



**THE GLOBAL
MECHANISM**
United Nations Convention
to Combat Desertification

LAO PEOPLE'S DEMOCRATIC REPUBLIC
PEACE INDEPENDENCE DEMOCRACY UNITY PROSPERITY

National Report on Land Degradation Neutrality Target Setting Programme: Lao PDR



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Abbreviations

ADS	Agriculture Development Strategy 2016-2025 and Vision 2030
DALAM	Department of Agriculture Land Management
FRA	Forest Resources Assessment
FS2020	Forest Strategy to the year 2020
GoL	Government of Laos
INDC	Intended Nationally Determined Contribution
LDC	Least Developing Country
LDN	Land Degradation Neutrality
MAF	Ministry of Agriculture and Forestry
MoNRE	Ministry of Natural Resources and Environment
NA	National Assembly
NAFRI	National Agriculture, Forestry Research Institute
NAPA	National Adaptation Plan and Action for Climate Change
NBSAP	National Biodiversity Strategy and Action Plan
NERI	National Economic Research Institute
NFP	National Focal Point
NRES	Natural Resources and Environment Strategy
NSCC	National Strategy on Climate Change
NSEDP	National Socio-economic Development Plan
REDD	Reducing Emission from Deforestation and Degradation
SD	Sustainable Development
SDG	Sustainable Development Goal
SOC	Soil Organic Carbon Stock
SSLCC	Soil Survey and Land Classification Centre
SWOT	Strengths, Weaknesses, Opportunities, Threats
TSP	Target Setting Programme
TWG	Technical Working Group
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

Executive Summary

In September 2015, the global community agreed on “The 2030 Agenda for Sustainable Development”, including 17 Sustainable Development Goals (SDG) and 169 targets. Goal 15 urges countries to “protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss”. More specifically, target 15.3 aims to “combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world” by 2030.

In October 2015, the twelfth session of the Conference of Parties (COP 12) of the United Nations Convention to Combat Desertification (UNCCD) agreed to integrate the SDGs and related targets into the implementation of the Convention. UNCCD has therefore introduced the concept of ‘Land Degradation Neutrality’ (LDN). It is ‘a state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems. It is a unique approach that counterbalances the expected loss of productive land with the recovery of degraded areas. It suggests measures to conserve sustainably manage and restore land in the context of land use planning. In order to enable the UNCCD to “make a significant contribution to achieving LDN”, the COP decided to invite Parties to formulate baseline and voluntary targets to achieve LDN within their NAP (National Action Plan) and include voluntary national LDN targets in their national reports, as appropriate.

This report presents a summary of important activities carried out within the framework of the target setting program for Land Degradation Neutrality Target Setting Program (LDN TSP) in Lao PDR and presents the significant outcome, goal of national efforts such as: plans to elevate the trends and drivers of land degradation and voluntary LDN targets of the nation.

National context

Lao Peoples’ Democratic Republic (Lao PDR), located in the heart of the Greater Mekong Sub-Region (GMS), is surrounded by China, Vietnam, Cambodia, Thailand, and Myanmar. Compared to its neighbors, the Lao PDR is smaller in size, with a lower population. Covering a total land area of 236,800 km², the country is divided into seventeen provinces, and one municipal province of Vientiane Capital. Demographically of the Lao PDR is home to approximately 6.8 million people. It is estimated that 75-80% of population lives in rural areas. The country is prone to seven main hazards: floods, droughts, storms, landslides, epidemics, and Unexploded Ordinance (UXO). Among these hazards, floods and droughts are the most recurrent hazards (ADPC & UNDP, 2010).

Lao PDR has an abundance of natural resources including its mineral deposits and a wealth of forests, which cover more than 40% of its total land surface. In addition, the Mekong River and its tributaries provide rich water resources which present the potential for power generation and irrigation development. Hydropower project are totally 409 power plants nationwide signed with the MoU with the central and local authorities, totaling 409 projects with a total installed capacity of about 28,600 MW and total energy capacity 133,874 (GWh/year) in 2015 stated in summary of hydropower development projects in the Lao PDR, 2015. Therefore has great potential for rapid socioeconomic development, even as it must ensure protection of its productive environment and ecosystems in the long term.

Nevertheless, Lao PDR is one of the 48 least developed countries (LDC), with a per capita gross domestic product (GDP) of US\$ 1,725. Agriculture contributes around 23.15%, Industry 32.42%, and Services 37.87% (MPI, 2014). Lao PDR has made significant progress towards poverty alleviation over the past 2 decades with poverty rates declining from 46% in 1992, to 23.24% in 2012/13 (Lao Statistics Bureau & The World Bank, 2014).

Although agriculture has been gradually declining in terms of its contribution to GDP over recent years, it still continues to play a major role in Lao PDR. Nevertheless, the provinces that have a shortage in rice production are surplus maize producers. Besides that rice, which is one of the important economic crops in the Lao PDR, other important crops include coffee, sugarcane, cassava, sweet potato, and other industrial crops (such as rubber, eucalyptus, and acacia). According to the GoL & United Nations (2015), the country is on target to achieve the Millennium Development Goal of halving poverty and hunger reduction by 2015. The country's National Socio-Economic Development Plans (NSEDP), moreover, has adapted the Millennium Development Goals (MDGs) and incorporated these into its national priorities and goals. In addition, the most recent 8th Five-Year NSEDP (2016-2020) aims at graduating the country from its current least developed country (LDC) status.

The 8th NSEDP aims to:

- i) Graduate from least developed country (LDC) status by 2020;
- ii) Consolidate regional and international integration in the context of the launching of the ASEAN Economic Community in 2015;
- iii) Take further steps towards industrialization and modernization and to enhance the well-being of the people and the prosperity of the country in order to achieve the ranking as an upper-middle-income country by 2030 (MPI, 2015).

Lao PDR has strong ambitions for national development by 2020 and has witnessed relative poverty reduction; maintaining sustainable economic growth; conservation of natural resources, biodiversity and ecosystems; and social development, including development of human resources, and addressing issues of unexploded ordnance (UXO). It also faces challenges in fulfilling its commitments to international conventions that it has ratified (MONRE, 2012). The Lao PDR is also located within the center of the domestication of Asian rice (*Oryza sativa* L. 2016). The center of origin of the glutinous rice types is, moreover, recognized to be within Lao PDR and northern Thailand. Rice is a globally important crop species and Lao PDR, it's also probably has the highest number of varieties amongst any country of a similar size in the world. Over 13,000 samples were collected between 1995 and 2000, and stored at International Rice Research Institute (IRRI) gene bank (ABP, 2015). Wetlands in Lao PDR, like many other countries, play an important role in water regulation, and combating droughts. The country has about 30 significant wetland sites, which cover and estimated 1 million hectares (Claridge, 1996). Though much of the population of the Lao PDR relies heavily on the social and economic benefits derived from use of its biological resources, there has been little progress in ensuring that these benefits are evenly distributed. Examples of these important resources include Non-Timber Forest Products (NTFPs) such as medicinal plants, orchids, rattan, and bamboo species which are traded domestically and internationally. However, some taxes are collected on these items, there is no system in place to ensure that communities from which the materials originate benefit financially from their sales (IUCN, 2011). Although Lao PDR is still rich ecologically,

biodiversity has been significantly reduced by a range of factors, including population growth, land use change, resource extraction, and the transition from subsistence farming to a market economy. Moreover, in 2015 the decree for Protected Areas (No.: 134/G) was published in order to make the Protected Areas become abundant and sustainable by focusing on environmental protection, watershed protection, prevention from erosion, protection of soil quality, protection of strategic zones for national defense & security, adaptation and reduction of climate changes, global warming mitigation measures, contributing to the improvement of living conditions for people of all ethnic groups, and developing the national socio-economic status (Lao PDR, 2015).

Objective of LDN 2016-2025

- To develop and improve national policies, assess and update the national policies and specific tasks; identify technical working group and the responsibilities of relative ministry or sector for LDN implementation.
- Prioritize the implementation in the degradation with area land degradation caused by soil erosion, conversion land use, pollution from wastewater, shifting cultivation in upland solid wastes, fertilizer chemicals.

1. Leveraging LDN

Linking LDN with national plans on the three Rio UN convention

Lao PDR is a signatory to UN's 3 Rio Conventions (UNCCD, UNCBD and UNFCCC). In response to these conventions, Government of Lao PDR (GoL) has developed: There are significant to integrate the national action plans of the three Rio conventions: United Nations Convention to Combat Desertification (UNCCD), United Nations Convention on Biological Diversity (CBD) and United Nations Framework Convention on Climate Change (UNFCCC) that support the Sustainable Development Goals (SDG) in general and Sustainable land management. The integration of relevant components from national action plans from the three Rio conventions is mentioned below in Table 1.

Table 1: Linkage of the national action plans on LDN with the three Rio UN conventions

UN CONVENTIONS AND NATIONAL PROGRAMMES	COMPONENT FOR LDN
<p>1. UNCCD (United Nations Convention to Combat Desertification)–Land Degradation Setting Target:</p> <p>Key Agencies:</p> <ul style="list-style-type: none"> - Ministry of Natural Resources and Environment (MONRE) - Ministry of Agriculture and Forestry (MAF) - Department of Agriculture and Forestry Rural Development (DA) - Department of Natural Resources and Environment (DONRE) 	<p>LDN: The LDN targets to aims to “combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land 00degradation-neutral world” by 2030.</p>

<p>2. UNCBD (United Nations Convention on Biological Diversity)–National Biodiversity Strategy and Action Plan 2016-2025</p> <p>Key Agencies:</p> <ul style="list-style-type: none"> - Ministry of Natural Resources and Environment (MONRE) - Ministry of Agriculture and Forestry (MAF) - Provincial Natural Resources and Environmental Departments - Department of Agriculture and Forestry (MAF) 	<p>NBSAP: The goal of NBSAP is Enhance the role of biodiversity as a national heritage and as a substantial contributor to poverty alleviation, as well as sustainable and resilient economic growth and objective of NBSAP including</p> <ol style="list-style-type: none"> 1. Institutionalize innovative multi stakeholder efforts to arrest the degradation and enhance conservation of ecosystems and biodiversity resources therein. 2. Provide clear and enforceable guidance for the sustainable use of biodiversity resources to support poverty alleviation and sustainable economic growth. 3. Establish practical mechanisms for ensuring fair and equitable sharing of benefits from the use of biodiversity resources. <p>LDN: The objective of LDN to reach to the land management including biodiversity conservation and sustainable use.</p>
<p>3. UNFCCC (United Nations Framework Convention on Climate Change)</p> <ul style="list-style-type: none"> - National Adaptation Programme of Action to Climate Change (NAPA) to the year 2020 (GoL, 2009); National Strategic on Climate Change (NSCC) to the year 2020 (GoL, 2010); <p>Key Agencies:</p> <ol style="list-style-type: none"> 1. MONRE <ul style="list-style-type: none"> - Department of Climate Change management; - Department of Meteorology and Hydrology - Department of Water Resources 2. PoNRE <ul style="list-style-type: none"> - Provincial Natural Resources and Environmental Departments 	<p>NAPA: the objective of NAPA to:</p> <ul style="list-style-type: none"> - Improve the safety of Lao society by mitigating the negative impacts of disaster on the lives, economies, properties of the peoples and government; - Ensure that all disaster-affected people get adequate help and support on time, and that livelihood recover as fast as possible; - Ensure that Lao PDR has sufficient regulations and laws to migrated impacts of disasters on an individual, communities, society and the economy of country; and - Ensure that knowledge of disaster management and environment protection is in line with, an integrated into, all development issues and that general public awareness is raised. <p>NSCC's Vision: To secure a future where the Lao PDR is capable mitigating and adapting to changing climatic conditions in a way that promotes sustainable economic development, reduce poverty, protects public health and safety, enhances quality of the Lao PDRs natural environment, and advances quality of life for all Lao people.</p> <p>Goals:</p> <ul style="list-style-type: none"> - Reinforce sustainable development goal

	<p>(SDGs) of the Lao PDR, including measure to achieve low-carbon economic growth;</p> <ul style="list-style-type: none"> - Increase resilience of key sectors of the national economy and natural resources to climate change and impacts; - Enhance cooperation strong alliances strong partnerships with national stakeholders and international partners to implement national development goals; - Improve public awareness and understanding of various stakeholders about climate change and vulnerabilities and impacts, greenhouse gas emission sources and their relative contributions, and of how climate change impacts to the country's economy, in order to increase stakeholder's willingness to take actions. <p>LDN: To achieve LDN to be improved land uses management: agriculture, irrigation, forestry, fishery and rural development,</p>
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Leverage opportunities

Archiving LDN is important to meet the Government of Lao PDR objective for food security and nutrient, quality of agriculture commercialization, sustainable forest management and rural livelihood development by sustainable green growth development strategy.

Agriculture Development Strategy (ADS) to 2025 and Vision to the year 2030 (MAF, 2015)

“Ensuring food security, producing comparative and competitive agricultural commodities, developing clean, safe and sustainable agriculture and shift gradually to the modernization of a resilient and productive agriculture economy linking with rural development contributing to national economic basis”

Goals:

1. Economy has strongly grown in the line with industrialization and modernization direction, comprehensive infrastructure, ensuring economic growth at the constant level, effective, stable and ensuring food security and strongly ensures quality in term of nutrition, producing agriculture products with quantity and quality that are highly competition as well as adaptable to climate change;
2. Agriculture production as in a line with sanitary principles, clean, safe for producer and consumers, health and environmentally friendly;
3. Agriculture production has made contribution with many aspects such as creation of employment, income generation for people, reduction gap between cities and rural areas, construction new rural areas along side with protection of symbolic cultures and all ethnic people, environment protection and contributes stability and balance ecological system.

Programs:

- food production;
- agricultural commodity production;

Measures:

- Policy and registration;
- Improve coordination with relevant sectors;
- Cooperation investment in agriculture sector;
- Humans resources development and gender issues;
- Improve organization and governance development in agriculture sector;
- Industrialization and modernization in agriculture sector and rural areas;
- Development agriculture product group/ agriculture cooperative connection with new rural development objective.

Agriculture Land Management and Development Strategy (ALMDS) to 2020-2025 and Vision to the year 2030 (DaLAM, MAF, 2020).

Management and development of agricultural land aims to ensure high production efficiency and stability of agriculture land used.

Programme and Actions:

Agricultural Land Use Management and Protection Program

- Conservation of land and development of agricultural land in all geographical conditions by using appropriate techniques,
- Technologies to protect land production capacity, prevent land erosion, develop agricultural ecosystems and conserve biodiversity and green agriculture.
- Conservation, development, protection and management of agricultural land.
- Ensure the effective use of agricultural land and move towards the development of a green economy.
- To ensure the implementation of agricultural land management and development strategies

Forestry Strategy Programs to the year 2020 (MAF, 2005)

National forestry programs (2006-2020) with overall objective state that “Increasing forest cover 70% by the year 2020 by protect remaining forest, natural regeneration/rehabilitation and planting forest in degraded forest land areas”

Programs and actions:

- Biodiversity conservation/Conservation forest;
- Harvesting/logging plan and royalties;
- Land and forest use;
- Non timber forest products;
- Production forest;
- Protection forest and watershed management;
- Tree plantation development;
- Village land and forest management.

- Wood processing industry;

National Adaptation Programme of Action to Climate Change (NAPA) to the year 2020 (GoL, 2009)

Objectives:

- Improve the safety of Lao society by mitigating the negative impacts of disaster on the lives, economies, properties of the peoples and government;
- Ensure that all disaster-affected people get adequate help and support on time, and that livelihood recover as fast as possible;
- Ensure that Lao PDR has sufficient regulations and laws to migrated impacts of disasters on an individual, communities, society and the economy of country; and
- Ensure that knowledge of disaster management and environment protection is in line with, an integrated into, all development issues and that general public awareness is raised.

Goals:

- Food production program;
- Commodity production;
- Complete eradication of slash and burn cultivation; and
- Sustainable forest management (SFM).

Programs and action:

- Agriculture
- Forestry
- Water
- Public health

National Strategy on Climate Change (NSCC) to the year 2020 (GoL, 2010)

Objectives, vision and goals:

Vision:

To secure a future where the Lao PDR is capable mitigating and adapting to changing climatic conditions in a way that promotes sustainable economic development, reduce poverty, protects public health and safety, enhances quality of the Lao PDRs natural environment, and advances quality of life for all Lao people.

Goals:

- Reinforce sustainable development goal (SDGs) of the Lao PDR, including measure to achieve low-carbon economic growth;
- Increase resilient of key sectors of the national economy and natural resources to climate change and impacts;
- Enhance cooperation strong alliances strong partnerships with national stakeholders and international partners to implement national development goals;
- Improve public awareness and understanding of various stakeholders about climate change and vulnerabilities and impacts, greenhouse gas emission sources and their

relative contributions, and of how climate change impacts to the country's economy, in order to increase stakeholder's willingness to take actions.

Programs and action:

- Agriculture and food security
- Forest and land use change
- Water resources
- Energy and transport
- Industry
- Urban development
- Public health

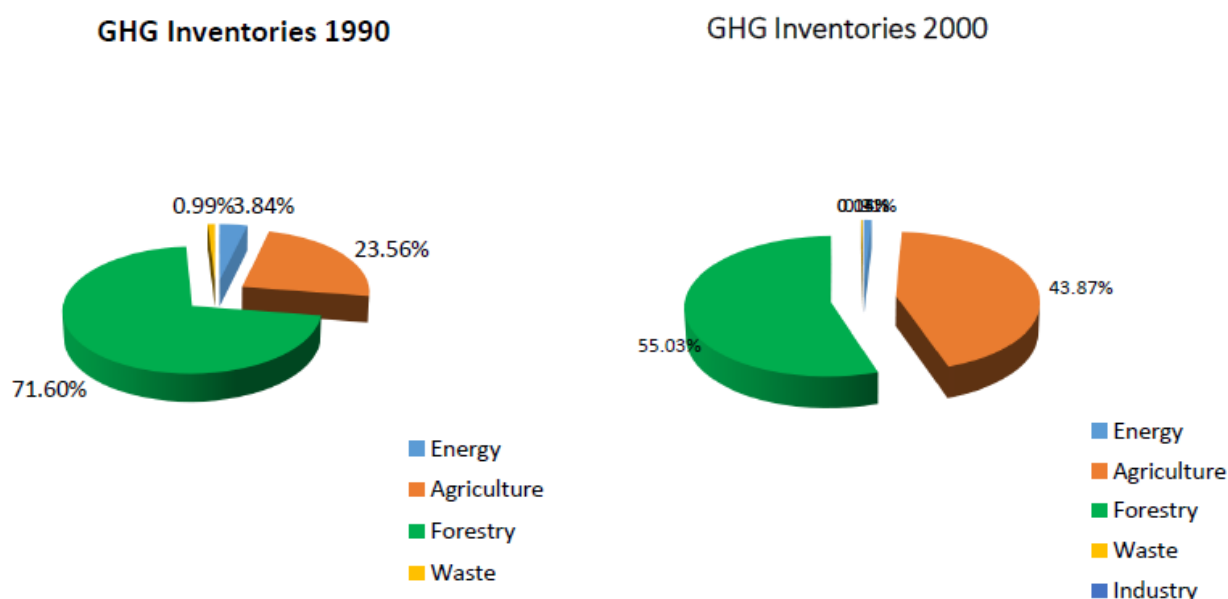


Figure 1: Green House Gas Inventory.
(Sources: First and Second National Communication to UNFCCC 2000 and 2013)

LDN leverage plan for Lao PDR that identified the objectives, targets, and scope leveraging activities that will help to develop the mainstream LDN concepts, strategies, and targets in policy investment programs is presented as below in Tables 2 and 3.

Table 2: Intended mitigation activities to implement by Lao PDR 2016-2025.

No.	Name of activities	Objectives	Estimate CO _{2eq} reduction
1	Implementation of FS2020	To increase forest cover of 70% of land area (16.58 million ha) by 2020. One of target emission reductions will carry out beyond 2020.	60,000 – 69,000 ktCO _{2e} (one of target has been met by 2020 onwards)
2	Implementation of renewable energy development strategy	For energy to increase the share of renewable energy to 30% of energy consumption by 2025. For transport fuels to increase the share of biofuels to meet	1,468,000 ktCO _{2e} (by 2025)

		10% of transport fuels by 2025.	
3	Implementation of rural electrification programme	To make electricity available to 90% of household in rural area by the year 2020. This will be offset of combustion of fossil fuels to produce power where they no access to electricity grid.	63 ktCO ₂ /pa (one of target has been met in 2020)
4	Implementation of transport focus on NAMAs	In one NAMA feasibility study, road network development is identified as a first objective which will be reduce number of kilometers traveler by all vehicle. The second objective is to increase public transport compared business as usual (BAU). In addition to reduce GHG emissions the activity will be led to reduction NO _x and SO _x emissions which will have significant co-benefits such as improvement air quality which in turn will have positive impacts on human health.	Road network development is 33 ktCO ₂ /pa, and 158 ktCO ₂ /pa for public transport development
5	Expansion of the use large scale hydroelectricity	To build large scale (>15MW) hydropower plants to provide clean electricity to neighboring countries. Approximately total installed capacity of the hydropower plants will be 5,500 MW by 2020. In addition, 20,000 MW after 2020	16,284 ktCO ₂ /pa (2020-2030)
6	Implementation Climate Change Action Plan	To build capacity to monitor and evaluate policy implementation success, with a view producing new policy, guidance and data. The objective to develop and implement effective, efficiency and economically viable climate change mitigation and adaptation measures.	To be estimated as part of implementation plan.

Adaptation:

Table below is shown the adaptation and key related sectors on the project implementation.

Table 3: Adaptation projects and keys sectors.

No.	Sector	Focus project and programme
1	Agriculture, Agriculture Land Management and Development	<ul style="list-style-type: none"> • Promote climate resilience in farming systems and agriculture infrastructure • Promote appropriate technologies for climate adaptation • To bring crop cultivation techniques on steep slopes by rehabilitating the soil quality in order to capture the natural conditions and fertility to farmers, provincial and district staff to have the knowledge and ability to use in their own areas and create demonstrations. • To bring crop cultivation techniques on steep slopes by rehabilitating the soil quality in order to capture the natural conditions and fertility to farmers, provincial and district staff to have the knowledge and ability to use in their own areas and create demonstrations. • To protect the use of agricultural land in steep slopes and maintain fertility so that upland farmers have a stable agricultural production system. • To ensure that the production area is fertile and can be used for a long time. Increase productivity per capita, can produce sufficiency and produce goods, people have more income, better living standards. • To increase the yield of maize, upland rice per area and use land sustainably.
2	Forestry and land use change	<ul style="list-style-type: none"> • Promote climate resilience in forestry products and forest ecosystems • Promote technical capacity in forestry sectors for managing forest for climate change adaptation
3	Water resources	<ul style="list-style-type: none"> • Strengthening water resources information systems for climate change adaptation • Managing watersheds and wetlands for climate change resilience • Increasing water resources infrastructure resilience to climate change • Promotion of climate change capacity in water resource sector
4	Transportation and urban development	<ul style="list-style-type: none"> • Increasing the resilience of urban development and infrastructure to climate change
5	Public health	<ul style="list-style-type: none"> • Increasing the resilience of public health infrastructure and water supply system to climate change • Improving public health services to climate

		change adaptation and coping with climate change induces impacts.
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Natural Resources and Environment Strategy (NRES) 2016-2025 and Vision 2030 (MONRE, 2015)

The Ministry of National Development's vision is focused on "Lao PDR, green, clean, beautiful, rich in natural resources on the basis of green economic growth to achieve sustainable development and become a modern industrial country to ensure the ability to prepare for disasters and disasters".

6th Targets:

- Planning and managing the sustainable use of natural resources (land, water, wetlands, forests, biodiversity and minerals);
- Promote sustainable environmental quality in urban and rural areas in a green, clean and beautiful way;
- Increase Lao PDR's capacity to adapt to climate change and mitigate the effects of natural disasters;
- Maintain and increase coordination and cooperation with relevant sectors and integrate with international organizations in the region;
- Build organizational capacity for natural and environmental resources efficiently and sustainably.
- Make Lao green to ensure peoples livelihood, biodiversity and contribute to mitigated of global warming and greenhouse gas emission;

National Green Growth Strategy 2016-2025 and Vision 2030 (NERI, 2018)

State “Efficiency, clean, entirely, lasting for national economic growth”

National Green Growth Strategy (NGGS)

Lao PDR has experienced rapid economic growth in recent years, averaging 7.9% GDP growth during its 7th Five-Year National Social Economic Development Plan (NSED) 2011-2015. By 2015, Lao PDR’ poverty rate was reduced to 19.7%, its human development index increased, and its labor structure improved with an increased percentage of labor employed in industry and service sectors. However, these national gains are tempered when compared against regional peers, as Lao PDR has been less successful in translating growth into job creation and poverty reduction.

These growth outcomes, and the impact they have had on Lao PDR’ environment, are due to several overarching trends and challenges, including a two-fold increase in the urban population in less than two decades, minimal institutional coordination, lack of financial resources and financial planning capacity for sustainable development, and lack of effective regulations on natural resource use, combined with a weak tax structure on environmentally harmful production and consumption. Nevertheless, the Government of Lao PDR (GoL) is committed to graduating the country out of the LDC group by 2020, and doing so with a greater emphasis on the quality of growth. The Lao PDR Vision to 2030 and its 10-year

Strategy (2016-2025), as well as the five-year 8th NSEDP 2016-2020, all clearly identified policy priorities on LDC graduation, increased human capacity, regional and international integration, and sustainable development. The three policy documents focus on green growth and its contribution to long-term social-economic development goals.

GGGI is supporting the government in Lao PDR to develop a National Green Growth Strategy (NGGS), which will provide policy direction on the mainstreaming of green growth into national, sub-national, and sector strategies and policies.

National Biodiversity Strategy and Action Plan (NBSAP) 2016-2025 and vision 2030 (MONRE, 2016)

Goal and objectives:

Goal “Enhance the role of biodiversity as national heritage and as substantial contributor to poverty alleviation, as well as sustainable resilience economic growth”.

Objectives:

- Institutionalize innovation multi-stakeholder efforts to arrest the degradation and enhance conservation ecosystems and biodiversity resources therein;
- Provide clear and enforceable guidance sustainable use of biodiversity resources to support poverty alleviation and sustainable economic growth;
- Establish practical mechanisms and ensuring fair and equitable sharing of benefits from the use of biodiversity resources.

Link between LDN, Achieving SDGs and Country Commitments

- Forestry Strategy to the year 2020 (MAF, 2005);
- National Adaptation Programme of Action to Climate Change (NAPA) to the year 2020 (GoL, 2009);
- National Strategic on Climate Change (NSCC) to the year 2020 (GoL, 2010);
- Agriculture Development Strategy to 2025 and Vision to the year 2030 (MAF, 2015);
- Natural Resources and Environment Strategy 2016-2025 and Vision 2030 (MONRE, 2015);
- National Biodiversity Strategy and Action Plan 2016-2025 (MONRE, 2016);
- National Green Growth Strategy of Lao PDR (NERI, 2018).

Current and ongoing status of legal support documents:

- National Land Management Plan (MONRE, 2018);
- Agriculture Law (as Version 1998);
- Draft Prime Minister Decree on Agriculture Land Management (as MAF, 2018);
- Environment Law (as Version 2012);
- Industry Processing Law (as Version 2014);
- Intended National Determined Contribution (GoL, 2020);

- National Assembly Agreement on Adopted National Land Management Plan to the year 2030 (NA, 2018);
- Draft revised of Land Law version (2019);
- Draft revised of National Forest Strategy to the year 2020 (2019 ongoing);
- Draft revised of Forestry Law version 2007 (2019 ongoing);
- Decree on Production Forest (PM, 2002, 2007, 2008);
- Decree on Protection Forest (PM, 2010);
- Decree on Conservation Forest (PM, 2015);
- Decree on Environment Impact Assessment (No. 21/PM, 2019);
- Order on Land concessions for Rubber, Eucalyptus and mining operation (No. 13/PM, 2012);
- Order on timber and non-timber forest product exploitation and transportation (No.15/PM, 2016);
- Order on Land concession for tree plantation and cash crops purpose (No. 9/PM, 2018);
- Order on Land concession for mining purpose (No. 8/PM, 2018);
- Order on prohibited of flora and fauna management (No. 5/PM, 2018);
- Draft revised of National REDD⁺ Strategy (DoF/MAF, 2018 on going).

**The Lao REDD+ Action Plan, period of 2021-2030
Period of 2021-2030 (Drafting on going)**

- Integrated Sustainable Agriculture Development combined with forest protection;
- Promotion of commercial tree planting and reforestation;
- Integrating infrastructure development;
- Mining, construction of cable corridors and linked to forest protection and forest resources;
- Prevention of logging and reckless forest product not in accordance with the laws and regulations;
- Stop shifting cultivation by promoting sustainable agriculture and controlling fires.

2. Stakeholder engagement and the LDN working group

Stakeholder engagement

The main stakeholders have done to identify the relevant technical working group to involve in land degradation neutrality (LDN) target setting process to ensure the stakeholder engagement and coordination.

Ministry of Natural Resources and Environment (MoNE) established the LDN working and have decided the LDN programs and project.

The LDN technical working group has been established from the relevant sectors consists agriculture, sciences, education and etc... sector totally of 26 members.

The list of LDN technical working group, the national focal point document and the official approval of LDN technical working group are mentioned in the annex in both English and Lao versions.

LDN working group

The LDN working group was established from the list of identified stakeholders from key agencies such as:

- Ministry of Natural Resources and Environment (MONRE), Department of Environment and Department of Land (DOE and DOL);
- Ministry of Agriculture and forestry (MAF), Department of Agriculture Land Management (DALaM);
- Ministry of Energy and Mining;
- Ministry of Planning and Investment (MPI);
- Ministry of Transportation and Public Work (MTPW);
- National University of Lao PDR.

The process was led by the UNCCD National Focal Point, under Ministry of Natural Resources and Environment. The LDN working group was involved in the analysis of national trends and drivers of land degradation, existing land management practices and validation of the results of the LDN assessment and proposed LDN baseline. The targets and the data were also validated by the LDN working group.

3. Concerns for land degradation in Lao PDR

The concern of land degradation Lao PDR include soil erosion from natural disasters resulting to reduce natural nutritional enrichment in the soil, land use change from development project for example energy-mining, infrastructures, over using chemical in agriculture and industrials in the Northern part of Laos such as Luangnamtha, Borkeo, Oudonxay provinces and in the central part including Bolihamxay, Khammuan, and Savannkhet provinces, drought event which cause to reduce crop productivities and decreased livestock, deforestation, shifting Cultivation/slash of land use. In additional, land degradation has been concerned in some the hot-spot area such as upland area, special economic zone, hydropower and mining projects, banana and rubber plantation areas.

Soil Erosion

According to the comparison of the impacts of 4 farming systems on runoff and soil erosion the average annual loss 6421kg/ha/yr. The soil erosion loss in case of stations; S6, S8, and least are least than case of S7 average 5838kg/ha/yr which in the Table 4:

Table 4: The study result of the land use impact soil erosion.

Station (S)	Cropping systems	Soil erosion T/ha
S6	Improved fallow	0.00
S7	Slash and burn	5.84
S8	Contour line planting	0.00

S9	Mulch&No tillage	0.00
Total of soil erosion T/ha		5.84

(Sources: Phonexay INTHALA, 2005)

According to the study on soil on runoff generation and soil detachment under various soil cover in an agricultural watershed of Northern of Lao PDR. The 64ha study area in Ngeun district, Luang Prabang province, there are 10 sub-areas of study. The result shown that the large amount of soil runoff was Teak average 54.32% and the rubber is smallest of soil runoff average 7.08%. The most cropping system of soil loss is the maze cultivation at the river bank 2585.80 g/m²/yr. The area with the least soil loss is a broom grass 52.38g / m² / year in the following Table 5 below:

Table 5: the study result on soil runoff generation and soil detachment under various soil cover.

Cropping systems	Soil runoff %/yr	Soil erosion (g/m ² /yr)
Teak	54.32	
rubber	7.08	
Maize		2585.80
bloom grass		52.38

(Sources: Sombath BOLIVANH, 2015)

4. Driver of land degradation

Definition of land degradation neutrality (LDN)

The concept of “zero net land degradation” was purposed at the 2012 UN conference on sustainable development. The UNCCD defines land degradation neutrality (LDN) as “a state where the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security stable or increase within specified temporal and spatial scales and ecosystem”.

Direct drivers

The concerns for land degradation in Lao PDR include reduction in the natural nutritional enrichment in the soil because soil erosion, acidic, salinity, unsustainable agriculture practice erode on the top soil layer for example shifting cultivation in upland and natural disaster such as flood and drought. In additional, land use conversion to other types, slash burn commercial plantation use of chemical fertilizer and heavy machinery are also our concern for land degradation in Lao PDR. The anthropogenic drivers that are directly associated with the local land use system are:

- Commercial plantation particularly uses of chemical fertilizer and heavy machinery;
- Unsustainable agriculture practices e.g. Shifting cultivation in upland, grazing;

- Soil degradation (erosion/acidic/salinity);
- Land Slides/Droughts/climate change (natural disaster);
- Land use conversion to other types;
- Improper land use planning (forestland, agriculture land, industry and commerce, energy and mines, education and sport, public work and construction, information-culture and tourism, post-telecommunication-communication, national defense and public security).

Drivers for deforestation and forest degradations summarized as following (Source: Draft of National REDD⁺ strategy, 2018)

- Infrastructure development (transportation);
- Mining;
- Hydropower development;
- Urban development;
- New village resettlement management;
- Slash and burn / shifting cultivation;
- Forestland conversion for commercialization agriculture;
- Forestland conversion for commercial tree plantation;
- Forestland degradation for rotation shifting cultivation;
- Forest degradation by legal logging quota;
- Forest degradation by illegal logging; and
- Forest degradation by forest fires from shifting cultivation and wildlife hunting.

The drivers based on environment and socio impacts assessment (SESA)

- Forestland conversion for commercial tree plantation;
- Forestland conversion for commercialization agriculture;
- Forest degradation by legal logging quota;
- Forest degradation by illegal logging; and
- Infrastructure development (transportation);
- Mining;
- Hydropower development;
- Urban development;
- New village resettlement management;
- Slash and burn / shifting cultivation;
- Forestland degradation for rotation shifting cultivation;
- Forest degradation by forest fires from shifting cultivation and wildlife hunting

Agriculture drivers specific:

- Unsustainable cultivation practices on slope land including tree clearance, pitting for seedling, non-application on erosion control measures and rotational cultivation;
- Monoculture, deserted land, lack or faulty application of fertilizers, no weeding;
- Degradation causes by pollution from wastewater, solid waste, toxic chemical, and the excessive use of pesticides.

Indirect drivers

Indirect drivers come from local, national and global level including objective and subjective factors (population, socio-economic and policy).

5. LDN institutional and legal environment

National Coordinator Committee

- 1976-1985 Department of Property, Land and Housing, Ministry of Finance; Paddy Land under management of Department of Cooperative, Ministry of Agriculture-Forestry and Irrigation. However, both Ministries play roles on data collection, inspection, management (Land tax and Agriculture tax);
- 1986-2005 Forestry, agriculture, irrigation, wetlands under management of MAF;
- 2006 established National Land Management Agency (NLMA) and National Land Information Centre under Prime Minister Office (PMO);
- 2011 National Land Management Agency merged to Ministry Natural Resources and Environment (Department of Land Management and Department of Land Development);
- 2012 Established Department of Agriculture Land Management under MAF;
- 2016 Department of Land Management and Department of and Development combined into one Department called Department of Land Development, MONRE;
- 2018 Agreement between two ministries MAF and MONRE such as National Land Management under Land Development Department, Forestland and agriculture Land under MAF.

SWOT Analysis

SWOT analysis was carried out by establishing links between the domestic legal and institutional environment and the national commitment to achieve LDN in Table 6.

Table 6: SWOT analysis:

<u>Strengths</u>	<u>Weaknesses</u>
<p>Legality related to LDN:</p> <ul style="list-style-type: none"> - clear policy and direction of land management - clearly identify responsibility of each ministry for survey, manage each category of land - there are legislations to support the implementation - there is a policy on encouragement of afforestation/reforestation in degraded forestland <p>Institutional: organizations which are responsible for land management implementation:</p> <ol style="list-style-type: none"> 1. department of agricultural land 	<p>Legality related to LDN:</p> <ul style="list-style-type: none"> - limited budget of the government - limitation of technical skills - limited facilities and equipment for the survey and management - unlinked database system in nationwide - issues of development move prior the management - some cases of land use are not in line with land use planning and legislation - Still implemented by sectors, not yet centralized. - invasion on state land - weak monitoring on land use and not achieve the target, low technology used for monitoring, - The dissemination on legislation and laws are not covered whole areas. - limitation of high technology on land management

<p>management and development</p> <ol style="list-style-type: none"> 2. department of land 3. department of forestry 4. department of agriculture 5. department of agriculture promotion 6. department of livestock and fishery 7. department of irrigation 8. National Agriculture and Forest Institute (NAFI) 9. Farming Association such as organic farming association on vegetable, coffee...etc 10. Ministry of Interior <ul style="list-style-type: none"> • 8 departments with mandate in sustainable land management in central to local level • legislations, approach and human resources 	<p>mechanism,</p> <p>Institutional:</p> <p>the implementation is not good enough</p> <ol style="list-style-type: none"> 1) human resources: less knowledge and experiences on using tools, technique on how to enrich soils 2) limited equipment and low technology 3) inadequate budget for the implementation of land management 4) some conflict in mandate of relevant agencies such as issue of duplication on land certificate 5) Some organizations do not monitor properly. For example, problems on illegal logging and weak were raising awareness.
<p style="text-align: center;"><u>Opportunities</u></p> <p>Legality related to LDN:</p> <ul style="list-style-type: none"> - to support in management, conservation and use of land - assist in attracting and certifying to internal and international investments - contribute to the improvement of life-being of people - support to the sustainability of soil conservation - reduce the risks of soil degradation and help to recover the degraded land - ensure the harmonization between socio-economic development and land management in central and local levels. - assist in land tax collection to achieve the target - reduce the hazard risk areas. <p>Institutional:</p> <ul style="list-style-type: none"> - support from the government - cooperation between government of Laos and international organizations - Projects/programme on food security and production. 	<p style="text-align: center;"><u>Threats</u></p> <p>Legality related to LDN:</p> <ul style="list-style-type: none"> -the implementation is slow and not on time as a plan. - issues of the land use do not follow the correct purpose/target, -issues of land concession and approval are not in line with sustainable land management plan <p>Institutional:</p> <ul style="list-style-type: none"> - impact of climate change to the recent land use - Technical staff still need capacity building and human resources is still limited. - The improvement on involvement of local people is still needed. - coordination among central and local level need to strengthen - Limited budget

6. LDN Baseline

Base line

The Baseline data has been provided through the Land Degradation Neutrality Target Setting Programme (LDN STP) of Lao PDR land cover change during 2000, 2005 between 2000 and 2010. The data provided was derived from Department of forestry (DoF, 2016) which divided in to different group of land use and change detection between 2005, 2010 and 2015.

The classification of forest classification and land use has been provided through LDN TSP of Lao PDR forest cover change. The forest definition in terms of canopy cover reflects changes in Forest Protection and the study by MAF and Japan's Programme Grant Aid for Environment and Climate Change FPP-TA6 between 2010 and 2015 the proportion of forest cover in 2015 was 46.7% that there has been a 6.5% increase in forest cover between 2010 and 2015, which equals to 1.29% annual increase. According to this study, the forest cover increase has been rapid in all regions: Southern Lao=1.7%/ year; Central Lao=1.2%/year; and Northern Lao=1.2%/year. The current trend of decreasing potential forest category and increasing current forest cover would indicate significant regeneration of fallows to forest. This trend was completely opposite between 2002 and 2010 in South and Central regions, where forest cover actually declined and potential forests increased.

According to the case study research of Chaplot et.al, 2009 study of 2,348 Soil profiles in 581 Georeferenced hill slope in northern Lao PDR found that in 0.0-0.05 m soil depth carbon stock at $0.4 (\pm 0.0046 \text{ Kg C m}^{-2})$ to $- 1.9 \text{ Kg C m}^{-2} (\pm 0.22 \text{ Kg C m}^{-2})$ and 0.0-0.35 m soil depth carbon stock at $2.6 (\pm 0.29 \text{ Kg C m}^{-2})$ to $- 11.4 \text{ Kg C m}^{-2} (\pm 1.31 \text{ Kg C m}^{-2})$. According global assessment by FAO carbon stock in living biomass plants not too much change during 25 years (1990-2015) during 1,074- 1,186 million ton.

Land Use change

The Baseline data has been provided through the LDN TSP of Lao PDR land cover change during 2000, 2005 between 2000 and 2010. The data provided was derived from Department of forestry (DoF, 2016) which divided in to different group of land use and change detection between 2005, 2010 and 2015. The national data for land cover/land use change data have been provided through LDN TSP, the process of improving historical forest/land use change is presented below in Tables 7 and 8.

The national Land use change assessment in 2005, 2010, 2015 the current forest has changed from 14,252,033 ha or 60.2% to 59.35 and 58.0% respectively; the potential forest has been changed from 6,255,810 26.7% to 5,999,443 or 25.7% and 6,238,431 or 26.7% in 2005, 2010 and 2015 respectively of total land use group; for the Other vegetation has been 413,924 ha to 396,344 ha in 2010 and 6,329,743 ha in 2015 of total land use group; the assessment by Department of forestry in 2016 showed that the Infrastructure areas use not much change during 2005, 2010, 2015 from 257,241 ha to 266,288 ha in 2010 and 268,901 ha or 1.1% of total land use group. However, for the wetland and river have been increased from 297,170 ha or 1.3%, 359,318 ha or 1.5%, 359,633 ha Or 1.6% of total land use group in Table 7.

Table 7: Land Use Change during 2005, 2010 and 2015 (DoF, 2016).

No.	Land use group	Land use sub-group	Code	Area (ha)					
				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 broadleaf and coniferous	MBC	146,325		111,513		110,808	
		Plantation	P	24,528		113,011		141,710	
		Sub total		14,252,033	60.2		59.3		58.0
2	Potential forest	Bamboo	B	70,869		93,616		91,312	
		Revegetation (Fallow)	RV	6,255,810	26.7	5,999,443	25.7	6,238,431	26.7
		Sub total		6,326,671		6,093,059		6,329,743	
3	Other vegetation	Open dry dipterocarps	SA	108,735		108,056		104,881	
		Sort revegetation	SR	28,218	0.6	27,511	0.6	27,360	0.6
		Grass land	G	276,971	1.2	262,777	1.1	261,281	1.1
		Sub total		413,924		396,344		393,523	
4	Agriculture	Upland agriculture	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	634,620		980,578		1,081,138	
		Agriculture production area	AP	53,717		84,206		85,567	
		Sub total		2,114,807	8.0	2,510,808	9.7	2,553,780	10.1
5	Infrastructure areas	Urban	U	66,102		75,285		77,691	
		Barren 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	Water	(Swamp water) Wetland	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	359,633	1.6
GRAND TOTAL				23,680,000	100	23,680,000	100	23,680,000	100

(Source- Land Use Change during 2005, 2010 and 2015 (DoF, 2016) 2 for the period of 2000, 2005 and 2010).

Forest cover change in Lao PDR from 2010-2015

Industrial exploitation of forest resources has a long-standing history in the Lao PDR, which can be traced back to its colonization, starting in the early 1900s. The exploitation, however, became systematic and evident in the mid-20th century, when the country turned more towards a forest resource-based economy (Fujisaki, 2012). According to a recent national survey carried out in 2010, forests in the Lao PDR cover approximately 9.55 million hectares, or 40.3% of the total land area of the country. Areas of forest cover in the Lao PDR have changed over time. As shown in Figure 3 (the percentage of forest areas by region from 2002 to 2015), the forest areas in the northern part of country have increased by about 0.75% per year, whereas the forest areas in central and southern part have decreased consequently about 0.43% and 1.16% per year. Overall, the forest areas in each region (southern, central and northern) in 2010 are less than 50% in Table 8.

Table 8: Forest cover change in Lao PDR from 2010-2015.

North	Current forest	Potential forest	Other non-forest
Proportion 2010 (%)	34	41.14	25.04
Proportion 2015 (%)	51.7	38.6	9.7
South	Current forest	Potential forest	Other non-forest
Proportion 2010 (%)	47.44	30.6	27.34
Proportion 2015 (%)	66	22.6	18.1
Central	Current forest	Potential forest	Other non-forest
Proportion 2010 (%)	42.55	34.8	24.91
Proportion 2015 (%)	59.3	26.7	15.3
Lao PDR	Current forest	Potential forest	Other non-forest
Proportion 2010 (%)	40.25	45.98	6.51
Proportion 2015 (%)	46.72	38.16	3.00

(Source: 2016, MAF and Japan's Programme Grant Aid for Environment and Climate Change FPP-TA6)

- Source- National Land Management to the year 2030, approval by the National Assembly No. 098/NA, date 28 June 2018 and National Land Management Master Plan to the year 2030, date October 2018 (MONRE, 2018) Table shows Lao PDR Land Cover Changes between 2000 and 2010, as approved by the LDN working group using the national data of Lao PDR.
- Current forest: canopy cover > 20%, area >0.5 ha, tree height > 5 m;
- Potential forest: canopy cover 10-20%, area >0.5 ha, tree height > 5 m;
- Other wooded: tree outside forest;
- Permanent agriculture: paddy field, fruit tree garden, orchard;

In the Lao PDR, national forest cover assessment has been conducted six times, in 1940, 1982, 1995, 2002, 2010 and 2015. The forest has decreased from 17 million hectares, or 71.8% of the total land area in 1940, to 11.6 million hectares, or 49% of the total land area in 1982 to 9.8 million hectares, or 41.4% of the total land area in 2002, to 9.55 million hectares, or 40.33% of the total land area, in 2010 (Figure 2). However, further studies conducted by MAF and Japan's Programme Grant Aid for Environment and Climate Change FPP-TA6 indicate that the proportion of forest cover in 2015 was 46.72% (see table 8). The study shows that there has been a 6.47% increase in forest cover between 2010 and 2015, which equals to 1.29% annual increase. According to this study, the forest cover increase has been rapid in all regions: Southern Lao = 3.7%/ year; Central Lao = 3.35%/year; and Northern Lao=3.54 %/year. The current trend of decreasing potential forest category and increasing current forest cover would indicate significant regeneration of fallows to forest. This trend was completely opposite between 2002 and 2010 in South and Central regions, where forest cover actually declined and potential forests increased.

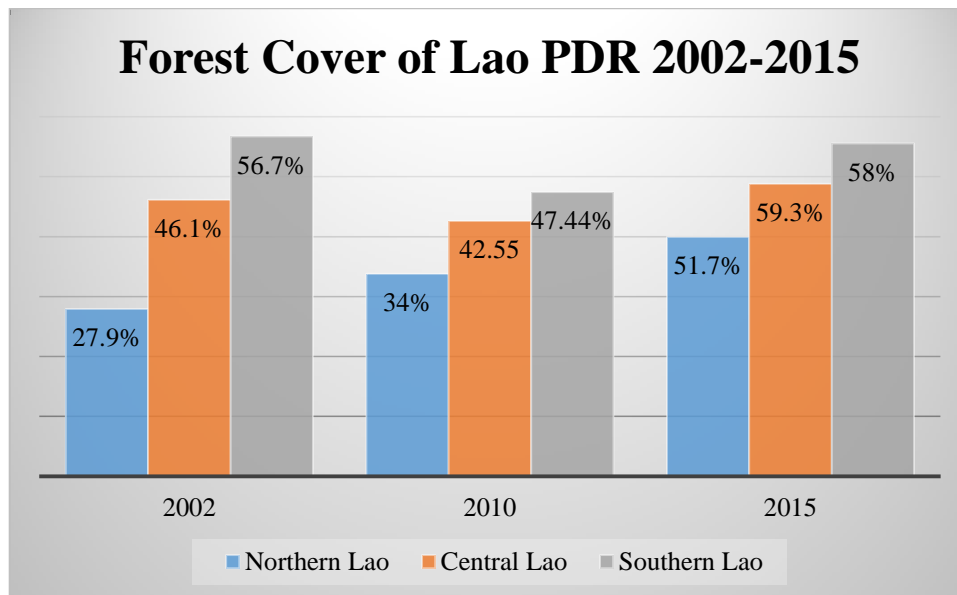


Figure 3: The percentage of forest cover by regions 2002-2015

Other non-forest

The indisputable environmental issues related to declining forest cover are generally local and caused by factors beyond the traditional realm of forestry; i.e. commercial logging and/or illegal logging as well as household utilization of wood for construction and energy. In many studies the main factors behind deforestation have been found to be the expansion of permanent agriculture, and, in particular, shifting cultivation. Overall, the loss of forest area has resulted in a loss of biodiversity and ecosystem services and reduced the extent to which local people can rely on wild food to meet their food security and nutritional needs. The loss of forest, moreover, can be attributed to the change in the country's status regarding greenhouse gas emission, where it was previously recorded as a net sink of CO₂ in 1990 and then a net producer of CO₂ in 2000 (MoNRE, 2013).

Nevertheless, to address deforestation, the government is promoting community participation, Payment for Ecosystems Services (PES) and sustainable forest management, and has applied Forest Stewardship Council standards (FSC) to all production forest areas (MoNRE, 2012). The demand for wood products within and outside the Lao PDR is increasing rapidly. Wood products provided by the forestry sector include lumber, furniture, doors, parquet flooring, and posts. Most houses in urban areas are now built with bricks and a large proportion of production serves to meet increasing demands associated with construction. The increase is resulting in a heightened demand for doors, flooring, furniture, and other household items (FAO, 2002). In 2001, log production contributed 3.2% of the national GDP; this share would have been higher if subsistence use and processing of wood and NTFPs were included. In terms of energy consumption, charcoal and fuel wood are the dominant sources of energy for cooking, and also for providing heating during the cold weather months in highland areas (MoNRE, 2013).

Land productivity dynamics

Lao PDR’s agriculture sector is facing serious challenges meeting the demand of both international and domestic markets, due to issues of farm productivity, produce quality, and profitability. The project hopes to address these challenges by promoting best practices in farming, to improve the quality of produce and reduce costs; linking farmers to agribusinesses to improve marketing; and shifting to more modern and environmentally-friendly processing facilities and technologies, to improve the product value and reduce losses. Strengthening the enabling environment will also help reduce the costs of doing business in the agriculture sector.

The US\$25 million project will support 28,000 farming households in 224 selected rural villages to improve their yields and product quality, and increase labor productivity and crop sales. Expanding access to high quality seeds, machinery and irrigation schemes aims to reduce transaction costs and enable higher returns for farmers. Through diversified production, the project will combat stunting, which affects over 40 percent of children under five in Lao PDR. The project will encourage farming communities to diversify their diets, improve cooking and processing of food, and reduce women’s time in farming through the use of modern machinery. Farmers will also use climate smart technologies to develop cleaner and higher value agricultural products.

Soil Organic Carbon Stock (SOC)

Chaplot et.al, 2009 study of 2348 soil profile in 581 Georeferenced hill slope in northern Laos found that in 0.0-0.05 m soil depth carbon stock at 0.4 ($\pm 0.0046 \text{ Kg C m}^{-2}$) to- 1.9 Kg C m^{-2} ($\pm 0.22 \text{ Kg C m}^{-2}$) and 0.0-0.35 m soil depth carbon stock at 2.6 ($\pm 0.29 \text{ Kg C m}^{-2}$) to - 11.4 Kg C m^{-2} ($\pm 1.31 \text{ Kg C m}^{-2}$). According global assessment by FAO carbon stock in living biomass plant not too much change during 25 years Table 9.

Table 9: Carbon stock in living biomass.

Year	Forest area (mil.ha)	Total (mil. tons)	AGB	BGB	Litter
1990	17,645	1,186	-	-	-
2000	16,526	1,133	-	-	-
2005	16,870	1,106	-	-	-
2010	17,816	1,074	-	-	-
2015	18,861	1,126	917	184	35

(Sources: FRA, 2010; 2015)

Chaplot *et.al*, 2010, estimated of soil carbon stock in Laos’s using 3,471 soil profile 0.0-1.0 m depth, they found that 4.64 billion tones, and 2556 soil samples 0-0.3 m depth they found that 1.8 – 771 Mg C m^{-2} (mean 129 Mg ha^{-1}). Phachomphon *et. al.*, 2010 using 2,806 soil profiles during 1995-1996 (Table 10) they found that most of carbon stock was found at top soil layer 0.0-0.0 m depth.

Table 10: Soil carbon stock with different soil depth.

Soil depth (m)	Soil carbon stock (Kg C m ⁻²)	Standard error (Kg C m ⁻²)
0.0-0.3	12.5	0.71
0.3-0.6	5.6	0.71
0.6-0.9	1.5	0.08
0.0-1.0	19.8	1.11

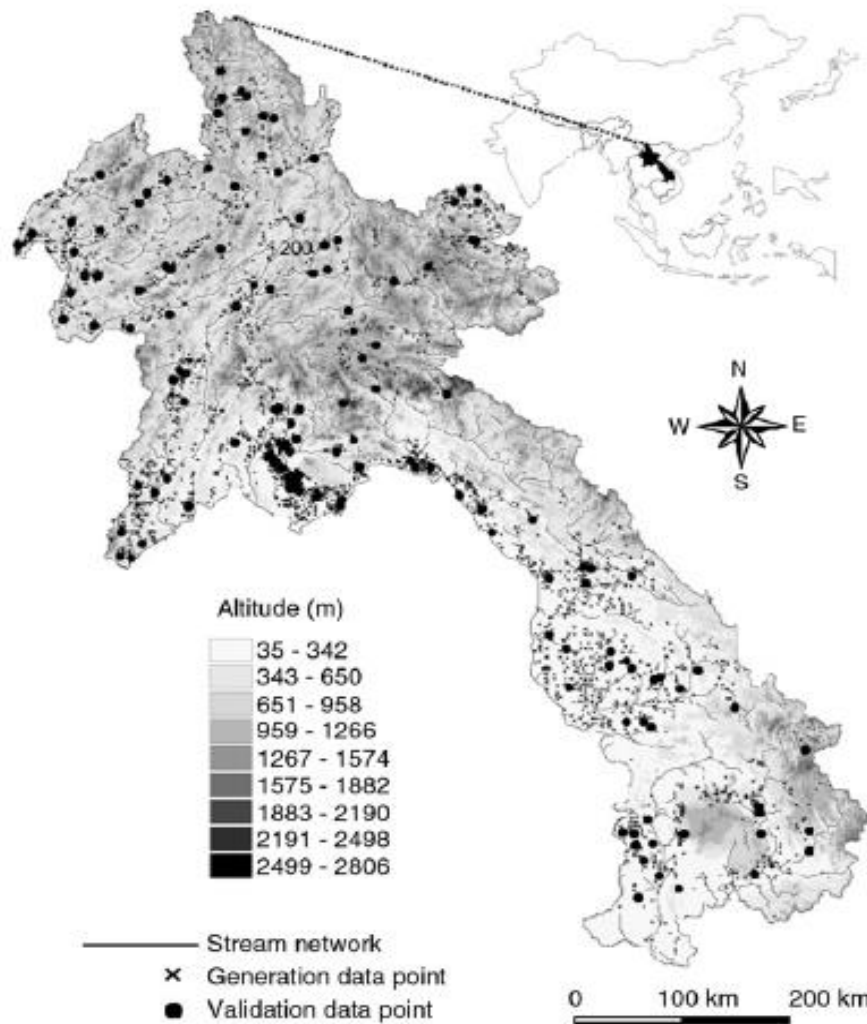


Figure 3. Soil profile samples mapping (Source: Phachomphon *et. al.*, 2010).

7. LDN Targets and Measures

The LDN targets

The objective of land degradation neutrality in Lao PDR is implementation sustainable development goals through the operations of national action programs and plans in order to prevent land degradation. According to a recent national survey carried out in 2010, forests in the Lao PDR cover approximately 9.55 million hectares, or 40.3% of the total land area of the country. Areas of forest cover in the Lao PDR have changed over time. The forest areas in the northern part of country have increased by about 0.75% per year, whereas the forest areas in central and southern part have decreased consequently about 0.43% and 1.16% per year. Overall, the forest areas in each region (southern, central and northern) in 2010 are less than 50%. To ensure food security/potential commercial production to develop good, safe and

sustainable agriculture by 2030 and Implementation of “Forestry Strategy to the year 2020” of the country.

In the National Master Plan of Land Management, there are several types of the land categories has been classification of the total land area as following;

- Forestry Land including Wet land 16,5 Million ha, 70% of total land area;
- Agriculture land including wet land 4,5 Million ha, 19% of total land area;
- Industry Land, Culture land and National Defense and Security Land, 2,05 Million ha, 8,6% of the total land area;
- Transportation Land 0,37 Million ha, 1,6% of the total land area;
- Construction Land 0,18 Million ha, 0,8% of the total land area.

The National Land Degradation Neutrality Targets in Lao PDR for the period to 2030 with the following content in illustrated in Table 11:

Table 11: Summary of the national voluntary LDN targets from Lao PDR

Targets	Area (ha)	Location	Co-ordination Ministries
I. Agriculture/Agriculture land management			
<ul style="list-style-type: none"> • To ensure food security/potential commercial production to develop good, safe and sustainable agriculture by 2030 • To bring crop cultivation techniques on steep slopes by rehabilitating the soil quality in order to capture the natural conditions and fertility to farmers, provincial and district staff to have the knowledge and ability to use in their own areas and create demonstrations. • To protect the use of agricultural land in steep slopes and maintain fertility so that upland farmers have a stable agricultural production system. • In order to expand the results of agricultural land use planning, erosion prevention techniques, soil improvement, and composting of upland crops have been 		<ul style="list-style-type: none"> • Concentrated in Central and Southern part of Lao DR • 2021, Kham, Nong Het, Pek, Khoun Districts, Xieng Khouang Province. • 2022, La, Nga, Pakbeng, Beng Districts, Oudomxay Province. • 2023, Long, Nalae, Sing, Namtha Districts, Luang Namtha Province. • 2024, Xieng Kho, Khuan, Sop Bao Districts, Houaphanh Province. • 2025, Samphan, Khua, Mai, Yot Ou Districts, Phongsaly Province. • 2021, Xieng Kho and Sop Bao Districts, Houaphanh 	DOA, DaLAM, MAF and MoNRE (In line with agriculture development strategy up-to 2030) and related line Ministries Department).

<p>implemented for maximum benefit and sustainability.</p> <ul style="list-style-type: none"> • To ensure that the production area is fertile and can be used for a long time. Increase productivity per capita, can produce sufficiency and produce goods, people have more income, better living standards. • To increase the yield of maize, upland rice per area and use land sustainably. 		<p>Province.</p> <ul style="list-style-type: none"> • 2022, Xieng Kho and Sop Bao Districts, Houaphanh Province. • 2023, Xieng Kho and Sop Bao Districts, Houaphanh Province. • 2024, Viengxay and Xamtai Districts, Houaphanh Province. • 2025, Viengxay and Xamtai Districts, Houaphanh Province. 	
II. Forestry			
<p>Implementation of “Forestry Strategy to the year 2020” of the Lao PDR</p>	<p>To increase forest cover to 70% of land area (i.e. to 16.58 million hectares) by 2020. Once the target is achieved, emission reductions will carry on beyond 2020.</p>	<p>As a whole country and Estimated 478.000.000 tCO_{2e} from 2015 to 2020; and 770.000.000 from 2020 to 2025 478.000.000 tCO_{2e} from 2015 to 2020; and 770.000.000 from 2020 to 2025</p>	<p>MAF, MoNRE</p>
III. Land Management/Electricity Sectors			
<p>National Planning of Land Management (2030):</p> <ul style="list-style-type: none"> • Forestry Land including Wet land • Agriculture land including wet land • Industry Land, Culture land and National Defense and Security Land 	<p>16,5 Million ha, 70% of total land area</p> <p>4,5 Million ha, 19% of total land area</p> <p>2,05 Million ha, 8,6% of the</p>	<p>Total Land area of country is 236,800 sqkm²</p>	<p>MAF, MoNRE and others Ministries/Mo NRE, Department of Climate Change and Disaster</p>

<ul style="list-style-type: none"> • Transportation Land • Construction Land 	<p>total land area</p> <p>0,37 Million ha, 1,6% of the total land area</p> <p>0,18 Million ha, 0,8% of the total land area</p>		
Expansion of the use of large-scale hydroelectricity	<p>The objective of this activity is to build large-scale (>15 MW) hydropower plants to provide clean electricity to neighbouring countries. Approximately 5,500 MW is planned for construction by 2020. In addition, 20,000 MW of additional hydroelectric capacity is planned for construction after 2020.</p>	As a whole country and Estimated 16.284.074,5 tCO ₂ (until 2020)	MoEM, MoNRE
Implementation of Rural Electrification Programme	<p>To make electricity available to 90% of households in rural area by the year 2020. This will offset the combustion of fossil fuels to produce power where there is no access to the electricity grid.</p>	As a whole country and Estimated CO _{2eq} reductions about 69.183.340 tCO _{2e}	MoEM, MoNRE
Finalize land use planning,			MoNRE and

to register and issue land title nationwide by 2030, manage and administer the land that comply with law and regulation			Concerning Ministries
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Measures identified to achieve LDN

Implementing solution:

- Promote organic agriculture limited use of chemical fertilizer to ensure food security production to develop good, safe and sustainable agriculture;
- awareness/capacity building how to manage drought/natural disaster;
- enforce of existing laws limiting shifting cultivation by sustainable livelihood to farmers
- develop drought/climate change management plan (natural disaster);
- review plan and implementing on forest management to achieve 70% forest cover by 2020;
- Restore the open pit mines and abandoned mines and prioritize land use planning/project to reduce the land degradation by 2030;
- Review and implementing national land use planning/ master plan 2018 in effective and sustainable;
- Strengthen law, regulation and responsibilities of forest and land use management.

The national targets and Measures identification of the country and The National Land Degradation Neutrality Targets in Lao PDR for the period to 2030 are illustrated in Table 12 below;

[Table 12: The National Land Degradation Neutrality Measures and Targets in Lao PDR for the period to 2030.](#)

Measures	Targets	Co-ordination ministries
Promotion of organic agriculture Limited use of chemical fertilizer Good agriculture practice and protect on the soil erosions.	To ensure food security/potential commercial production to develop good, safe and sustainable agriculture by 2030, promoting clean agriculture and Forestry products 3.4% by 2020 but specifics location for implementation and soil protection on the hilly area on the mountainous in Northern part of the country.	MAF, MoNRE (in line with agriculture development strategy up-to 2030) and related line ministries department
Proper enforcement of existing laws Limiting shifting cultivation by sustainable livelihood to farmers Proper grazing and livestock management.		MAF, MoNRE
		MAF, MoNRE
Forest planning and management according to production forest and conservation forest	<ul style="list-style-type: none"> • To achieve 70% area under forest by 2020 • To increase soil organic carbon in forest by 2030, in 6 provinces in Northern part of Lao PDR but not specifies the percentage on the plan to 	MAF, MoNRE
Increase in protected area Public awareness on disadvantage of slash and burn		MAF, MoNRE

	increase soil organic carbon yet, because REDD+ is ongoing drafting supporting to approve by 2020.	
EIA compliance		MAF, MoNRE
Proper forest management Community awareness	<ul style="list-style-type: none"> To minimized the impact on the Natural and resource and environment. Community Forestry is very important issue to Protect forest in rural community. 	MAF, MoNRE
Restoration forest on the Watershed and degraded land areas.	<ul style="list-style-type: none"> Reforestation is an effective mitigation strategy to fight global warming. In addition to benefiting the climate, To help protect important species of animals. To help to rebuild habitats and degradation which are the leading threats to the health of a species. Reforestation is the natural or intentional restocking of existing forests and woodlands (forestation) that have been depleted, usually through deforestation. ... Sometimes the term "re-afforestation" is used to distinguish between the original forest cover and the later re-growth of forest to an area. 	MAF, MoNRE.
Proper Implementation national land use master plan 2018	Finalize land use planning, to register and issue land title nationwide by 2030, manage and administer the land that comply with law and regulation.	MoNRE and concerning Ministries

Achieving LDN

Implementing organization, the main causes are the impacted of unsustainable land use, soil erosion, water quantity and water quality are degradation of water condition with the following contents.

Land Administration and Management:

- Develop a National Master Land Use Plan and national, provincial, and district Integrated Spatial Plans (ISP) for sustainable utilization of land as basis for developing the National and Provincial Social Economic Development Plans;
- Conduct an integrated and participatory land survey and allocation in 18 provinces, 91 districts, and 3,492 villages across the country;
- Develop regulations on land use management and monitoring and grievance redress mechanisms for improving land administration.

Forest Resources and Biodiversity Management:

- Conduct forest re-survey, allocation, and rehabilitation to identify 3 national, provincial, and district forest categories (protection forest, protected forest, and production forest) and promoting community ownership to protect the forest;
- Develop and implement sustainable forest allocation, administration and rehabilitation plan for 49 national, provincial, and district protection areas;
- Develop and implement sustainable forest allocation, administration and rehabilitation plan for 7 national protected areas by mainstreaming into ISP and promoting community ownership.

Environment and Climate Change and Disaster Management:

- Develop and implement national, provincial, and district ISP across the country;
- Develop and implement the concept frameworks, mechanisms, and guidelines for sustainable city development to ensure Green, Clean and Beautiful cities piloted in cities along Roads;
- Enhance the promotion and dissemination of environmental protection, legislation, policy and regulations related to environmental protection and quality improvement;
- Conduct review and update the State of Environment Report every 3 years based on the national indicators including solid waste, water quality, air quality, soil quality, forest cover, and biodiversity and climate change adaptation by developing pilot model projects for each indicator.

8. Land-based adaptation priorities

Sustainable Forest Management: Increase forest cover to a total of 70% of land area by 2020 , and maintaining it at that level going forward; Develop and enforce appropriate laws, regulations and implement guidelines for sustainable forest management; Strengthen capacity in integrated land use planning, watershed, forest management, reduction of slash and burn practices to increase the resilience of forests;

- Promote integrated actions on watersheds, reservoir management, water storage for agroforestry, wildlife management, fisheries and tree varieties, prevention of drought; Forest surveys and allocation for sustainable management and rural development; Strengthen the capacity of technical staff and village forest volunteers;
 - Promote forest seed and seedling production for reforestation and forest restoration; Research and select forest species which are resilient to pests, diseases, drought, and soil erosion
- Climate Smart Agriculture: Improve appropriate resilient agricultural farming system practices and technologies: conservation of agricultural soil, animal health and disease outbreak monitoring and control, long term feed storage improvement, climate resilience crops, efficient water use cropping systems, short rotation cropping and maximizing the use of indigenous climate resilient knowledge;
- Develop and improve crops and animal diversification and resilience especially in the risk, flood and drought areas; Upgrade agricultural research and extension services
- Water Infrastructure: Strengthen information gathering, modeling and vulnerability assessment for climate change in priority river basins in Lao PDR;

- Develop and implement reliable early warning flood systems, reporting and information disseminating services;
- Strengthen the protection of watersheds to safeguards and moderate down streamflow during periods of high and low flow;
- Study and promote the conservation of wetlands as part of a climate resilient ecosystem-based approach;
- Develop and strengthen standards and procedures to ensure the safety of dams and other water resource related infrastructure;
- Design and build multi-purposes dam and reservoirs to ensure sufficient water supply in drought prone areas and seasons;
- Construct/rehabilitate dykes and enhance river bank protection and irrigation systems to increase climate resilience; Increase awareness and technical capacity of staff regarding climate change impact on water resources and appropriate technologies, and wetland management; Study water treatment which has ground water impacts, ground water and ecosystem.

9. Conclusions and Recommendation

Conclusions

Lao PDR has set the national voluntary LDN targets, established a baseline, and formulated the measures to achieve LDN which are truthful and measurable. Lao PDR identified the achieving LDN to contribute/link with three Rio conventions, Sustainable Development Goal, Social Economic Development Plan, Law, National Strategy are significant for sustainable management of land sources, forest resources and water sources and poverty reduction. The LDN implementation based on the forest and land management, forest ecosystem services, water resources management, agriculture management should be integrated biodiversity conservation, responses to natural disaster/climate change to ensure for the long-term decision on land management and resilient in the future.

The UNCCD National Focal Point (NFP) and the LDN TSP National Working Group members are responsible for working closely with the key stakeholders to ensure that the LDN target setting process receives their input and approval. The national level (MoNRE and MAF) will work with provincial level for LDN, leveraging LDN and to support these agencies in the LDN planning and implementation process at the local level.

The LDN implementing objective is to voluntary goals integrated the investment policies and programs at different levels (National, local level). These can be achieved by adopting measures to mobilize the policy makers at all levels through proper institutional and communication regimes at appropriate times. Moreover, to achieve LDN targets, Lao PDR aim to coordinate and work adjacently with national agencies such as: UNDP, IUCN, FAO, GEF and other financial support for capacity building, awareness, development plan to achieve the LDN implementation.

Recommendation

Land degradation is a process in which the value of the biophysical environment is affected by a combination of human-induced processes acting upon the land. It is viewed as any

change or disturbance to the land perceived to be deleterious or undesirable. Land degradation is caused by multiple forces, including extreme weather conditions particularly drought, and human activities that pollute or degrade the quality of soils and land utility negatively affecting food production, livelihoods, and the production and provision of other ecosystem goods and services. Land planning and land management need to be organized according to the risk of degradation and to control soil erosion and preserve soil resource. According to this LND target recommendation approach is a valuable tool for land use planning and management at District and Provincial levels. Attention should be paid on the fact that the working set up the targets for land use planning on target areas to makes appropriate for such planning scale. Therefore, for precise targeting of specific soil protection zones more detailed information should be needed.

Soil degradation can be classified into four main types of degradation: water erosion, wind erosion, chemical deterioration and physical deterioration. There are 5 Ways to Reduce Land Degradation in Connecticut, should be consideration in the country;

- Gardening Planting vegetation and grass can stop heavy rains from damaging our land and it protects the topsoil from being washed away,
- Afforestation and Reforestation,
- Conservation Tillage,
- Constructing Wind Breakers,
- Using Fertilizers.

In general, relying on the current land-use policy framework to address LDN will likely result in some gaps and anomalies. Key policy and institutional improvements needed to support effective implementation of LDN include putting in place: a national soil conservation policy to provide an overarching policy framework on land and soil protection; a systematic and coordinated data collection strategy on soils and the impacts of land degradation; mechanisms for the mobilization of adequate and sustained financial resources; streamlined responsibilities and governance structures across national, regional and county levels. While the focus of this analysis has been on public policies, processes and agencies, numerous and diverse non-governmental actors also play a crucial role in the protection and management of soil and land in Lao PDR. Hence, across all levels of government, platforms, pathways and incentives need to be strengthened and/or created to effectively facilitate the role of diverse stakeholders.

There are some recommendations should be made in the future;

- Clarifying the contribution of national programs to combat the land degradation in Lao PDR and integrate the LDN targets into national sustainable development policies.
- The goal of combating against land degradation was very broad and it took many decades to succeed, so need supporting for preparing our LDN.
- It is necessary to identify the soil degradation hotspots for each province and we focus efforts on this hot spot of land degradations.
- Survey and assessment the data and information regarding Land Cover, Land productivity dynamics (LPD) and Soil Organic Carbon.
- Classification of land degradation level, the degree of degeneration required by the UNCCD, it is necessary to divide it into three levels of land degradation, medium, low and potential of degeneration. In the LDN implementation plan, we also need to emphasize areas with high degeneration and areas at high risk of land degradation.

- In order to implement, it likes as Vietnam, we will not have a separate budget for this program, so we should pick up some contents of other programs that we believe are invested by the government here, the target should be lower than the Government's plan because the rest should call for the support of international organizations.
- LDN target needs some specific indicators such as how many hectares of forests are newly planted, how many hectares are restored, how many hectares are applied advanced technology such as drip irrigation and Agro-forestry with NTFP species, how many hectares will request support from international donor, we need to identify for each province.

10. Mapping of LDN transformative projects

Lao People's Democratic Republic (Lao PDR) is a small country in Southeast Asia currently trying to reform and develop its agriculture by introducing new crops and farming practices. One of many things to consider when adapting to new farming practices is the impact on soil erosion. Until recently most of the farming in northern Lao PDR, an area characterized by mountainous terrain and steep slopes, has been rice paddies on flat land and slash and burn agriculture on the hillsides. After clearing a forested area and growing crops, the soil was put into fallow for up to 20 years allowing the forest to regrow. Now, due to land reallocation and increased demands, the time span allowed for fallow has often been shortened to only a few years. This reduces the fertility of the soil since it has less time for recovering and nutrient accumulation, and also reduces the amount of re-growing vegetation.

Soil erosion is a problem throughout the globe, as it reduces the fertility of arable land. As the population increases the pressure on agricultural land increases, resulting in overgrazing of rangelands, shorter fallow periods, and forest clearing. This reduces the protective vegetation cover and exposes the soil to rainfall and runoff erosion.

Some projects proposal proposed in Northern part of Lao PDR by the Department of Agriculture Land Agriculture Management (DaLAM), Ministry of Agriculture and Forestry will be supplementing the National Land Degradation Neutrality Measures and Targets in the country for the period to 2030 to ensure food security/potential commercial production to develop good, safe and sustainable agriculture by 2030, promoting clean agriculture and Forestry products 3.4% by 2020 but specifics location for implementation and soil protection on the hilly area on the mountainous in Northern part of the country as mention in the Table 12. There are to project will be conducted such as following;

1st Project, the title is “**Soil Erosion Protection on the hilly agriculture land on in the Northern part of Lao PDR**”

Introduction:

The government has adopted a national strategy for economic growth and poverty alleviation. The strategy sets out the direction and systematic poverty eradication program, in which steep land use planning is important in land use planning to create stable livelihoods for farmers, especially in upland or mountainous areas, and to provide sustainable livelihoods as well as to conserve natural resources, forests, and the environment.

The Agriculture Land Development and Fertilization Management Center, Department of Agricultural Land Management (DALaM) has a central role in implementing the development of crop protection techniques to prevent soil erosion in steep slopes as a small-scale project. Results research station that crop using planting techniques and have positive resource lands to reduce erosion is 4-8 tons per hectare per season production, increase efficiency and productivity, and sustainability can reduce slash to compare how crop farmers to resolve careers shifting cultivation by farmers in the area slope, land use, using the forest aggravation has caused the survey, allocation, set zoning of agricultural land management use, preservation, restoration and improvement of soil, pilot demonstration and transfer of technology to improve soil and land use favorable to ninth on the management and development of agricultural land to effectively and heard stirred.

In past center development and management of the use of fertilizers in coordination with provincial and district lines in passing techniques to staff provincial and city officials to the task, but that staff at provincial and district cannot bring knowledge of techniques such as projects to prevent soil erosion in production agriculture that are amenable to implementation in the local area its due employee centers are techniques to convey knowledge available to staff provincial and city into closer as they should.

Project location:

Project will be implementation in 5 provinces in Northern parts of Lao PDR, such as Xiengkhuang, Oudomxay, Luangnamtha, Huaphanh and Phongsaly Provinces (Detail of the location of the Project refer to mapping below).

Objectives:

In general, to perform work efficiently and sustainably; The access technology-technology appropriate to ensure a crop to prevent soil erosion in land slope is implementing performance management and development of agricultural land to benefit conditional local is necessary to implement the project to build a staff central to coach good quality can convey knowledge of its existing staff at provincial and district strength can be used to expand the operating level and its dissemination to farmers and local its effective use in the real.

- To bring crop cultivation techniques on steep slopes by rehabilitating the soil quality in order to capture the natural conditions and fertility to farmers, provincial and district staff to have the knowledge and ability to use in their own areas and create demonstrations.
- To protect the use of agricultural land in steep slopes and maintain fertility so that upland farmers have a stable agricultural production system.
- In order to expand the results of agricultural land use planning, erosion prevention techniques, soil improvement, and composting of upland crops have been implemented for maximum benefit and sustainability.

Outcome of Project:

- Farmers and provincial and district staff have been trained in the use of agricultural techniques in cropping in steep areas.
- Farmers shared their experiences and practiced in their own areas.

Duration of Project:

- 2021, Kham, Nong Het, Pek, Khoun Districts, **Xieng Khouang Province.**
- 2022, La, Nga, Pakbeng, Beng Districts, **Oudomxay Province.**
- 2023, Long, Nalae, Sing, Namtha Districts, **Luang Namtha Province.**

- 2024, Xieng Kho, Khuan, Sop Bao Districts, **Houaphanh Province**.
- 2025, Samphan, Khua, Mai, Yot Ou Districts, **Phongsaly Province**.

Budget Needed: 500,000US\$

2nd Project, the title is “Soil and Fertilizer Management for Crops on the Slope on the Lao-Vietnam Border”

Introduction:

The livelihood of the people of all ethnic groups is based on the cultivation of crops as the main occupation and animal husbandry as a secondary occupation. The government has focused on agricultural production in-focus areas with favorable conditions and production advantages. Improve product quality and increase yield efficiency per area. Encourage farmers to shift from subsistence production to commodity production to generate income for families to gradually improve their lives. In order to increase productivity on the land, it is necessary to pay attention to solving many problems, especially the issue of agricultural land. Farmers' production is still largely dependent on nature (relying on land, water, and forest resources for development). These resources are now drying up and deteriorating each year. The use of land for agricultural production is ongoing, but land improvement and maintenance have not been done well, although farmers in some areas have taken the initiative and are not paying attention to it.

Pa Rang (Sop Bao) and Lao Hung-Phieng Sa (Xieng Khom) districts in Houaphanh province are among the priority areas of the government and are the epicenter of the revolution in the national liberation struggle, which is experiencing land degradation (lowland fertility) due to high tillage and poor tillage. There are some areas where farmers' production of degraded soils cannot be used to grow crops (low yields per acre make the results not worth the investment). Farmers have left the land as a pasture for livestock, resulting in low per capita income. Farmers still lack the skills to grow and raise, most of which are natural products that have been used in the past. Dissemination of technical information from the relevant sectors is not continuous and throughout the lives of the people in the area are still experiencing poverty. However, the focal areas of Pa Rang and Lao Hung-Phieng Sa areas still have many natural potentials, such as bordering Vietnam and having many traditional checkpoints that can easily export goods. Therefore, the Ministry of Agriculture and Forestry, as well as the Department of Agricultural Land Management and Development-DaLAM, must pay special attention to the implementation of incentives for farmers to produce. Disseminate technical knowledge to farmers to use production techniques that are model for the conservation and improvement of land used for production in a sustainable manner. Therefore, the project to manage soil and fertilizer in the cropping system on the steep slope of the Lao-Vietnam border is a project that will help farmers to know how to manage the use of plant nutrients and protect the soil to be able to use it for a long time. Improved land will be able to meet the needs of production, can increase the productivity of the area, farmers will have higher incomes, have a better life.

Project location:

Project will be implementation in a province in Northern part of the country (Lao PDR), such as Hoaphanh Province (Detail of the location of the Project refer to mapping below).

Objectives:

The overall goal is the need for indirect development, usually 2-3 years, after the completion of the project and at the time of implementation of the project for a certain period of time, the overall goal of the project must be in line with the socio-economic development plan and focus on regional development strategies and strategies.

- To ensure that the production area is fertile and can be used for a long time. Increase productivity per capita, can produce sufficiency and produce goods, people have more income, better living standards.
- To increase the yield of maize, upland rice per area and use land sustainably.

Outcome of Project:

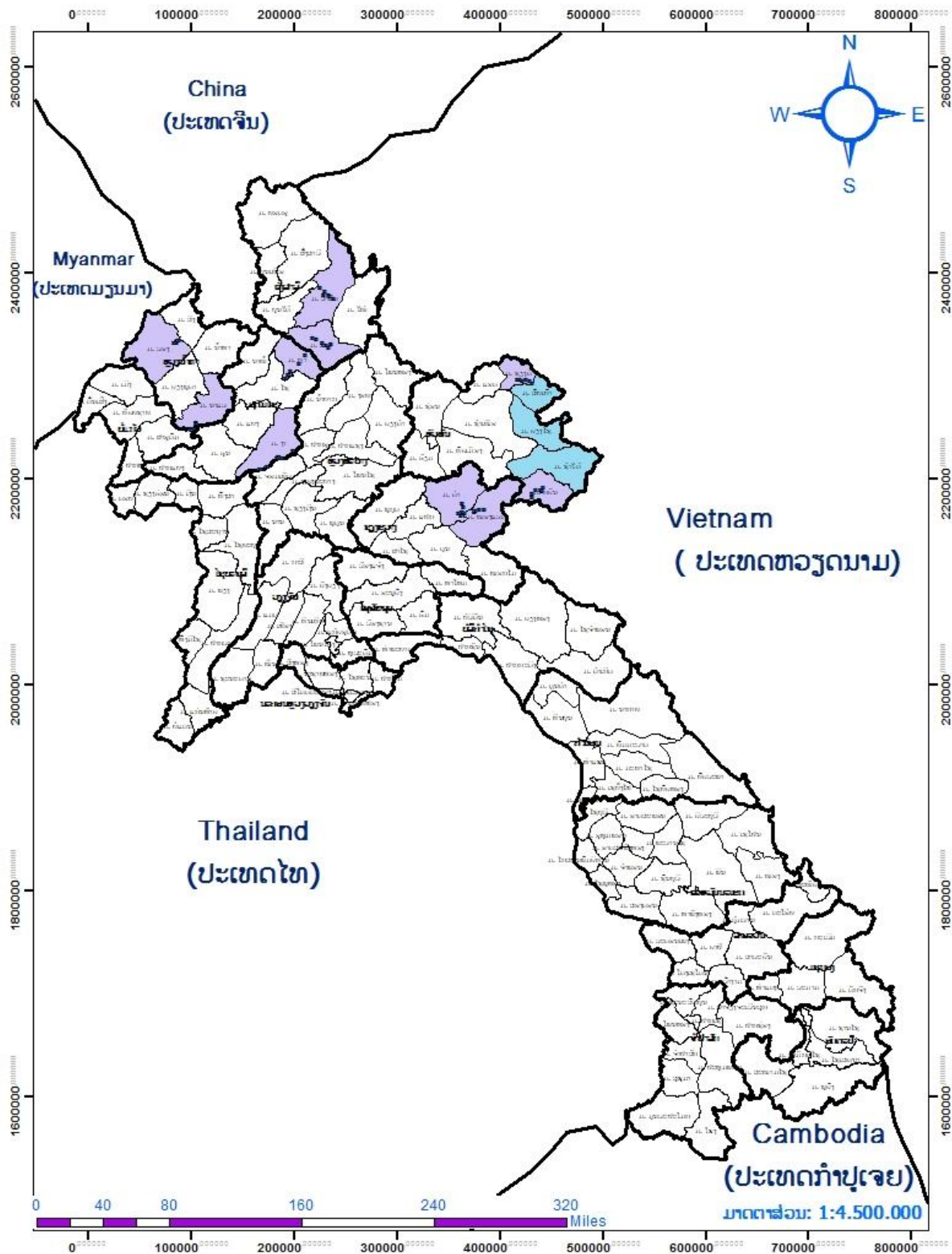
- Farmers are trained and learned from practice, have an understanding and can pass on the lessons to others.
- Farmers' production systems are implemented by integrated production models that can improve and resist soil erosion for long-term use.

Duration of Project:

- 2021, Xieng Kho and Sop Bao Districts, **Houaphanh Province.**
- 2022, Xieng Kho and Sop Bao Districts, **Houaphanh Province.**
- 2023, Xieng Kho and Sop Bao Districts, **Houaphanh Province.**
- 2024, Viengxay and Xamtai Districts, **Houaphanh Province.**
- 2025, Viengxay and Xamtai Districts, **Houaphanh Province.**

Budget needed: 315, 000,000ກີບ, ປະມານ 350,000US\$

Map of Laos showing the provinces of the north that projects will be implemented



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Annex 1. List of LND working group members

Government:

No.	Name of organisation	Website	Name of representative	email	Sector
1	Department of Water Resources, Ministry of Natural Resources and Environment	http://www.MoNRE.gov.la	PhD Inthavy AKKHARATH	inthavymrc@gmail.com	Natural Resources and Environment
2	Institute of Agriculture, Forestry and Rural Development, Ministry of Agriculture and Forestry	http://www.nafri.org.la	Mr. Chansamone PHONGOUDOM		Agriculture & Forestry
3	Department of Agriculture, Ministry of Agriculture and Forestry	http://www.doa.maf.gov.la	Mr. Bouapha BOUNKHAMPONE	bouapha.bkp@gmail.com	Agriculture
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6	Department of Irrigation, Ministry of Agriculture and Forestry	http://www.doi.maf.gov.la	Mr. Phetsaphone SILIPHONG		Agriculture
7	Department of Agriculture Technique and Processing, Ministry of Agriculture and Forestry	http://www.daec.maf.gov.la	Mr. Phokhalasy AROUNSAVATH	DAEC_pho@gmail.com	Agriculture
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11	Department of Environment Quality and Promotion, Ministry of Natural Resources and Environment	http://www.deqp.monre.gov.la	Mr. Vonephasao OLASENG	vonephasao@gmail.com	Natural Resources and Environment
12	Department of Planning and Cooperation, MPI	http://www.investlao.gov.la	Ms. Pany VOLACHIT		Planning & Invest
13	Department of Environment, Ministry of Public Security	http://www.laosecurity.gov.la	Mr. Malaiphone VONGSENA		Environment
14	Ministry of Public Work and Construction	http://www.mpwt.gov.la	Mr. Seumany PAKDIMANIVONG		Public Work and Transport
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Science:

No.	Name of organisation	Website	Name of representative	email	Sector
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18	Institute of Natural Resource and Environment, Ministry of Natural Resources and Environment	http://www.nrci.gov.la	PhD. Virasith PHOMSOUVANH	phvirasith@gmail.com	Natural Resources & Environment
19	Institute of Bio-Technology and Ecology, Ministry of Science and Technology	http://www.most.gov.la	Mr. Panya BOUPHASIRI	panyabounphasiri@gmail.com	Science
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23	Land Conservation Centre, Department of Agriculture Land	http://www.dalam.maf.gov.la	Mr. Nammakone SOUKCHALEUN		land
24	Agriculture Soil Survey and Classification Centre, Department	http://www.dalam.maf.gov.la	Mr. Chai SOMSAIN		land
25	Institute of Renewable Energy Promotion, Ministry of Energy and	http://www.mem.gov.la	Ms. Suphavady PHOTHISATH	suphats@hotmail.com	Energy & Mines
26	Department of Natural Resources Policy	http://www.deqp.monre.gov.la	Mr. Saleumsack Xayamoon		Natural Resources & Environment

Annex 2. Agenda of NTWG

Tentative agenda for inception Technical working group consultation workshop on Land Degradation Neutrality-Target Setting Programme-LDN-TSP-United Nations-UNCCD, on 28th February to 1 March 2019, Vang Vieng, and Vientiane Province Lao PDR.

Time	Topic	Responsibility
Day 1		
0800-0830	Registration	Organizer
0830-0845	Welcome remark	Dr. Inthavy Akkalath, NFP
0845-0900	Introduction of participants	All
0900-910	Agreement of Party secretary No. 026/CMPC, 03 August 2017	Department of Land Management, MONRE
0910-0925	National assembly agreement No. 98/NA, 28 June 2018 on Master Plan of Land Management Vision 2030	Department of Land Management, MONRE
0925-0945	Master Plan on National Land management	Department of Land Management, MONRE
0945-1005	Introduction of UNCCD	Dr. Inthavy Akkhalath, NFP
1005-1020	Coffee break	
1020-1050	Presentation of UNCCD Expert	TBC by UNCCD
1050-1200	Introduction to LND-TSP National report content	Dr. Chanh Samone Phongoudome
1200-1300	Lunch	
1300-1430	Group discussion main driver of LDN, etc.	All
1430-1445	Coffee break	
1445-1530	Group discussion presentation	All
1530-1600	Closed of meeting	Chairman
Day 2		
0800-0830	Registration	Organizer
0830-0845	Follow up day 1	Dr. Inthavy Akkalath, NFP
0845-0900		
0900-910		
0910-0925		
0925-0945		
0945-1005		
1005-1020	Coffee break	
1020-1050		
1050-1200		
1200-1300	Lunch	
1300-1430		
1430-1445	Coffee break	
1445-1530		
1530-1600	Closed of meeting	Chairman

Annex 3: List of participants Inception workshop 6-7 March 2019, Vang Vieng District, Vientiane Province, Lao PDR.

No.	Name	Organization	Email	Sector
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22	Mr. Sysouphan Xaiyavong	Faculty of Environment Science, NUoL	xayavong@gmail.com	
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25	Mr. Saleumsack Xayanoon	Department of Natural Resources Policy, MoNRE	Nouk_555@hotmail.com	
26	Dr. Chanhsamone Phongoudome	Institute of Agriculture, Forestry and Rural Development, MAF	chanhsamonenafri@gmail.com	
27	Ms. Sengphasouk	Department of Water Resources, MoNRE		Support staff
28	Ms.	Department of Water Resources, MoNRE		
29	Mr.	Department of Water Resources, MoNRE		
30	Mr.	Department of Water Resources, MoNRE		
31	Mr.	Company		Interpreter

Annex 4. List of reports submitted and contribution

1. Contribution to country profile Lao PDR 2017;
2. List of government and science working group and agenda for TWG meeting;
3. The agreement on UNCCD National Focal Point;