



National REDD+ Strategy

Lao People's Democratic Republic

Sustainable
agriculture

Stabilize
uncontrolled
shifting
cultivation

Promotion of
tree plantation
and forest
restoration

Stop uncontrolled
harvesting of
wood and forest
products

Linking
infrastructure
development with
protection of forest

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Foreword

Forest and forest resources are the nation's most precious natural resources, being important for national socio-economic development, environmental protection, biodiversity conservation and climate change mitigation. Therefore, the Government of Lao PDR (GoL) has allocated 16.5 million hectares to forestland (or 70% of the country's total land area) and has set a target to increase the forest cover rate to 70% of the country's area. In order to sustainably manage forest and forestland, and achieve these targets, the Ministry of Agriculture and Forestry (MAF) has been at the center of implementing various forest management projects, including the REDD+ programme.

The target for emission reductions from deforestation and forest degradation by 2025 is approximately 30 million tonnes of carbon dioxide equivalent (tCO₂e), with the target of reducing emissions from forest loss being 21 million tCO₂e, and the target of promoting emissions removal from forest restoration and plantation being 9 million tCO₂e.

To achieve these emission reduction targets, the MAF has developed a National REDD+ Strategy (NRS) to 2025 and Vision to 2030. The NRS's overall objectives are to contribute to developing the forestry sector and provide environmental protection, particularly addressing issues of greenhouse gas emissions, as well as supporting socio-economic development and livelihood improvement.

The NRS development started in 2016. The identification of main programmes and priority projects for addressing deforestation and promoting forest restoration in the NRS has been derived from consultation processes with stakeholders at all levels, together with the revision of policies, legislation, other relevant strategies, the National Socio-Economic Development Plan (NSEDP), international conventions and other documents related to forest, forest resources and land. In addition, the identification of programmes and projects has also benefitted from lessons learned from the implementation of the Forestry Strategy from 2005 to 2020, national REDD+ readiness projects, and REDD+ pilot projects at sub-national levels.

The NRS forms the basis for the development of the national REDD+ programme. The NRS will be incorporated into the Forestry Strategy 2030, which is currently being drafted, and has been integrated into the 9th NSEDP 2021-2025 and other relevant development plans. Therefore, there is a need for coordination between stakeholders in forestry, agricultural land and other relevant sectors, in order to further develop the NRS into programmes and projects for the forestry sector and other related sectors. In the course of the implementation of this NRS, it will be necessary to evaluate the impacts of priority projects, and report their results and challenges, as well as to obtain lessons learnt and make adjustments to the strategy according to changing conditions in each period.

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Executive Summary

- i. Forest and forest resources are the nation's most precious natural resources, being important in contributing to national socio-economic development, environmental protection and biodiversity conservation. In addition, forests play an important role in tackling climate change, as well as global warming, as they are a major source of carbon sequestration and are capable of absorbing a large amount of carbon dioxide (CO₂), which is a key greenhouse gas, from the atmosphere. Therefore, deforestation in Lao PDR, and in many parts of the world, has depleted forest carbon sequestration and is one of the main causes of global climate change.
- ii. Lao PDR attaches great importance to forest management, forestland and forest resources. The Government has set important policies and goals for the next ten years as follows: (1) Allocate 16.5 million hectares to be forestland (accounting for 70% of the country's total area); (2) Set a target to increase forest cover to 70% of the country's area; and, (3) Assign forestry staff to stations in local areas to improve forest management and to develop a strict legal management system.
- iii. The National Communication (NC) and the Nationally Determined Contribution (NDC) of Lao PDR have identified forests as an important sector for emission reductions. In 2008, in order to implement the Government's policy on international contribution and to achieve the goal of reducing greenhouse gases from deforestation and forest degradation, the Ministry of Agriculture and Forestry (MAF) as assigned by the Government, initiated REDD+ programmes and set out a national readiness programme into three phases: readiness, implementation, and results-based payments. The main activities of the first phase (readiness) include the development of a National REDD+ Strategy (NRS), Reference Emission Level (REL), National Forest Monitoring System (NFMS), and Safeguards Information System (SIS).
- iv. The development of a NRS and the construction of a REL required data on past forest changes and the drivers and underlying causes of deforestation. Forest change assessments and estimates of greenhouse gas emissions and removals from forest in Lao PDR during 2005 to 2015, show that emissions from deforestation and forest degradation were about 41 million tCO₂e per year, while removals from restoration and plantation were about 7.5 million tCO₂e per year.
- v. The main drivers of forestland conversion and forest encroachment, which contribute to GHG emissions include: (1) the need to expand land for investment for permanent agriculture; (2) the necessity of livelihoods linked to uncontrolled shifting cultivation; (3) the need for infrastructure development particularly hydropower, electricity line construction and road construction, and mining; and, (4) uncontrolled logging against laws and regulations.

- vi. The underlying causes of deforestation and forest degradation include: (1) the formulation of policies for the development of relevant sectors are not centralized, consistent, or inclusive; (2) forest management and law enforcement are not strict; the legislation to provide tools for forest management is not yet complete; and the demand for natural forest timber from domestic and foreign markets is high, leading to illegal logging; (3) demand for agricultural products in domestic and external markets is increasing, but the efficiency of agricultural production is still low, as traditional methods are predominantly used in agricultural production; (4) most upland people are still poor and lack livelihood alternatives other than shifting cultivation; and, (5) land allocation and planning to accommodate population growth and investment have not been completed, which in many cases has allowed for encroachment into forestland.
- vii. The NRS has a vision that by 2030 forest and forestland, which will cover 70% of the country's total land area, are sustainably managed, protected, developed and utilized through the participation of all stakeholders in the whole society; forest management systems are enhanced; and forest can provide efficient economic, social and environment services.
- viii. The overall objectives of the NRS are to determine directions for the development of REDD+ and develop these into action plans and projects for implementation in each period, aiming for reducing emissions from deforestation and forest degradation, along with promoting restoration and plantation to increase CO₂ absorption, and contributing to national socio-economic development
- ix. The target for reducing greenhouse gas emissions from deforestation and forest degradation (REDD+) is a reduction of 30 million tonnes of carbon dioxide equivalent (tCO₂e) by 2025, by reducing emissions from forest/tree loss of around 21 million tCO₂e, and the promotion of removals of around 9 million tCO₂e through forest restoration and plantation.
- x. To achieve the above objectives and projected levels of emission reduction, five programmes and 24 priority projects have been defined, including:
 - Programme 1. Development of sustainable agriculture in coordination with forest protection, consisting of four priority projects.
 - Programme 2. Promotion of commercial tree plantation and forest restoration, consisting of six priority projects.
 - Programme 3. Linking infrastructure development (e.g., construction of hydro-power dam/reservoirs, electricity line and road, and mining) with protection of forest and forest resources, consisting of four priority projects.

- Programme 4. Stopping uncontrolled harvesting of wood and forest products against laws and regulations, consisting of five priority projects.
- Programme 5. Stabilize uncontrolled shifting cultivation by promoting sedentary agriculture production and to control forest fires, consisting of five priority projects.

- xi. The implementation of the NRS is multi-sectoral, which requires strong inter-sectoral coordination, to ensure that stakeholder participation is proactive and effective, transparent, open and credible. Therefore, the MAF has issued a decision appointing the National REDD+ Taskforce (NRTF), chaired by a vice-minister of the MAF, and is composed of representatives from relevant ministries, private sector, Lao Front for National Development, and Lao Women's Union. The NRTF is responsible for the overall NRS implementation and management of REDD+. The Taskforce receives technical support from the Secretariat, Technical Working Groups, and organizations at local levels that are responsible for REDD+ activities.
- xii. The full budget requirement to implement the NRS for the entire country is not yet fully estimated. However, the ER Programme carried out an assessment of budget needs for its project areas in the six northern provinces. This assessment showed that the programme requires approximately US \$135 million during its implementing period of 2019 to 2025.

1. Introduction

1.1 National Policy Framework of Forestry and Greenhouse Gas Emissions

1. Forest and forest resources play an important role in national socio-economic development, environmental protection, biodiversity conservation, and in tackling climate change. Therefore, the Government of Lao PDR (GoL) has given a high priority to sustainable forest management and protection, in parallel with improving the livelihoods of multi-ethnic people, who depend on forest resources. In line with the GoL's policies and instructions, the Ministry of Agriculture and Forestry (MAF), in coordination with relevant stakeholders and local authorities, has focused on implementing a number of initiatives to transform forest and forest resources management and protection into a system of lawful and transparent management, combating and preventing all forms of forest encroachment.
2. Key measures include (1) the implementation of the revision of Forestry Law 2019, through the formulation of key byelaws; (2) forest and forest resources are better protected through improved sustainable management of the three forest categories; and, the implementation of PM Order No. 15/PM dated 13/5/2016 on Enhancing Strictness on the Management and Inspection of Timber Exploitation, Timber Movement and Timber Business, which places a ban on the export of un-finished wood products harvested from natural forests in Lao PDR.
3. In order to continue to manage and improve forestry, MAF has set priorities and goals for the next five years as follows: (1) allocate 16.5 million hectares to be forestland (accounting for 70% of the country's total area); (2) increase forest cover to 70% of the country's area; (3) assign forestry staff to stations in local areas to improve forest management at grassroots levels. Such measures aim to establish an effective forest management system with robust and effective laws (*more details on forest management and governance in Lao PDR are summarized in sections 2.3.4 and 2.3.5*).
4. The GoL attaches importance to international cooperation and since 1995 has been a party to the United Nations Framework Convention on Climate Change (UNFCCC). The GoL ratified the Kyoto Protocol in 2003 and the Paris Agreement in 2016. Parties to the Convention must implement greenhouse gas (GHG) reduction commitments in accordance with the status and conditions of development, economy and society, set forth by each country in its Nationally Determined Contributions (NDCs). The NDC of Lao PDR identifies GHG emission reductions in a number of sectors, of which forests play the most important role. This is because most of the GHG emissions in Lao PDR come from forestland conversion or forestland use changes, which accounted for about 80% of the country's total GHG emission (according to Second National Communication of Lao PDR submitted to the UNFCCC in 2013). In addition, based on the forest inventory data from 2005 to 2015, forest cover has changed, with actual forest cover falling from 14.2 million hectares or 60.2% to 13.7 million hectares or 58% (more details are in section 2), which results in both emissions and removals. The estimated GHG emissions from deforestation from 2005 to 2015 were about 41 million tCO_{2e} per year, while GHG removals from forest restoration and plantation were about 7.5 million tCO_{2e} per year.

5. In order to contribute to and implement the GHG emission reduction commitments at international level, Lao PDR has set targets to reduce GHG emissions from deforestation and forest degradation to a reduction of around 30 million tCO₂e by 2025, by reducing emissions from forest/tree loss of around 21 million tCO₂e, and the promotion of removals of around 9 million through forest restoration and plantation.

1.2 Background and Progress of REDD+ in Lao PDR

6. The concept of Reducing Emissions from Deforestation and Forest Degradation (REDD+) was first developed in 2007, under the UNFCCC framework. The overall objective of REDD+ is to provide incentives in the form of results-based payments for developing countries that are willing to participate in REDD+ implementation. The form or mechanism of results-based payments is based on the measurement, reporting and verification of actual results within specific regulations and guidelines. REDD+ activities must contribute to: (1) reducing emissions from deforestation; (2) reducing emissions from forest degradation; (3) maintain carbon sequestration through promotion of sustainable forest management and uses; (4) maintain carbon sequestration from the conservation of forests; and, (5) promotion or enhancement of forest carbon stocks through forest restoration, forest or tree plantation.
7. The negotiation process at the UNFCCC to determine how to implement REDD+ took about eight years, from 2007 to 2015. The results of international negotiations have been the formulation and adoption of a number of decisions and technical guidelines, most notably the inclusion of REDD+ in the Paris Agreement in 2015, which is the most important legal document of the UNFCCC for the coming years.
8. Lao PDR joined the REDD+ initiative in 2008 and has identified a national REDD+ readiness programme, and started implementing activities related to the four main components of REDD+ readiness, including National REDD+ Strategy (NRS), Reference Emission Level (REL), National Forest Monitoring System (NFMS), and Safeguards Information System (SIS). Laos PDR has also established REDD+ institutional arrangements at the central level and in selected priority provinces, as well as capacity building and piloting REDD+ projects at local levels to obtain lessons learnt, mainly REDD+ projects in Phonsay District and Xiang Nguen District of Luang Prabang Province during 2010-2015; and, REDD+ projects in Xam Nuea District and Hua Mueang District of Hua Phan Province during 2009-2020. In addition, the Emission Reduction Program Document was approved by Forest Carbon Partnership Facility (FCPF) Carbon Fund and the Emission Reduction Payment Agreement has been agreed with the World Bank as contract partner, with a total value of US \$42 million.
9. Forestry sector organizations have the main responsibility for the implementation of REDD+. The MAF has issued a decision appointing a National REDD+ Taskforce (NRTF) at central level, and has provided guidance at provincial levels by appointing a Provincial REDD+ Task Force (PRTF).

10. The NRTF is chaired by Vice Minister of the MAF, and is composed of representatives from relevant ministries, private sector, Lao Front for National Development, and Lao Women's Union, with the Department of Forestry (DoF) as the secretariat and providing technical coordination. In addition, there are six Technical Working Groups (TWGs) that are responsible for coordination and technical inputs, as per their area of expertise. The PRTF is chaired by the Deputy Governor who oversees economic affairs, with the Provincial Agriculture and Forestry Division (PAFO) as the focal point.

1.3 Development process of the NRS

11. The development process of the NRS consisted of:
 - (1) Researching, reviewing and analyzing the 2010 REDD+ Readiness Plan (R-PP) of Lao PDR and related documents, including the study report on land use maps, satellite imagery, and field surveys, in order to compile information on the drivers and underlying causes of deforestation and forest degradation. The findings from these documents formed the basis for consultation and development of the NRS.
 - (2) Consultation with stakeholders to comment on and prioritize the drivers and underlying causes of deforestation, and identify measures into the five priority programmes and 24 priority projects. Consultations with stakeholders were conducted through diverse meetings and forums, organized at central and local levels, thereby ensuring wide and inclusive participation by all stakeholders.
12. The Department of Forestry (DoF), with technical support from the six REDD+ TWGs and experts from REDD+ projects, was responsible for compiling the initial data and draft of the NRS. The draft NRS has gone through several reviews and revisions at the technical level and through the comments of stakeholders at central and local levels, including the NRTF. Lastly, the draft has been reviewed and commented on by the MAF for finalization.

2. Land and Forest Management

2.1 Institutions for Land Management

2.1.1 Institutional Arrangements for Land Management

13. The land management authority is currently under the responsibility of Ministry of Natural Resources and Environment (MoNRE), with organizational arrangement from the central to local levels:
 - Central level: Department of Land as Secretariat.
 - Provincial level: Land Section, under Office of Natural Resources and Environment.
 - District level: Land Unit under Natural Resources and Environment Office.
 - Village level: Nature Resources and Environment Unit.
14. The Department of Land has the main roles and responsibilities in respect to policy research, legislation, programmes, land allocation, land use planning, issuance of land titles and certification of land management at the central level, including formulation of regulations, technical standards and manuals related to land management.
15. The Land Section at the provincial level is responsible for leading and coordinating the registration and certification of land use rights, issuance of land survey maps and land titles based on proposals from the district level.
16. The Land Unit at the district level is responsible for surveying, managing and collecting relevant information related to the preparation for registration at the provincial level.
17. The village level is required to provide information on the proposal for land registration and titling.

2.1.2 Land Management, Allocation and Rights

18. The Constitution of Lao PDR in 2015 stated that natural resources, including land, minerals, forest and air, are the property of the national community. The State is the designated authority to centrally manage natural resources in a uniform manner throughout the country. The State also promotes the sustainable protection, restoration and development of environment and natural resources, as embodied in Articles 19 of the Constitution.
19. The Land Law (revised), No. 70/NA, dated 21/06/2019, Article 20, defines land allocation based on natural conditions, such as plains, plateaus and mountain. Article 21 defines land use into eight categories: agricultural land, forestland, wetland, industrial land, transportation land, cultural land, defense and security land, and construction land. The Land Law also states the roles and responsibilities of relevant ministries for the use and management of each land use category, in order to obtain maximum benefit from national socio-economic development.

20. In order to determine the general guidelines for resolving land issues, the Central Party Committee issued the Resolution No. 026/CC, dated 03/08/2017, on the Enhancement of Land Management and Development. This Resolution specified that land management must be allocated and planned for use and development, and granted land use rights to individuals, legal entities, households, collectives and organizations for long-term and sustainable uses in accordance with relevant law. The Resolution also recognizes and protects traditional land use rights, in accordance with existing laws. In order to implement these resolutions and to strengthen the effectiveness of land management in line with the conditions of development and socio-economic growth, the Land Law was revised and endorsed by the National Assembly in 2019.
21. Another important piece of legislation is the National Master Plan for Land Allocation, which was approved in 2018. This National Master Plan defines land to be reserved and conserved to be forestland covering 70% of the country's land area, including wetland. The designated land consists of Protection Forest, Conservation Forest and Production Forest, including forest plantation. Land allocation and land use planning will be implemented at multi-levels, based on the National Master Plan for Land Allocation, and coordinated with all relevant stakeholders.
22. The main challenges of current land management are: (1) the allocation of land in the actual area as required by law has not yet been completed and there is a lack of strict monitoring and management system; (2) weak land management, limited human resources and budget, coupled with rising land values, thus making it a challenge for the government and stakeholders to improve, resolve and prevent disputes, unplanned land conversion and illegal land acquisition in society.

2.2 Institutions for Forest Management

2.2.1 Institutional Arrangements for Forest Management

23. Management of forests, forestlands and forest resources are the responsibility of the MAF, with organizations from central to local levels.
 - Central level: The Department of Forestry and the Department of Forest Inspection as Secretariat.
 - Provincial level: The Forestry Section and Forest Inspection Section, under the Office of Agriculture and Forestry.
 - District level: The Forest Unit under the Agriculture and Forestry Office.
 - Village level: The Agriculture and Forestry Sub-Unit under the Village Economic-Finance Unit.
24. The Department of Forestry has roles and responsibilities to formulate policies, strategies, programmes, regulations, technical standards, manuals and other documents relevant to allocations, management of forest, biodiversity, forestland, forest resources, including REDD+ and others.
25. The Department of Forest Inspection (DoFI) has roles and responsibilities regarding inspection, litigation related to forest resources, including implementation and

dissemination of laws, legislations and regulations such as the Forestry Law, the Aquatic and Wildlife Law, and other relevant conventions and legislations.

26. Forest institutions at local levels, which act as secretariats for DoF and DoFI, have roles and responsibilities to implement and disseminate national policies, strategies, and programmes, as well as to lead, coordinate and implement activities related to management, protection, development and utilization of forest resources, forestland and other activities on forest management and inspection.

2.2.2 Forest Management

27. Forest and forestland classification in Lao PDR consist of three categories, namely Protection Forest, Conservation Forest and Production Forest, for management, protection, development and utilization in accordance with the NSEDP, and agriculture, forestry and rural development plans. Currently, the MAF is in the process of establishing 49 National Protection Forests, 5 Provincial Protection Forests, and 85 District Protection Forests; has established 25 National Conservation Forests (including 3 National Parks and 1 Wildlife Sanctuary), 65 Provincial Conservation Forests, 87 District Conservation Forests; and, 51 National Production Forests. In addition, there are large forest areas that have not yet been surveyed and allocated.
28. In the past, the Government has made strong efforts to manage forests, forestlands and forest resources in a way that is transparently governed by laws, in order to combat and prevent all forms of forest encroachment. Tasks include (1) the revision of the Forestry Law, which was completed in 2019; (2) issuance of several decrees and legislations to enhance forest management and address issues and problems in the forestry sector; (3) issuance of instructions on strict implementation of decrees and legislations; and, (4) establishment of websites and hotlines, so that individuals or stakeholders can easily access relevant ministries for the exchange of information, news, concerns, or other matters.
29. Key legislations under the Laws include: (1) PM Order No. 15/PM, dated 13/5/2016, on Enhancing Strictness on the Management and Inspection of Timber Exploitation, Timber Movement and Timber Business, which strictly bans the export of un-finished wood products harvested from natural forest; (2) PM Order No. 13/PM, dated 11/6/2012, on Moratorium of Mining, Rubber and Eucalyptus Concessions; (3) PM Order No. 31/PM, dated 5/11/2013, on Temporary Suspension of Logging in Production Forest, until the development of production forest management plans is completed; and (4) PM Order No. 05/PM, dated 8/5/2018, on Strengthening the Management and Inspection of Protected Wildlife and Wild Plants; PM Order No. 09/PM, dated 2/7/2018, and PM Decree No. 247/PM, dated 20/8/2019, on Promotion of Tree Plantation; and, other relevant legislations.
30. The development of legislation is very important and is an ongoing task that will continue to be implemented in the future, particularly the revised Forestry Law (2019), which has specific articles that need to be further developed into more detailed legislation, in order to strengthen effective implementation.
31. The implementation of PM Orders on forest management has been successful, with past

issues such as logging, illegal timber exports, and improper approval of forestland concessions being all addressed to some extent. This has also resulted in positive impacts to GHG emission reductions from deforestation and forest degradation.

32. Pursuant to the Forestry Law and related regulations, villages or local communities have the rights and obligations to contribute to the management, protection, development and utilization forests, forestlands and forest resources as allocated, permitted and assigned by the relevant government agencies. The State recognizes village-level forests that are allocated and managed into different forest areas, such as Protection Forest and Conservation Forest. Vacant forestlands in the village management area can be allocated as production areas in the future, as prescribed in Article 114 of the Forestry Law.
33. In addition, as per Articles 116 and 117, individuals or households can be granted the rights to use forests and forestlands for long term use, in accordance with the allocation plan and regulations. Individuals and families will benefit from the forest and forestland associated with the trees where they have invested in planting and restoration, as well as the benefits of logging in the village forest area, which is allocated and permitted for logging in in accordance with Article 65 of the Forestry Law.
34. Challenges in forest management in Lao PDR include: (1) the organizational structure of forest management at the local level, especially in every forest category, is not yet completed, and the number of staff is not adequate at the local level; (2) most ethnic people live close to the forest, thus an allocation plan is needed for production areas, as well as the promotion of sustainable livelihoods and a budget for implementation; (3) systematic and effective sustainable forest management requires participatory planning in the field for the allocation of each forest category. The demarcation of forest areas and the utilization of each forest category is a difficult and challenging task and requires significant budget resources; and, (4) the requirement for infrastructure development linked to sustainable development and poverty alleviation is based on the use of forest areas, hence a comprehensive development plan is required.

2.3 Forestland Use and Forest Cover Changes

2.3.1 Forestland Use Changes

35. The data from forest cover interpretation in 2015 indicates that Current Forest (CF), which consists of six forest types: Evergreen Forest (EF), Mixed Deciduous Forest (MD), Dry Dipterocarp Forest (DD), Coniferous Forest (C), Mixed Coniferous and Broadleaved Forest (MCB) and Forest Plantation (P), has a total area of 13.7 million hectares, covering 58% of the total land area of Lao PDR (Table 1). In addition, Potential Forest area, including Bamboo (B) and Regenerating Vegetation (RV), has a total area of 6.3 million hectares, covering 26.7% of the total land area of Lao PDR. Cropland consists of Upland Crop (UC), Rice Paddy (RP), Agricultural Plantation (AP), and Other Agriculture (OA), and has a total area of 2.6 million hectares, covering 10.8% of the total land area of Lao PDR.
36. The forest change assessment, undertaken to determine the drivers of deforestation and REL, showed that during a 10-year period, from 2005 to 2015, Current Forest decreased from 14.3 million hectares (or 60.2% of the total land area) to 13.7 million hectares (58%). Cropland increased from 2.1 million hectares (8.9%) to 2.6 million hectares (10.1%). Water

area increased from 0.29 million hectares to 0.36 million hectares.

Table 1 Summary of land use in 2005, 2010 and 2015

No.	Land Use Type Level 1	Land Use Type Level 2	Code	Areas in Hectare					
				2005	%	2010	%	2015	%
1	Current Forest	Evergreen Forest	EF	2,689,232		2,684,154		2,676,277	
		Mixed Deciduous Forest	MD	9,947,722		9,745,359		9,454,880	
		Dry Dipterocarp Forest	DD	1,306,531		1,248,709		1,220,448	
		Coniferous Forest	CF	137,694		128,628		128,158	
		Mixed Coniferous and Broadleaved Forest	MCB	146,325		111,513		110,808	
		Forest Plantation	P	24,528		113,011		141,710	
		sub total		14,252,033	60.2%	14,031,376	59.3%	13,732,282	58.0%
2	Potential Forest	Bamboo	B	70,862		93,616		91,312	
		Regenerating Vegetation	RV	6,255,810		5,999,443		6,238,431	
		sub total		6,326,671	26.7%	6,093,059	25.7%	6,329,743	26.7%
3	Other Vegetated Areas	Savannah	SA	108,735		106,056		104,881	
		Scrub	SR	28,218		27,511		27,360	
		Grassland	G	276,971		262,777		261,281	
		sub total		413,924	1.7%	396,344	1.7%	393,523	1.7%
4	Cropland	Upland Crop	UC	213,917	0.9%	210,844	0.9%	154,604	0.7%
		Rice Paddy	RP	1,212,572		1,235,181		1,232,471	
		Other Agriculture	OA	634,602		980,578		1,081,138	
		Agriculture Plantation	AP	53,717	8.0%	84,206	9.7%	85,567	10.1%
		sub total		2,114,807	8.9%	2,510,808	10.6%	2,553,780	10.8%
5	Settlement	Urban	U	66,102		75,285		77,691	
		Barren Land and Rock	BR	191,139		191,003		191,210	
		sub total		257,241	1.1%	266,288	1.1%	268,901	1.1%
6	Other Land	Other Land	O	18,153	0.1%	22,807	0.1%	32,138	0.1%
7	Aboveground Water Source	wetland(Swamp)	SW	10,708		10,227		9,821	
		River(Water)	W	286,462		349,091		359,812	
		sub total		297,170	1.3%	359,318	1.5%	369,633	1.6%
		Total		23,680,000	100%	23,680,000	100%	23,680,000	100%

37. During the period from 2005 to 2015, Current Forest was reduced by a total of 0.64 million hectares, through encroachment and conversion to other land types, which also left about 0.41 million hectares as degraded forest. This conversion included changes to forest plantation (59,000 hectares), to permanent agricultural land (168,000 hectares), and upland rain-fed rice fields (56,000 hectares). Natural forest areas have increased through natural restoration by approximately 98,000 hectares (Table 2).

Table 2 Summary of land use changes from 2005 to 2015

	2015		Current Forest			Crop Land			Other Vegetated area	Other land	Total
2005	ha	Change from 2005 to 2015	1) Natural Forest	2) Forest Plantation	Regenerating Vegetation	1) Upland Crop	2) Permanent Agriculture land	Water			
Current Forest	1) Natural Forest	- 636,932	13,492,150	59,117	407,785	55,669	167,969	35,817	270	8,727	14,227,505
	2) Forest Plantation	+ 117,181	0	23,338	428	15	737	1	0	9	24,528
Regenerating Vegetation		+ 3,072	97,638	44,077	5,658,493	82,414	408,130	27,497	132	8,289	6,326,671
Crop Land	1) Upland Crop	- 59,313	762	29	202,471	5,708	3,643	248	896	159	213,917
	2) Permanent Agriculture land	+ 498,286	22	9,893	58,377	9,932	1,809,336	3,864	29	9,438	1,900,890
Water		+ 73,350	0	0	0	0	382	285,928	0	152	286,462
Other Vegetated area		- 21,289	0	5,237	1,540	714	8,330	6,128	402,010	673	424,632
Other land		+ 25,645	0	18	648	152	649	329	6	273,593	275,394
Total		+ 0	13,590,572	141,710	6,329,743	154,604	2,399,176	359,812	403,343	301,039	23,680,000

2.3.2 Estimation of Emissions and Removal from Forest Areas

38. The estimation of GHG emissions and removals from forest changes show that during the 10-year period, between 2005 and 2015, about 410 million tCO₂e were emitted (or 41 million tCO₂e /year); while the removal level is about 75 million tCO₂e (or 7.5 million tCO₂e /year). Therefore, between 2005-2014 Laos' forests were considered to be a source of GHG emissions, with average annual emissions of approximately 33.5 million tCO₂e (the result of subtracting the emission level (41 million tCO₂e) with the removal level (7.5 million tCO₂e)).

2.4 Drivers and Underlying Causes of Deforestation and Forest Degradation

2.4.1 Drivers of Deforestation and Forest Degradation

39. **Overall Situation:** The review, research and consultation process on drivers and issues regarding deforestation and forest degradation in Lao PDR, identified four main drivers: (1) the need for expansion of permanent agricultural land, including illegal cropping and tree plantation; (2) the necessity of livelihoods linked to uncontrolled shifting cultivation; (3) the need for infrastructure development particularly hydropower, electricity distribution and road construction, and mining; and, (4) uncontrolled logging that is against laws and regulations.
40. **Regional Situation:** The field studies and consultations identified main causes of deforestation and forest degradation in each region, as summarized here:

Northern region

- The necessity of livelihoods linked to uncontrolled shifting cultivation by rural people is still widespread in many areas.

Central region

- The need for infrastructure development, such as roads, hydropower and electricity line construction, and mining.
- The expansion of agricultural land into forest areas for uncontrolled shifting cultivation and commercial crops.

Southern region

- Illegal forestland acquisition and conversion for agricultural purposes, including cropping and tree plantation.

2.4.2 Underlying Causes of Deforestation and Forest Degradation

41. The main underlying causes of deforestation and forest degradation can be grouped as following: (1) the formulation of policies for the development of relevant sectors is not yet centralized, consistent or inclusive; (2) forest management and law enforcement are not strict; the legislation that provides a tool for forest management is not yet complete; and the demand for natural forest timber from domestic and foreign markets is high, leading to illegal logging; (3) demand for agricultural products in the domestic and external markets is increasing, but the efficiency of agricultural production is still low as traditional methods are still predominantly used in agricultural production; (4) most upland people are still poor and lack livelihood alternatives other than shifting cultivation; and, (5) land allocation and planning to accommodate population growth and investment have not been completed, which in many cases has allowed encroachment into forestland.

3. Visions, Goals, Programmes and Priority Projects

3.1 Vision

42. By 2030, forest and forestland, which will cover 70% of the total land area, are sustainably managed, protected, developed and utilized through the participation of all stakeholders in the whole society; forest management systems are enhanced; and, forests can provide efficient economic, social and environment services.

3.2 Goals and Targets

3.2.1 Goals

43. The overall goals of the NRS are to determine directions for the development of REDD+ and develop these into action plans and projects for implementation. The outcome from the implementation of the NRS is to reduce emissions from deforestation and forest degradation, along with promoting restoration and plantation aiming at contributing to national socio-economic development, and the implementation of a national programme contributing to climate change mitigation (NDC) of Lao PDR.
44. The specific objectives to achieve these goals are to:
- Improve forest management and establish sustainable management systems, aimed at reducing deforestation and forest degradation, along with enhancement of forest protection and promotion of restoration and plantation.
 - Promote and develop livelihoods of rural people, who depend on forest and forest resources, by participatory village forestland allocation. Support technical aspects of agricultural practices and forest product processing for rural people; and, improve participatory forest management and benefit sharing from forests.
 - Encourage entrepreneurs to invest in and manage sustainable forest-based enterprises, such as tree plantations, ecotourism and other initiatives.

3.2.2 Targets

45. The targets include:
- Reduce greenhouse gas emissions in the forestry sector by 30 million tCO₂e by 2025, by reducing emissions from forest/tree loss of around 21 million tCO₂e, and the promotion of emission removals of around 9 million tCO₂e through forest restoration and plantation.
 - Key organizations have the capacity to protect forest that are a source of carbon sequestration and sustain the richness of biodiversity.
 - Possess an effective near-real time forest monitoring system that is able to monitor changes or conversions of forestland, and forest fires. Develop systematic, modern and transparent mechanisms for forestry data management.
 - Entrepreneurs in the forestry sector improve understanding and participate in addressing deforestation and forest degradation issues, while also contributing to protection and restoration of forest and sustainable tree planting.

3.2.3 Challenges and Opportunities

46. **Challenges:** The implementation of the NRS is extremely challenging, as it involves the transformation of forestry activities into a management system with strict law enforcement to prevent encroachment, destruction and illegal forestland conversion, in accordance with laws and regulations. These challenges are due to the current weak forest management system, coupled with the fact that the formulation of development policies of relevant sectors is not yet coherent, comprehensive and consistent with each other. In addition, improving forest management system and addressing deforestation along with livelihood improvement in remote areas can be time consuming, needs significant financial resources, and requires multi-sectoral cooperation.
47. **Opportunities:** The Government attaches importance to the management of forest and forestland by defining specific policies, laws and regulations, such as the Forestry Law 2019, National Green Growth Strategy 2018, National Master Plan for Land Allocation 2018, which clearly define criteria of land to be reserved and conserved as forestland. At the same time, development partners and international organizations have provided support for the implementation of forestry policies. In addition, the Government has ratified the UNFCCC to address climate change, Convention on Biological Diversity (CBD), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

3.3 Programmes and Priority Projects

48. To achieve the above objectives and targets on emission reductions from deforestation and forest degradation, five programmes and 24 priority projects have been defined. These programmes and projects together aim to address drivers and underlying causes of deforestation and forest degradation, and promote forest protection, forest restoration and sustainable utilization of forest resources. The programmes and projects are as follows:

Programme 1: Development of sustainable agriculture in coordination with forest protection, consisting of four priority projects

Objective: *To address the issue of clearance of forest areas for agriculture land expansion, which is not abiding by or in line with relevant laws and regulations, and with sustainable forest management plans.*

Project 1: Enhance the capacity for the implementation of existing policies, laws and regulations, in order to address challenges related to the implementation of concession agreements, contract farming and environmentally friendly agriculture production, in a way that is consistent with green and sustainable development principles.

Project 2: Implement, improve, and expand forest landscape management and participatory land use planning, and agriculture area expansion, in accordance with allocated areas, taking into consideration social and environmental impacts, including the control of the use of harmful pesticides, herbicides and chemical fertilizers.

Project 3: Expand good practices and develop diverse livelihood models, based on local potential, together with the provision of opportunities for local people to have access to financial sources for the promotion of agriculture production and alternative livelihoods.

Project 4: Improve near real-time monitoring systems and participatory field-based monitoring on the implementation of concession agreements, contract farming and agriculture land expansion.

Programme 2: Promotion of commercial tree plantation and forest restoration, consisting of six priority projects

Objective: *To protect and prevent tree plantation area development, which is not lawfully sanctioned, or against laws, regulations and technical standards leading to deforestation or clearance of natural forest and degradation of forest resources, forest eco-systems and environments.*

Project 1: Enhance the capacity to implement existing policies, laws and regulations, and address and reduce ambiguity and loopholes in the policies, laws, and regulations, related to the promotion of industrial tree plantations by investors and households.

Project 2: Promote and manage tree planting for both commercial and conservation purposes, in accordance with regulations and standards, and land and forest allocation plans, and review participation and partnership models between stakeholders, especially communities and investors.

Project 3: Enhance capacity to implement existing policies, laws and regulations related to forest restoration and restoration, in order to achieve forest strategy targets, together with public awareness raising; and, formulate and improve handbooks and technical guidelines for both natural and assisted forest restoration.

Project 4: Delineate restoration areas and develop forest restoration plans with a focus on surveys; and delineate potential or degraded forest for allocation as restoration areas and formulation of short, medium and long-term plans for management of restoration areas.

Project 5: Promote forest restoration in accordance with specific targets or management objectives of each forest category, through the review and improvement of participation and investment of all stakeholders. Analyze and develop forest restoration models, based on local potential and actual positive experiences, including support to access potential financing modalities, such as domestic and international cooperation and private investment.

Project 6: Improve efficient systems for the management of forest information, monitoring, inspection and reporting of forest status and changes, with a focus on the establishment of technical capacity, especially at local levels; improve handbooks, guidelines on information management, monitoring, inspection and reporting systems, in line with capacity building for participatory field-based monitoring by all stakeholders in society.

Programme 3: Linking infrastructure development (e.g., construction of hydro-power dams/reservoirs, electricity line and road, and mining) with protection of forest and forest resources, consisting of four priority projects

Objective: *To improve and address outstanding issues related to conversion of forest areas for infrastructure development (e.g., construction of hydro-power reservoirs, electricity lines and road, and mining).*

Project 1: Formulate and improve legislation on land conversion, by granting infrastructure development, land leases or concessions through a bidding or auction process, which is based on land and forest use maps and field surveys provided by the forestry sector.

Project 2: Improve and expand the implementation of forest landscape management, including integrated land use planning in coordination with the sectors of energy and mines, public works and transport and others, in order to determine possible areas for infrastructure development, mining and other land uses.

Project 3: Review information for zoning of each land category and register the land for infrastructure development in detail; and, establish a centralized information system on land and forest uses.

Project 4: Strengthen the monitoring and evaluation process of the infrastructure and mining projects through Environmental and Social Impact Assessment (ESIA); and Environmental and Social Management, and Monitoring Plan (ESMMP) implementation.

Programme 4: Stop uncontrolled harvesting of wood and forest products that do not comply with laws and regulations, consisting of five priority projects

Objective: *To address the drivers and underlying causes of forest degradation due to uncontrolled logging and non-timber forest product (NTFP) collection, which is not complying with laws and regulations or abiding by sustainable forest resource use plans.*

Project 1: Promote and enhance capacity at local levels for the implementation of existing laws and regulations to manage, monitor, inspect and report on the implementation of development projects and investments, which are related to use, clearing or converting forest, forestland and forest resources, in order to ensure sustainable development and investment, and regulations on environmental and social protection.

Project 2: Improve the coordination for information on annual logging quotas, in order to be effective and based on approved sustainable forest management plans.

Project 3: Review and strengthen capacity for planning and control of logging in concession areas for infrastructure development and mining, in order to strictly follow relevant laws and regulations, and be based on technical parameters.

Project 4: Research and publicize legislation and regulations on participation and sharing benefits from log sales, and promote certification of wood products and NTFPs, in order to achieve additional value.

Project 5: Improve near real-time monitoring systems and field-based monitoring by all stakeholders in society, especially by local communities.

Programme 5: Stabilize uncontrolled shifting cultivation by promoting sedentary agriculture production and to control forest fires, consisting of five priority projects:

Objective: *To address drivers and underlying causes of forest degradation due to uncontrolled shifting cultivation and forest fires.*

Project 1: Enhance capacity to implement existing policies, laws and regulations to reduce and address issues related to uncontrolled shifting cultivation, along with promotion of sustainable forest management, and livelihood improvement of people relying on forests.

Project 2: Review and determine the boundaries of the three forest categories at national, province, district and village levels, according to the National Master Plan for Land Allocation, as well as formulate a forestland allocation plan according to the target and objectives of management and use of each category of forestland.

Project 3: Expand good practices and develop diverse livelihood models based on local potential; promote and develop local livelihood alternatives through income-generating activities, including ecotourism.

Project 4: Improve near real-time monitoring systems of shifting cultivation and forest encroachment and participatory field-based monitoring, by all stakeholders in society.

Project 5: Raise public awareness on legal aspects and implementation on the use of natural resources, impacts of slash and burn, forest fire prevention, development of warning, reporting and control system of forest fires, with participation of local communities.

4. Implementation Methods and Measures

4.1 Implementation Methods

49. The NRS will be further developed into action plans for implementation at various levels, such as national, local and project levels, which will be based on the overall framework of REDD+ implementation defined by the UNFCCC, as follows:
- Covers five programmes or activities:
 - Reducing emissions from deforestation.
 - Reducing emissions from forest degradation.
 - Conservation of forest carbon stocks through the promotion of sustainable forest management and uses.
 - Conservation of forest carbon stocks through forest protection.
 - Promotion of forest restoration and plantation to enhance forest carbon stocks.
 - There are three phases:
 - Readiness.
 - Piloting of measures or implementation of the NRS at local levels.
 - Results-based payments through measurement, reporting and verification of positive results in accordance with specific technical principles and a defined compensation payment scheme.

4.2 Institutional Framework of Lao REDD+

50. The implementation of REDD+ and the NRS is the responsibility of the MAF, and is closely linked to various sectors. In order to ensure strong cross-sectoral coordination for the implementation of the NRS and the integration of REDD+ into relevant sector development policies and plans that are coherent, comprehensive and consistent with each other, REDD+ institutions at central and local levels have been established, as detailed below.
51. The National REDD+ institution consists of the National REDD+ Taskforce (NRTF), REDD+ Taskforce Secretariat, and Technical Working Groups (TWGs). This institutional framework can be revised and modified in the future in order to respond to emerging challenges and opportunities.
52. **National REDD+ Taskforce (NRTF):** The NRTF has the Vice Minister of the MAF as chair and the Director General of the DOF as vice chair. The other members are deputy director generals of department or equivalent, which are representatives from the MAF, MoNRE, Ministry of Finance, Ministry of Justice, Ministry of Energy and Mines, Ministry of Planning and Investment, Lao Front for National Development, Lao Women's Union, National University of Laos, and the Lao National Chamber of Industry and Commerce.
53. The NRTF is responsible for overseeing all REDD+ activities, including setting policies and strategies in each period, coordination at international level and the implementation of projects. The NRTF meeting is held at least once a year to review the implementation of REDD+ projects and activities, and to defining a plan for each period.

54. **REDD+ Taskforce Secretariat:** The REDD+ Division under the DoF is assigned to act as the secretariat for the taskforce. The REDD+ Division has the roles and responsibilities of coordinating, researching, managing, and implementing programmes, projects and activities related to REDD+, under the guidance of the NRTF. These roles also include coordinating technical tasks and facilitating financial activities of projects.
55. **REDD+ Technical Working Groups (TWGs):** There are six TWGs and they provide technical advice in various areas of REDD+, which mainly include benefit-sharing, land use, legal framework, Reference Emission Level (REL), Measurement, Reporting and Verification (MRV), social and environment safeguards and implementation of the NRS. Each working group consists of members from different agencies, who conduct research based on their roles and responsibilities and work closely with the REDD+ Division.

4.3 Income and Benefit-Sharing Management

56. Benefit generation and sharing is one of the most important tasks of REDD+ implementation, as the benefits from forest carbon must be managed and allocated in a transparent, fair and efficient manner, with the participation of all sectors in society. To date, the management mechanisms and benefit-sharing principles for REDD+ have not been finalized. The TWG on benefit sharing and REDD+ secretariat will continue analyzing the key elements and factors of benefit-sharing including organization-management, benefit types, rationale and distribution criteria, recipients, distribution ratios, distribution methods, utilization of benefits, and others. The TWG on benefit-sharing will review and obtain lessons learned from projects with benefit-sharing mechanisms implemented at the local level, particularly the Governance, Forest Landscapes and Livelihoods in Northern Lao PDR (GFLL).

4.4 Management of Social and Environmental Safeguards

57. Countries implementing REDD+ projects and activities must comply with social and environmental safeguards, in particular the development of a Safeguards Information System (SIS) for providing information on how the UNFCCC Cancun safeguards have been addressed and respected. Under the UNFCCC framework, a country is not eligible to request to receive results-based payments from implementing REDD+ if there is no system for reporting on social and environmental safeguards, or a report on the implementation of safeguards. The result of analytical work conducted for the designing of a SIS indicates that Lao PDR has in existence an adequate framework to address social safeguards, but would need to take steps to address the environmental risk of reversals and displacement, which are both key requirements under the UNFCCC Cancun Safeguards.
58. The design process of a SIS is based on participatory principles, so that all stakeholders can contribute to the development of the SIS through consultation meetings, technical meetings and workshops at central and local levels. These processes offer opportunities for all stakeholders to provide comments and information for the development of the SIS.

59. The SIS of Lao PDR will build on existing and emerging institutional mechanisms within the forestry sector and other relevant sectors. The mechanisms will be strengthened periodically, in line with the transformative processes of development and changes in the forestry sector and socio-economic situation. In terms of REDD+, safeguards are a priority and important task. Consequently, the existing safeguards mechanisms or systems need to be strengthened, especially the existing options or mechanisms for grievance redress, so that they are easier to access and are able to receive feedback, complaints and grievances. Existing Village Mediation Units will need to receive additional technical training and other support, in order to strengthen their role and management of comments and grievances, allowing them to be able to resolve grievances rapidly, fairly, and with transparency.
60. In parallel with the strengthening of existing safeguard mechanisms and systems, the development of the SIS will also focus on: (1) adequate dissemination of important and relevant regulations, guidelines and manuals for effective management of safeguards; (2) establishment of institutional mechanisms with adequate staff; and, (3) preparation of training plans and adequate funds for the effective management of safeguards.
61. These steps will enable the GoL to put into place an effective and functioning SIS, which will provide information on how Lao PDR addresses and respects the Cancun safeguards of the UNFCCC.

4.5 Fund Sources and Budget for Implementation of NRS

62. The NRS to 2025 forms the basis for the development of REDD+ in Lao PDR and will be further developed into action plans and projects for implementation. The budget for implementing programmes, projects and activities will derive from various sources including State budget, Forest Protection Fund, Environmental Protection Fund, domestic and international development partners, domestic and international investors, and other contributions from society.
63. The full budget requirements to implement the NRS for the entire country is not yet fully estimated. However, the ER Programme carried out an assessment of budget needs for the six northern provinces in the project area. This assessment showed that the programme needs approximately US \$135 million during its implementing period of 2019 to 2025.

5. Reference Emission Level and National Forest Monitoring System

5.1 REL - Reference Emission Level

64. The national REL of Lao PDR was developed and submitted to the UNFCCC in 2018, and was officially accepted and published on the UNFCCC website in January 2019. The development of the national REL was based on the UNFCCC guidelines on RELs. In addition to the national REL, the sub-national REL for the GFL project in six provinces of northern Laos was also developed. The national REL and REL for the GFL project are based on the use of consistent methodology and dataset.
65. Table 3 summarizes the average of emissions and removals for the 10-year period from 2005 to 2014, which was used for the development of the national REL.

Table 3 Summary of Emissions and Removals for national REL

Source/Sink	Emissions (+)/ Removals (-)		
	2005-2010 (tCO ₂ e)	2010-2014 (tCO ₂ e)	Annual average 2005-2014 (tCO ₂ e/year)
Deforestation	57,616,664	62,351,723	11,996,839
Forest Degradation	153,432,727	136,732,050	29,016,478
Changes among land/forest strata	98,311,948	99,984,864	19,829,681
Selective logging	55,120,779	36,747,186	9,186,797
Reforestation	-17,532,039	-14,956,818	-3,248,886
Restoration	-18,236,927	-24,609,792	-4,284,672
Total Emissions	211,049,391	199,083,773	41,013,316
Total Removals	-35,768,966	-39,566,610	-7,533,558

5.2 NFMS - National Forest Monitoring System

66. The design of the NFMS is based on UNFCCC guidelines on NFMS development. The Lao NFMS Roadmap has been developed through broad participation of government and development partners, and was endorsed by the DoF in February 2021.

5.2.1 MRV - Measurement, Reporting and Verification

67. Measurement (M) is one of the key activities, and is mainly conducted through the development of Activity Data from forest type maps, and Emission Factors from the National Forest Inventory, including stump surveys. The timing and methods for measurement will be decided based on the actual needs and requirements of the implementation of existing REDD+ programmes and projects in Lao PDR. Measurement (M) and Reporting (R) of emissions and removals are two of the three main functions of the MRV, which the NFMS supports, with a purpose to estimate the achievement of REDD+ implementation and communicate the results to the verifying agency. Verification (V) is an interactive process undertaken with the verifying agency to assess the degree to which the estimation is correctly quantified.

Information and Functions to Provide Data for MRV

68. Information on MRV should be transparent, consistent over time, and comparable in the future, or after subsequent surveys and assessment in later years, and suitable for MRV.

Reference Information for Measurement

- Satellite imagery used for forest type map development.
- Forest Type Map (2000, 2005, 2010 and 2015).
- Data from the forest inventory.
- Equations and conversion factors that include emission factors, allometric equations and others.

Data obtained from the analysis for Reporting

- Area for each land and forest type and time series change.
- Average carbon stock and carbon pool for each forest type, and the amount of emissions and removals caused by each land and forest type change.
- CO₂ emissions and removals based on area of interest.
- Achievement against the REL.

The First National REDD+ MRV

69. Lao PDR completed its first National REDD+ MRV in 2020. The results of the first National REDD+ MRV were presented in a transparent manner, as a REDD+ Technical Annex attached to the first Biennial Update Report, which was submitted to the UNFCCC in July 2020 (<https://unfccc.int/documents/274307>).
70. In summary, the first National REDD+ results for Lao PDR for the period of 2015-2016 and 2017-2018 were 2,680,944 tCO₂e/year and 3,721,683 tCO₂e/year respectively (12,805,253 tCO₂e over four years) for emissions and 468,325 tCO₂e/year (1,873,301 tCO₂e over four years) for removals as depicted in Table 4.

Table 4 Summary of first national REDD+ results for 2015-2018

Emissions/Removals	tCO ₂ e/year	4 years total
Emission reductions 2015-2016	2,680,944	12,805,253
2017-2018	3,721,683	
Removals increase 2015-2016	468,325	1,873,301
2017-2018	468,325	

71. The overall uncertainty of the proposed first National REDD+ Results is considered to be 16.5% for emissions and 15.7% for removals for the 2015-2016 period, and 12.7% for emissions and 15.7% for removals for the 2017-2018 period.
72. The technical analysis of the REDD+ Technical Annex by the UNFCCC is expected to be completed in the second to third quarter of 2021.

5.2.2 Monitoring of Drivers and Interventions

73. In addition to quantifying emissions and removals, the NFMS aims to progressively develop and pilot systems, initially in the GFL project area of six northern provinces to monitor the prominent drivers and results of interventions.

5.2.3 Carbon Registry

74. A carbon registry is composed of a Data Management System (DMS) and an Emissions Reduction Transaction Registry (ERTR). Lao PDR has been developing a DMS as a part of its NFMS, but has not yet made a decision on the development of an ERTR. There are two options for the ERTR, including the development of its own national system or to use an international system, such as the Forest Carbon Partnership Facility's emission trading registry.
75. Lao PDR has been developing its NFMS and its associated database, which will be the basis for carbon accounting of REDD+ programmes and projects at various scales. This will manage information, such as programme and/or project areas, activity data, emission factors, reference period, average annual emissions over the reference period, and adjustments and data to adjust REL or baseline, if applicable. The methodological steps to derive this information will also be documented.

5.2.4 Public Access to NFMS

76. Statistical data, maps and analytical results are made accessible to the public through the NFMS web-portal, <https://nfms.maf.gov.la/>. The NFMS web-portal and the NFMS database in the background will be further improved in a stepwise approach.