture that behaves as one unit from a remote-sensing perspective. This is exactly what **EUDR Article 2(27)** defines a plot of land to be: "land ... which possesses sufficiently homogeneous conditions to allow an evaluation of the aggregate level of risk of deforestation and forest degradation associated with relevant commodities produced on that land". The plot is a functional unit, not a cadastral parcel: per FAQ 1.13, "a plot may encompass the whole real-estate property (if it is sufficiently homogeneous) or only a part of land within such single real-estate property"; per FAQ 1.6, "the absence of a land registry or formal title should not prevent the designation of land that is de facto used as a plot of land." Where cadastral or land-title data exists and matches the homogeneity criterion, it can be the plot. Where it doesn't, Epoch's commodity-detection stack identifies the same unit directly from satellite imagery (§4).

EUDR compliance starts with what an operator knows about its first mile. Epoch supports two input modes, in order of preference; §4 then describes what runs against either input.

**Operator action.** Provide first-mile data for every supplier, exact plot polygons where the supplier holds them (§3.1), first-mile aggregation-point coordinate otherwise (§3.2). If neither is available, supplier engagement to obtain at least an aggregation point is the only path before a DDS can be filed (§3.3). The platform accepts the data in any of the common formats (CSV, Shapefile, GeoPackage, GeoJSON, KML/KMZ, Excel) and normalises it on ingestion.

Whichever mode the operator uses, the platform first **normalises** heterogeneous inputs into a single analysis-ready representation. The accepted formats are deliberately wide, CSV, Shapefile, GeoPackage, GeoJSON, KML/KMZ, Excel, with mixed coordinate reference systems, free-text addresses or coordinates, partial schemas, and per-row metadata that varies across submissions. On ingestion the platform detects the schema, projects coordinates to a common reference system, forward-geocodes any address-only rows, deduplicates near-identical entries, and validates each geometry for topological correctness. The output is an analysis-ready dataset that the downstream screening, supplyshed and full-resolution stages can run against without bespoke pre-processing.

#### 3.1 Plot locations

The operator provides the exact production plots being sourced from, polygons for plots over 4 ha, or point + plot-area for plots under 4 ha (the EUDR threshold). This is the gold standard: every check downstream runs against the actual sourcing footprint.



Plot polygons, exact production plots traced over satellite imagery.

### 3.2 First-mile aggregation points

If plot data isn't available, the operator provides the location of the first-mile aggregation point, sawmill, palm mill, rubber vulcanization plant, soy silo, coffee washing station, cocoa buying centre, cattle slaughterhouse, as a coordinate or a navigable address.

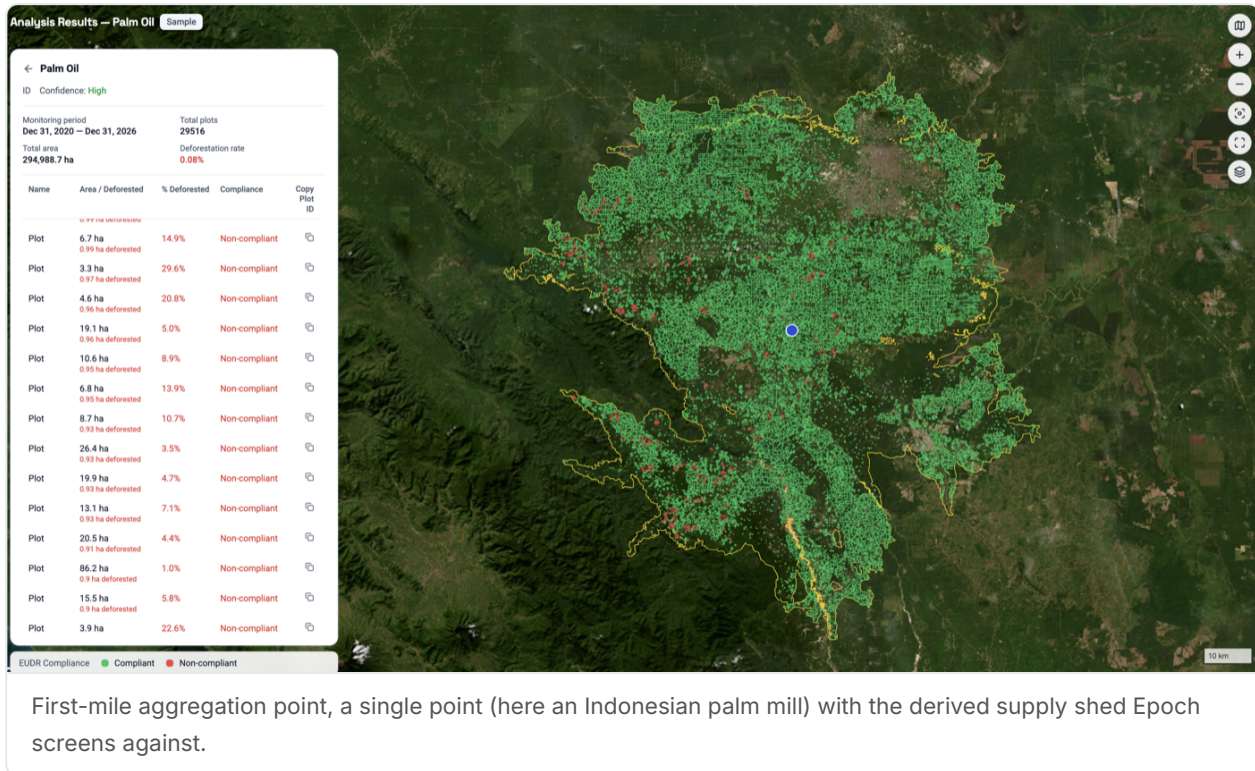
From that single point, Epoch:

1. **Generates a supply shed** around the aggregation point (a travel-time isochrone calibrated per commodity, §4.1).
2. **Detects** every plot of the target commodity inside that shed directly from satellite imagery, using Epoch's commodity-detection stack (Forest Data Partnership (FDP) layers for palm/cocoa/rubber/coffee, GLAD annual soy mapping for soy, Global Pasture Watch for cattle, and Epoch's harvest-event detection for timber). No producer-supplied polygons are required.
3. **Runs compliance checks** across every detected plot, a superset of what the operator actually sources from.

This is the "declaration in excess" approach: the operator submits a DDS over a wider footprint than the actual sourcing, which is a stricter bar than the regulation requires. It has been used in cases where individual plot polygons don't exist for the entire supply

base, smallholder North-American hardwood, Ethiopian coffee cooperatives, West-African cocoa cooperatives. The cost of widening the assessment is far smaller than the cost of non-compliance.

The full methodology, friction surface, per-commodity travel-time defaults with citations, the three-step pipeline from isochrone to deforestation analysis, is set out in §4.



### 3.3 Neither

If the operator has no plot data and no aggregation-point data, **the operator structurally cannot comply** (per the Article 9 geolocation requirement; see §1.1). The first action must be supplier engagement to obtain at least an aggregation point. Epoch can refer operators to plot-mapping service providers and smartphone-app vendors.

## 4. SUPPLY-SHED METHODOLOGY

When the operator provides only a first-mile aggregation point (§3.2), Epoch generates a sourcing region around it and runs compliance checks against that region, wider than the actual sourcing footprint by design (declaration in excess), which is a stricter bar than the regulation requires. The supply shed also addresses landscape-level risk that pure plot-by-plot screening misses: a single plot can be clean while sitting inside a region under heavy deforestation pressure.

The supply shed is computed as a **travel-time isochrone** (areas reachable from the aggregation point within a given travel time by road), not a fixed-radius circle; roads, terrain,

water bodies and border crossings shape what is actually reachable. Within the resulting boundary, Epoch's commodity-detection stack (FDP layers for palm, cocoa, rubber and coffee, GLAD annual soy mapping, Global Pasture Watch, and Epoch's harvest-event detection for timber) identifies the actual production plots, and the §6 full-resolution deforestation analysis runs on those plots.

#### 4.1 Per-commodity travel-time defaults

Commodity	Default	Approx. one-way distance	First industrial aggregation point
Cattle	180 min	≈ 100–150 km	Slaughterhouse (state-licensed / SIE)
Soy	120 min	≈ 30–80 km	Grain elevator / trading post
Palm oil	90 min	≈ 50 km	Palm-oil mill
Timber	180 min	≈ 60–100 km	Sawmill
Rubber	120 min	≈ 60–80 km	Crumb rubber / RSS factory
Cocoa	90 min	≈ 22–40 km	Cooperative fermentation & drying centre
Coffee	60 min	≈ 25–35 km	Cooperative wet mill (washing station)

The friction-surface specification (per-class road speeds, terrain, water, land cover, border-crossing penalties), the empirical-literature rationale behind each commodity default, and the three-step delineate → detect → analyse pipeline are documented in [Supply Sheds](#).

#### 4.2 Operator overrides

Operators can override the per-commodity travel-time defaults where local knowledge of road conditions, transport mode, or sourcing geometry dictates. Common cases include federal export-licensed slaughterhouses (longer cattle radius), dry-process coffee (longer farm-to-mill haul), and basins where river transport supplements road access.

Operators can also replace the isochrone with an **administrative-jurisdiction boundary** (county, municipality, district, state) where the supply chain is structurally bound to a jurisdictional source. For example, North-American timber operators sometimes source from a fixed set of counties, in which case the supply shed is the union of those county polygons rather than a travel-time isochrone. The downstream pipeline is unchanged: the commodity-detection stack (FDP, GLAD soy, Global Pasture Watch, harvest-event detection) detects the actual production plots within the supplied boundary, and the deforestation analysis runs at full resolution on those plots.

The audit trail records every override and the rationale supplied alongside the resulting supply-shed analysis.

### 4.3 Timber: harvest-event detection as plots

Timber differs structurally from the other six commodities: the plot the regulation cares about is the area that was **harvested** to source the wood, not a permanent standing-crop footprint. For timber, Epoch's commodity-detection stack therefore identifies **harvest events** (clear-cuts, selective-cut patches, salvage cuts) inside the supply shed over a configurable time window, and treats each detected harvest patch as a plot for downstream §6 deforestation analysis and DDS submission.

The default look-back window is **1 year** from the DDS reporting date, which fits operators submitting DDS annually and want every harvest that fed their shipments in the past year to be covered. The window is tunable: operators submitting quarterly can shorten it to 3 months to avoid screening harvests that pre-date their actual sourcing; long-lead operators (e.g. seasoned hardwood, kiln-dried product cycles) can lengthen it to match their inventory turnover. The selected window is recorded in the audit trail alongside the operator's stated rationale.

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## 5. INITIAL RISK EXPOSURE ASSESSMENT

**Turnaround time:** real-time.

Epoch's initial screening returns instantly (no batch processing) and produces five outputs. It is the **first triage**: which suppliers are obviously fine, and which need attention.

### 5.1 Location validation

Every uploaded geometry is validated against geometry-quality and plausibility issues, duplicates, overlaps, self-intersections, spikes, illogical coordinates, commodity-presence mismatches, protected-area overlap, and patterns suggesting cherry-picking or circumvention, before screening proceeds. Plots that fail validation are flagged for the operator to correct or to acknowledge with a justification before the assessment continues.

The full validation pipeline (15 geometric checks with their issue weights, the AI-powered schema detection at ingestion, and the per-pillar risk scoring) is set out in [Location Validation](#).

### 5.2 Crude deforestation check

**Resolution:**  $\approx$  30 m.

Off-the-shelf forest-loss datasets are run against the supplier footprint as a fast first pass. The detection layer at this stage uses **JRC Tropical Moist Forest** (TMF) annual change

classes and **GLAD Landsat alerts** from the University of Maryland, both 30 m. The 10 m full-resolution treatment runs at §6.

This screening exists to give the operator, on day one, a sense of where deforestation risk is concentrated across the supplier base, not to produce a final compliance verdict.

### 5.3 Article 10.2 risk assessment: criterion by criterion

The regulation defines fourteen criteria. Each is addressed with one of three method classes, made explicit in the **Method** column below so a reader (operator or competent authority) can tell at a glance how a particular finding was produced:

- **Deterministic.** Pixel-level overlay, spatial join, or scalar lookup against named, versioned reference datasets. Reproducible to the pixel; the same inputs always yield the same output.
- **LLM + grounding.** A large language model with web grounding, run against a structured prompt, returning citations to dated, geographically relevant public sources (news, NGO reports, court records, sanctions lists). Used to surface entity- and locality-specific evidence that no scalar dataset captures. Each finding is recorded with title, URL, publication date, sentiment (positive / negative), and geographic relevance tier.
- **Operator-supplied.** Evidence that, by the structure of the regulation, only the operator can produce (consultation records, certification documents, internal traceability data).

Article 10.2 ref	Criterion	Method	What Epoch checks
(a)	Country risk classification	 Deterministic	Country/jurisdiction risk under Article 29; deforestation rate, agricultural expansion, governance
(b)	Forest presence	 Deterministic	Forest area within the convex hull of the supply base
(c)	Indigenous-peoples presence	 Deterministic	Spatial overlap between supply base and indigenous territories
(d)–(e)	Consultation, FPIC & claims	 Operator-supplied	Documentation required when (c) flags overlap; the platform identifies where consultation is needed, not whether it has occurred
(f)	Deforestation prevalence	 Deterministic	Country- and supply-base-level deforestation rate (six-source ensemble, see §6)
(g)	Source reliability	 Deterministic	Multi-source agreement raises confidence; disagreement flags review
(h)	Governance concerns	 Country-level deterministic +  LLM + grounding	Country-level datasets: corruption, document falsification, law-enforcement deficit, human rights, armed conflict, sanctions. Entity-level LLM grounding surfaces news / NGO / court evidence linking the facility or parent company to violations
(i)	Supply-chain complexity	 Deterministic +  Operator-supplied	Tier count (operator-supplied) + processing complexity (commodity matrix) + traceability system (operator-supplied) + known plots vs. supply-shed
(j)	Risk of mixing / circumvention	 Deterministic	Composite of (i) complexity and (f) regional deforestation
(k)	Commission expert-group conclusions	 Operator-supplied	Flagged for the operator's review against the Commission expert-group register

Article 10.2 ref	Criterion	Method	What Epoch checks
(l)	Substantiated concerns / non-compliance history	■ Deterministic + ■ LLM + grounding	Historical DDS retained per Article 12; open-web sweeps for substantiated concerns and operator/parent non-compliance history
(m)	Other risk indicators	■ Deterministic + ■ LLM + grounding	WDPA protected-area overlap, anomalous spatial patterns, biomass-stock drift; news-feed sweeps for residual risk signals
(n)	Complementary information	■ Operator-supplied	Certifications (RSPO, FSC, PEFC, Rainforest Alliance, RTRS) accepted as supplementary Article 10.2 (n) evidence

The full per-criterion dataset list (including Hansen GFC, CPI, WGI, Freedom in the World, UCDP/PRIO, GSDB V4, Native Land Digital, WDPA, the FDP commodity layers, and the LLM-grounding source set) is documented under the [Article 10 Risk Assessment section in the EUDR Compliance documentation](#). Country identification is performed via spatial join from the plot centroid to country-boundary polygons, then fuzzy-matched to each governance dataset.

**On legality due diligence (Article 9 + Article 10.2 (h)).** The operator's full legality obligation is set out in §1.1. In the context of Article 10.2 (h) specifically: Epoch's deterministic governance signals (CPI, WGI, Freedom House, UCDP, GSDB) and LLM-grounded entity-level news/court evidence **flag where legality risk sits at country and entity level**; the documentation that closes the loop on the actual plots in the supply chain is operator-supplied and operator-defended.

**On the LLM-grounded checks specifically.** The model never invents URLs and never decides compliance. Every source returned is recorded with title, URL, publication date, geographic relevance (facility / local / regional / national), sentiment (positive / negative, positive sources, e.g. certifications and remediation, reduce the displayed risk), and a snippet. Sources before the EUDR cutoff (1 January 2021) are excluded. The composite Article 10 risk score (§5.5) caps the contribution of LLM-grounded evidence so a single dramatic article cannot push an otherwise low-risk supplier into the high-risk band; its role is to flag for review, not to drive the determination.

## 5.5 Composite Article 10 risk score

The Article 10.2 criteria are combined into a deterministic composite score that classifies each supply base into one of three tiers. The tier directly drives the operator's evidence-collection burden (per §1.1 and Articles 10.6 / 11 / 13):

- **Low risk** (score < 5): **simplified due diligence** under Article 13 may apply where the Commission has benchmarked the country as low-risk under Article 29. Article 10 evidence trail and Article 11 mitigation (§7.3) not required; Article 9 information (plot polygons, supplier/shipment fields, basic Article 9.1(h) legality) remains required.
- **Medium risk** (score 5–7): standard due diligence. Full Article 9.1(h) legality pack required; Article 11 mitigation only for flags that fire; targeted monitoring recommended.
- **High risk** (score ≥ 8): enhanced due diligence. Deeper Article 9.1(h) evidence (primary > proxy, recent audit cycles, expanded grievance-mechanism coverage), active Article 11 mitigation per §7.3, recurring re-assessment.

The score is built from:

- forest presence within the supply base;
- indigenous-territory overlap;
- deforestation prevalence in the surrounding region;
- CPI corruption score;
- WGI governance deficit;
- armed-conflict exposure;
- sanctions exposure;
- supply-chain complexity tier (per the commodity matrix);

minus a **governance discount** subtracted from the total, a deduction proportional to the country's Worldwide Governance Indicator (WGI) average, with an additional deduction when the country has no active conflict signal and no UN/EU sanctions match. The final score is  $\max(0, \text{points} - \text{discount})$ , so strong rule-of-law signals can offset risk points accumulated from other factors.

Per-criterion contributions are exposed in the audit trail so each score is reproducible from declared inputs by either the operator or a CA inspector.

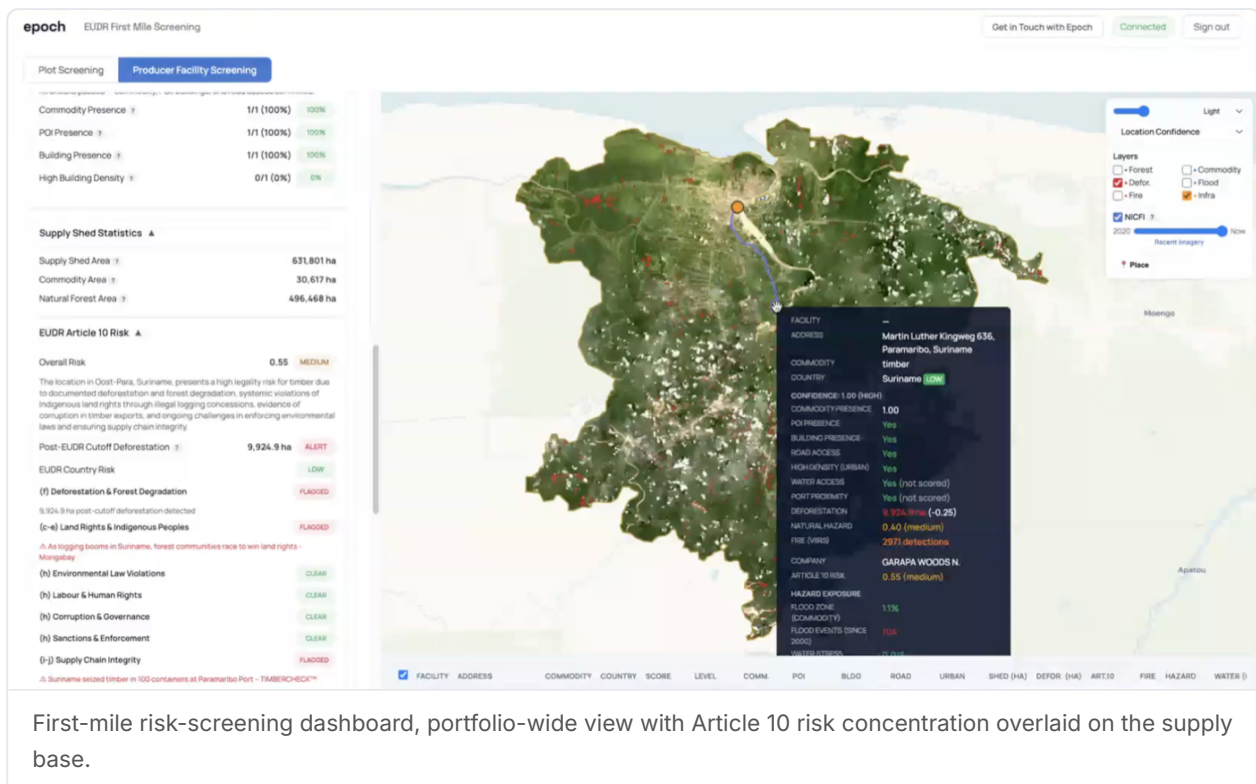
The exact point values, threshold logic, and governance discount are documented under [Composite Article 10 Risk Score in EUDR Compliance](#).

**Operator action.** The Article 10.6 negligible-vs-non-negligible risk determination is the operator's call, anchored on the composite score above and the §5.3 per-criterion contributions. The tier governs the evidence-collection depth (above); sign-off on the determination sits with the operator per submission and is captured in the audit trail.

## What this screening is for

Triage, not adjudication. By the end of §5 the operator knows which suppliers are clearly low-risk, which need full-resolution deforestation analysis (§6), and which need supplier engagement on Article 10 grounds before full-resolution checks are worth running (§7).

**Auditor's view (Article 18–24).** Every score in this section is reproducible from declared inputs: the Article 10 point system is published (§5.5), the datasets are versioned and named (§5.3), and country attribution is a deterministic spatial join. An inspector can re-run any single supply base from the same inputs and arrive at the same triage outcome. Probabilistic outputs (Article 10.2 (h)(l)(m) news-based aggregation) are surfaced separately with citations and never raise an operator's score above what the deterministic indicators alone would justify.



## 6. FULL-RESOLUTION DEFORESTATION CHECKS

**Resolution:** 10 m. **Turnaround time:** ≈ 12 h (batch processing on the supplied geometries).

This is the methodology-heavy stage of the process. It runs once §3–§5 have produced an analysis-ready set of plots; the verdict it returns is then fed back into supplier engagement (§7) for any flagged plots and into the audit trail (§8) before DDS submission (§9).

The technical depth below matters because the regulator will want to verify it. For the operator workflow, what matters is that this stage produces a per-plot compliant / non-compliant verdict, a submission-ready GeoJSON, and the evidence that backs both.

The initial screening is **not sufficient** for a DDS submission, even when it returns "all compliant". Two reasons:

1. **Resolution gap.** The 30 m initial check can miss deforestation that the 10 m full-resolution check catches.
2. **Geometry generation.** EU TRACES requires a GeoJSON of the actual production plots. If the operator only provided an aggregation point, this stage delineates target-commodity plots within the derived supply shed so a valid GeoJSON can be assembled.

## 6.1 Multi-source deforestation ensemble

Full-resolution checks combine **six independent change-detection systems**:

- four near-real-time alert systems, **GLAD-L** (Hansen / UMD, Landsat-based), **GLAD-S2** (UMD, Sentinel-2-based), **RADD** (Wageningen, Sentinel-1 radar-based), and **OPERA DIST-ALERT** (NASA, Landsat + Sentinel-2);
- one annual institutional product, **JRC TMF** (Joint Research Centre, Tropical Moist Forest dataset, annual updates);
- one Epoch-operated time-series breakpoint detector, **CCDC** (Continuous Change Detection and Classification, Zhu & Woodcock 2014, run on Google Dynamic World tree-class probabilities).

Each pixel of forest change is reported with the count of systems in agreement, a derived confidence band, and an alert classification. CCDC is on by default for EUDR submissions; the operator's audit trail records the active set on every run.

Per-source asset identifiers, sensor specifics, cadence, the CCDC parameter set, and the per-pixel ensemble integration are documented in [Metric Methodology](#). Initial screening (§5) does not run CCDC; full-resolution checks (this section) do.

## 6.2 Natural-forest mask

The natural-forest reference mask for the 2020 baseline is the **union** of two named datasets: **DeepMind Natural Forest of the World** (10 m) and **JRC Tropical Moist Forest** (30 m). Country-specific tenure datasets, currently 19 jurisdictions: Canada, USA, Estonia, Latvia, Lithuania, Australia, New Zealand, Brazil, Chile, South Africa, Indonesia, Portugal, Uruguay, Norway, Sweden, Finland, Poland, Denmark and Slovenia, are layered in for managed-forest exemption checks, with additional jurisdictions added as authoritative tenure data becomes available. The full mask construction, the tenure-exemption layer set, and the connected-component sieving thresholds are documented under [Natural Forest Masks and Managed Forest Exemptions in Metric Methodology](#).

### 6.3 Cutoff treatment

All deforestation is assessed against the **31 December 2020 cutoff** established by EUDR. Only post-cutoff events affect compliance status.

### 6.4 Outputs

- A per-plot compliance verdict, compliant or non-compliant, the area of any deforestation found, a confidence level, and the start and end dates of the deforestation event.
- Per-year non-compliance area, for time-series charts that show how exposure has evolved.
- A submission-ready GeoJSON file containing every plot with the metadata EU TRACES requires.
- Aggregated supply-shed statistics, total compliant area, non-compliant area, forest area, and the equivalent breakdowns for the wider sourcing region.

### 6.5 Dataset versioning and reproducibility

Earth-observation datasets evolve continuously: institutional forest products are refreshed annually, the near-real-time alert systems shift every few days, the commodity-detection models are re-trained as new ground-truth data lands, and Epoch's own change-detection parameters can change between releases. Every Epoch run records the exact identifier and version of every dataset it touched, alongside the algorithm version it was running. A re-run six months later does not quietly produce a different answer; the audit trail captures whether the difference is data evolution or methodology change. This is what makes per-plot verdicts independently reproducible by an inspector at any point in the retention period.

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## 7. SUPPLIER ENGAGEMENT

Two distinct triggers escalate from automated checks to direct supplier engagement:

- **Initial-screening flags (§5).** Elevated risk in any Article 10 category fires before full-resolution analysis is worth running, the operator engages the supplier on the relevant category (governance, FPIC, sanctions, labour, supply-chain integrity). Sanctions matches are a stop-the-line: the supplier cannot ship until cleared.
- **Full-resolution flags (§6).** A specific plot fails the 10 m deforestation analysis (post-2020 forest loss or protected-area overlap). Engagement is **per plot**: the supplier provides justifications that the plot is not in the supply chain, so it can be lawfully excluded from the DDS GeoJSON.

The full map of which evidence is required, in what form, and when, covering both engagement-driven uploads and the operator-initiated evidence packs that pre-stage the audit trail, is consolidated in §7.2 Operator evidence reference.

**Operator action.** Initiate engagement through the platform when a flag fires. Upload responses, justifications, and supporting documents into the conversation thread; entries land in the audit trail (§8). For the consolidated list of evidence the operator may need to upload at any stage, flag-driven or pre-staged, see §7.2.

## 7.1 Engagement channel

Engagement is initiated from inside Epoch's platform. Compliance-officer decisions, the supplier responses returned through the engagement workflow, and the supporting evidence collected against each flagged plot are captured back into the audit trail (§8), keeping the evidence chain intact across the lifecycle of each flag rather than dispersed across inboxes and shared drives. Supply-chain partners can also be invited into the platform to **inherit the same DDS** and share the financial burden of compliance.

## 7.2 Operator evidence reference

The table below consolidates the evidence types an operator may need to attach to the audit trail, the trigger that determines whether they apply, the form expected (primary preferred, acceptable proxy otherwise), and the upload path. **Validity follows the evidence type's own cycle** (audit periods, certification renewals, permit validity), the audit trail timestamps every upload, so an inspector can verify freshness against the evidence's stated validity. As a baseline, the operator should refresh **at least annually**, and earlier where the operator wishes to align evidence cycles with its import cadence.

Two upload paths exist:

- **Flag-driven.** Uploads attached to a specific supplier-engagement thread after an Article 10 or full-resolution flag fires (§7.1). These are pinned to the flag and the plot they justify.
- **Operator-initiated.** Standalone uploads attached to a supplier or DDS at any time, independent of any engagement flow. This is how legacy evidence packs, internal compliance memos, and any supporting document the operator wishes to retain are added to the audit trail. The audit trail is the single home for everything that backs the DDS but is not formally submitted to TRACES.

Evidence category	Required (Article + risk tier per §5.5)	Trigger	Primary form	Acceptable proxy	Upload path
Plot polygons / aggregation point	Article 9, all tiers	Setup; refresh on sourcing change	GPS polygons (> 4 ha) or point + plot-area (< 4 ha)	Aggregation point; Epoch derives plots via §4	Operator-initiated (§3)
Land titles, harvest permits, production licences (Article 9.1(h))	All tiers; depth scales with §5.5	Setup; refresh on expiry or flag	Per-producer titles / permits	Regional permit list + note (low/medium only)	Operator-initiated; refreshed via engagement when flagged
Third-party audit reports (SMETA, RJC, RSPO-equivalent)	Medium / high tier; or §10.2(h) flag	Forced-labour / corruption signals (§5.3(h))	Audit covering the production area	Parent-company audit + note covering the subsidiary	Both paths
Sanctions screening	All tiers	Sanctions match (§5.3(h))	Live entity + parent screening against EU / UN / OFAC	None — binary	Operator-initiated, real-time
FPIC / community-consent records	§10.2(c)(d)(e) overlap fires	Indigenous-territory overlap (§5.3(c))	Signed FPIC, community-consent records	Regional NGO assessment + note covering the production area	Both paths
Supply-chain traceability documentation	All tiers; depth scales	Setup (operator-supplied tier count)	Traceability-system docs + tier-count attestation	Chain-of-custody certification (FSC, PEFC, RSPO, ...) covering the volume	Operator-initiated
Commodity certifications (Article 10.2(n))	Supplementary, all tiers	Operator's choice; refresh per renewal	FSC, PEFC, RSPO, Rainforest Alliance, RTRS certificate covering the volume	Chain-of-custody declaration	Operator-initiated
Article 11 mitigation (training, audit cycle, grievance log, evidence-of-effect — see §7.3)	Medium / high tier	Composite $\geq 5$ or specific §10.2 flag	Operational records per §7.3	None — primary only	Operator-initiated, recurring

### 7.3 Mitigation evidence, operational, not just documented

Supplier engagement that ends with an exclusion or a justification is the start of mitigation, not the end of it. Article 11 risk-mitigation expects evidence that mitigation works in practice, not that it has been documented in policy. The audit trail captures the operational artefacts that support that bar:

- **Supplier training records.** Date, attendees, content, supplier-side acknowledgement.
- **Audit cycle records for high-risk suppliers.** Frequency, scope, findings, remediation status, follow-up date.
- **Grievance-mechanism log.** Channel through which a grievance was received, classification, resolution path, time-to-close, outcome.
- **Evidence-of-effect records.** The post-mitigation observation (re-screened deforestation absent, supplier passed re-audit, claim withdrawn) that closes the mitigation loop.

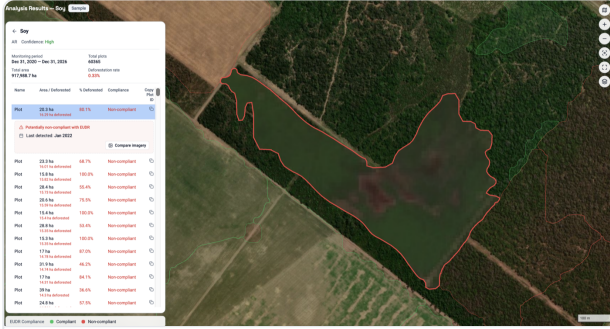
These are operator-supplied (§5.3 (n) territory), but the platform structures them so each entry is linked to the supplier, the supply base, and the period of effect, and so a recurring-mitigation cycle (e.g. annual third-party audits for high-risk suppliers) is visible as a series of events rather than as a single uploaded PDF.

For compliance officers, the moderation flow includes a checkmark control:

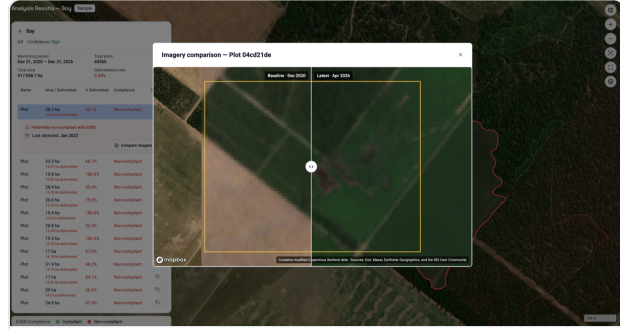
I confirm that after thorough inspection, the non-compliant cases flagged by Epoch's service show negligible risk of deforestation.

When ticked, the flagged plots are **excluded from the generated DDS** and the action is recorded in the audit trail. Clear instructions and disclaimers require the operator to provide a paper trail or supplier documents justifying the negligible-risk finding.

**Auditor's view (Article 11).** Plot-level exclusions are never silent. Each excluded plot carries its own row in the audit trail with: the original screening verdict, the operator's stated rationale, the supporting documents uploaded, the user who actioned the exclusion, and a UTC timestamp. An inspector reviewing a DDS can request the full exclusion ledger for the submission and check whether justifications meet the Article 11 risk-mitigation bar, without having to ask the operator to assemble evidence after the fact.



Per-plot closeup, a non-compliant soy plot with the post-2020 deforestation footprint highlighted on the satellite imagery.



Before/after slider, pre-cutoff baseline against the latest imagery for the same plot, the visual evidence the supplier is asked to address.

<a href="#">US Imposes Sanctions on Three Surinamese Companies Due to Alleged Trade Ties Wit</a> The United States imposed sanctions on three Surinamese companies (Strong Roots Provider, Glazing Future Management, and	sanctions	national	2024-10-16
<a href="#">Land rights bill in Suriname sparks outrage in Indigenous communities - Mongabay</a> Indigenous and Tribal communities in Suriname are concerned about a proposed land rights bill, which they argue still gr	land_rights	national	2025-02-28
<a href="#">Corruption in Suriname - Wikipedia</a> Corruption is pervasive in Suriname, with recent high-profile cases involving top officials, including allegations again	corruption	national	2024-03-01

### Flagged Locations (1)

Location	Risk Score	Summary
Dr. Martin Luther Kingweg 636 in Suriname	0.60	The location in Oost-Para, Suriname, faces a high legality risk due to widespread national issues including significant deforestation driven by illegal logging and mining, unresolved indigenous land rights disputes and FPIC violations, pervasive government corruption, documented child labor in hazardous sectors like gold mining, and recent US sanctions on Surinamese companies for illicit trade ties.

### Supplier Engagement

2 plot(s) reviewed by supplier.

Plot ID	Sourcing?	Deforestation?	Comment
3016b33f-1edf-4c17-a589-015d546b91ea	No	N/A	—
ede86608-91a6-446c-98fe-a1f523b18878	Yes	No	This is a managed forest that has been harvested

### Plot Exclusions

2 plot(s) excluded based on supplier response:

Plot ID	Reason	Timestamp
3016b33f-1edf-4c17-a589-015d546b91ea	Supplier not sourcing	10/04/2026, 17:09:37
ede86608-91a6-446c-98fe-a1f523b18878	False positive confirmed	10/04/2026, 17:10:31

Supplier-engagement screen, a flagged plot, the in-platform exchange, the uploaded justification, and the resulting status change all captured in one view.

## 8. AUDIT TRAIL

Epoch maintains a continuous, timestamped audit trail for every compliance submission. Each operation, initial screening, full-resolution check, supplier engagement, justification upload, exclusion decision, is logged with:

- who performed it (operator user, supplier user, Epoch system);
- when (UTC timestamp);
- what changed (input, output, status delta);
- why (operator's stated rationale).

The latest compliance status of a submission is computed from the audit trail rather than stored as a flat field, so the reasoning behind the current state is always reconstructable from the events.

**Beyond the engagement-driven uploads, operators can attach standalone supporting documents to the audit trail at any time.** Legacy supplier evidence packs, third-party assessments, internal compliance memos, or any document the operator chooses to retain as backing for the DDS. The intent is single-home consolidation: anything that backs the DDS but is not formally submitted to TRACES lives in the audit trail, where it is timestamped, linked to the supplier or DDS it supports, retained for the full Article 12 period, and exportable on competent-authority request.

The audit trail is retained inside Epoch's platform for **up to 5 years** as supporting evidence for inspections and audits, in line with EU retention requirements. The operator can also download and archive a copy independently. **The audit trail is not submitted to EU TRACES.** Only the DDS GeoJSON, the PDF audit-trail summary, and the required metadata go to TRACES; the full audit trail backs the operator if challenged.

The DDS export package is a ZIP containing two artefacts:

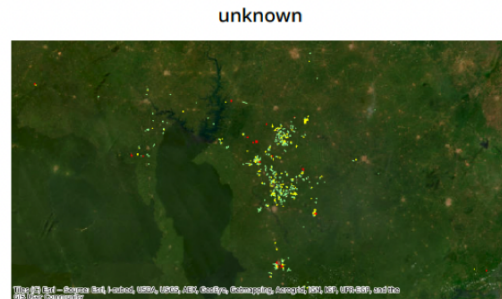
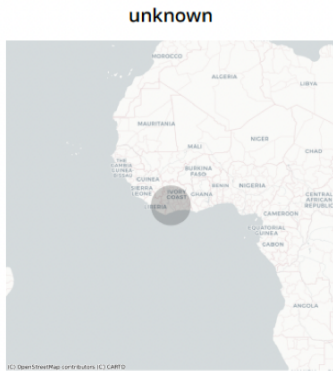
- **GeoJSON files.** One per collection, with plot geometry, identifiers, deforestation results, and compliance classification, ready for EU TRACES (one GeoJSON per HS code / supplier as TRACES requires).
- **PDF audit trail.** Operator and commodity details, summary of all plots with compliance status, country- and plot-level maps with deforestation-alert colouring, deforestation statistics and annual deforestation chart, low-compliance plot cards with thumbnails and justifications, the Article 10 risk-assessment results, methodology and data-source references, timestamp and version metadata.

## Summary

Supply Base: unknown

Country-level View

Plot-level View

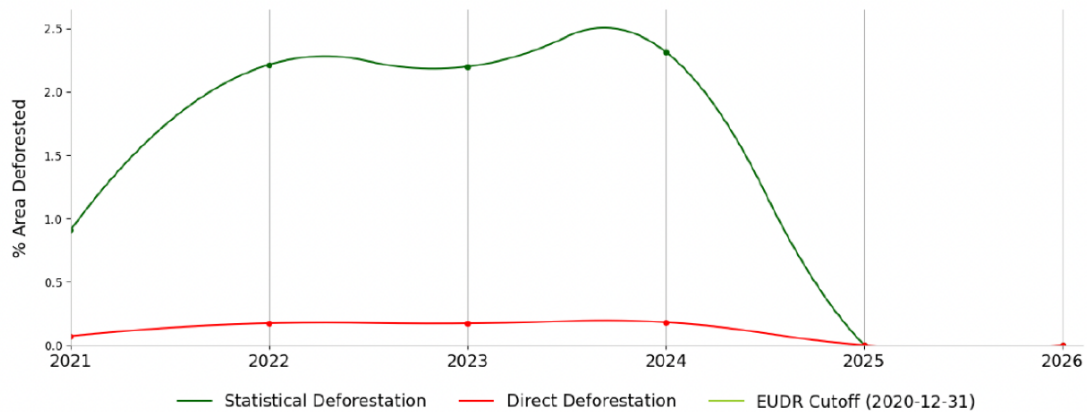


## Summary Statistics

<b>Supply Base</b> Total number of supplier plots  <b>563 Plots</b>	<b>Total Area Monitored</b> Supply base area  <b>3135 ha</b>	<b>Deforestation Area</b> 2021 - 2026  <b>62.31 ha</b>	<b>Deforestation Rate</b> 2021 - 2026  <b>0.33% / yr</b>
<b>High Risk Plots</b> Plots with abnormal deforestation  <b>26 Plots</b>	<b>Moderate Risk Plots</b> Plots at risk of deforestation  <b>0 Plots</b>	<b>Compliance Check</b> Proportion of compliant plots by count  	

## Deforestation Chart

Deforestation trend in statistical region (% area deforested)



DDS audit-trail summary page, supply-base context, country- and plot-level views, headline statistics, and the deforestation trend chart against the 31 December 2020 cutoff.

## 8.1 DDS resource-level tracking

A DDS is filed for a collection of plots, typically all the production plots backing a given consignment under a specific HS code. Epoch tracks each DDS as the unit it actually is, while exposing the per-facility / per-plot view underneath the DDS so the operator can see which resources contributed to which submission. The compliance dashboard tells the operator, at a glance:

- how many DDS submissions are **submitted**, **stale**, or **awaiting submission**;
- which facilities / plots are included in each DDS, and which DDS each facility / plot is currently associated with;
- when shed monitoring data has been refreshed past the snapshot taken at the previous submission for any DDS (a stale indicator at the DDS level, traceable down to the resources that triggered it);
- the reference number, verification number, and submission status returned by EU TRACES for each DDS.

When new satellite data lands and triggers re-processing, any prior DDS whose monitoring window is now older than the latest data is automatically flagged for re-submission. This supports the Article 10.5 requirement to review and update risk assessments.

**Auditor's view (Article 12 retention; Articles 18–24 inspection).** The audit trail is structured as an event log, not a flat status field. The current compliance state is computed from events, every transition is reconstructable. For an inspection, a CA receives (a) the submitted GeoJSON, (b) the PDF audit-trail summary, and on request (c) the full event log scoped to the DDS, including all supplier exchanges, document uploads, exclusion decisions, and the dataset versions used at each step. Because events are immutable, retroactive editing is detectable.

## 9. DDS SUBMISSION TO EU TRACES

The law is unequivocal: filings to EU TRACES must be compliant, or they shall not be filed. This is operationalised in Epoch as follows:

1. Iterate §6 and §7 until every flagged plot is either resolved to **compliant**, or excluded from the GeoJSON with a justification recorded in the audit trail.
2. Run a final pre-submission check confirming: (a) every plot in the GeoJSON has passed full-resolution screening, (b) no Article 10 stop-the-line risk remains unmitigated, (c) all supplier-engagement threads are closed.
3. Submit via Epoch's TRACES integration, either **operator-signed** (the operator controls the submission) or **on-behalf-of** (the operator ticks I authorize Epoch to submit the DDS directly to the EU TRACES portal on my behalf; Epoch submits and returns the reference + verification number).

4. Retain audit trail and supporting documents in Epoch's platform for the legally required retention period.

### 9.1 Operator-supplied mandatory fields

Epoch produces the GeoJSON of plot geometries and the supporting audit-trail PDF. The remaining mandatory fields that EU TRACES requires for a valid DDS are **operator-supplied**. Epoch cannot manufacture them, and the regulator holds the operator (or their authorised representative) responsible for their accuracy. These include, at minimum:

Field	Notes
HS code	EUDR-relevant Harmonised System commodity code
Product trade name	The trade name of the product being placed on or exported from the EU market
Product quantity	Net mass in kilograms (must be > 0)
Production country	ISO 3166-1 alpha-2 code
Operator name, address, country, email	Legal entity placing the product on the market
Operator EORI number (where applicable)	Required for many activity types
Activity type	DOMESTIC or BORDER_CROSS
Operator role	OPERATOR , TRADER , REPRESENTATIVE_OPERATOR , REPRESENTATIVE_TRADER
Species name (timber only)	Common and scientific species name, <b>mandatory for timber and timber-derived products</b> . Required even when sourcing through cooperatives or aggregation points
Supplier details	Names/addresses of the businesses or persons from whom the relevant products were supplied (Article 9 (e))
Customer details	Names/addresses of the businesses or persons to whom the relevant products were supplied (Article 9 (f))

When Epoch is the **authorised representative** for a DDS submission (the on-behalf-of route in step 3), the operator is responsible for completing this field set in the platform before the submission is dispatched. Epoch validates that no required field is missing and that the values pass type checks against the TRACES schema, but the regulator's accuracy obligation rests with the operator. The platform records the user, timestamp, and source of every field value in the audit trail so that, in the event of an inspection, the chain from declared field to authoring user is fully reconstructable.

**Operator action.** Provide and verify every Article 9.1 mandatory field above; sign off the DDS. The platform pre-validates the field set and the GeoJSON against the EU TRACES schema before dispatch, but the legal accuracy attestation remains the operator's.

## 9.2 Submission status

TRACES status	Meaning
SUBMITTED	DDS submitted and awaiting processing
ACCEPTED	DDS accepted; reference number valid for customs clearance
REJECTED	DDS rejected; check rejection reasons and resubmit

If, after engagement, justifications cannot be produced for residual non-compliance, the lawful outcome is that **the product cannot be imported**. Epoch does not paper over this, the entire process is designed so the answer is unambiguous before submission, not after.

## 9.3 Direct registration on TRACES vs. submission via Epoch

Operators can either register directly on EU TRACES (cumbersome, requires a national EU access point and identity-verification steps) or submit through Epoch's integration. The data the regulator receives is identical. Epoch recommends the mediated route for the same reason most operators use a customs broker rather than dealing with HMRC / customs authorities directly: speed, error-handling, and a single audit surface.

# 10. FOR COMPETENT AUTHORITIES

This section is written for the regulator. EUDR enforcement works best when both sides agree on what a good screening and flagging process looks like, and Epoch's deterministic methodology is intentionally legible from the audit chair as well as from the operator's chair.

A DDS submitted via Epoch comes with two artefacts in the EU TRACES filing: the **GeoJSON** of plot geometries (with EUDR-required attributes: commodity, area, country, compliance classification) and a **PDF audit-trail summary** (operator and commodity details, methodology and dataset versions, per-plot compliance status, the §5.3 Article 10.2 risk assessment, maps, time-series charts, and a low-compliance plot appendix with super-resolution satellite evidence thumbnails at  $\approx 2.5$  m). A summary verdict is not on its own sufficient evidence under Article 10; the PDF explains the methodology and the conclusions: which datasets were used at which versions, how disagreement between sources was resolved, where flags were raised and how each flag was closed, and how

potential false positives (wildfire scars, beetle-kill salvage, plantation rotation) were identified and removed from the deforestation tally before the verdict was issued.

On request, the full event log for any DDS is exportable: every screening run, every supplier message, every document upload, every exclusion decision, with UTC timestamps and the dataset versions in force at each step; the current compliance state is computed from events, so retroactive tampering is detectable.

Compliance verdicts (compliant / non-compliant) are always produced by **deterministic rules**: pixel-level overlay against named, versioned datasets (JRC TMF, GLAD L/S2, RADD, OPERA DIST, CCDC), with the natural-forest mask applied uniformly. Any inspector can re-run a single plot from the same inputs and reach the same verdict. AI-assisted components (open-web evidence aggregation for Article 10.2 (h)(l)(m)) are surfaced separately, with citations to dated, geographically relevant sources; they **flag** risk, they never **decide** compliance. The Method column on the §5.3 Article 10.2 table labels every criterion as either deterministic, LLM-grounded, or operator-supplied, so the provenance of every flag is legible at the point it is raised.

### 10.1 Risk-stratified inspection

Because every risk score is decomposable into named contributing factors (§5.5), a CA can prioritise inspections by:

- **Country / sub-national risk.** Operators sourcing from high-risk benchmarked countries under Article 29.
- **Commodity-complexity tier.** Palm and cattle (5/5) vs. timber (3/5); higher tiers warrant proportionally higher inspection density.
- **Cherry-picking and circumvention flags.** Epoch's screening surfaces patterns that suggest plot geometries were drawn around known forest-loss footprints; these are inspection priorities.
- **Aggregation-point declarations.** DDS submissions filed against a supply shed (rather than known plot polygons) are more likely to merit verification of the operator's first-mile engagement record.

### 10.2 Sampling and false-positive management

A persistent failure mode in EUDR enforcement is **false positives**: a deforestation alert at a 30 m pixel that, on close inspection, is a legitimate canopy reshuffle, salvage logging following beetle-kill, or a misclassified water/built-up boundary. Epoch's six-source ensemble (§6.1) requires multi-source agreement before a critical alert is raised, and the natural-forest mask (§6.2) explicitly removes plantation-on-plantation conversions from the deforestation tally. The operator's audit trail contains the per-pixel ensemble counts and

the per-plot evidence, so an inspector can resolve a borderline case in minutes rather than escalating it.

### 10.3 Where Epoch's enforcement-side product fits

Epoch builds an **EUDR Enforcement Dashboard** purpose-designed for CAs. Same engine, complementary view: facility-level risk maps across an entire jurisdiction, batch verification of submitted DDS GeoJSONs against Epoch's independent forest-change layer, and the ability to integrate independent facility/concession reference layers as those datasets become available. CAs that want to verify a sample of submissions without standing up their own geospatial infrastructure can request a regulator demonstration at [info@epoch.blue](mailto:info@epoch.blue).

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## APPENDIX A: FREQUENTLY ASKED QUESTIONS

### A.1 General

**"What has Regulation (EU) 2025/2650 and the May 2026 simplification package actually changed?"** The Commission has confirmed that the core text of Regulation (EU) 2023/1115 will not be reopened. Two binding instruments and one proposal sit underneath that confirmation:

- **Regulation (EU) 2025/2650** (published 23 December 2025; in force 26 December 2025) amends the EUDR with three operative changes. **Application dates:** 30 December 2026 for large and medium operators; 30 June 2027 for small and micro operators. **Scope adjustment:** certain printed products (books, newspapers, printed pictures) were removed from Annex I. **Simplified mechanisms** for micro and small primary operators: simplified declaration options and more flexible geolocation requirements under defined conditions.
- **Commission report on simplification**, due 30 April 2026, evaluating administrative burden particularly for smaller operators.
- **Proposed Delegated Act amending Annex I** (released 4 May 2026; four-week public consultation to 1 June 2026; not yet in force at the time of this document). The proposal would remove certain leather-related products (raw hides, skins, cattle leather) from scope and narrow the retreaded/used pneumatic tyres entry to tyre treads only. The proposal would also add soluble coffee, coffee extracts/essences/concentrates, and certain palm-oil derivatives (soap products containing or made using oil palm) to scope.

**What this means operationally for an Epoch-supported DDS.** Operators preparing for the 30 December 2026 deadline should treat the May 2026 Delegated Act proposal as not yet binding, the compliance perimeter today is the Annex I list as amended by Regulation (EU)

2025/2650. Operators sourcing leather, soluble coffee, palm-oil-derivative soaps, or re-treaded tyres should track the consultation outcome before finalising their CN-code mapping. Epoch's process and methodology are unchanged by the simplification: parcel-level deforestation screening, the Article 10.2 risk assessment, the audit trail, and the DDS submission flow apply to whatever Annex I list is in force at the time of submission.

**"What happens if a competent authority queries our DDS, at the border or in an inspection?"** The audit trail (§8) is the operator's defence. Every screening run, supplier-engagement message, uploaded supporting document, exclusion decision and deterministic check output is timestamped, dataset-versioned, and retained for up to 5 years. On request, the full event log scoped to a single DDS can be exported to the requesting CA.

**"Does AI make compliance decisions?"** No. The §5.3 Article 10.2 table labels every criterion as deterministic, LLM-grounded, or operator-supplied; compliance verdicts are always produced by deterministic rules. See §10 for the regulator-facing view.

**"How frequently should we re-run checks?"** Epoch's recommended default is annual. The simplification proposal's headline 75 % compliance-cost reduction comes largely from operators submitting fewer, less frequent DDS rather than one DDS per shipment. Annual cadence aligns with most agricultural harvest cycles, smooths operational load, and minimises the procurement and audit-management overhead that drives the bulk of compliance cost, while still meeting the regulation's review-and-update requirement under Article 10.5.

Higher-frequency cadence (e.g. every 2 weeks, or per-shipment) is operationally meaningful in two narrow cases: (a) supply chains where a single DDS covers a small, fast-moving cargo flow and per-shipment customs evidence is preferred, and (b) supply bases where the operator has reason to believe new deforestation events would occur intra-year (active frontier, recent enforcement actions, ongoing supplier engagement on flagged plots). For most operators outside those cases, the annual route is the simpler and equally compliant choice.

Whichever cadence is chosen, Epoch automatically flags resources as **stale** when fresh satellite data has landed since the previous submission's monitoring window, so operators do not need to track refresh windows manually, and the audit trail records the staleness state at every point in time.

**"What if a supplier in our chain has already submitted a DDS for the parts we're sourcing?"** Downstream operators are not required to file a fresh DDS for inputs already covered by an upstream DDS. Current Commission guidance (and confirmation received from the Belgian Competent Authority during a June 2026 enforcement briefing) indicates the operational pattern: the upstream operator's DDS reference and verification numbers must be passed outside of TRACES, since downstream operators don't file their own DDS

for already-DDS'd inputs, retained in the downstream operator's audit trail, and made available on inspection. Epoch can ingest upstream DDS references and surface them in the audit trail alongside any fresh DDSs the operator does file.

**"Can a single product be covered by multiple DDSs?"** Yes. Where TRACES data-size limits or supply-chain structure produce more plots than fit in a single DDS, multiple DDSs can be linked to a single shipment. DDS submissions can be filed up to one year ahead of the shipment, and customs reconciliation accepts multiple references against a single product. Epoch generates one DDS per HS code / supplier collection by default and links them in the audit trail.

**"Can a single DDS cover multiple products?"** Yes (Commission FAQ V5 Q5.19 confirms this, including the cross-commodity case in Q3.29: "cattle and timber" in a single declaration is allowed). The practical constraint we see most often is **the TRACES ≈ 25 MB file-size cap**, not the per-DDS line limits (200 product lines, 10,000 production places). With many suppliers and many geolocations per product, the cap is hit first, so operators with deep supply bases typically end up filing multiple DDSs per product family even where the regulation would allow consolidation.

**"Our finished product is made of raw materials with different HS codes. Which HS code(s) go on the DDS?"** The **finished-product HS code** goes on the DDS, the one customs anchors its process on, not the bill-of-materials HS codes. For a wooden nightstand entering the EU under HS 9403.50.0000, that single code is what is declared, even though the underlying materials include oak (HS 4407.91), veneer sheet (HS 4408.90), and plywood (HS 4412.39). The DDS body still lists all production plots for the underlying raw materials. The Commission's FAQ 1.3 covers the multi-commodity case (e.g. a chocolate bar with cocoa + palm oil) where DD extends only to the main commodity per Annex I's left column.

**"Our supplier has FSC / PEFC Chain of Custody certificates but no harvest locations or mill addresses. Is that enough for the DDS?"** No. The Commission's position is that FSC / PEFC CoC certificates count as Article 10.2(n) supplementary evidence but do **not** on their own meet Article 9's geolocation bar. Operationally, FSC CoC certificates are administrative site certificates: they prove a facility is licensed to handle certified material but don't contain harvest locations or pulp/paper mill addresses. The supplier (or one tier up) has to provide some processing-node or harvest-area data. We see three usable tiers of precision in practice, ranked by cost and false-positive load:

- **Good** — country or major sub-national region (e.g. "Biobío Region, Chile"). Epoch can run a deforestation scan over the whole region; expect a larger workload to rule out false positives.
- **Better** — a list of counties or provinces (e.g. five named counties in Maine, USA). Scan area is smaller, false-positive load lower.

- **Best** — the exact mill or first-mile facility address. Epoch can build a calibrated supply shed (e.g.  $\approx$  150 km for sawmill-fed hardwood) and identify the candidate harvest plots; lowest false-positive load.

Even the Good tier is workable; the country alone (e.g. just "Sweden") is not, because the scan area is too large to generate a defensible DDS at reasonable cost.

**"Our upstream supplier is a smallholder / primary producer. Does their MSPO status let us skip our own DDS obligations on the finished product?"** No. The **micro or small primary operator (MSPO)** simplified-declaration regime (Commission FAQ V5 Q3.21 defines who qualifies) applies to the primary producer placing products on the EU market directly. It does **not transfer downstream**. An EU retailer or trader sourcing finished products from a smallholder MSPO is itself a standard operator and is subject to standard per-product DDS obligations on what it places on the market. In practice this is the question we see most often — operators sourcing from low-risk-country smallholders sometimes assume the supplier's lighter regime carries through; it doesn't. The supplier's SD can be one input to your Article 9.1(h) legality evidence, but you still file your own DDS with full geolocation.

**"What if our supplier data has invalid addresses or missing HS codes?"**

- **Invalid addresses.** Epoch's location-validation pipeline (§5.1) flags addresses that fail to geocode, fall outside plausible commodity-producing regions, or don't match the declared country. The operator gets a flag and a recommended fix, correct the address, request the supplier provide coordinates, or supply an aggregation point.
- **Missing HS codes.** Where a part's HS code isn't yet mapped, the operator must either provide the code via the platform or supply a CN-code mapping that resolves to an EUDR-relevant HS prefix.
- **Composites with multiple HS codes** are reported on net EUDR-commodity weight, not gross. A timber-frame chair declares only the timber mass under Annex I, not the upholstery, finishings, or hardware.

**"For wood products and furniture, do we need to trace to the plot of harvest, or to the source of production?"** EUDR Article 9 requires geolocation of the plots of land where the relevant commodities were produced. For timber, that is the plot where the trees were harvested, not the sawmill, not the manufacturing site. The 4 May 2026 proposed Delegated Act would expand Annex I to include certain manufactured wood products (e.g. furniture); under the current regulation those are outside scope until the Delegated Act is in force. Operators sourcing wood-derived products today should track Annex I plus the Delegated Act consultation outcome before finalising scope. Where furniture sources include leather, both the wood-harvest plot and the cattle-rearing geolocation may be required if both

commodities are in scope at submission time. Status as of May 2026; check EUR-Lex for the latest position.

**"What if our supplier disputes Epoch's deforestation finding?"** Disputes are resolved through the supplier-engagement workflow, not by Epoch unilaterally. The supplier provides justifications (e.g. natural-cause beetle-kill salvage, plantation rotation, mis-identified water boundary) and any supporting evidence (drone imagery, ground photos, audit reports) via the platform; the operator's compliance officer reviews the rebuttal and decides whether to maintain the flag or exclude the plot. Both the original Epoch verdict and the supplier-supplied counter-evidence are retained in the audit trail with timestamps and the user who actioned the decision. Epoch's role is to surface the original deterministic finding and structure the disagreement; the resolution is operator-decided and operator-defended on inspection.

**"How does Epoch handle indirect suppliers, the supplier of our supplier?"** The Article 9 geolocation obligation extends to the plots where the relevant commodities were produced, regardless of how many tiers separate the operator from the producer. Where the operator only knows the direct supplier (e.g. a slaughterhouse, a co-operative, a mill), Epoch's supply-shed methodology (§4) screens the realistic sourcing region around the direct supplier, the commodity-detection stack (FDP, GLAD soy, Global Pasture Watch, harvest-event detection) then detect the actual production plots within that region. The resulting geolocation package covers every plot the direct supplier could plausibly have drawn from, which is a stricter bar than the actual sourcing footprint. Where the operator wants tighter resolution than the supply-shed gives, the operator must engage the direct supplier to obtain indirect-supplier polygons or aggregation points, Epoch's supplier-engagement workflow captures the request and any returned evidence.

**"Can a DDS be edited or revoked after submission?"** No, and this isn't a limitation Epoch could lift even if it wanted to. The EU TRACES IS API has no operator-facing amend operation: once a DDS is submitted, the record is immutable. The only path to correct an error is to **file a new DDS** with the corrected information (which receives a new reference and verification number) and update any downstream cross-references that pointed at the old DDS. A narrow withdrawal flow exists in TRACES (typically pre-customs-clearance) which marks a DDS as withdrawn without removing it from the record. Epoch mirrors this behaviour: post-submission, configuration changes, regeneration, and resubmission attempts are rejected by the system. **The regulator's accuracy obligation rests on the operator at submission time.** Errors must be caught in the moderation flow (§7.4) and the pre-submission check (§9 step 2), not after.

## APPENDIX B: COMMODITY-SPECIFIC OPERATIONAL NOTES

Per-commodity reference cards: EUDR readiness, structural traceability problems, supply-shed tactics, and national/industry rails Epoch uses where they exist.

### B.1 Soy

**Readiness: medium.** Brazil, US, Argentina supply most volume; risk concentrates sharply at the sub-national level (Trase, see Sources), which country-level averaging hides.

Two structural problems:

1. **Cerrado biome.** Most conversion is woodland-savanna clearing, partly side-stepped by EUDR's forest definition. EUDR-compliant soy may still carry conversion exposure under stricter definitions.
2. **Early mixing at elevators.** Beans from many farms enter the same silo before first crush, so plot-level traceability is hard to maintain upstream of the elevator. Declaration-in-excess at the elevator (screening the full feeding region at 10 m resolution) closes the gap; the over-inclusion is the mass-balance loop closure.

**Rails as Article 9 / 10.2(n) supplementary evidence:** **CAR** (Brazil) and **AFIP grain transportation certificates** (Argentina) for plot/farm provenance; **RTRS** zero-deforestation/zero-conversion chain-of-custody (segregated or mass-balance); **Donau Soja / Europe Soya** for lot-based IT traceability within Europe.

### B.2 Timber & pulp

**Readiness: medium, high variance by origin/product.** Globally distributed production (US, India, China, Brazil, Russia, Canada, Indonesia). Industrial plantations (eucalyptus, acacia, pine) coexist with natural-forest concessions across the tropics. Broadest product scope of any EUDR commodity (logs, chips, pellets, pulp, paper/board, lumber, furniture, charcoal); **multi-tier DDS and CN-code precision** is the bar.

- **Industrial plantations** (Brazilian eucalyptus → kraft mill, Indonesian acacia → coastal pulp mill, US pine → industrial sawmill): plantation polygons usually documented; mill sheds short (≈ 60–180 km Brazil, ≈ 10–70 km Indonesia coastal). Screening burden: **peatland exposure** and **post-cutoff plantation expansion**; the natural-forest mask separates plantation-on-plantation (compliant) from plantation-on-natural-forest (non-compliant).
- **Smallholder hardwood** (e.g. North-American private woodlots): tens of thousands of small lots, no national registry, strong rule-of-law trends. Canonical declaration-in-excess: aggregation-point sheds at the sawmill + USDA Forest Service / FIA corroboration. Beetle-kill salvage and natural regeneration are out of EUDR scope

(Article 2(3): deforestation = human-induced); exclusion justifications cite natural-cause evidence per plot.

- **Tropical hardwood** (e.g. Malaysian timber → UK): plot polygons usually from concession data; chain-of-custody is the rate-limiter. Rails: **SVLK / V-Legal** (Indonesia FLEGT spine), **DOF / Sinaflor+ + CAR** (Brazil), **FLEGT TLAS. FSC / PEFC** chain-of-custody is Article 10.2(n) value, not a geolocation substitute.
- **Species-and-country-only sourcing** (wood from upstream agents without a named sawmill or concession): admin-region (county/municipality) boundary replaces the isochrone; the commodity-detection stack identifies harvest plots within the region for the relevant period. Output is still plot-level GeoJSON.

### B.3 Cattle

**Readiness: low to medium, jurisdiction-dependent.** Brazil is the EU-relevant hot-spot (industry scale, Amazon/Cerrado frontier proximity, structurally the hardest commodity to trace). Birth → rearing → finishing → slaughter typically spans **different farms**; indirect suppliers (the rearing ranches feeding the direct slaughterhouse supplier) are where the traceability gap and deforestation risk concentrate. Imazon found ~80% of Amazon indirect suppliers within 100 km of the direct supplier and up to 360 km with stark seasonal variation, the empirical basis for Epoch's 180-min cattle isochrone default (§4.2).

**Rails** where the jurisdiction supports them: **GTA** (Brazil animal movement), **SISBOV** (Brazil export ID), **CAR** (Brazil farm polygons); **NLIS** (Australia, full RFID linked to property ID); **SENASA** (Argentina); **National RFID** (Uruguay). Tactic: **link GTA events → CAR polygons → deforestation monitoring**, and request indirect-supplier controls from the slaughterhouse. Where no national rails exist (parts of Africa, Mexico, India), direct screening is economically infeasible without supply-shed analysis around the slaughterhouse and aggressive supplier engagement.

**Scope caveats (May 2026 Delegated Act, in consultation, not yet binding):** proposes removing certain leather products (raw hides, skins, cattle leather) from Annex I; in-scope cattle products (live bovine animals, beef, edible meat offal) would remain. The same proposal excludes **frozen cattle tongues** while keeping fresh ones in scope; the Commission itself concedes this "creates a fragmented and incoherent approach for the cattle sector ... and may result in the relocation rather than the elimination of the deforestation risk." Operators sourcing cattle by-products should map CN codes carefully against the final Annex I list when the Delegated Act lands.

### B.4 Rubber

**Readiness: low to medium.** Production concentrated in Southeast Asia (Thailand ≈ 33%, Indonesia ≈ 28%, Vietnam ≈ 12% of global 2023 output); West Africa scaling rapidly (Côte d'Ivoire ≈ 6–7% at double-digit annual growth). **80–85% smallholder-grown** is the struc-

tural feature making rubber harder to trace than palm or soy: many small deliveries, frequent dealer mixing, and large West-African supply sheds where mill density is low and cup-lump (field coagulant) tolerates longer hauls than fresh latex.

**Adaptive supply-shed approach:** latex (preserved on-farm, tight first mile) and cup-lump (longer hauls, more dealer mixing) drive different freshness windows and polygon tactics. The default 120-min isochrone (§4.2) is overridden up/down per origin and processing form.

**Rails:** **GPSNR** (industry traceability pilots increasingly compatible with EUDR DDS fields); **FSC** chain-of-custody with material segregation, **PEFC**, **Rainforest Alliance**, **Fair Rubber Association** certifications for Article 10.2(n) value; Thailand's **RAOT** and Indonesia's Ministry of Agriculture are building plantation registries. **Reclaimed/recycled and synthetic rubber are out of scope** — operators sourcing finished tyres should track **CN codes and blends** carefully.

## B.5 Coffee

**Readiness: medium, variance by origin/processing.** Brazil and Vietnam dominate volume; Colombia, Indonesia, Ethiopia, Uganda, Honduras supply most of the rest. Processing is the structural divider:

- **Wet-processed (washed) coffee** is time-critical (cherries to wet mill / washing station within 24–48 h; fermentation 5–7 days), keeping the first mile tight ( $\approx$  2–5 km in Ethiopian washing-station belts, often delivered on foot). Supply-shed at the washing station works well; the 60-min default isochrone (§4.2,  $\approx$  25–35 km) is calibrated for this case. Same-day intake timestamps align with the DDS harvest-window field.
- **Dry/natural coffee** (Brazil estates, Colombian smallholders, Vietnam smallholders): the processing site IS the farm; dry beans then move tens-to-hundreds of km to the dry mill. The relevant supply shed is the farm itself; the dry mill is an aggregation point, not the production geography. Override the default travel-time upward.

**Rails:** **Colombia FNC**, **Ethiopia eATTS**, **Brazil CONAB**, **Uganda UCDA** and large-trader farm registries provide partial farm-to-mill traceability for Article 9 fields; **Rainforest Alliance**, **4C**, **Fairtrade** and origin-specific programs carry Article 10.2(n) value, not a plot-polygon substitute.

## B.6 Cocoa

**Readiness: medium, higher in regulated countries.** Côte d'Ivoire and Ghana supply over half of global cocoa; Indonesia, Ecuador, Cameroon, Nigeria, Brazil, Peru, Colombia supply the rest. Post-2021 cocoa-driven deforestation is concentrated in Côte d'Ivoire and Ghana, a sharper geographic concentration than any other EUDR commodity, making West-African cocoa the highest-priority operational case. Epoch's pilot study (3,711 Ivori-

an cooperatives, see Sources) found the **top 20% of cooperatives account for 64.2% of non-compliant-deforestation exposure**, so a cooperative-ranked engagement priority list closes most of the gap with a fraction of the effort.

- **West Africa.** Traceability hinges on **first-buyer documentation** (Licensed Buying Companies in Ghana, cooperatives and pisteurs in Côte d'Ivoire), not centralised wet mills as in coffee. **Ghana GCTS** (COCOBOD-managed) and **Côte d'Ivoire SYDORE** (Conseil Café-Cacao) track purchase events from first buyers, not individual farmers. Tactic: align the national-system data format with the DDS, identify the smallholder gap, run supply-shed analysis at the cooperative level (a representative Ivorian co-op shed in Epoch's April 2026 benchmark covered  $\approx 526,000$  ha with  $\approx 43,000$  detected plots). The 90-min default (§4.2,  $\approx 22\text{--}40$  km) reflects field studies finding 80–90% of smallholders within  $\approx 22$  km of their nearest cooperative.
- **Latin America** (Ecuador, Peru, Brazil, Colombia): on-farm and cooperative acopios (central fermentation boxes and drying patios) coexist. Where wet beans arrive same-day at the acopio, plausibility checks against the time-to-acopio constraint (hours, not days) become a material part of the audit trail.
- **Indonesia.** Smallholder-dominated; humid post-harvest forces short windows and dispersed processing; very local intake (kilometres).

**Rails for Article 10.2(n): Cocoa & Forests Initiative (CFI)** company-government commitments on farm mapping; **Rainforest Alliance / Fairtrade** certifications.

## B.7 Palm oil

**Readiness: medium to high (smallholder gaps).** Indonesia and Malaysia supply most global palm oil; Thailand, Colombia, Nigeria, Guatemala supply the rest. Smallholder share is large in all major origins (majority in Thailand, substantial minority elsewhere); many lack mapped polygons. Mill catchments aggregate hundreds of farms, so **pre-refinery mixing risk is high**. Epoch's pilot study (1,290 Indonesian mills,  $\sim 51$  M ha shed footprint, December 2025, see Sources) found the **bottom 5% of mills account for over 73% of post-2020 deforestation**, so mill-level supply-shed screening ranked by composite risk concentrates engagement effort on the small minority that matters.

**Supply-shed tactic.** Fresh Fruit Bunches must reach the mill within 24–48 h to avoid free-fatty-acid spikes, bounding the geographic shed:  $\approx 30$  km Sumatra/Thailand,  $\approx 50$  km Kalimantan and parts of Africa/Latin America (90-min default, §4.2). Plasma and organised smallholders deliver within 50–80 km in Indonesia; RSPO-certified mill analysis (Meijaard et al. 2025) puts the operative shed at  $\approx 20$  km for direct smallholder delivery. A repres-

entative Indonesian mill shed in Epoch's April 2026 benchmark covered  $\approx$  588,000 ha with  $\approx$  58,700 detected palm plots.

- **RSPO  $\neq$  EUDR compliance**, but RSPO documentation is the strongest Article 10.2(n) evidence available for any commodity. Cross-check against the **Universal Mill List** (Rainforest Alliance) and **Trase Indonesia palm flows**.
- **Peat soil exposure**. Indonesian peatlands are the persistent risk hot-spot; the audit trail surfaces peat overlap explicitly so primary-forest-on-peat conversions aren't lost amid oil-palm expansion on mineral soils.
- **Indonesian enforcement has escalated**. The forestry task force has launched criminal prosecutions and concession seizures targeting palm and mining operators on suspected illegally cleared land; operators sourcing from Indonesia should expect concession-level actions to feed Article 10.2 (h) and (m) news-aggregated signals.

**National rails: MPOB** (Malaysia), **GAPKI** (Indonesia), **Fedepalma** (Colombia). NDPE commitments at large producers cover most directly-managed estate area but not the smallholder tail; smallholder polygons are the practical priority for closing the EUDR gap.

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## APPENDIX C: PRODUCT INTERFACES

Epoch ships three surfaces over a single compliance engine. Outputs are identical across all three; the choice of surface is a question of integration pattern, not capability.

Surface	Best for	Where to access
<a href="#">Self-serve EUDR Application</a>	Compliance officers, sustainability leads	<a href="https://platform.epoch.blue">platform.epoch.blue</a>
<a href="#">FM-API</a>	Data and engineering teams integrating compliance into ERP / TMS / supplier portals	<a href="https://sandbox-docs.epoch.blue/docs">sandbox-docs.epoch.blue/docs</a>
<a href="#">CLI / MCP interface</a>	Power users, AI-assisted workflows from any MCP-compatible chat client	<a href="#">Loom walkthrough</a>

**Anything that can be done in the UI can be done via the API.** The self-serve UI is a thin client over FM-API.

The self-serve app supports four data-entry modes:

1. **Drop a pre-existing GeoJSON** (plots or aggregation-point polygons/points) on screen.
2. **Drop a pin on the map** with reverse geocoding, or **type an address** with forward geocoding.

3. **Click a facility from a baseline reference layer.** Public points-of-aggregation datasets such as [Trase](#) facility data (palm mills, cattle slaughterhouses, soy crushers, wood-pulp concessions, etc.) are loaded as selectable map layers.
  4. **Re-fetch a previously submitted DDS** by reference number + verification number (pulled from EU TRACES via the Information System integration).
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## APPENDIX D: GLOSSARY

**Article 9 / 10 / 11 / 12 / 18–24 / 23 / 25 / 29.** Sections of Regulation (EU) 2023/1115 that respectively define information requirements, risk-assessment criteria, risk-mitigation, record retention, competent-authority inspection powers, market-access restrictions, penalties (capped at 4 % of EU-wide turnover), and country-level risk benchmarking.

**CAR:** Cadastro Ambiental Rural. Brazilian rural-property geospatial registry used for plot/farm provenance.

**CCDC:** Continuous Change Detection and Classification. Time-series breakpoint-detection algorithm (Zhu & Woodcock 2014) run by Epoch on Google Dynamic World tree-class probabilities; detects gradual encroachment that discrete alert systems miss. Fully deterministic; full-resolution checks only.

**CFI:** Cocoa & Forests Initiative. Industry-government commitment platform for cocoa farm mapping and deforestation reduction.

**CN code.** Combined Nomenclature commodity code used in EU customs declarations; finer-grained than HS codes.

**CPI, Corruption Perceptions Index** (Transparency International). Annual scalar score per country, used in Article 10.2 (h) governance scoring.

**DDS:** Due Diligence Statement. The filing an operator lodges with EU TRACES, comprising plot geolocations and the supporting evidence required by Articles 8 and 9.

**DIST-ALERT (OPERA).** NASA / JPL Harmonized Landsat-Sentinel-2 vegetation-disturbance alert product. Near-real-time.

**FDP:** Forest Data Partnership. Multi-institution commodity-presence model series (palm, cocoa, rubber, coffee at 10 m); one component of Epoch's commodity-detection stack, which also integrates GLAD annual soy mapping for soy, Global Pasture Watch for cattle, and Epoch's harvest-event detection for timber.

**FFB:** Fresh Fruit Bunches. Raw oil-palm fruit; must reach the mill within 24–48 hours of harvest.

**FLEGT TLAS.** EU Forest Law Enforcement, Governance and Trade, Timber Legality Assurance System. Indonesia's SVLK is FLEGT-licensed.

**FNC:** Federación Nacional de Cafeteros de Colombia. National coffee body operating partial farm-level traceability infrastructure.

**FSC / PEFC.** Forest Stewardship Council / Programme for the Endorsement of Forest Certification, chain-of-custody certifications accepted as Article 10.2(n) supplementary evidence.

**GCTS:** Ghana Cocoa Traceability System. Managed by COCOBOD; tracks first-buyer purchases from Licensed Buying Companies.

**GLAD-L / GLAD-S2.** University of Maryland Global Land Analysis & Discovery near-real-time deforestation alerts on Landsat (30 m) and Sentinel-2 (10 m).

**GPSNR:** Global Platform for Sustainable Natural Rubber. Industry initiative on rubber traceability, increasingly aligned with EUDR DDS fields.

**GSDB V4:** Global Sanctions Database. Source for Article 10.2 (h) sanctions screening.

**GTA:** Guia de Trânsito Animal. Brazilian animal-movement document; central to cattle traceability chains.

**HS code.** Harmonised System commodity code; six-digit international standard.

**Isochrone.** A polygon enclosing every point reachable from a centroid within a given travel time, given a friction surface. Used in §4 supply-shed delineation.

**JRC TMF:** Joint Research Centre Tropical Moist Forest. EU Commission product; annual change classes and deforestation year, 30 m. Used both as a deforestation source and as a forest baseline.

**LBC:** Licensed Buying Company. First-tier buyer in Ghana's regulated cocoa chain.

**Mass-balance.** Chain-of-custody model that tracks aggregate volumes rather than physical lot identity; weaker than segregation but more practical for early-mixing commodities like soy.

**NDPE.** No Deforestation, No Peat, No Exploitation, voluntary palm-oil industry commitment.

**NLIS, National Livestock Identification System** (Australia). Full RFID cattle traceability linked to property ID.

**OOD:** out-of-distribution. Evaluation of a model on conditions absent from its training distribution.

**Plot.** Homogeneous area growing (or, for cattle, used to raise) the target commodity, a contiguous patch that behaves as one unit from a remote-sensing perspective. Per **EUDR Article 2(27)**: "land ... which possesses sufficiently homogeneous conditions to allow an evaluation of the aggregate level of risk ... associated with relevant commodities produced on that land". A plot is functional, not cadastral: FAQ 1.13 confirms a plot can be the whole real-estate property or only a homogeneous part of it; FAQ 1.6 confirms absence of a land registry or formal title does not prevent designation.

**RADD.** Wageningen University radar-based forest-disturbance alerts on Sentinel-1 (10 m); cloud-penetrating.

**RAOT.** Rubber Authority of Thailand; building national plantation registries.

**RSPO:** Roundtable on Sustainable Palm Oil. Mature certification scheme; RSPO documentation does not on its own meet EUDR but is the strongest 10.2(n) evidence base.

**RTRS:** Round Table on Responsible Soy. Soy certification scheme with zero-deforestation/zero-conversion criteria.

**SISBOV.** Brazilian export-segment cattle identification system.

**SVLK:** Sistem Verifikasi Legalitas Kayu. Indonesian timber-legality verification system; spine of EU FLEGT licensing for Indonesian wood.

**SYDORE.** Côte d'Ivoire's purchase-receipt cocoa-traceability system run through Conseil Café-Cacao.

**TRACES:** TRade Control and Expert System. EU IT system through which DDS submissions are filed.

**WDPA:** World Database on Protected Areas. UNEP-WCMC + IUCN; used in Article 10.2 (m) protected-area overlap checks.

**WGI, Worldwide Governance Indicators** (World Bank). Six-dimension governance score; used in Article 10.2 (h) and the §5.5 governance discount.

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## SOURCES

### Regulation and EU Commission

1. **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. <https://eur-lex.europa.eu/eli/reg/2023/1115/oj>

2. **Regulation (EU) 2025/2650** amending Regulation (EU) 2023/1115, postponement of application to 30 December 2026 (large/medium) and 30 June 2027 (small/micro), and Annex I amendments. <http://data.europa.eu/eli/reg/2025/2650/oj>
3. **EU TRACES Information System, official EUDR specification**. EU Commission CIRCABC: <https://circabc.europa.eu/ui/group/34861680-e799-4d7c-bbad-da83c45da458/library/5fb710e6-075e-4ab9-8290-ca51fa178fd6>
4. **EU Commission, EUDR Country Benchmarking System under Article 29**. [https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products\\_en](https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products_en)
5. **EU Commission, EUDR Implementation FAQ, 5th iteration (April 2026)**. [https://environment.ec.europa.eu/document/download/744919a7-8650-4850-89ad-a597268cd69e\\_en?filename=FAQ-UPDATE-5th-Iteration+FINAL.pdf](https://environment.ec.europa.eu/document/download/744919a7-8650-4850-89ad-a597268cd69e_en?filename=FAQ-UPDATE-5th-Iteration+FINAL.pdf)

### Forest baseline and natural-forest classification

1. **DeepMind Natural Forests of the World 2020**. Google DeepMind global natural-forest classification, 10 m. Methodology paper: <https://www.nature.com/articles/s41597-025-06097-z>. Dataset reference: [https://developers.google.com/earth-engine/datasets/catalog/projects\\_nature-trace\\_assets\\_forest\\_typology\\_natural\\_forest\\_2020\\_v1\\_0\\_collection](https://developers.google.com/earth-engine/datasets/catalog/projects_nature-trace_assets_forest_typology_natural_forest_2020_v1_0_collection).
2. **JRC Tropical Moist Forest (TMF)**. Joint Research Centre, European Commission, 30 m. <https://forobs.jrc.ec.europa.eu/TMF>

### Deforestation alert ensemble

1. **GLAD forest-disturbance alerts** (Landsat & Sentinel-2). University of Maryland GLAD Lab, distributed via Global Forest Watch. <https://glad.umd.edu/projects/global-forest-watch>
2. **WUR RADD radar alerts**. Wageningen University & Research. <https://www.wur.nl/en/research-results/chair-groups/environmental-sciences/laboratory-of-geo-information-science-and-remote-sensing/research/sensing-measuring/radd-forest-disturbance-alert.htm>
3. **OPERA DIST-ALERT**. NASA / JPL OPERA project, Harmonized Landsat-Sentinel-2 vegetation-disturbance alerts. <https://www.jpl.nasa.gov/go/opera>
4. **CCDC, Continuous Change Detection and Classification**. Zhu, Z. & Woodcock, C. E. (2014), Remote Sensing of Environment 144 : 152–171.
5. **ESA OpenSR, open-source super-resolution for Sentinel-2**. <https://opensr.eu/>; <https://github.com/ESAOpenSR/SEN2SR>.

## Commodity detection

1. **Forest Data Partnership (FDP) commodity layers.** Palm, cocoa, rubber, coffee at 10 m. <https://www.forestdatapartnership.org/>
2. **GLAD annual soy mapping for South America.** University of Maryland. <https://glad.umd.edu/dataset/annual-maps-soybean-south-america>
3. **Global Pasture Watch.** FAO/IIASA, grassland classification at 30 m. <https://gpw.geo-wiki.org/>

## Indigenous, protected areas, governance, conflict, sanctions

1. **Native Land Digital, Indigenous Territories.** <https://native-land.ca>
2. **WDPA, World Database on Protected Areas.** UNEP-WCMC and IUCN. <https://www.protectedplanet.net>
3. **Transparency International, Corruption Perceptions Index.** <https://www.transparency.org/en/cpi>
4. **World Bank, Worldwide Governance Indicators.** <https://www.worldbank.org/en/publication/worldwide-governance-indicators>
5. **Freedom House, Freedom in the World.** <https://freedomhouse.org/explore-the-map?type=fiw>
6. **UCDP, Uppsala Conflict Data Program.** <https://ucdp.uu.se/>
7. **GSDB V4, Global Sanctions Database.** <https://www.globalsanctionsdatabase.com/>

## Supply-shed travel-time literature (see §4.2)

1. Gibbs, H. K. et al. (2015). Conservation Letters 9(1): 65–76. <https://conbio.onlinelibrary.wiley.com/doi/10.1111/conl.12175>
2. Imazon & Instituto Centro de Vida (2017). As zonas de influência dos frigoríficos no arco do desmatamento. <https://imazon.org.br/publicacoes/as-zonas-de-influencia-dos-frigorificos-no-arco-do-desmatamento/>
3. Cramb, R. & McCarthy, J. (2016). The Oil Palm Complex. NUS Press. <https://nuspress.nus.edu.sg/products/the-oil-palm-complex>
4. Meijaard, E. et al. (2025). Communications Earth & Environment 6. <https://www.nature.com/articles/s43247-025-02683-6>
5. Holmes, T. P. et al. (1997). Forest Ecology and Management 108(1–2): 17–34. [https://doi.org/10.1016/S0378-1127\(97\)00310-9](https://doi.org/10.1016/S0378-1127(97)00310-9)
6. ETRMA (2022). The Natural Rubber Supply Chain. <https://www.etrma.org/library/>
7. Mighty Earth (2020). Cocoa smallholder distance study. <https://www.mightyearth.org/issues-and-campaigns/forests/>
8. Minten, B. et al. (2017). Coffee value chains on the move: Evidence in Ethiopia. Food Policy. <https://doi.org/10.1016/j.foodpol.2017.07.012>

## Industry and civil-society references

1. Trase, facilities baseline data layer. <https://trase.earth/>
2. Earthsight, Malaysian-timber UK investigation. <https://www.earthsight.org.uk/news/malaysian-timber-uk>
3. Karolina Sarna, "Six regulations, one observation system, no standard." LinkedIn Pulse, 2026. <https://www.linkedin.com/pulse/six-regulations-one-observation-system-standard-karolina-sarna-lkz2f/>
4. Karolina Sarna, "What agentic GeoAI architecture carries and drops." LinkedIn Pulse, 2026. <https://www.linkedin.com/pulse/what-agentic-geoai-architecture-carries-drops-karolina-sarna-iwhcf/>
5. Robert Nasi, "What would a fully realised EUDR actually deliver?" LinkedIn Pulse. <https://www.linkedin.com/pulse/what-would-fully-realized-eudr-actually-deliver-take-make-robert-nasi-ap25c/>

## Epoch first-party studies referenced in the commodity FAQs

1. Epoch (December 2025). Codex Planetarius Pilot Study: Palm in Paradise, A Supply Shed Analysis of Indonesian Palm Oil. WWF Codex Planetarius initiative. [https://www.codexplanetarius.org/pdfs/Codex%20Plantarius%20Pilot%20Phase%20Report\\_Epoch%20Analysis%20of%20Indonesian%20Palm%20Oil.pdf](https://www.codexplanetarius.org/pdfs/Codex%20Plantarius%20Pilot%20Phase%20Report_Epoch%20Analysis%20of%20Indonesian%20Palm%20Oil.pdf)
2. Epoch. Codex Planetarius Pilot Study: A Supply Shed Analysis of Cocoa Cooperatives in Côte d'Ivoire. WWF Codex Planetarius initiative. <https://codexplanetarius.org/research-library>

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