



5.2 Synergies between the TLAS and the National Forest Monitoring System

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FLEGT and REDD+ information systems

FLEGT recognizes the responsibility of timber consumers in global illegal logging and the related trade, and aims to ensure that only legally harvested timber is exported to the EU from VPA partner countries. A Voluntary Partnership Agreement (VPA) is a key element of FLEGT and ensures that only legally verified timber is exported to the EU. A Timber Legality Assurance System (TLAS) is a key component of a VPA.

At the core of any robust TLAS are mechanisms to control timber supply chains. Other key elements include a Legality Definition (to determine the scope of what will be verified), verification of legal compliance (along controlled supply chains), licensing of legally produced timber products (for exports), and periodic independent audits (to ensure that the system is fully implemented).

In most VPA countries, timber supply chain control mechanisms take the form of an electronic information system (herein referred to as Forest Sector Information System, or FSIS)¹ that is implemented at the central government level.² The FSIS provides or supports nationwide monitoring, traceability and legality verification for timber production and commercialization throughout the supply chain, from the forest to the point of export or local sale.

The FLEGT Action Plan addresses illegal logging, which it regards — among a number of other negative impacts — as contributing to the process of deforestation, which in turn can increase the vulnerability of forests to fires. Both problems have climate change implications.

In a different context, REDD+ recognizes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in reducing the net



POTENTIAL SYNERGIES EXIST
BETWEEN A TLAS FOR FLEGT
AND THE NATIONAL FOREST
MONITORING SYSTEM FOR
REDD+.

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global emissions of carbon dioxide (CO₂) and other carbon-based greenhouse gases (GHGs) such as methane (CH₄), from tropical forests. Emissions from land-use change, which includes deforestation and forest degradation, are estimated to be responsible for up to 29 percent of the world's net carbon emissions.³

Under REDD+, developing countries that reduce emissions or enhance removals of emissions from forests (for example, by increasing carbon stocks through sustainable management) will be financially compensated. REDD+ requires these countries to conduct a periodic inventory of national forest carbon stocks and net emissions or removals.

Net GHG emissions are generated in three ways:

- the release of carbon in the atmosphere in gaseous form, such as CH₄ from rotting biomass or CO₂ from combustion;
- reduction in biomass (removal of carbon stocks) through harvesting or other off-take processes, which are then considered to have been released as GHGs into the atmosphere;⁴ and/or
- the removal of a carbon sink (vegetation that previously sequestered carbon through photosynthesis).

REDD+ defines five activities that are eligible as emission reductions and enhanced removals: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.⁵

In Decision 4/CP.15 of the COP to the UNFCCC, countries that implement REDD+ are requested to establish National Forest Monitoring Systems (NFMSs) that have the following features:

- Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;
- Provide estimates [of green house gas reductions and emissions] that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities;
- Are transparent and their results are available and suitable for review as agreed by the Conference of the Parties⁶ (UNFCCC Decision 4/CP.15).

The NFMS integrates the three MRV functions: measurement, reporting and verification. The reporting function provides the periodic inventory; every four years, developing countries must produce a new National Communication that includes reports on forest land and REDD+ activities, with a biennial update report on major developments.⁷

Although the UNFCCC is still developing guidelines for the NFMS, many developing countries are in the process of REDD+ readiness: preparing for the implementation of REDD+ at the national level with financial support from industrialized countries and

multilateral institutions. These activities invariably include preparations for the NFMS and MRV, such as capacity building in basic skills such as remote sensing, spatial analysis and forest inventory. No country has a functioning NFMS at this time.

All of the 15 countries with a VPA or negotiating with the EU also have some major REDD+ funding; see Table 1.

Table 1. VPA countries and major REDD+ activities

Country	VPA	UN-REDD ⁱ	FCPF ⁱⁱ	FIP ⁱⁱⁱ	Other major REDD+ support
Cameroon	I	p	▪		GEF funding to COMIFAC ^{iv} countries
Central African Republic	I	p	▪		GEF funding to COMIFAC countries
Côte d'Ivoire	N	p	C		
DRC	N	I	▪	√	GEF funding to COMIFAC countries
Gabon	N	p	▪		GEF funding to COMIFAC countries
Ghana	I	p	▪	√	
Guyana	N	p	▪		Bilateral agreement with Norway
Honduras	N	p	▪		
Indonesia	I	I	▪	√	Australia support for MRV
Lao PDR	P	p	▪	√	Finland supporting REDD+ development, aligned with FIP
Liberia	I		▪		EuropAid support
Malaysia	N	p			Australia support for MRV; EuropAid support to State of Sabah
Republic of the Congo	I	I	▪		GEF funding to COMIFAC countries
Thailand	P		▪		
Vietnam	N	I	▪		FAO Finland Forestry Program; JICA support for remote sensing assessment

VPA: I — Implementing; N — Negotiating; P — Preparing to negotiate

UN-REDD: I — Implementing (fully budgeted); p — Partner country (limited budget)

FCPF: ▪ — Partnership agreement signed and activities funded; C — Candidate.

FIP: √ — FIP country

Other: This column lists only those activities with major NFMS/MRV support.

i: UN-REDD = United Nations Collaborative Programme on REDD; ii: FCPF (Forest Carbon Partnership Facility);

iii: FIP (Forest Investment Program); iv: COMIFAC = Central African Forest Commission (*Commission des Forêts d'Afrique Centrale*)

TLAS and NFMS linkages

Potential synergies exist between a TLAS for FLEGT and the NFMS for REDD+, especially in reducing emissions (from deforestation or forest degradation) and sustainable management of forests under REDD+ and through avoiding illegal logging under FLEGT. In order to minimize transaction costs these synergies could be harnessed in developing countries that enter into a VPA and establish a national REDD+ programme.

Linkages between the TLAS and NFMS are possible in many areas, such as institutions, policy development, legislative and regulatory frameworks, and operational implementation for reporting and control (i.e., methodology, data gathering and processing). This article focuses on forest resources, timber for FLEGT and carbon stocks for REDD+ and their associated information systems; and some governance aspects.

An FSIS implemented to monitor timber production and timber product movements creates potential synergies with REDD+/NFMS, not only in VPA countries but in other nations where similar systems are being implemented to control logging and trade.

An FSIS operates at the level of individual forest management units, and then aggregates and consolidates the data at the national level. It therefore has the potential to provide the various levels of the national inventory in the NFMS with useful information and help meet some of the MRV requirements of REDD+.

Neither an FSIS nor the corresponding information system in an NFMS, however, are forest management tools as such. Timber companies will have their own information systems that suit their business and operations. In order to comply with FLEGT and/or REDD+ these companies will need to meet the corresponding information requirements. One question is how to minimize efforts and costs related to data management for these companies. This suggests links and shared routines between the information systems of FLEGT and REDD+.

As a rule, businesses must provide the obligatory data in a format appropriate for transfer to the relevant system. This can be achieved by gradually introducing increasingly sophisticated data transmission techniques: conventional, paper-based transmission of legal declarations that are manually retyped into the central system; the use of data cards or e-mail or mobile phone to send formatted files for automatic data upload; and eventually, fully integrated electronic processes with automatic interfaces between company and government systems.

Forming a national electronic data network implies that every operator at some point becomes a participant in the system as information technology is introduced and evolves. Appropriate incentives and individualized support to these operators must be carefully planned.

FSIS and NFMS functionality as information systems

FSIS

A typical FSIS reflects the usual sequence of forestry activities and covers the corresponding information needs, from trees to logs to processed wood products throughout the processing and trading chains:

- It will include or link to a Geographical Information System (GIS) component for mapping the nation's conservation and production forests, thereby contributing to detailed baseline information that can be verified on the ground. This includes cadastral and forestry data on boundaries, ownership, areas, occupation, forest

types, stratification, forest management regimes, and management and harvesting plans as well as any land-use change.

- It will require forestry operators to generate GIS-related forest inventories, including detailed pre-felling inventories of all harvestable and other trees above a certain diameter. These inventories can be used to compute the amounts of biomass as Harvested Wood Products, secondary REDD+ benefits, and transfers of roots, canopies and branches to other carbon pools after harvesting.
- It will also include the data that forestry and timber operators normally provide as part of their regulatory declarations of felling (i.e., converting trees into logs), transport to processing mills (i.e., changing location and possibly ownership), primary processing (i.e., converting logs into bundles of sawn timber or veneer), further transport, and further processing or manufacturing into different products.

The data sets contained in those declarations provide information related to 1) origin (forest, geographical coordinates); 2) identity (tree species, unique ID number); 3) quantity (measurement, calculated volumes) of the products; and 4) location and ownership. All this information is also potentially useful for planning, analysis and benefit distribution under REDD+.

Information will be verified for authentication and accuracy, and for traceability and legal compliance. The verification process includes a range of methods, including data checks through the system (for formatting, completeness, accuracy and validity, plus cross-checks for consistency of information) and sample field inspections to confirm that the declarations reflect reality. After any correction (following procedures for adjustment and dispute resolution), the information is validated. The result is the final set of data used for enforcement, taxation, statistics and other purposes.

NFMS

In comparison, the NFMS implements the three MRV functions, with an emphasis on measurement and reporting.⁸ Reporting has to follow the IPCC Guidelines on National Greenhouse Gas Inventories, as mandated by the UNFCCC. The measurement protocols are determined more by the country, but the UNFCCC decisions and IPCC Guidelines shape the general design:

- the entire forest estate of developing countries is covered by the NFMS (countries report on all forest land in their National Communications to the UNFCCC);
- forest land is stratified into homogeneous units (considered good practice in the IPCC Guidelines);
- a detailed account of forest land areas — and changes over time — is provided (called Activity Data in the IPCC Guidelines, it is part of calculating emissions and removals); and
- a detailed account of carbon pools in all strata of forest land — and changes in them over time — is also provided (called Emission Factors in the IPCC Guidelines, it assists in calculating emissions and removals).

Collection of the Activity Data and Emission Factors, using a combination of remote sensing and ground-based forest carbon inventory approaches, constitutes the measurement part of MRV. Considering this and the national scope of REDD+, the use of stratified forest land, and other REDD+ requirements (such as the development of and comparison to Reference Levels), the NFMS will in practice be GIS-based and applied uniformly over the national forest estate. This implies that the NFMS will be centrally managed, even though operations may be decentralized, as is indeed the prevailing design of current REDD+ readiness activities throughout the developing world.

A typical NFMS involves multiple systems performing individual functions. These include remote sensing assessment of forest cover and forest inventory or registration of forest land and management activities. This results in a system that brings together all inputs, merges and analyzes them and produces reports. Given the requirements of the UNFCCC and IPCC with regard to verification and possible reassessment of previously reported emissions, the system has to maintain all relevant information for as long as the REDD+ mechanism exists.

FSIS and NFMS synergies

Both national TLAS and NFMS set out certain tasks:

- encourage, verify and monitor compliance with relevant regulations and approved (management, operating) plans;
- generate accurate reporting of forestry and policing activities by private- and public-sector entities;
- foster good governance and support law enforcement based on capacity building and on increased transparency and accountability;
- stimulate communication with communities, civil society and the general public through the publication of forestry data on relevant web sites; and
- open up forest management and control to public scrutiny.

The two systems also share many features. They are both based on centralized information systems, with access to relevant stakeholders. They both require information on forest land, boundaries, ownership and licensing, ecological and other natural properties, and volumes of timber and carbon. They both support the implementation of forest policies and the identification of infractions.

Integrating FSIS and NFMS

Integrating the two systems would therefore likely be beneficial in most cases. There are several benefits of such integration:

- A forest concession holder would need to submit concession details only once, including spatial information of forest blocks and forest ecological properties, for registration under both systems.
- Logging operations already registered in an FSIS would be submitted once, to the TLAS/NFMS system, to track the timber under FLEGT and to calculate the exact removals of carbon that result from logging and associated operations (i.e., clearing, tracks, roads and collateral damage).

- Reduced emissions — either from a reduction in deforestation or enhanced removals from sustainable forest management — could be traced back to their source, just as timber is traced to its place of harvest for FLEGT. This would help validate these emission reductions and qualify them as tradeable carbon credits, where relevant.
- Effective implementation of controls in FLEGT makes it possible to identify illegally harvested timber and report it to the relevant law enforcement authorities. Controlling illegal logging under FLEGT will also facilitate conservation (in protected areas) and management (in production areas) for REDD+ purposes.

Carbon benefits of TLAS

In terms of carbon, TLAS will also promote sound forest management and emission reductions, if for example, over-mature trees are removed as a result of forest management plans and not left to rot and release carbon, and if the corresponding carbon is further stored in building materials or burned to produce carbon-neutral energy.⁹

TLAS will also help control fires in forests and peatland, an important source of emissions, through more effective monitoring and control, including surveillance and on-site ground inspections useful to both FLEGT and REDD+.

Other benefits of combined systems

With appropriate analysis oriented to REDD+ and collaboration with other sectors, FSIS data also has the potential to accomplish several other things, possibly feeding combined FSIS/NRMS data systems:

- help establish the current state of forests (the baseline);
- help establish a “without REDD+” scenario and develop relevant models on the basis of much-improved knowledge of past and current trends in terms of legal and illegal logging and forest protection, conversion and growth rates;
- help establish a “with REDD+” scenario and models based on much better monitoring of land-use planning and changes, and of the extent of all types of production, conservation and conversion forests and of conversion areas (to land use other than forest), and of authorized logging under tightly controlled forest management; and
- in particular, it will allow users to calculate the exact amount of “conversion timber” (timber produced on land that was converted from natural forest into plantation and timber produced when land was cleared for other uses) and include this information when calculating net emission reductions.

In other words, it will help quantify two factors:

- “pluses” such as the enhancement of carbon stocks and sinks through the growth of natural and plantation forests and through afforestation and reforestation activities; and
- “minuses” such as the removal of carbon stocks and carbon sinks through deforestation activities for purposes other than logging (mainly conversion).

Governance and organizational structures

In VPA countries the operational responsibility for implementing and managing the national FSIS — and the related tasks — has so far either been taken on by government or contracted out to a private-sector operator in an initial phase for reasons of cost efficiency and capacity-building (e.g., the Republic of the Congo, Ghana and Liberia).

The potential synergies of the FLEGT and REDD+ systems could be captured and maximized if the national REDD+ agency is implemented in the same way and works hand in hand with the VPA agency in charge of the FSIS system. Both agencies would be provided with operational capacity, including offices, trained managers and operational staff, equipment, etc.

Similarly to FSIS, the development, implementation and operational management responsibilities of the REDD+ agency could be carried out by government or contracted to the private sector. It could be funded initially by donors and then become financially self-sustainable through the sale of carbon credits and the collection of fees or fines paid by forest operators for carbon-based services or sanctions. (An example is the recent establishment of a national, ministerial-level REDD+ agency in Indonesia.)¹⁰ It remains to be seen whether the two agencies would be able to share common components of their systems or, more realistically, create interfaces between their systems.

To verify carbon reductions, REDD+ projects could use voluntary carbon certification schemes if they are credible and meet certain requirements, similarly to practices under FLEGT where producers use third-party verification of legal production. Some of these requirements can be met through forest or timber legality certification schemes, which would provide further linkages between the two systems.

Because of similarities in concepts, a REDD+ agency would also be well positioned to monitor and verify the broad range of ecosystem services and revenues, not just monitoring the co-benefits from REDD+.

Conclusion

An FSIS implemented as part of a national TLAS to address illegal logging and deliver verified, traceable and legal timber, in combination with an NFMS implemented by a REDD+ agency, has the capacity to more effectively support the generation of verified, legal and traceable carbon credits under REDD+ and to offer synergies between the two initiatives.

Endnotes

1. To date, this system has been known in Cameroon as the National Timber Traceability System (*Système de Traçabilité des Bois et Produits Dérivés du Cameroun*, or lately, *Système Informatisé de Gestion des Informations Forestières/SIGIF*); and in the Republic of the Congo as the *Système national de traçabilité des bois et produits forestiers en République du Congo*. In Ghana it is called the Wood Tracking System (WTS); in Liberia it is called the Chain of Custody System (COCS). Names tend to evolve to reflect the increasing incorporation of the legality verification function of the TLAS within the information system.
2. The exceptions are Indonesia and Malaysia, where the TLAS relies on individual company-based audits and does not as yet include a centralized information system.
3. See Philip Fearnside, 2000, "Global warming and tropical land-use change: Greenhouse gas emissions from biomass burning, decomposition and soils in forest conversion, shifting cultivation and secondary vegetation." *Climatic Change* 46: 115–158.
4. The use of wood in construction timber, furniture or even paper may be accounted as Harvested Wood Products according to the latest IPCC Guidelines, which effectively delays their emission as a GHG by a period ranging from 2 to 50 years, depending on the use.
5. See UNFCCC Decision 1/CP.16, paragraph 70.
6. See UNFCCC Decision 4/CP.15, paragraph 1(d).
7. See UNFCCC Decision 1/CP.16, paragraph 60(b)-(c).
8. Verification is carried out by the UNFCCC, not the country implementing REDD+. Obviously, though, information contained in the NFMS will provide one of the important sources for verification of the country reports.
9. Carbon neutrality is obtained from burning renewable wood. Unlike the combustion of fossil fuels, the regrowth of wood will sequester as much carbon as was released through its combustion.
10. The new agency, established September 2, 2013, will focus on monitoring, reporting and verifying emission reductions related to forestry and managing incentive disbursements from developed countries. It will also coordinate the nationwide REDD+ strategy alongside ministries and institutions (www.thejakartapost.com/news/2013/09/07/govt-forms-redd-agency.html).