WORKING PAPER

DEVELOPING AND PILOTING A TOOL FOR INTEGRATED PFES, REDD+ AND FLEGT/VPA SUBNATIONAL FOREST MONITORING

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Abbreviations

CFMB	Community Forest Management Board
CFPT	Community Forest Patrol Team
CPC	Commune People's Committee (Hieu)
DARD	Department of Agriculture and Rural Development (Kon Tum)
DPC	District People's Committee (Kon Plong)
EFI	European Forest Institute
FFI	Fauna & Flora International
FGM	Forest Governance Monitoring
FLEGT	Forest Law Enforcement, Governance and Trade
FORMIS	Monitoring and Information System for the Forestry Sector
FPD	Provincial Forest Protection Department (Kon Tum)
FPDF	Provincial Forest Protection and Development Fund
MARD	Ministry of Agriculture and Rural Development
MRV	Monitoring, Reporting and Verification
PES	Payment for Environmental Services
PFES	Payment for Forest Environmental Services
PFMB	Protection Forest Management Board (Thach Nham)
REDD+	Reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
SFE	State Forest Enterprise (Mang La)
Sub-FPD	Kon Plong district Sub-Department of Forest Protection
UNFCCC	United Nations Framework Convention on Climate Change
VPA	Voluntary Partnership Agreement

1. Introduction

Under the European Forest Institute (EFI)/EU REDD+ Facility small grant, Fauna & Flora International (FFI) developed and conducted a pilot scheme on an integrated forest monitoring for Payments for Forest Ecosystem Services (PFES), Reducing Emissions from Deforestation and Forest Degradation, and the role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in developing countries (REDD+), and the Voluntary Partnership Agreement (VPA) on Forest Law Enforcement, Governance and Trade (FLEGT) between Vietnam and the European Union. The monitoring tool was piloted in Hieu commune, Kon Tum Province where a REDD+ pilot project in the form of a voluntary carbon project certified by Plan Vivo is being implemented. The pilot scheme follows was designed to incorporate key national legal requirements on forest monitoring at local level, and key indicators from REDD+, PFES and FLEGT.

The monitoring tool was also designed to be realistic, viable and sustainable. It took into account various aspects: collected data; capacity of local forest owners; managers and data (forest statistics) collectors; and indicators unique to, and/or cross-cutting among REDD+, the Vietnam-EU FLEGT/VPA and PFES. The numerous existing indicators created for these schemes (and the national legal requirements on forest monitoring) were pooled and assessed against these aspects. Similar indicators were combined, while several indicators were either unchanged or rejected, yielding a complete list of key or core indicators. Subsequently, a lengthy process of consultation, refinement, testing and reiteration was carried out, until the current version of the tool was produced. The current version of the tool offers a working and real-world approach, but also options for further refinement and operationalisation, that will also be explored in the report.

The project was carried out between November 2018 and January 2021. It was extended primarily due to the impacts of the COVID-19 pandemic. Piloting or field-testing of the tool was conducted in three villages in Hieu Commune, Kon Plong District, Kon Tum Province, from October 2019 to March 2020, where FFI has been developing and implementing a fully functional REDD+ pilot project since 2011, which was validated (certified) by Plan Vivo in December 2020.

The project consisted in the creation and testing of the tool as an initial phase of development, laying the groundwork of a comprehensive new monitoring system. Further work and dissemination is needed in light of recent developments, including in terms of VPA monitoring and evaluation (M&E) framework, Forest Governance Monitoring (FGM) and PFES monitoring, and specifically the work of Winrock/USAID 'Vietnam Forest and Deltas', DAI/USAID 'Sustainable Forest Management', the Centre for Sustainable Rural Development (SRD), and the Forest Carbon Partnership Facility (FCPF) under the World Bank. a In particular, further work may focus on creating: (1) the final list of combined monitoring indicators appropriate at the subnational level;

and (2) requirements on data and data collection templates to ensure that the data collected is legal, accurate and consistent to promote better programme/project governance.

This report details the design of the integrated tool, and provides a final review of the piloting scheme, including description of its methods and results, creation of a subnational level monitoring framework with validated/appropriate requirements and indicators, and a monitoring toolset. Furthermore, difficulties and challenges that need to be overcome to make the system fully operational and effective, at scale, from both the policy and implementation perspectives, are also discussed.

Overall, a toolset consisting of 16 data collection templates with respect to the monitoring indicators was designed and provided to local partners and stakeholders. These templates were field-tested (using a paper-based system with Excel for data inputs) and updated. A final (draft) version was created using Google Forms, with Google Sheets as the centralised and 'accessible from anywhere' database.

2. Design methods

The monitoring indicators, the central component of the subnational level monitoring framework, were developed and revised in the design and piloting stages.

In the design stage, the indicators were developed in four steps:

1. **Literature review:** The project reviewed existing monitoring systems and listed all the metrics therein. These included Vietnamese law and regulations related to forest statistical monitoring and the PFES system, REDD+ monitoring requirements under the FCPF, UNFCCC requirements, including the Cancun safeguards, the Plan Vivo, combined Community, Biodiversity and Carbon & Verified Carbon Standard (CCCB-VCS) standards for voluntary REDD+ projects, and the emerging VPA monitoring and related FGM framework.

2. **Pre-selection of subnational indicators:** The project undertook a first round of indicator selection, consolidation and rejection to produce a first draft of the integrated forest monitoring tool.

3. **Multi-level consultation workshops:** Three focused group discussions were held with local actors (in Hieu and Kon Plong), followed by a large, multistakeholder workshop held in October 2019 in Hanoi to review the tool and collect expert feedback (see Appendices 2–5).

4. **Selection of indicators and testing:** After the large workshop was held, the tool was refined, before being tested during a six-month period in Hieu Commune. Data was collected by local community patrol teams, rangers and forest owners. A second iteration of the tool was then produced, although at this point, still Excel-based (namely, paper-based data collection and Excel data input).

Following the creation of the updated tool, more iterations were developed, including by incorporating more technical feedback from the EU REDD and FLEGT facilities. This fifth step culminated with the creation of the Google Form (version), in which FFI decided to experiment with electronic/online and app-based tools. A large validation workshop was held in Hanoi to seek feedback on the updated tool.

In total, 51 monitoring indicators were identified, reviewed and categorised into different monitoring requirements, as follows:

- Specific PES/PFES financial flows: 14 indicators for monitoring income sources, payments and use of funds.

- Safeguards – under REDD+, PFES and FLEGT/VPA: 15 indicators for monitoring both the development of the programme/project (for example, use of Free, Prior and Informed Consent) and its effectiveness.

- Forest implementation monitoring: seven indicators for monitoring programme/project activities, law enforcement (in forest protection and timber harvesting, transport, purchase and process), livelihood support (benefits) and grievance redress/management.

- Forest impact monitoring: 15 indicators for monitoring the project/programme level carbon, biodiversity, forest conditions, social and institutional/legal impacts.

During the implementation stage, almost all identified indicators were field-tested, with the exception of several at the larger-impact level (for example, socioeconomic indicators that require longer term monitoring). FFI provided technical support in the form of training sessions and loaned electrical devices (e.g. GPS units) to local partners (including FPDF, Kon Plong Sub-FPD and State Forest and Water Protection Forest owner/managers) and the selected REDD+ pilot project communities. Specific activities conducted in the design and implementation stages are presented in Table 1 below.

Table 1: Pilot scheme of the integrated monitoring system

Stage/No.	Activities
1.	***Design stage***
1.1	Literature review of legal framework/M&E in PFES, REDD+ and FLEGT/VPA
1.2	Pre-selection and formulation of the monitoring indicators
1.3	Consultation workshops at the national and provincial levels
1.4	Final selection of the monitoring indicators
2.	***Field implementation stage***
2.1	Technical trainings for local partners on PFES, REDD+ & FLEGT/VPA, the monitoring framework and toolset
2.2	Technical trainings for communities and CPC/on-field rangers on multi-purpose forest patrol/monitoring
2.3	Field-testing of data collection and management protocols
2.4	Final pilot review and workshop

3. Contextual Analysis

3.1 Brief context of the project site

Hieu commune, Kon Plong District, Kon Tum Province is located in a mountainous and remote area, with a forest cover rate of 86.2% approximately and high levels of biodiversity. The area is a Key Biodiversity Area (KBA) and Endemic Bird Area (EBA). Ninety-nine percent of the population belongs to ethnic minority groups. Most of its forest area is managed by two state forestry entities, Thach Nham (watershed) Protection Forest Management Board (Thach Nham PFMB) and Kon Plong Forestry Ltd company (its branch, Mang La State Forest Enterprise in Hieu commune). The remaining area is governed by Hieu CPC and three village communities (with land-use right certificates or 'Red books,' already allocated).

Payments for forest protection services have started to flourish with the payment for forest environmental services (PFES), established under Decree 19 (PFES legislation) and revised by the 2019 Forest Law. There are also several state-funded programmes on forest protection and the KFW10 project (KFW10/REDD+), including the FFI-led Hieu REDD+ Pilot project, covering three villages (see below). Hieu commune is in the watershed of several rivers where a number of hydropower plants are operational. These include: Yaly; Sê San 3, 3A, 4, 4A; Dak Bla 1; Dak Pô Ne 1; Dak Pô Ne 2; Dak Pô Ne 2AB; Sơn Trà 1; and Vĩnh Sơn 5.

As a commune of Kon Plong District (one of Vietnam's 61 poorest districts), Hieu commune has been involved in different state programmes for forest protection over the last ten years, through

which households receive contracts (and payments) for forest protection of specific areas. Examples include Programme 30a to Support Sustainable and Rapid Poverty Reduction in the 2008–2020 period ('Programme 30a'), the Target Programme on Sustainable Forest Development in the 2016–2020 period ('PTLNBV programme'), the Programme on Strengthening Control of Natural Timber Harvesting in the 2014–2020 period ('2242 programme') and the Programme on Forest Protection and Development associated with Sustainable and Rapid Poverty Reduction and with a focus on Support for Ethnic Minorities in the 2015–2020 period ('Programme 75'). Under these programmes, local communities have continuously been paid for forest protection.

Additionally, Hieu commune is the pilot site of the project 'Protection and Inclusive management of forest ecosystems in Gia Lai, Kon Tum and Quang Nam provinces' (KFW10), which includes a pilot carbon Plan Vivo project (REDD+) in the three villages of Dak Lom, Dak Lieu and Vi Chring[1]. During the KFW's project implementation period (2015–2021), the villagers have received support to enhance forest protection and sustainable forest management. Carbon revenue will be distributed directly to the communities, for ongoing avoidance of carbon emissions (forest protection), after the KFW10 project ends and its funds are exhausted.

3.2 Implementation of payment programmes/projects for forest protection

PFES

PFES revenues (for Hieu commune only) are managed by the provincial Forest Protection and Development Fund (FPDF). They come from the payment by Kon Tum water supply company and the above-mentioned 10 hydropower plants, including direct payments by four in-province dams/power plants and indirect payments by six inter-province dams/plants[2] via the National Forest Protection and Development Fund. The payments are made once every quarter and are based on commission contracts between users of forest environmental services and FPDF. As per regulations, a specified percentage of the revenue (approximately 6–8% for Kon Tum Province in particular) is reserved for FPDF's operating costs, while the rest is verified by the Province Fund Management Council and approved by PPC before payment to forest owners. These payments are made twice a year with advance payments in July – August and final payments in February – March of the following year.

FPDF conducts direct payment to family households and local communities who own forests either through household bank account transfer (about 90% of the households) or in cash (for

[1] https://www.planvivo.org/hieu-commune

[2] Different from in-province hydropower plant, the inter-province one has a large catchment covering two provinces at least, for example, Se San hydropower plants' catchment is stretched over two Kon Tum and Gia Lai provinces.

the remaining 10% who do not have bank accounts). Charged with managing PFES buyers/enterprises, sellers/forest owners and market transactions, FPDF is a key actor in the PFES market. Electronic and hard copies of market data/information are circulated among relevant state organisations.

In cases where forest owners are state forestry entities, local households and communities may receive benefits as well. Once a part of the revenues (approximately 10%) has been directed to operational/admin cost recovery, the rest is paid by state forestry entities to households or local communities who are contracted as forest protection actors. Payments are made twice a year (one in March-April and the other in October) via household bank account transfer. Thus, these state forest owners manage the PFES market at the community level. Electronic and hard copies of market data/information are circulated among certain state organisations, such as District- and Commune-level People's Committees and District FPD.

State-funded programmes

Currently, the local Forest Protection Department, Hieu CPC, Kon Plong Forestry Ltd Company and Thach Nham PFMB are responsible for managing Programme 75, Programme 30a, Programme 2242 and Programme PTLNBV, respectively. Under these programmes, households and local communities are contracted to perform forest protection duties. Payments are made with a different unit price but by the same mechanism as that of PFES.

KFW10 Project/REDD+

Based on the established Community Forest Management (CFM) model, the KFW10 project fund (also called 'CFM fund') aims to pay for forest protection and sustainable forest management in the form of community funds. Like PFES and state-funded programmes, payments under KFW10 are made twice a year through community bank account transfer. For each community, the community fund will be disbursed based on an established benefit-sharing mechanism for different purposes: CF Management Board's (CFMB) operation; community-based forest patrol activity; and livelihood development under the Village Development and Saving Fund (a kind of hybrid payment and microfinance scheme).

3.3 Monitoring framework

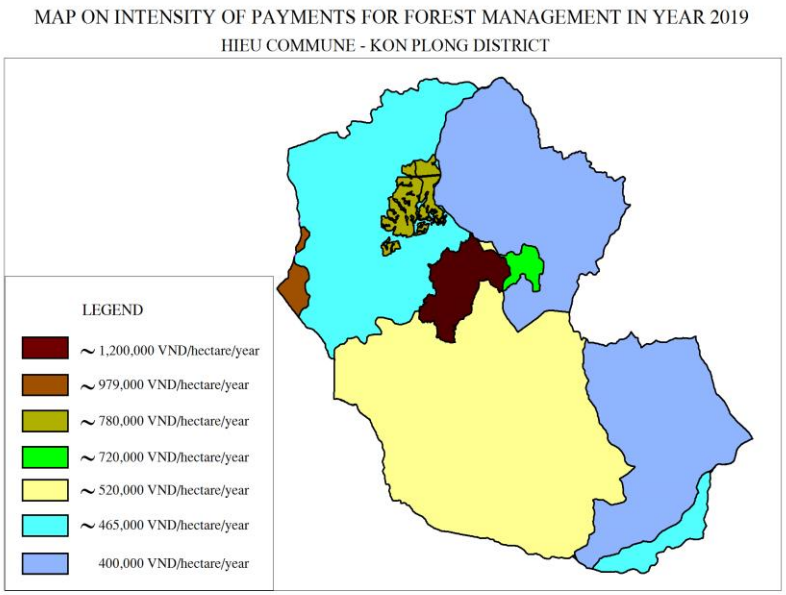
Based on literature review and multiple consultations, four monitoring categories were identified as key to the monitoring framework and thus to the tool being developed. These four categories are: environmental services payment monitoring; monitoring of safeguards for REDD+, PFES and state-funded programmes; implementation monitoring; and impact monitoring.

Environmental services payment monitoring

We recognised that the same forest area or plot may be covered by different payment programmes. Further, one actor (household or household group or community) may be paid by more than one programme for protecting different forest areas. Such overlaps are one of the reasons why the integrated monitoring tool is being developed. They have several consequences:

First, the income per hectare is different from one programme to another or even within the same programme (i.e. PFES) with different payment sources (for example, from different hydropower plants). For example, 1005.3 ha of forest managed by Hieu Commune People's Committee was contracted with price unit of 200,000 VND/ha/year under Programme 30a. Meanwhile, 1706.8 ha of forest managed by Thạch Nham PFMB was contracted with a higher price unit of 400,000 VND/ha/year under the PTLNBV programme. In particular, 81.4 ha of forest managed by Hieu CPC had the highest unit price of 979,277 VND/ha/year under PFES from nine payment sources (namely nine hydropower plants). In Vi Chring Village, a total of 808 ha of community forest is simultaneously valued at 318,750 VND/ha/year under the KFW10 project and at 400,000 VND/ha/year under Programme 75. Of the total 808 ha, 569 ha[3] has a price unit of 492,427 VND/ha/year under PFES (i.e. Son Tra 1 hydropower plant). In addition, the village as a whole receives 400,000 VND/ha/year under another forest protection contract with Kon Plong Forestry Ltd Company for managing 472 ha of forest under Programme 2242. Discrepancies in income per hectare for different forest plots across the commune in 2019 are shown in Figure 1

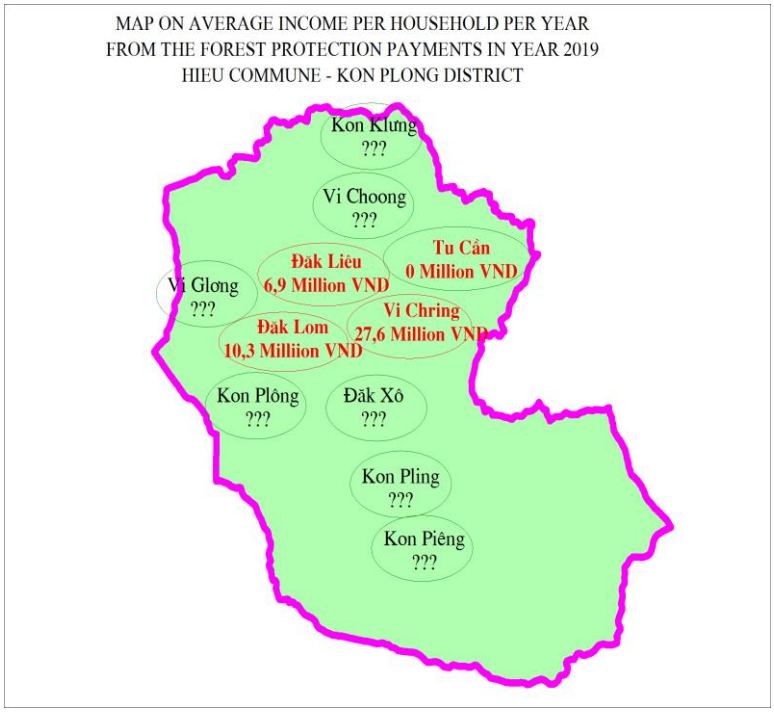
Figure 1: Intensity of payments for forest management in Hieu Commune, Kon Plong District in 2019



[3] Out of a total of 808 ha, the Vi Chring community forest is 569 ha, situated within a catchment where the Son Tra No. 1 hydropower plant is operational.

Second, the income per household also differs from one village to another, in part due to differences in PFES availability and amounts (see Figure 2). For example, the total income per household in Vi Chring village from PFES, Programme 2242, the PTLNBV programme and KFW10 project is 27,624,762 VND/year, while for Dak Lom village the amount is 10,310,110 VND/year. Villages that are paid under only one programme/project have a comparatively low average income per household and those not covered by any programme have zero income from forest protection payment.

Figure 2: Average income per household per year from forest protection payments in villages in Hieu Commune, Kon Plong District in 2019



Clearly, effective governance of forest protection payment sources requires close oversight of the environmental service 'market'. Some form of state-based and overarching mechanism to work on blended finance and equitable benefits sharing is needed.

Many related monitoring questions have emerged during this study, including from the study team and the stakeholders involved. These include:

- Which forest areas are communities paid to protect?
- How many hectares are covered?
- From what payment sources?
- What is the total income per ha per year?
- Is the forest area paid for protection contracted under different programmes/projects?
- Is the forest protection contracting plan reasonable and equitable?

- What is the average income for each unit area or per household from different payment sources?
- Is such a payment equitable? If not, why?
- Does the effectiveness of forest protection correlate with the payment amount (namely, the higher the forest protection payments, the more protected a forested area is)?

After further reflection, the monitoring system for the environmental service market was designed to focus on three areas:

1) Payment sources – PFES (by service users/buyers, such as hydropower plants versus water supply companies, etc.), REDD+ and state-funded programmes
2) Payment amount
3) Allocation and use of the payment revenues

In the end, nine indicators were identified, revised and adjusted as shown in **Table 2**.

Table 2: Monitoring of environmental services market and state-funded programmes

Monitoring requirements	Monitoring indicators	Data source/Monitoring tools
PES sources (PFES, REDD+ or state-funded programmes)	Amount and percentage of payments annually gathered from different sources, further categorised by PES users (water supply company or hydropower plant) and state programmes	Annual payments scheduled by FPDF
	Total amount of payments annually paid to different forest owners, categorised by PES users (company or hydropower plants) and state programmes	Annual payments scheduled by FPDF
	Number and percentage of carbon credits annually certified and sold, categorised by different forest owners	Annual reports by project coordinator (FFI)
	Forest area, boundaries and location (block, apartment and plot) paid, categorised by payment sources and forest owners	Data and maps by FPDF and state forest owners
	Percentage of forest area and boundaries of totally planned forest area paid from all the different payment sources	Data analysis and GIS mapping
Payment amount	Income per ha (VND) for different forest areas and boundaries	Data analysis and GIS mapping

	Income per household (VND) for different villages and communes	Data analysis and GIS mapping
Allocation and use of the payment revenues (applied for REDD+ only)	Amount and percentage of payments annually used for different purposes as per the benefit-sharing mechanism	CFMB record book Annual reports by project coordinator
	Total amount of payments and percentage of PES payments earmarked for livelihood development (through microfinancing initiatives such as bank loans) actually spent for livelihood development, categorised by forest owners/communities	Annual reports by project coordinator

Monitoring of safeguards for REDD+, PFES and state-funded programmes

REDD+ safeguards in the context of voluntary carbon markets, refer, for example, to how the projects address and respect customary laws (for example, the right of Indigenous Peoples/local communities to access forest resources), the right to use forest products sustainably, the right to preserve cultural values (such as a sacred forest) and the full and effective participation of local communities in REDD+ design and planning, etc. These are a part of REDD+ project design in line with carbon standards, such as Plan Vivo and VCS. REDD+ Project Design Development (PDD) is verified and approved by carbon certificate foundations before implementation. Therefore, REDD+ safeguards monitoring would not only be necessary as part of the project design process (beyond the scope of this tool and carried out independently as part of REDD+ development and certification) but also as part of impact monitoring, which is covered by this tool.

Unlike REDD+, PFES and state-funded programmes are either implemented based on established forest contracts or forestland allocation (for example, developed under the guidelines on forest protection contracting or forestland allocation according to the letter No. 623/LN-SDR/2006[4] issued by the Forestry Department, MARD for the implementation of the programme No. 135[5] or programme No. 304[6]) or designed under Decree No. 168/2016/NĐ-CP[7]. Pursuant to this

[4] The letter No. 623/LN-SDR was issued by the Forestry Department, MARD – Guidelines on pilot implementation of forest allocation, forest contracting in the Central highlands.
[5] Programme 135 refers to the Programme on Socioeconomic Development for Specially Difficult Communes in Mountainous areas with large ethnic minority populations according to Decision No. 135/1998/QD-TTg. Since 2012, this programme has been known as the 'National Target Programme on Sustainable Poverty Reduction'.
[6] Programme 304 refers to the Programme on Piloting Forest Allocation and Forest Contracting to Household and Local Communities of Ethnic minority groups in the Central highlands according to Decision No. 304/2005/QD-TTg.
[7] Decree No. 168/2016/NĐ-CP dated 27/12/2016 stipulated on the contracting of forest, agricultural farm and water surfaces that belong to state forestry entities: Management Boards of Special-use and Protection Forests, and state-owned forestry and agriculture limited (Ltd) companies.

Decree, forest contracting plan is designed and verified by forest owners, such as state forestry entities (that is, not by technical departments such as DARD or FPD).

The Decree only regulates procedural step-process on forest contracting rather than specific standards used for verification and validation to safeguard PFES or state-funded programmes. For Hieu commune, a series of monitoring questions for forest contracting design remains unresolved (see **Box 1** below).

Box 1: Monitoring questions/issues in forestland allocation and forest contracting for the implementation of PFES and state-funded programmes in Hieu commune

- How to ensure equity and effectiveness, knowing that, out of a total of nine villages in Hieu Commune, Tu Can Village was excluded from all forest contracting and forestland allocation schemes? Consequently, people from this village have violated forest protection laws by clearing forested areas for agricultural farming and logging from the forestland of other villages. This 'leakage' is a social justice issue and has the potential to undermine any ecosystem service protection/carbon avoidance (gains) made in the nearby villages.

- Why was forest block 495 contracted with Dak Lieu Village (10 km away) instead of nearby villages of Kon Klung, Vi Choong or Tu Can? Is the forest well protected if forest patrolling is conducted only twice a year due to the long distance?

- Why are some small forest plots of 1.71–2.0 ha contracted with groups of four to six households (for example, a group headed by Mr. A Len consists of five households in Vi Glong Village) under Programme 30a? Is the low payment sufficient to motivate them to protect the forest?

- Why are forest protection contracts implemented on degraded forestland categorised as post-cultivation restoration forest and arbitrarily distributed within agricultural land? Forest plots returned by Kon Plong Forestry Ltd Company and Thach Nham PFMB are currently managed by Hieu CPC. Is it possible to convert this degraded forest land into agricultural land?

In summary, similarly to REDD+ safeguard monitoring, safeguard monitoring for PFES and state-funded programmes should occur at the design/readiness phase through programme design verification and validation. An implementation proposal/plan with detailed socioeconomic and technical measures (such as land-use planning, forestland allocation, forest contracting, payment method, benefit-sharing mechanism, institutional developments for forest management, etc.) needs to be verified and validated by local authorities.

Implementation monitoring

Programmes/projects will usually include one or more of the following groups of activities as part of their implementation of forest management and protection:

- Awareness raising (of forest protection law and policies, environmental services, etc.)
- Capacity building for local communities (training)
- Forest protection actions/forest patrol (law enforcement): detecting, preventing and resolving violations (for example, forest clearance, forest exploration, wildlife hunting, etc.), collecting carbon storage and biodiversity data
- Forest development (forest regeneration, restoration, enrichment, planting including dispersed tree planting, etc.)
- Forest product harvesting and processing (timber and non-timber forest products)
- Support for/facilitation of livelihood development

Monitoring programme/project activity of forest protection and management is necessary for efficient local forest administration, oversight and reporting (and it is essential for good governance). Forest owners are required to periodically report to local FPDs and provide an Excel datasheet and an operational report. The FPD then analyses the collated data and reports to the respective People's Committee of the same level.

(i) Awareness raising and capacity building

In the context of the Hieu Commune, and the various forest programmes/project operating there, forest owners claim that awareness-raising activities have been conducted on a monthly or quarterly basis and integrated with monthly village meetings. They mainly focused on Payment for Environmental Services (PFES) or CFM fund (KFW10/REDD+), forest patrol activity (PFES, REDD+, FLEGT), law enforcement (FLEGT), among others. Under FLEGT, regulations on forest product management and traceability, pursuant to Circular No. 27/2018 issued by MARD, were introduced to local communities in Hieu Commune. Capacity building through annual trainings were conducted by state forestry entities or NGOs (i.e. KFW10 project or FFI) and focused on participatory land-use planning, sustainable forest management planning, forest patrol, community fund management, livelihood development, etc.

Capturing the number of households involved in awareness-raising and capacity-building activities and the percentage in each village is required by decision makers on the ground, especially CPC and state forest owners. At the commune level, the results of such activities are reported at periodical meetings.

(ii) Forest patrol

A core activity of all programmes/projects subject to monitoring, forest patrolling is tailored to the specific provisions of different programmes/projects. While only violation information is

required under PFES and other state-funded programmes, REDD+ requests reporting of forest/carbon and biodiversity monitoring.

Violations that are clearly defined in Decree No. 35/2019 are recognised in legal records with details of the evidence and forest damage (such as cleared forestland). Pursuant to Circular No. 12/2019/TT-BNNPTNT[8], forestry law violations are categorised into three groups: violations of forest management and utilisation regulations (eight behaviours); violation of forest protection and development regulations (eight behaviours); and violations of forest product trade and processing regulations (nine behaviours). Violation monitoring includes the number of violations and evidence.

Forest patrols are regarded as a carbon monitoring channel as they provide ground-truthing data for estimating changes in carbon stocks and emissions (see Table 3 on project impact monitoring). Carbon monitoring through forest patrols involves, for example, collecting data of felled trees, including species name and base diameter. At the same time, biodiversity monitoring requires data collection of indicators of animal species presence or tracks/signs (for the REDD+ pilot project, these include the endemic grey-shanked douc langur, northern yellow-cheeked gibbons and terrestrial species including the Owston's civet), indicator of floral species that are felled (*Cinnamomum pathenoxylon, Magnolia spp., Taxus chinensis)* and anthropogenic disturbance to the forest habitat (such as forest clearance, timber harvesting, fuelwood collection, etc.).

(iii) Forest development

Monitoring of forest development is based on five indicators specified in Circular No. 12/2019/TT-BNNPTNT on Regulations of the Forest sector's Data and Statistics, and includes:

- Area of newly established plantation
- Plantation area included into tending regime
- Area of assisted regeneration forest
- Number of trees planted
- Number of forest seedlings provided

Data on plantations or assisted regeneration of forests are acquired from either forest patrol activities (determined via GPS demarcation by local communities) or blueprints (provided by forest owners as state forestry entities). Similarly, statistical data on the number of trees planted (via scatter planting) under plantation schemes can only be collected from or provided by forest owners as state forestry entities. At the project site, statistical data showed around one hectare (10,424 m^2) of community forests of Dak Lom, Dak Lieu and Vi Chring villages cleared off for

[8] Circular 12/2019/TT – BNNPTNT issued on 25/10/2019 on the forestry sector's statistics regulations

farming by 11 households in 2019. This plot was subsequently established as part of a plantation in 2020.

(iv) Forest product harvesting and processing

Forest products consist of timber (natural and planted forests) and non-timber forest products. Monitoring of natural forest timber harvesting is required to collect data and legal evidence on legal and illegal timber volume/yield. While logging is banned, legal exploitation of natural forest timber is ongoing in the form of salvage harvests following legally planned land-use conversion (for example, the establishment of hydropower plants). This type of timber extraction is monitored based on a timber packing list recognised by the local FPD. Meanwhile, illegally exploited natural forest timber that is statistically recorded by exhibits of timber confiscated from violation cases. For example, in Hieu commune, 414 m^3 of timber was harvested through salvage logging after land-use conversion into energy land for the construction of a 500 kV power line across the project site.

For timber harvested from state-owned plantations, monitoring of harvesting yields is based on the timber packing list and one of the following documents provided by forest owners, such as state forestry entities:

- Harvesting design statement (for main harvesting of plantation forest)
- Copy of decision on changing land use from forestland into other uses, silviculture project or approved scientific research thesis/programme
- Description report on location, area and estimated forest product volume (for salvage harvesting of plantation timber)

At the Hieu pilot project site, for this tool, most of the plantation forests owned by Kon Plong Forestry Ltd Company have not been harvested, in part due to the logging moratorium in mature forests, and because the area is considered High Carbon Sock (HCS) and High Conservation Value (HCV) forest.

For planted timber owned by private enterprises, households and individuals, monitoring of harvesting yields is based solely on the timber packing list, which poses certain challenges. First, households and individuals, especially people of ethnic minorities, have no experience making timber packing lists and eschew this paperwork altogether. For example, at Vi Choong village of Hieu commune, *Litsea* timber is harvested and sold without timber packing lists to traders from Quang Ngai Province. Second, even if the packing lists are made by forest owners (for example, households) or traders, the local FPD's recognition is not required for certain actors, making it extremely difficult to collect yield data in these cases. It is suggested that this data be collected through reporting by households and harvesters at regular village meetings instead.

For non-timber forest products, their collection is regarded as a daily or seasonally livelihood activity. The main products are orchid leaves (*Anoectochilus* spp.), bee honey, and *Radix*

Kadsurae Coccineae. As this activity is not controlled by local FPD or forest owners, monitoring/data collection for these forest products is not yet possible, as access is not prohibited and there is uncertainty at the local level as to what is legal, in terms of specific species.

In Kon Plong District, all six timber processing enterprises have registered their businesses. Two of them are private companies (Tat Thanh and Dang Phat) and the remaining four are smallholder businesses. The two private enterprises provide sawn wood to companies in and out of the province, while the smallholder businesses produce furniture for local consumption. The monitoring of timber processing is based on the volume of both legal and illegal timber processed, and compliance with current regulations (such as business permission, labour safety, fire prevention equipment, environmental protection measures and child labour use). This activity is directly supervised by the Sub-FPD. Monitoring data is collected during periodical checks and thus always available at the agency's office.

(v) Dispersed tree planting

The monitoring of this activity is based on data collected on the number of different plant species, categorised by forest owners and village/commune. Monitoring data is not available because this activity has not taken place recently (in Hieu).

(vi) Livelihood development

PFES and state-funded programmes are currently at a standstill in their attempts to encourage local people to transition to sustainable livelihoods (for example, castle/buffalo raising) or alternative livelihoods (for example, medicinal plants and coffee). Local communities need to be persuaded that these alternatives, based on biodiversity and sustainability imperatives, and as identified in the master plan of district socioeconomic development, can potentially bring higher income, even though the communities are landless. The key issue here is that PFES and state-funded forest protection programmes make payments that are nominally tied to forest protection but come with no performance or results monitoring. The funds are not channelled into any formal training of village development fund.

Meanwhile, the REDD+/KFW10 project does regard livelihood development as a mandatory activity in line with Plan Vivo carbon requirements. Therefore, multiple facilitation activities have been conducted, including participatory land-use planning, annual village development planning, oversight of loans (from Village Saving Fund or banks) and capacity building. Under the pilot REDD+ project, livelihood development is monitored based on two criteria: changes in the percentage of households that have changed livelihood and the scale (number or area) of sustainable livelihoods or alternative livelihoods.

(vii) Grievance management

Grievances are categorised into two categories: grievances on policy and legislation (addressed in impact monitoring); and grievance on the implementation of policy and legislation (addressed in implementation monitoring). Both are raised by local people at regular village and commune meetings or voters' meeting. In the REDD+ project, filing grievances is encouraged as part of the grievance mechanism. Grievances are resolved by the Community Forest Management Board or Project Coordinator (FFI) within the project duration or the People's Committees at the commune and district levels if required.

At the implementation level, the pilot revealed that grievances result from inequity in distribution of responsibilities for forest patrol rather than that of funds/money (this conclusion applies to all payment sources: the KFW10 project, PFES and state-funded programmes). In the KFW10 project, following resolution of this kind of grievances, the community forest patrol force was reorganised into five member-task teams, two – three teams per village (instead of all households being involved in the patrol). These teams are paid to conduct forest patrols and are fully responsible for community forest protection. In general, such grievances are not severe and can be resolved within the project duration.

Monitoring of the implementation process is reviewed and adjusted with 14 indicators as shown in **Table 3**.

Table 3: Monitoring of the implementation process

Monitoring requirements	Monitoring indicators	Data sources/Monitoring tools
Awareness raising	Number and percentage of households that participated	Village meeting minutes
Capacity building	Number and percentage of households that participated	Activity report by project/programme (training, study tour, etc.)
Forest violations/level of compliance with legal regulations in forest protection	Percentage of violation cases sanctioned by CPC or on-site forest rangers, categorised by forest owners and administrative units	Forest patrol sheet Violation minutes Sanctioning decision
	Percentage of violation cases sanctioned by DPC or SubFPD, categorised by forest owners and administrative units	Sanctioning decision
	Percentage of criminal violation cases sanctioned by local courts	Sanctioning decision

Forest violations/levels of compliance with legal regulations on timber harvesting, transport, trade and processing	Percentage of timber processing enterprises that are fully compliant with regulations	Periodical check minutes by SubFPD
	Volume and percentage of timber harvested from natural and plantation forests from different sources with legal dossiers, categorised by forest owners and administrative units	Timber packing list Periodical check minutes by SubFPD
	Percentage of timber processing enterprises that use legal timber Percentage of processed timber that is legal (m^3)	Periodical check minutes by SubFPD
	Volume and percentage of non-timber forest products collected from natural and plantation forests, categorised by forest owners and administrative units	Packing list Village meeting minutes
Dispersedly planting tree	Number of dispersed planted trees, categorised by tree species, forest owners and administrative units	Scheme and report by forest owners
Livelihood development	Increase in scale (amount or area) of sustainable livelihoods and percentage of participating households	Annual report by REDD+ project coordinator
	Increase in scale (amount or area) of alternative livelihoods and percentage of participating households	Annual report by REDD+ project coordinator
Grievance management	Number and percentage of grievances that are fully resolved, categorised by PFES, REDD+, FLEGT and other state-funded programmes	Record books by forest owners or CPC/on-site forest rangers and REDD+ Project Coordinator

Impact monitoring

(i) Forest monitoring

The objectives of PFES and state-funded programmes are clearly defined as per regulations on the responsibility of forest environmental services providers (namely forest owners such as state forestry entities, households or local communities contracted for forest protection) according to Article 20, Decree 99/2010/ND-CP on Policies of Payment for Forest Environmental Services. It is stated that: a) forest owners must ensure that the acreage of the contracted forests providing

environmental services is protected and developed properly in line with functions regulated in the approved forest protection and development master plans; b) households contracted for stable and long-term forest protection must ensure that acreage of forests providing forest environment services is protected and developed in accordance with the signed contracts. This means that the main objective of forest protection duties is to focus on 'forest acreage,' which was reaffirmed by various forest owners during the assessment exercise. Forest acreage, not volume or biodiversity, is the basis for PFES payment, and determining forest acreage is the primary task of forest owners as defined in Articles 60, 61, 62 and 63 of Section 2, Decree 156/2018 that implements several articles of the Forestry Law. Therefore, forest patrol activity of forest owners usually focuses on monitoring forest acreage rather than forest volume or biodiversity (more details are presented in the next section). Regarding forest change monitoring, forest cover is measured as forest acreage specifying: 1) acreage of plantation forests to be tended; 2) regeneration or restoration forests; and 3) natural forest reduced by land-use conversion or by natural disasters (for example, forest fire).

(ii) Carbon and biodiversity monitoring

The objective of REDD+ as defined in the REDD+ Plan Vivo pilot project design is to reduce deforestation and forest degradation (focused on forest acreage, forest volume/carbon and biodiversity) such that biomass is preserved and emissions of carbon dioxide are avoided. In practice, following the project design phase, forest patrol activity has been regarded as a monitoring channel and is thus conducted (or should be, to achieve verification). Data on violations, forest cover, biomass/carbon and biodiversity (namely key and/or indicator species) are collected during this activity.

(iii) Socioeconomic impact monitoring

Monitoring of forest sector project/programme socioeconomic impacts is considered in REDD+, PFES and state-funded programmes even though each takes a different approach. According to forest owners, PFES and state-funded programmes provide financial support to local people and communities (similarly to previous Programmes 327, 661) with the expectation that improved livelihoods and wellbeing will reduce negative impacts/pressures on natural resources. As mentioned above, livelihood interventions under PFES and state-funded programmes are very restricted, involving only village meetings where more sustainable and high-income livelihoods are introduced and their adoption and development encouraged. In contrast, improved livelihood and wellbeing is a requirement of the Plan Vivo carbon standard. Therefore, the REDD+ pilot project is designed to include a section of livelihood development associated with the monitoring plan.

(iv) Policy and legislation monitoring

As presented above, the impact of programmes/projects on policies and legislation is revealed in feedback or grievances lodged directly by villagers at regular village meetings or indirectly by village representatives/village leaders at weekly commune meetings. Some of the feedback received from stakeholders at such meetings is listed in Box 2 below.

Box 2: Some feedback on the current policies and legislation

- The logging ban is impractical for forest-dependent people/communities, hampering timber harvesting as a conventional practice for their vital demand (e.g. housing, fuelwood).
- The condemnation of felling trees with diameter at breast height (DBH) ≥ 10 cm as an illegal behaviour is unreasonable and even impractical for local people who use it as fuelwood for cooking year-round and warming in the winter.
- Overlapping implementation of multiple programmes/projects with similar objectives but managed by different governance or regimes at the same locality (village or commune) brings about different benefits and also requires different obligations/responsibilities simultaneously. This situation creates an impression of dissociation and unfairness among programmes/projects that then leads to further negative consequences, including diminished rates of participation. Dak Lieu village is such a case where villagers complain that less money is paid for much more work (forest patrol five times per month) under the KFW10/REDD+ project compared to the state-funded Programme 75 that pays more for less work (forest patrol twice a year).

In summary, at the impact level, monitoring requirements and respective indicators for REDD+, PFES and state-funded programmes covered forest change, carbon change and biodiversity. They were reviewed as appropriate. There are a total of 13 monitoring indicators (summarised in Table 4), of which four are forest change monitoring indicators, two are carbon/forest degradation monitoring indicators, three are biodiversity monitoring indicators, three are socioeconomic monitoring indicators and the last one is a policy monitoring indicator.

Table 4: Project impact monitoring

Monitoring requirements	Monitoring indicators	Data sources/monitoring tools
Forest	Change in forest cover (%)	Remote sensing/Global watch analysis combined with ground-truthing data

		REDD+ Forest Reference Emission Level (FREL), Biannual Update Report (BUR), Biannual Transparency Report (BTR)
	Percentage of increase in acreage of planted forest tended, categorised by forest owners and administrative units	Plantation plan by forest owners; Forest patrol sheets
	Percentage of increase in acreage of regeneration/restoration of forests, categorised by forest owners and administrative units	Forest nourishment and enrichment plan by forest owners; Forest patrol sheets
	Percentage of decrease in acreage of natural forest due to forest clearance and natural disasters, categorised by forest owners and administrative units	Forest patrol sheets
Forest carbon	Change in carbon stock (%)	Remote sensing/Global watch analysis combined with ground truthing data REDD+ Forest Reference Emission Level (FREL), Biannual Update Report (BUR), Biannual Transparency Report (BTR)
	Decrease in GHG emissions (tCO2 eq/year)	Remote sensing/Global watch analysis combined with ground truthing data
Biodiversity	Frequency of indicator animal species appearance (Grey-shanked douc langur and other primates)	Forest patrol sheets
	Status of indicator plant species (*Cinnamomum balansae*, *Magnolia spp*., *Taxus wallichiana*)	Forest patrol sheets
	Frequency of human activities that create a disturbance to wildlife habitat	Forest patrol sheets
	Percentage of poor households	Commune statistical data

Income and wellbeing	Percentage of households with improved living conditions, categorised by village and commune (community criteria)	Assessment report of REDD+ project coordinator
	Percentage of households with increased income, including monetary and non-monetary income (assets identified according to state inventory)	Assessment report of REDD+ project coordinator
Institutions and policies	Number of responses or grievances about policies and legal frameworks, categorised by programme/project (REDD +, PFES, FLEGT, state assistance and forest governance programmes)	Meeting minutes; Grievance record books of forest owners, FPD, REDD+ project coordinator

3.4 Data collection, storage and management as part of piloting

Monitoring data in the integrated tool has been classified into four groups: 1) environmental services payment data; 2) safeguards monitoring (usually associated with REDD+ but also international best practice for FGM); 3) participation data (from awareness-raising and capacity-building activities and patrol data of violations, and carbon and biodiversity data); and 4) impact assessment data.

Monitoring data is obtained/extracted from various data sources, including PFES payment schedule, forest patrol sheet, meeting minutes, list of training participants, forest products packing list or impact assessment reports. Thus, data collection means collecting, aggregating analysing and reporting these data. Collation is performed using templates either designed by local partners or following the most up-to-date guidance circulars. If required, additional templates are designed (see **Appendix**). Local partners confirm that the majority of monitoring data can be collected, reducing the human resource, costs and time needed.

That the collected data is legal, accurate, consistent and integrated is a principal requirement of this forest statistical and monitoring system, as described below:

(i) Legality

In practice, most of the monitoring data is collected based on legal requirements and are thus mandatory. For instance, PFES market data is available from the approved payment schedule or official announcements (on payments already made through forest owners' bank accounts). Implementation data, such as participation of local people in village meetings can be retrieved from meeting minutes and identified by role (generally these are representatives of CPC, SubFPD, on-site forest ranger, state forest owners and local communities). Data of violation cases handled and resolved (or unresolved) are recorded in legal dossiers by functioned authorities (for

example, CPC/on-site forest rangers at the grass-root level). Only forest loss data recorded during forest patrols, part of the violation dossiers, is officially imported into the forest change monitoring/FORMIS system.

(ii) Accuracy

The review found varying levels of accuracy of data types acquired from different sources. PFES market data is regarded as highly accurate. The emphasis on legality (namely data approved by high-level authorities or inspected/audited by different state inspection agencies) is an important factor that ensures the accuracy of data because data collectors or providers are legally responsible for the data (which is traceable). The payment method of bank transfer to forest owners (state forestry entities, communities and households) also helps ensure higher levels of data accuracy and reliability. The market data at forest owner level (such as payments to forest owners) is transparently and internally publicised by FPDF for internal oversight, specifically by DARD, DPC, SubFPD, bank, CPC and forest owners[9]. Likewise, the market data at forest protection contractor level (such as payments to local communities and households) are also transparently publicised among relevant government institutions at the grass-root level, specifically CPC, banks and forest protection contractors.

Participation data is also considered highly accurate. Data sources, such as meeting minutes and lists of training participants, are publicised and participants identified by role (for example, representatives of CPC/on-site forest rangers, state forest owners and communities). These reflect the actual events that took place.

Forest patrol data, however, is insufficient and inaccurate, as demonstrated by the patrol sheets. As GPS devices were either not utilised or utilised improperly, the forest patrol activity by community forest rangers (for community forests) and staff of state forestry entities (for state-owned forests) could not be validated although patrol sheets were filled in and submitted. It was later revealed that patrol sheets were completed although this activity was at times not conducted as planned. Many of the patrol sheets were incompletely filled in. Additional detail on patrol data accuracy, for violations and carbon and biodiversity indicators, is provided here:

- Violations (illegal activity)

At the project site, severe illegal behaviours, such as forest clearance for farming at a large scale and commercial logging, have rarely occurred in recent years. When detected, almost all cases were documented in the legal dossiers and resolved by the local authorities. However, forest violation behaviours classified as 'traditional livelihood activities,' such as clearance of fallowed

[9] An example is the list of government agencies and forest owners/communities who have been notified by FPDF on PFES in 2019 for Vi Chring village in Hieu commune according to the notification of FPDF No. 154/TB-QBVPTR dated April 15, 2020.

farmland-on-restored-forest for cultivation or logging for local use, are very common but not recognised as violation cases.

Picture: Some farms homes had and newly been established but none of violation cases were detected and reported as per the forest statistical and monitoring system.

Several reasons have been offered as explanations for this. First, such behaviours violate forest protection laws but are vital to local people and thus easily ignored by community forest rangers and even forest patrolling groups of state forestry entities. Second, if recognised, data on the large number of violations would be considered 'sensitive' because they reflect the ineffectiveness of forest protection duties. It is argued that the forest ecosystem benefits (namely arable land, timber, fuelwood, etc.) cannot be replaced by the payments. Therefore, the logging ban or stipulations on limited extraction under forest protection contracts can hardly deter forest-dependent people from harvesting forest products for household use. Under these circumstances, inadequate and inaccurate forest patrol data is completely understandable.

- Carbon and biodiversity

Carbon and biodiversity monitoring is a requirement of the KFW10/REDD+ project. This kind of data was collected in community forest patrols. The accuracy of this data is very low because of reasons similar to those discussed above and the lack of capacity among community forest patrol rangers. As noted previously, this activity is usually well implemented with external support (namely direct supervision and guidance).

(iii) Consistency

The integration of monitoring in PFES, REDD+ and FLEGT/VPA programmes requires that data from these programmes be collected by forest owners of different localities, combined into a single database, analysed and compiled as reports for the specific programmes (PFES, REDD+ or FLEGT/VPA), and managed solely by FPD. From secondary data sources (meeting minutes, lists of training participants, timber packing lists, assessment reports, etc.), monitoring data is extracted and entered into a database for processing and reporting. Doing so requires consistent data collected from different sources (for example, provided by different forest owners), including attributes required by PFES, REDD+ and FLEGT. In practice, most data sources, whether directly generated or indirectly collected by forest owners, are often incomplete. For example, meeting minutes only include the total number of household participants, with no specific information on the number of poor versus non-poor households or ethnicity group. The inconsistency of collected data poses a major obstacle to data analysis and reporting.

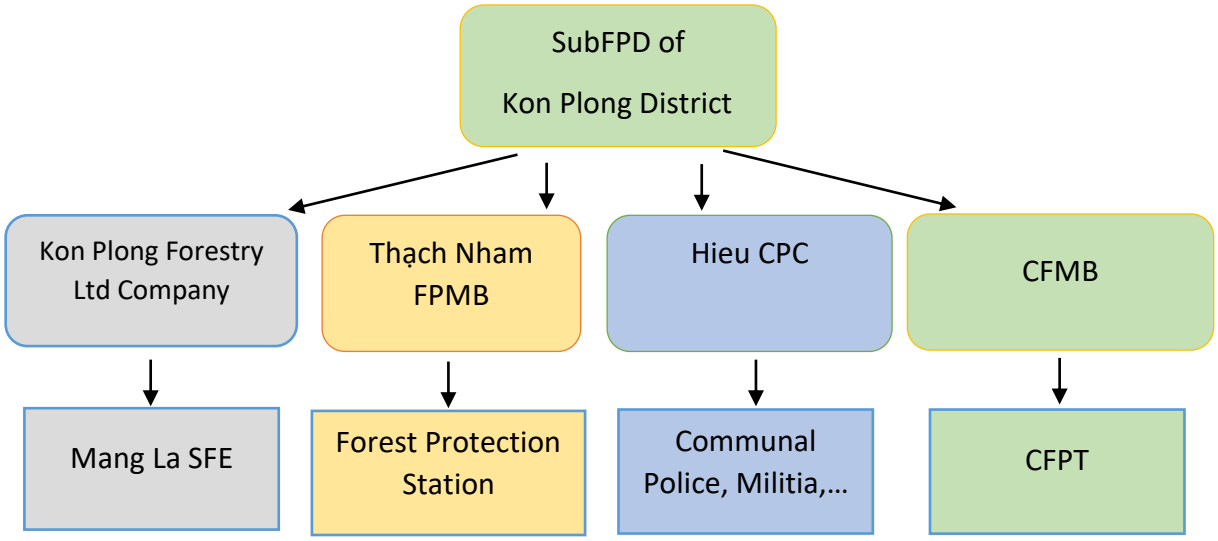
(iv) Integration, data storage and management

Monitoring data is stored by forest owners/state forestry organisations, local forest rangers and SubFPD. As an advanced database (such as Excel- or WebGIS-based) is not yet applied, the data collected is poorly managed.

At the level of forest owners/state forestry entities, data extracted from different sources is imported into a separate Excel sheet, with separate pages for each month for reporting. Regarding community patrol data, the forest patrol sheets and village meeting minutes are managed/stored by the Community Forest Management Board (CFMB). The Board extracts and records the data in notebooks instead of digitalising it using laptops provided by the KFW10 project because CFMB members have little technological skills. At the SubFPD, data beyond geographical coordinate-based forest acreage is imported into the FORMIS system and stored in an Excel spreadsheet for aggregation and reporting.

Low technical capacity for management of data collection and monitoring activities explains why data is often inadequate, inaccurate and unreliable. In general, forest patrol and monitoring activities are directly carried out by forest owners as state forestry entities, such as the State Forestry Enterprise (SFE), the Forest Protection Station (FPS) or the Community Forest Patrol Team (CFPT). But they are not closely supervised and nor provided with timely guidance and support (see **Diagram 1**). In forest patrols, occurrences of violation behaviours, exhibits or forest damages are sometimes incompletely recorded (for example, GPS coordinates or wildlife names are missing). Such technical errors are recurrent but are not reviewed and corrected.

Diagram 1: Monitoring activity management (forest patrol)

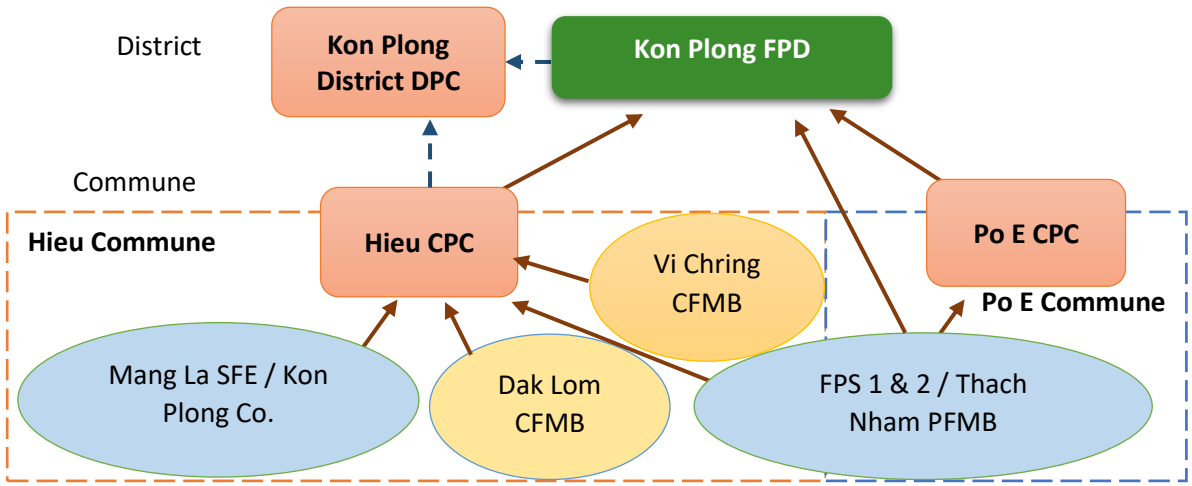


Similarly, at the administration level, SubFPD reveals that they have not made any of the required periodical data checks in collaboration with forest owners (for example, field checks and cross-checks of data sources). In addition, SubFPD and local authorities have not implemented administrative measures to control the quality of forest patrols as regulations on punishments of forest patrol violations are not available yet.

(v) Reporting

Institutionally, the monitoring and reporting system based on Circular 12/2019/MARD on Forestry Sector Statistics (illustrated in **Diagram 2**) is run for two types of monthly reports: statistical data report and monitoring report (commonly referred to as a result report of forest management). The statistical data report is an Excel-based digital data report while the monitoring report is Word-based and presents more detailed analyses of the forest management situation based on collected data.

Diagram 2: Simulation of district forest monitoring and reporting systems



At the commune level, forest owners (both groups I and II[10]) are in charge of preparing monitoring reports on the forest area they manage and reporting to CPC (data directly managed by on-site forest rangers). Statistical data is reported directly to SubFPD by forest owners as group II; and indirectly through on-site forest rangers as group I. For group II forest owners, data is collected by under-agencies, for example Mang La SFE, and internally reported to the headquarters office of Kon Plong Forestry Ltd company, then categorised and reported to SubFPD. At the district level, SubFPD is in charge of reporting the statistical data to the District Statistical Office and provincial FPD, and the monitoring result (or forest management result) to DPC.

4. Conclusions

Technological equipment (such as GPS or smartphones) necessary for forest patrol duties were not sufficiently provided for widespread or long-term patrol, given the small and focused nature of this project and the piloting phase in Hieu. It was also clear from the pilot that a more advanced data management and reporting software would need to be used or designed. Until such a monitoring tool is made available, the project developed an online Google Forms version (see later in this section).

For REDD+, monitoring of project impact level is still underway, and some indicators require more time to be fully operationalised and thus reviewed. However, the monitoring framework with requirements and indicators associated with the forestry sector's statistical system has basically been tested, reviewed and adjusted. It is regarded as appropriate and feasible at the jurisdictional level (commune or district level).

Noting that safeguards need to be monitored during project design and development, and then in terms of impacts, the project suggested that, going forward, the monitoring framework should focus on three main areas:

- Environmental services payments (three monitoring requirements)
- Implementation process (seven monitoring requirements)
- Programme/project impact (five monitoring requirements)

There are thus a total of 36 indicators in the final version of the excel-based tool, of which nine are monitoring indicators of environmental services market, 14 are indicators of the implementation process and 13 are indicators of impact monitoring. Safeguards monitoring for REDD+, PFES and state-funded programmes is in essence verification and validation of Project

[10] According to the circular 38/2018/MARD, forest owners – Group I include households, individuals and local communities; Group II includes organisations.

Design Development (PDD) at the design phase and therefore excluded from this monitoring system.

The findings from the pilot scheme are valuable and provide practical lessons to develop an effective monitoring system, including data collection and management, reporting, monitoring tools and system management.

The pilot scheme also found that the effectiveness of the monitoring system and policies/their implementation go hand-in-hand. That is, impractical policies or implementation will reduce the effectiveness of monitoring and, vice versa, ineffective monitoring will deter improvement of policies and their implementation. Recommendations for improving both policies and their implementation on the proposed monitoring system are presented below.

Following the pilot, additional iterations were made to the tool, and a final round of consultation was held with consultants leading on the development of the Vietnam VPA monitoring frameworks and related legislation. This process culminated in the full review of the draft tool by FFI technical staff and a consultant, Key-Log Economics. This review resulted in development of new version of the tool in Google Forms, with corresponding database in Google Sheets.

The Google Forms can be accessed via the following link:

https://docs.google.com/forms/d/e/1FAIpQLScwYGiug-wySxA41FZGZSId5R8jAwTQKnnVpAn78cdlwwI8wA/viewform

The project suggests the following 'next steps' for the integrated tool:

1. Possibly replace the drop-down list of Communes in Kon Plong with a short text question, same as District. Since it makes sense to use the tool beyond Hieu/Kon Plong we should either 'delocalise' it or put in every possible commune in Vietnam. There are too many of those for a drop-down list (over 10,000). The same issue exists for districts (over 600). Province can stay as a drop-down menu, as there are only 63.
2. Add Vietnamese translation.
3. Get some full test data in the form of existing paper or spreadsheet reports.
4. Develop back-end data management – This will enable the tool's Google Sheets (where the data can be automatically sent from the form) to do not only some quality control and assurance on data entered, but also to help flag urgent issues, build reports for printout as needed, etc.
5. Explore options for an app-based version of the tool (see below), find ways to better integrate with FORMIS, and see if there is a plug-in that could link the integrated tool to the already well-established Spatial Reporting and Monitoring Tool (SMART) for ranger-based patrol data collection and reporting.

6. If there is a desire to do more with this tool and with additional funding from a donor, one could look at alternative online/offline applications ('apps'). An initial review of some of the available apps suggests the following could be appropriate as alternatives to Google Forms: Input; Open Data Kit (ODK); and Kobo Toolbox. Kobo Toolbox is similar to Google Forms but has some additional features, including the ability to enter data off-line, geolocation using a phone's GPS, and built-in analytics.

Final review workshop

At the final technical workshop held on 29 January 2021 (see Appendix for list of participants) the following additional comments on the tool were noted:

- The tool is an effective, realistic and real-world framework for integrated and legal forest monitoring in Vietnam at the local or subnational scale.

- The tool has clearly been designed with FORMIS in mind, and they are compatible, but a technical solution is now needed to actually link them. This could be: some kind of plug in; a new, overarching architecture that links them; or that the new (EFI/FFI) tool evolves to be the umbrella under which other monitoring systems function but also 'feed in'.

- During the tool's development, there have been three important advancements. Winrock developed a new PFES M&E under the USAID-funded Vietnam Forest and Deltas Project; SRD and the FLEGT working group updated the FGM framework; and new legislation mandated new VPA M&E requirements.

- It was suggested that a useful next step would be to convene a workshop, led by VNForest, but supported by EFI (or others), with FFI, SRD, Winrock, JICA, FAO, and other related experts as key participants. The workshop would enable to hear from VNForest how they would like to proceed in terms of integrated monitoring, explore options and agree on a pathway.

5. Final recommendations

Such an integrated monitoring system should be piloted at a larger scale (such as a cluster of communes or even a whole district) and over at least one year to sufficiently assess its impact and ensure high performance of all monitoring indicators. Financial support should be secured for equipment and technical capacity building, especially the development of a data management and reporting system for the local FPD sector and forest owners. Fundamental to such an integrated monitoring system is an advanced and user-friendly database management and reporting software (Excel – or Internet – based) from which reports can be exported if necessary and that can be integrated into the national FORMIS system, as already explored but not finalised

via the Google Form and Google Sheets. Above all, such a system would be very useful if it can be made accessible to a wide range of audiences: environmental services buyers and sellers, managers or technicians, researchers, etc. If so, local decision makers would be provided with useful feedback or scientific recommendations from studies of the monitoring system.

Crucially, forest patrol is both a programme/project activity and a monitoring activity, providing essential data for monitoring at the implementation and impact levels. Therefore, the effectiveness of both the programmes/projects and of the monitoring largely depends on this activity. It is recommended that at the implementation level, forest patrol activities be improved with feasibility taken into consideration. Locally, guidelines on forest patrol and management, including monitoring and violation resolution, should be developed. Capacity-building activities can also be conducted to mitigate issues regarding inadequate, inaccurate and unreliable data.

6. Appendix

Appendix 1: List of participants involved in the field assessment

No.	Full names	Title/Organisations
1.	Lai Duc Hieu	Head of Forest Exploitation and Development section, FPD (a former head of Forest Protection and Management and Biodiversity conservation section)
2.	Nguyen The Ky	Officer of Kon Tum Provincial Forest Protection and Development Fund (FPDF)
3.	Le Cong Tai	Officer of Kon Tum Provincial Forest Protection and Development Fund (FPDF)
4.	Le Huu Co	A former Vice Head of Kon Plong district SubFPD
5.	Kim Thoa	Officer of Kon Plong district SubFPD
6.	Vo Tran Tuan Anh	Officer of Kon Plong Forestry Ltd Company
7.	Pham Van Tuy	Director of Mang La State Forest Enterprise
8.	Le Quoc Vu	Director of Thạch Nham Protection Forest Management Board (PFMB)
9.	Nguyen Van Hieu	Head of technical section, Thạch Nham PFMB
10.	Tran Quoc Sy	Vice head of technical section, Thạch Nham PFMB
11.	Hoang Van Dao	Vice Chairman of Hieu Commune People's Committee
12.	Dang Tuan	A former on-site forest ranger of Hieu CPC (prior to May 2020)

Appendix 2: List of participants involved in FGD – Vi Chring Village

No.	Full names	Title/Agency
1.	A Trieu	Head of Community Forest Management Board
2.	Dinh Thanh Tim	CFMB Supervisor
3.	A Chieng	Treasurer – Village Saving Fund
4.	A Hong	Community forest ranger
5.	A Ham	Community forest ranger
6.	A Trai	Head of forest patrol team

Appendix 3: List of participants involved in FGD – Dak Lom Village

No.	Full names	Title/Agency
1.	A Trong	Head of Community Forest Management Board
2.	A Tho	Deputy head of Community Forest Management Board
3.	A Veo	Community forest ranger
4.	A Hom	Head of Forest patrol team
5.	A Trao	Community forest ranger
6.	Y Gom	Head of Village Women's Union
7.	Y Gai	Treasurer – Village Saving Fund

Appendix 4: List of participants in the subgroup of specialised discussion – Dak Lieu Village

No.	Full names	Title/Agency
1.	A Tuan	Head of Community Forest Management Board
2.	Dinh Ngoc Huong	CFMB Supervisor
3.	A Dau	Accountant – Village Saving Fund
4.	A En	Community forest ranger
5.	A Chum	Community forest ranger
6.	Y Huynh	Member of the Women's Union
7.	Y Hao	Member of the Women's Union

Appendix 5: List of participants in the multistakeholder workshop, 25 October 2019

No.	Participant name	Institution
1.	*Edwin Shanks*	*VPA (provided remote input)*
2.	*Tim Dawson*	*EFI/EU-FLEGT (provided remote input)*
3.	Do Quang Tung	VNForest – FPD
4.	Pham Hong Luong	VNForest – Planning
5.	Nguyen Thi Thu Thuy	VRO
6.	Uwe Setje-Eilers	KfW – GFA CTA
7.	Kirsten Hegener	GIZ (PFES)

8.	Tran Ngoc Tue	SRD
9.	Brian Bean	Winrock (PFES)
10.	Gael Sola	FAO (MRV)
11.	Nguyễn Chiến Cường	VNFF
12.	Baku Takahasi/Hiro Miyazono	Jica (regarding REDD/SFM monitoring)
13.	Richard Rastall	SNV (SIS – safeguard monitoring)
14.	Thuy Xuan Hoang	PANature – V4MF project
15.	Tapio / Dr Ngai	FORMIS
16.	Truong Quang Hoang	CRD
17.	Nguyen Quang Tan	ICRAF
18.	Godefroy Grosjean	CIAT
19.	Tran Quynh Chi	IDH
20.	Fabien Monteils	UNDP/UNREDD possibly/FCPF
21.	Carolina Soto-Navarro	UNEP or WCMC
22.	Pham Thu Thuy	CIFOR
23.	Nguyen Huy Dung	FIPI
24.	Nguyen Vinh Quang	Forest Trends
25.	Phan Triều Giang	COPE – Tech Dir.
26.	Lê Khắc Côi	Hội Chủ rừng Việt Nam (VIFORA)
27.	Ngô Đình Thọ	/
28.	To Kim Lien	CED (CRD/FAO)
29.	Jeremy Broadhead	EFI/EU REDD Facility
30.	Satrio Wicaksono	EFI/EU REDD Facility
31.	Liem Thanh Dang	FFI
32.	Oliver Wearn	FFI
33.	Josh Kempinski	FFI

Appendix 6: List of participants in the final review workshop, 29 January, 2021

No.	Full names	Title/Agency
1.	My Hoang Phu	KfW10 Director/Management Board Forestry Projects
2.	Nguyen Thi Thu Thuy	UN-REDD
3.	Anja Barth	GIZ
4.	Spencer Phillips	Key-Log Economics
5.	Dang Thuy Nga	The USAID Sustainable Forest Management Project
6.	Nguyen Phan Dong	FORMIS II Project
7.	Brian Bean (+1)	Winrock PFES project (x2)
8	Uwe / Dung	KfW10 – GFA
9	Vu Cong Lan	SRD
10.	SRD x1	Joined via a meeting at SRD
11.	SRD x2	Joined via a meeting at SRD
12.	SRD x 3	Joined via a meeting at SRD
13.	SRD x 4	Joined via a meeting at SRD
14.	Tapio Leppanen	FORMIS (consultant)
15.	Satrio Wicaksono	EFI/EU REDD Facility
16.	Jeremy Broadhead	EFI/EU REDD Facility
17.	Ha Anh Nguyen	FFI
18.	Yen Anh	FFI
19.	Phuong Nguyen	FFI
20.	Josh Kempinski	FFI
21.	Liem Thanh Dang	FFI

Appendix 7: Sample photos

Photo 1: Planning workshop for the monitoring tool pilot scheme (Hieu)

Photo 2: GPS training in Dak Lom Village

Photo 3: Forest patrol/tool testing in Vi Chring village

Photo 4. Final technical review workshop, Hanoi, 29 January 2021

Photo 5. Workshop banner from final technical review workshop

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