



# New traceability in the timber industry: strict or precise?

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Since the recent evolution of European regulations with the European "zero deforestation" (EUDR) bill [1], the term "strict product traceability" has been used to summarize this new legislation being validated by the EU. Is this "strict" qualification for wood product traceability accurate? Is it really new for the wood industry? Does it really pose a problem? This article gives the point of view of two experts regarding traceability under certification in the timber industry and industrial traceability against the backdrop of forensic science.

## What is the context? To understand this new European regulation, let's go back a few years.

The EU (European Union) implemented FLEGT (Forest Law Enforcement, Governance and Trade) on 03/03/2013 to fight against the trade of illegal timber [2] with on the one hand the VPA (Voluntary Partnership Agreement) for timber-exporting countries and on the other hand the EUTR (European Union Timber Regulation) [3] for timber importing countries.

The EUTR has been integrated into French Law [4] since 13/10/2014: any importer of wood products of non-EU origin must collect information from their suppliers, perform a risk analysis by product, and then remove or reduce this risk if it is proven (thus limiting imports of illegally sourced wood products); these activities are called "Système de Diligence Raisonnée" (SDR, or DDS in English for Due Diligence System). Otherwise, it is an offence under French law (also for each EU country according to its own national legislation). In France, controls are carried out by the competent authorities (DRAAF, DDT, DDTM [5]).

In line with the commitment made in the "Climate Plan" adopted in July 2017, the relevant Ministries in France announced on 14/11/2018 the adoption of a National Strategy against Imported Deforestation (SNDI in French [6]) aimed at ending deforestation

caused by the import of unsustainable forest or agricultural products by 2030. The SNDI aims to cover deforestation as a whole, including legal deforestation and forest degradation issues [7]. Since January 1, 2022, all public purchases in France must be from a non-deforestation source (the SNDI follows the DDS from the EUTR).

The EU is not the only one to adopt regulations to stop participating in the trade of illegal wood, based on risk analysis: the United States (US Lacey Act, 2008), Australia (Australian Illegal Logging Prohibition Act, 2012), Japan (Clean Wood Act, 2016). **Despite these steps, deforestation continues:**

- after 2 catastrophic years since 2016, the disappearance in 2018 of 3.6 Mha (million hectares) of primary rainforest (an area equivalent to the size of Belgium) is particularly worrying (WRI, [8]) ;
- in 2021, it was 3.75 Mha of primary tropical forests, equivalent to 10 soccer fields per minute, and as a consequence 2.5 GT of carbon dioxide emissions, equivalent to India's annual fossil fuel emissions (WRI, [9]);
- The FAO 2022 State of the World's Forests report shows that deforestation has been decreasing since the 1990-2000 period, but 10 Mha of forest have been lost each year during the 2015-2020 period; 47

Mha of primary forest have been lost from 2000 to 2020 [10], an area almost equivalent to the size of Cameroon.

**As for controls**, the results reported by UNEP-WCMC over January to June 2019 [11] show a low and heterogeneous number of controls per country (e.g. 5 companies controlled in France against 134 in Germany over the year 2019), also companies in violation with this regulation. In France, the 2019 control plan [12] concerned 150 importing companies, i.e., 1.2% of the total, 4676 import flows, i.e., 1.7% of the total, 145,000 tons of imported products, i.e., 6.3% of the total; around forty checks carried out in 2022 on 15,500 wood importers in France, i.e. 0.26% [13]: a relatively low rate of control by the French government in relation to the quantities imported and the stakes.

Implementing the EUTR for a company, regardless of its size (microenterprises, industrial or retail groups), means performing a risk analysis of each wood product per year (and each time there is a change in the wood product or its supply chain), including each component if it is not from the same origin, collecting the necessary information in the supply chain and reducing the risk if it is identified: these activities require time and staff. To date, Indonesia is still the only country issuing FLEGT certificates since 15/11/2016 (allowing importing companies to forgo performing a risk analysis); 10 countries are in a similar ongoing process [14].

Targeting as a priority the import of illegal (or potentially illegal) timber, the EUTR already mentions forest degradation without directly including it in concrete action: *"Illegal logging (...) represents a serious threat to forests as it contributes to deforestation and forest degradation"* [15].

At the same time, on the international level, the climate issue is developing very rapidly (IPBES [16] and IPCC [17] publications). A WWF report [18] informs the public that the EU is responsible for the destruction of 16% of its forests, an important factor in global warming and the loss of biodiversity. Awareness of the environment and climate is becoming real and widespread. The European Commission thus adopted on 17/11/2021 a new legislative proposal [1] in favor of the "European Green Deal" in order to stop deforestation attributable to the EU ("imported deforestation"): *"All economic operators will have to comply with the*

*same requirements and exclude from their supply chains products that cause deforestation and forest degradation, thus promoting fair and sustainable competition."* As such forest degradation takes its place in the causes to be excluded at an EU level after France (SNDI), and several products are concerned this time in addition to wood: palm oil, beef, soy, coffee, cocoa. The control level is established as 5% of companies and 5% of quantities per state (article 14, al. 9 [1]).

On the subject of "deforestation/degradation" of forests, the Forest Scientific and Technical Committee (CST-Forêt in French) published on 02/11/2022 the results of its study concerning certification standards and the SNDI (on the subject of deforestation and forest degradation) [19]: *"FSC and PEFC meet the main requirements of the SNDI, unlike other existing standards. However, the authors also highlight certain limitations; to be fully compliant, improvements are proposed. (...) They show that the 4 standards verifying the legality of wood [LegalTrace®, LegalSource, Origin and Legality of Wood, Legal Harvest Verification] only guarantee the absence of illegal deforestation. They depend on the legislation of exporting countries and its effective application. They are not adapted to guarantee the total absence of deforestation and forest degradation."*

On the subject of "traceability", the requirements go further with this bill by now requiring the location (latitude and longitude) of the exploitation area (forest plot) as well as the day of exploitation (article 9, paragraph 1.d). The European Council adopted on 28/06/2022 [20] its negotiation position (general orientation) on this bill. It was on 06/12/2022 that the Parliament and the European Council together reached a provisional agreement to adopt the EU Regulation on "zero deforestation" supply chains that will *"guarantee that certain essential goods placed on the EU market will no longer contribute to deforestation and forest degradation in the EU or elsewhere in the world"* [21]. This law is expected to be applicable as early as 2024 for businesses and will replace the EUTR. This summary shows the inevitable progression of regulatory requirements for forest protection; wood is no longer alone (palm oil, beef, soy, coffee, cocoa, rubber) and has dropped from the top of the list of products causing the most deforestation when considering each region of the world separately [22].

In parallel to this situation, the COVID crisis has accentuated for all companies the subject of risk management in the supply chains of their products, directly affecting purchasing strategies. This issue has been taken into account by the certification bodies with the events in Ukraine since February 2022: the cross announcements of the FSC [23] and PEFC [24] bodies make all wood products of Russian and Belorussian origin (along with some conflict zones in Ukraine) uncertified, until the activities of the accreditation body ASI for FSC in these countries are stopped [25;26].

Despite an additional delay due to the COVID context, the new version of the FSC and PEFC chain-of-custody certification standards had to be applied as early as 2022 (and is still in progress for PEFC). On the FSC side, the added requirements mainly

concern the FSC core values of labor rights in relation to the ILO conventions and the legislation of each country (self-assessment) [27]. On the other hand, on the PEFC side, the new version takes a big step forward with requirements targeting "greenwashing" [28], in particular the obligation that all wood products outside the scope of the certificate be analyzed (SDR/DDS) regarding their origin; and as a logical consequence the obligation not to sell these wood products if they are from "controversial sources" (i.e. high risk or so-called "significant"); the ultimate requirement requested by the PEFC standard is *"the cancellation or suspension of any timber contract or order until the supplier can demonstrate that risk mitigation measures have been implemented"* [28;29]; these new requirements now imply the necessary controls during each annual audit.

## What are the implications on knowing the origin of wood products under the term traceability?

In the wood industry, the certification of the legality of wood products or responsible forest management (e.g. FSC or PEFC) already integrates traceability requirements for these products; these requirements target both the management system and the operational system of internal traceability in the company. Each link (company) in the supply chain is certified (FSC or PEFC) and its traceability system is based on the entity of each product or a batch of the same products.

The first link in this supply chain, the forest manager, is able to identify the origin of the forests according to their own implemented system (meeting the traceability requirements of the selected standard), and thus distinguish between forest products (logs, or batch of logs) originating from a certified forest (area included in the perimeter of his certificate) and those originating from a non-certified forest. Thus, the last link selling a so-called "certified" product has the guarantee that their sold product comes from a forest responsibly managed by the first link. This guarantee can be visible through a label affixed to the product sold, or not (because it is not mandatory). If this supply chain is not certified (FSC and/or PEFC), this guarantee can be very variable, or even non-existent; it only takes one deficient link for the entire chain to be called into question, or even without any possible traceability for the finished product. Hence the second-party audits imposed by companies on their suppliers with their own requirements, with a variable cost.

A non-negligible clarification of great importance: not all forest titles are "certifiable" in responsible forest management (FSC or PEFC): depending on the country's forest legislation, some forests are not "managed", i.e. under a management plan, and therefore cannot meet the requirements of responsible certification (i.e. sustainable management). Of course, in this case, the traceability is under the entire responsibility of the first link in the chain and without guarantee if there is no verification by the client (second party) or an independent third party. A possible solution remains a so-called "legality" certification or an "FSC Controlled Wood" certification [30] because the requirements of legality and traceability are included.

Note that the sales documents of a certified product (in BtoB) must bear the certificate number of the certified company that issues these documents, and not the certificate number of the company at the first link of the supply chain. In order to trace back to the first link and thus know the forest of origin, it is necessary to perform bottom-up traceability. This is a step-by-step process, because information must be requested from each successive company up to the first link.

A new requirement imposed by the draft EU law on imported deforestation, the location of the forest of origin (first link) by the last link could be verified step-by-step ("small leaps") or directly at the source

as a “big leap” (forest manager). Namely, country of origin knowledge is already mandatory in the current

EUTR regulation; the criterion on origin location increases its precision.

## To move forward in the analysis of this new traceability, let's go back to what traceability is.

First of all, it is not a notion specific to the wood industry, nor is it a technology (barcode, QR Code, RFID, Blockchain, etc.) or software (ERP, MES, CRM, PLM, WMS, etc. [31]) in particular, nor a standard and not even ISO 9001:2015, though it may be generic. Secondly, it is difficult to specify this notion without considering it as a system. Indeed, just like quality, traceability is partly intangible and sometimes complex, which is why it is difficult to present or understand on paper. In other words, what is a photo, a sample, a piece of traceability?

In concrete terms, we are talking about a traceability system with technologies, organization and functions associated with uses [32]. Before specifying in what way traceability in this proposed law is new, strict and/or precise, it is interesting to note that, despite the importance of this term in Article 9 and also in Article 8 (EU bill [1]), there is no definition. This is common, because apart from the EC regulation 178/2002 on food safety (art. 3-15), few regulatory texts contain a definition of the term traceability. Therefore, it is usual to refer to the most transverse definition in the industrial domain, namely that of ISO 9000:2015 which is as follows:

### 3.6.13 - traceability

Ability to trace the history, application or location of an object (3.6.1)

When considering a product (3.7.6) or a service (3.7.7), traceability can relate to:

- the origin of materials and parts;
- the processing history;
- the distribution and location of the product or service after delivery.

It is clear that the requirement of traceability of origin of the new regulation is in line with the definition of ISO 9000:2015. Basically, nothing new, and this relative novelty is confirmed by the traceability of origin in the beef sector [33] which has existed since 17/02/1998 in France with the VBF (French bovine meat) logo, taken up again in 2002 in a French text and again recently in 2022 [34].

It is a question here of using the traceability system to inform all the actors in the sector and ultimately the consumer that the wood comes from a legal exploitation and has not participated in imported deforestation (as per EUDR), or even from a responsibly managed forest if it is FSC and/or PEFC certified (as per FSC and PEFC certification). This use of a traceability system is part of a management/proof-of-origin register with the definition of the origin as the area of forest exploitation [35]. In other words, a traceability system is used here to combat fraud, and there is even talk of withdrawing, recalling and destroying fraudulent products, i.e. those originating from deforestation (see art. 22-2-d of the draft regulatory text [1]). **The withdrawal and recall of a product are integrated in this new EU legislation, which is new for the timber sector compared to the previous EUTR text** (see box). Traceability in the wood industry must now take into account the requirement of withdrawal and recall, just like the food industry.

*“Detailed explanation of the specific provisions of the ”, “Article 22: Market surveillance measures” [1]:*

*“according to Article 3 of this Regulation ‘recall’ means ‘any measure aimed at achieving the return of a product that has already been made available to the end user’; whereas ‘withdrawal’ means ‘any measure aimed at preventing a product in the supply chain from being made available on the market’.”*

*Article 18, 4:*

*“Competent authorities shall immediately alert competent authorities of other Member States and the Commission when they detect infringement of this Regulation and serious shortcomings that may affect more than one Member State. Competent authorities shall, in particular, inform competent authorities of other Member States when they detect a relevant commodity or product on the market that is not compliant with this Regulation, to enable the withdrawal or recall of such commodity or product from sales in all Member States.”*

*Article 22: Market surveillance measures*

*1) “where competent authorities establish that an operator or trader has not complied with its obligations under this Regulation or that a relevant commodity or product is not compliant with this Regulation, they shall without delay require the*

*relevant operator or trader to take appropriate and proportionate corrective action to bring the non-compliance to an end.”*  
2) *“For the purposes of paragraph 1, the corrective action required to be taken by the operator or trader shall include at least one or more of the following:*  
a) *rectifying any formal non-compliance, in particular with the requirements of Chapter 2 of this Regulation;*  
b) *preventing the relevant commodity or product from being placed, made available on or exported from the Union the<sup>(sic)</sup> market;*  
c) *withdrawing or recalling the relevant commodity or product immediately;*  
d) *destroying the relevant commodity or product or donating it to charitable or public interest purposes.”*

## **In conclusion, traceability in this regulation is not new compared to other sectors. Can it then be described as strict or precise?**

The notions of ascending and descending traceability seemed interesting to us, as well as the "n-1/n+1" approach (upstream company or direct supplier, and downstream company or direct customer of the operator) used in the food industry and redefined here as "small steps". Given the contractual relationships from one to the next, it seems possible that each actor, from the forestry company to the next, provides the product with this information up to the final consumer (downward traceability). Moreover, within the framework of a label, it seems possible that the auditing and certification body can survey the chain and check if the transfer of information is performed adequately. Moreover, this type of "survey" on a complete supply chain (from the forest to the consumer) has been carried out by the FSC organization since 2017 in the context of the transaction verification, and whose published results allow the suspension of the FSC certificate of companies caught in non-compliance [36].

The traceability is precise in the sense that the agricultural origin is rather well defined (location of the parcel), with the day of exploitation, but this precision is only in terms of result and not of means which leaves a lot open. Indeed, a company that wants to apply this regulation may find itself a little lost in the choice of means to be implemented and will depend on other companies that will not have made the same choice of means, which may cause distortions in the level of traceability in the sector. Moreover, as in other sectors (see the DGCCRF report [37]), the requirement of origin without defined or even required means can lead to fraud, because unscrupulous actors can take advantage of this lack of definition of means to commit fraud, given that the control of this origin will be very complex and uncertain: more so if the number of state controls remains low. However, the public authorities most often end up finding the fraudulent parties (cf. DGCCRF report [37]).

The other difficulty concerns the mixtures of

different origins. Here again it is a question of choosing the means to arrive at a list of different origins (forests, plots) for the product entering the EU. In this case, as for a mixture of lots in other sectors, the imported product will no longer contain a parcel, but a list of parcels.

In light of our experience and fraud cases from other sectors, a crucial point here that is unfortunately not addressed by this new regulation and that does not fully exist in the timber industry, even with the labels already in place, is the traceability marking (or traceability identifier) of the product at each stage, up to the finished product. Even if there is sometimes a marking upstream, at the level of trees and logs (or of a batch, i.e. an identifier for a set of homogeneous logs, for example from the same parcel), it is regrettable that a piece of furniture or a ream of paper is not identified at least by a traceability identifier. And this gap is found in the ISO 9000:2015 standard, since the previous version, the ISO 8402 standard of 1994 explicitly cited the notion of recorded identifications! According to that standard, traceability was defined as "the ability to trace the history, the use of an entity, through recorded identifications".

Where are the identifications registered in the wood sector? One arrives then at a limit of an obligation of results and it would be necessary that the private and public actors of the sector mobilize quickly to develop good practices of traceability specifying the modalities of marking and identification at each stage, for each intermediate or finished product. Before we mention the impossibility of having a marking on certain products because of their size or fragility, we answer that it is possible to have an indirect marking on the packaging and/or an accompanying document (better than nothing) and that even eggs are marked with a batch number on the shell! **There is no technical impossibility** and indeed other sectors have succeeded quite well in this change; some companies in the wood sector already have this advance because some of them

have an obligation of superior traceability by standards outside the wood sector. Of course, there will always be actors who do not support such an evolution...

And, regarding the parcel coordinates that are required by Article 9-1-d, it is understandable that they pose a problem with respect to business confidentiality on the subject of "resource areas" [38]. This is why, as with the beef industry, but also the battery sector, the notion of a "passport" with traceability identifiers that refer to protected information seems promising. Eventually, there may be a passport for wood products.

This is confirmed by the "One Forest Summit" in Gabon which ended on March 03. Indeed, the "Libreville Plan" gives traceability in the objectives to be achieved for the "Company commitments": "9. Promote traceability solutions that enhance trust,

## A precise but not so new regulation.

As we have discussed in this article, the context generates an increase in the requirements towards companies in order to contribute to the preservation of forests: the control of risk and traceability are at the heart of the subject. Companies no longer have a choice: adapt. The question is no longer whether or not to adhere to them (refuse, circumvent or voluntarily reduce the requirements), but rather when to carry out this adaptation: now (pro-active and progressive reaction), or in an urgent rush (wait-and-see reaction where only the constraint of authority makes it possible to move forward), i.e. to wait for the first control of the competent authorities. Voluntarily taking a risk with known consequences

As in the food industry, **regulatory constraints have become an opportunity and traceability can become a selling point** [40]. This new regulation against imported deforestation in the EU affects both food and non-food. Whatever the evolution, all sectors are concerned and overtaken by fraud, trade globalization and the environment.

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*efficiency and sustainability*" [39]. This is an unequivocal link to the requirements requested by the EU, as has been the case in other sectors such as food in 2002 or even medical devices in 2017.

Therefore, in conclusion, we consider that traceability in this regulation is new for the wood industry, but not compared to other sectors, and precise in the expected result only. And it is not at all "strict". On the contrary, this requirement of traceability is only a beginning that calls for defining means quickly. From then on, the wood industry will evolve like a good number of other sectors (textile, leather, metals, precious stones, luxury, etc.) by taking advantage of new and ever more efficient technologies, while being careful to consider them ONLY as means; for example, 2D code and Blockchain, which are very much in vogue at the moment, are only means and not results.

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## References:

[1] : Communiqué de presse de la Commission européenne du 17/11/2021, [https://ec.europa.eu/commission/presscorner/detail/fr/ip\\_21\\_5916](https://ec.europa.eu/commission/presscorner/detail/fr/ip_21_5916) ; Règlementation contre la Déforestation (importée) de l'Union Européenne (RDUE) ; European Union Deforestation Regulation (EUDR).

[2] : FLEGT : Forest Law Enforcement, Governance and Trade <https://agriculture.gouv.fr/la-reglementation-europeenne-flegt-en-matiere-dimportation-de-bois-indonesien>  
<http://www.euflegt.efi.int/es/web/apv-a-z/delivrance-autorisations-flegt>

- [3] : RBUE : le Règlement Bois de l'Union Européenne est l'outil de l'UE pour lutter contre le commerce de bois illégal, adopté le 20/10/2010 par le Parlement Européen et le Conseil, appliqué dans son intégralité depuis le 03/03/2013 ; <https://agriculture.gouv.fr/le-reglement-sur-le-bois-de-lunion-europeenne>
- [4] : Loi n°2014-1170 du 13 octobre 2014 d'avenir pour l'agriculture, l'alimentation et la forêt.
- [5] : Direction régionale de l'alimentation, de l'agriculture et de la forêt (DRAAF) ; DDT : Direction départementale des Territoires (DDT) ; Direction départementale des Territoires et de la Mer (DDTM).
- [6] : <https://www.ecologique-solidaire.gouv.fr/france-veut-mettre-fin-dici-2030-deforestation-causee-limportation-produits-non-durables-0>
- [7] : Comité Scientifique et Technique (CST-Forêt), mis en place en avril 2021 par l'AFD et le GRET ; "Normes bois et stratégie nationale de lutte contre la déforestation importée [SNDI] : compatibilité et améliorations possibles.", Avril 2022 ; <https://www.cst-foret.org/ressource/timber-standards-and-the-national-strategy-to-stop-imported-deforestation-compatibility-and-possible-improvements/>
- [8] : <https://www.wri.org/blog/2019/04/world-lost-belgium-sized-area-primary-rainforests-last-year>
- [9] : <https://research.wri.org/gfr/latest-analysis-deforestation-trends>
- [10] : La situation des forêts du monde (SOFO), FAO 2022 ; <https://www.fao.org/publications/sofo/2022/en/>
- [11] : "Overview of Competent Authority EU Timber Regulation checks, January - June 2019 ; Statistics of checks performed by EU Member States and EEA countries to enforce the implementation of the EU Timber Regulation" ; [https://ec.europa.eu/environment/forests/pdf/UNEP%20WCMC%202019\\_Overview%20of%20CA%20checks%20January-June%202019\\_FINAL\\_17.01.2020.pdf](https://ec.europa.eu/environment/forests/pdf/UNEP%20WCMC%202019_Overview%20of%20CA%20checks%20January-June%202019_FINAL_17.01.2020.pdf)
- [12] : "Présentation de la mise en oeuvre des contrôles RBUE" par le "Bureau des entreprises forestières et des industries du bois - MAA" (Ministère de l'Agriculture et de l'Alimentation) et le "Bureau de l'encadrement des impacts sur la biodiversité - MTE" (Ministère de la Transition Ecologique) ; atelier RBUE du 03 au 05/03/2021.
- [13] : [https://www.francetvinfo.fr/monde/environnement/deforestation-inc-comment-du-teck-birman-illegal-se-retrouve-vendu-en-france\\_5688743.html](https://www.francetvinfo.fr/monde/environnement/deforestation-inc-comment-du-teck-birman-illegal-se-retrouve-vendu-en-france_5688743.html)
- [14] : pays en cours de processus APV, <https://flegtvpafacility.org/countries/> ; informations sur le site officiel FLEGT : <https://flegt.org/>
- [15] : Règlement (UE) n° 995/2010 du Parlement européen et du Conseil du 20 octobre 2010 établissant les obligations des opérateurs qui mettent du bois et des produits dérivés sur le marché Texte présentant de l'intérêt pour l'EEE. <https://eur-lex.europa.eu/legal-content/FR/ALL/?uri=CELEX%3A32010R0995>
- [16] : Biodiversité et changement climatique, 10/06/2021, <https://www.ipbes.net/events/launch-ipbes-ipcc-co-sponsored-workshop-report-biodiversity-and-climate-change> ; Rapport d'évaluation mondial sur la biodiversité et les services écosystémiques, 05/05/2019, <https://ipbes.net/global-assessment>.
- [17] : "Changement climatique 2021 : la base des sciences physiques", GIEC, 09/08/2021, <https://www.ipcc.ch/report/ar6/wg1/> ; "Changement climatique 2022 : impacts, adaptation et vulnérabilité", GIEC, 28/02/2022, <https://www.ipcc.ch/report/ar6/wg2/> ; "Changement climatique 2022 : atténuation du changement climatique", GIEC, 04/04/2022, <https://www.ipcc.ch/report/ar6/wg3/>.
- [18] : rapport WWF "Quand les européens consomment, les forêts se consomment", Avril 2021, [https://www.wwf.fr/sites/default/files/doc-2021-04/20210414\\_Rapport\\_Quand-les-europeens-consomment-les-forets-se-consument\\_WWF.pdf](https://www.wwf.fr/sites/default/files/doc-2021-04/20210414_Rapport_Quand-les-europeens-consomment-les-forets-se-consument_WWF.pdf)
- [19] : "Timber standards and the National Strategy to Stop Imported Deforestation", Avril 2022 (CST-Forêt) ; [https://www.cst-foret.org/wp-content/uploads/CST-Foret\\_report-Timber-standards-Piketty-Garcia-2022.pdf](https://www.cst-foret.org/wp-content/uploads/CST-Foret_report-Timber-standards-Piketty-Garcia-2022.pdf)
- [20] : communiqué de presse du Conseil Européen du 28/06/2022, <https://www.consilium.europa.eu/fr/press/press-releases/2022/06/28/council-agrees-on-new-rules-to-drive-down-deforestation-and-forest-degradation/>
- [21] : communiqué de presse de l'UE du 06/12/2022, [https://ec.europa.eu/commission/presscorner/detail/fr/ip\\_22\\_7444](https://ec.europa.eu/commission/presscorner/detail/fr/ip_22_7444)
- [22] : "What are the main causes of tree cover loss?", WRI, <https://research.wri.org/gfr/forest-extent-indicators/forest-loss#how-much-tree-cover-is-lost-in-tropical-versus-temperate-and-boreal-forests>
- [23] : "Pas de matériaux certifiés FSC en provenance de Russie et de Biélorussie jusqu'à la fin de l'invasion", 08/03/2022, <https://fr.fsc.org/fr-fr/newsfeed/pas-de-materiaux-certifies-fsc-en-provenance-de-russie-et-de-bielorussie-jusqua-la-fin-de>

[24] : "Bois provenant de Russie et de Biélorussie classé par PEFC International comme bois de conflit non éligible à la certification PEFC", 08/03/2022, <https://www.pefc-france.org/articles/bois-provenant-de-russie-et-de-bielorussie-classe-par-pefc-international-comme-bois-de-conflit-non-eligible-a-la-certification-pefc/>

[25] : "Mise à jour sur les activités de surveillance de l'ASI en Russie", 08/03/2022, 08/03/2022, <https://www.asi-assurance.org/s/post/a1J5c0000S0idmEAB/p0943>

[26] : "Mise à jour sur les activités de surveillance du FSC au Bélarus", 04/03/2022, <https://www.asi-assurance.org/s/post/a1J5c0000S0fkkEAB/p0941>

[27] : norme FSC en chaîne de contrôle "FSC-STD-40-004 V3-1".

[28] : norme PEFC en chaîne de contrôle "PEFC ST 2002:2020 (Chaîne de contrôle des produits issus de la forêt et des arbres)".

[29] : article « Nouvelle version des normes PEFC applicable à partir du 15/08/2022 », <https://www.ekwato.com/nouvelle-version-des-normes-pefc-applicable-a-partir-du-15-08-2022>

[30] : "FSC controlled wood standard for forest management enterprises" (FSC-STD-30-010, V2-0 EN) pour les gestionnaires forestiers ; norme "Requirements for Sourcing FSC Controlled Wood (FSC-STD-40-005 V3-1 EN)" pour les entreprises souhaitant mettre en place un système de diligence raisonnée pour éviter des sources non-acceptables ; [https://connect.fsc.org/document-centre?dSPACE\\_doc\\_type=0&search=controlled+wood](https://connect.fsc.org/document-centre?dSPACE_doc_type=0&search=controlled+wood)

[31] : ERP (Enterprise resource planning), MES (Manufacturing Execution System), CRM (Customer Relationship Management), PLM (Product Lifecycle Management), WMS (Warehouse Management System).

[32] : « Traçabilité : outils, méthodes et pratiques » aux Éditions d'Organisation, Jean-Luc VIRUEGA, Janvier 2005.

[33] : « Le nouvel usage de la traçabilité dans le secteur français de la viande bovine », Jean-Luc VIRUEGA, Michel VERNET, Revue française de gestion industrielle, vol 18 (4), Novembre 1999.

[34] : Décret n° 2022-65 du 26 janvier 2022 qui modifie le décret n° 2002-1465 du 17 décembre 2002.

[35] : « La traçabilité dans l'environnement et le développement durable », Jean-Luc VIRUEGA, Traité traçabilité des Techniques de l'Ingénieur, Juin 2010.

[36] : vérification des transactions : <https://fr.fsc.org/en/node/28446> ; <https://connect.fsc.org/system-integrity/supply-chain-integrity>

[37] : [https://www.economie.gouv.fr/files/files/directions\\_services/dgccrf/dgccrf/rapports\\_activite/2021/ra-dgccrf-21-digital.pdf?v=1657549468](https://www.economie.gouv.fr/files/files/directions_services/dgccrf/dgccrf/rapports_activite/2021/ra-dgccrf-21-digital.pdf?v=1657549468)

[38] : Recommandations conjointes des représentants du secteur forestier européen à l'intention du Conseil de l'UE lors du trilogue sur la proposition de règlement relatif aux produits sans Déforestation (17/11/2022), [https://www.atibt.org/files/upload/news/RBUE/Recommandations\\_conjointes\\_des\\_representants\\_du\\_secteur\\_forestier\\_europeen\\_a\\_l'intention\\_du\\_Conseil\\_de\\_l'UE\\_.pdf](https://www.atibt.org/files/upload/news/RBUE/Recommandations_conjointes_des_representants_du_secteur_forestier_europeen_a_l'intention_du_Conseil_de_l'UE_.pdf)

[39] : Communication du Ministère de la Transition écologique et de la Cohésion des territoires, Ministère de la Transition énergétique ; <https://www.ecologie.gouv.fr/one-forest-summit>

[40] : <https://www.lesechos.fr/2001/09/jean-luc-viruega-la-tracabilite-est-un-argument-de-vente-726699>

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