



RESEARCH PAPER

Regional fellowship program

The Challenge of the Implementation of Forest Cover Policy to the Year 2020 Regarding Forest Carbon Stocks in Lao PDR

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1. Introduction

Lao PDR still has one of the highest percentages of national forest cover in mainland Southeast Asiaⁱ[1]. One of the pillars of the Forestry Strategy 2020 of the Lao PDR is the implementation of the National Growth and Poverty Eradication Strategy which consists of Forestry Policy that calls for increasing forest cover to 70% in 2020. Forests covered nearly 50% of the country in 1982, but dropped to 41% in 2002, before gradually decreasing to 40% of the total land area by 2010 (Department of Forestry 2011[2]; Vongsiharath 2011[3]). This 40% of forest cover can be mixed with secondary forests, plantations and bamboo, as indicated by a rapid assessment in 2010 (Forest Carbon Partnership Facility 2014[4]), and the share of primary forest within this estimation is unclear.

To address this forest decline, the government of Laos has set an ambitious target to increase forest cover up to 70% by 2020 through afforestation, reforestation and stabilization of shifting cultivation (Ministry of Agriculture and Forestry 2005[5]). Data on changes in forest cover suggested that during the 1990s the annual loss of forest cover was around 1.4% annually, which means an average annual loss of forest cover of about 134,000 ha[2]. In addition to the decline in forest area, there has been a steady fragmentation of forests and a decline in the average growing stock within the residual forest, which has both reduced carbon values and had a negative impact on biodiversity[2].

Annual emissions from deforestation and forest degradation were estimated at 95.3 million tCO₂e in 1982, declining to 60.6 million tCO₂e by 2010. For the period from 2012-20, the average annual emission is estimated at 51.1 million tCO₂e[2, 5]. There is growing concern over the depletion of the area of tropical forests in Laos. Its forests have been declining at an alarming rate, although the causes or factors associated with this depletion are poorly understood and the responses of tropical forests to environmental changes remain unknown. Both socio-economic and physical factors have important influences on forest depletion[6]. The loss of forest land in Lao PDR rapidly increased due to various land-use practices, such as shifting cultivation, commercial logging and agriculture and tree plantation. This resulted in the decline in forests has been occurring at a relatively fast rate in comparison to the goal of increasing forest lands by 70 percent[1]. Therefore, it appears that it may be a challenge to achieve this policy.

In addition, in 1989, during the country's first forestry conference it was stated that, "forest destruction in the country has reached a critical point; it is the time for us to change completely from indiscriminate logging and other forms of deforestation to focusing on tree planting and forest conservation" (Department of Forestry[5]).

Moreover, the National Forestry Strategy to the Year 2020 for increasing forest cover to 70 percent (about 16.58 million hectares) of the land area by 2020 will be reduced because of the risk of floods, and land degradation. However the greenhouse gas mitigation potential of such a target is substantial and long lasting. Forestry based actions will not only increase the amount of "carbon sinks"ⁱⁱ but will also provide adaptation co-benefits under different management actions[7],[8],[9]

ⁱ In Lao PDR forests are defined as areas of at least 0.5 ha in size, with crown cover above 20%; with trees that will reach higher than 5 meters when mature. Dense forests have crown cover greater than 70%, medium-stocked between 40% and 70% and degraded forests have crown cover between 20% and 40%.

ⁱⁱ Refers to certain human-induced activities in the land-use, land-use change and forestry sector that remove greenhouse gases from the atmosphere, namely afforestation, reforestation and tackling deforestation in Lao PDR (www.unfccc.int).

that contribute to the prevention of flooding, soil erosion and landslides, and protection of biodiversity and the ecosystem[5].

1.1 Objectives

- To analyze the change in forest cover in Lao PDR from 1992-2015;
- To review documents, official reports regarding the policy for increasing forest cover regarding to carbon sinks in Lao PDR; and
- To identify the challenges in reaching the government's goals.

1.2 Research Questions

- What is the purpose of forests in Lao PDR with regard to Climate Change-mitigation?
- What are the main causes of deforestation and forest degradation in Lao PDR?
- What are the challenges of the implementation of policy to increase forest cover regarding forest carbon stocks?
 - Are the policy and related laws suitable for achieving this goal this?
 - Is the coordination mechanism among the various sectors effective for implementation of this policy?
- How does the forest cover policy effect Climate Change?

1.3 Methodology

This paper will review existing government documents, online sources, and material from NGOs and development partners who work in the forestry sector in Laos.

2. Overview of Climate Change and Forest Cover

2.1 Climate Change

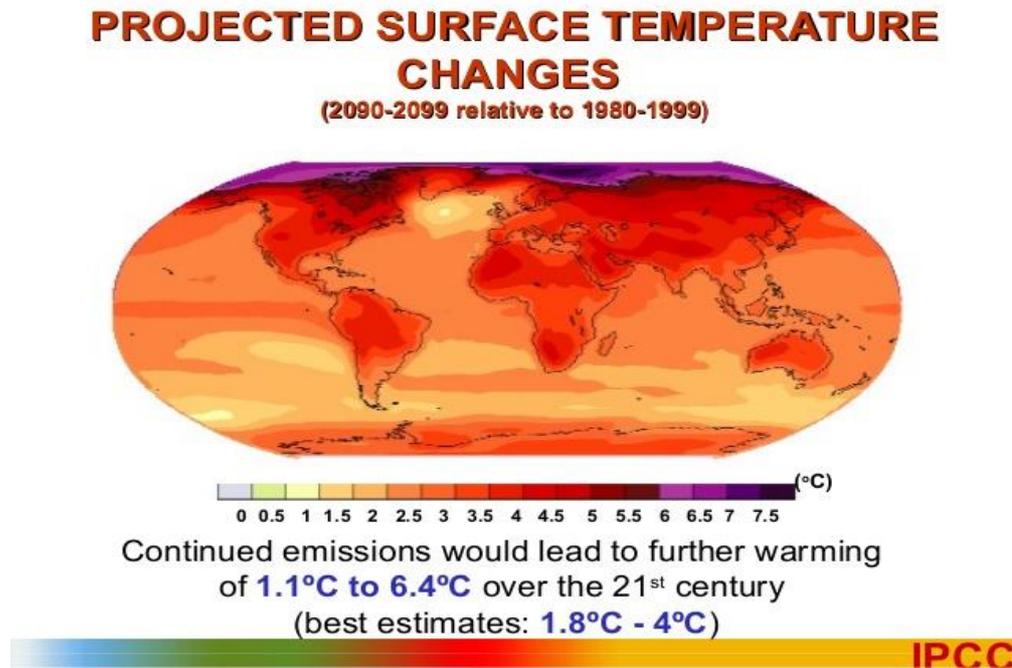
The Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”[10, 7].

Generally, there are a number of different definitions of Climate Change. For instant, in 1992, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted by the international community providing a basis for a global response to cope with climate change related issues. The objective of the Convention is to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system. It is complemented by the 1997 Kyoto Protocol, an international and legally binding agreement to reduce greenhouse gas emissions worldwide, which entered into force on 16 February 2005. Under this international treaty, 37 industrialized countries and the European Community have committed to reducing their emissions by an average of 5 percent by 2012 against 1990 levels.

For this reason, the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC), released in late 2007 states that the global average temperature has increased between 0.15°C-0.3°C per decade between 1990 and 2005[11]. Based on future scenarios of varying global emission levels, global temperatures are projected to rise by 1.1 to 6.4°C by the end of the 21st century, if the necessary actions to prevent temperatures from rising are not taken. Likewise, for South East Asia, the IPCC AR4 projects similar increases in temperatures, including an

increase in annual rainfall in the region by about 7%, and increased frequency and intensity of temperature and precipitation extremes which assumes that climate change will have impacts on water resources, ecosystems and crop production at lower latitudes[12, 1].

Figure 1. Projected Surface Temperature Change



Source: [www.ipcc.ch/Impact of Climate Change on Ground Water System](http://www.ipcc.ch/Impact%20of%20Climate%20Change%20on%20Ground%20Water%20System)

2.2 Climate Change in Lao PDR

The government of Lao PDR has clearly recognized that climate change is a key issue in the international arena. It is a real threat, concern and challenge for all countries of the world. As a least developed country, Lao PDR is one of many countries vulnerable to the impacts of climate change. The country recognizes the strong link between economic development, sustainability and the need to mainstream environmental considerations, including action on climate change into its development plans. The National Strategy on Climate Change (NSCC) of Lao PDR was approved in early 2010, and states a vision on how to address climate change. In addition to the overarching strategy set out in the NCCS, climate change action plans for the period 2013-2020 define mitigation and adaptation actions in the sectors of agriculture, forestry, land use change, water resources, energy, transportation, industry and public health[13]. Lao PDR is highly climate-vulnerable, and the country's greenhouse (GHG) emissions were only 51,000 Gg[14] in the year 2000, which is negligible compared to total global emissions. Despite this, Lao PDR has ambitious plans to reduce its GHG emissions while at the same time increasing its resilience to the negative impacts of climate change[15].

Lao PDR lacks data, adaptation strategies, funds, human resources, experience, an appropriate approach and the mechanisms to develop immediate and long term solutions. Climate change will also have negative impacts on economies, societies and environments as well as global ecology, expediting the poverty of vulnerable people and communities in every corner of the world. In this connection, the government of the Lao PDR endeavors to find practical solutions to the challenges posed by climate change at a national level by formulating policies, approving proper rules and regulations and making solid decisions to participate with the international community by ratifying the UNFCCC in 1995 and the Kyoto Protocol in 2003[16].

Thus, Lao PDR is fully committed to its obligations involving the management and protection of the environment. The country is making significant strides to reduce slash and burnt activities, pay close attention to the management and sustainable use of forests, and increase climate change awareness. All in all, these activities directly contribute to developing carbon sinks, facilitating adaptation to climate change and mitigating greenhouse gas emissions to the atmosphere.

To protect the natural forest resource and its environment, 20 National Bio-Diversity Conservation Areas were established and approved by the government under the resulting of the National Forestry Action Plan in 1993. They have an area of or about 12.5 percent (30,000 sq.km) of the country's land area. In addition, a large area has been designated as protected or conservation forest at the provincial and district level, and some of them are scheduled to be upgraded to National Bio-diversity Conservation Area status[17].

2.3 Forests and Climate Change

Forests, and particularly tropical rainforests, are an important part of the earth's carbon cycle. Tropical rainforests store large amounts of carbon in their trees as well as in the soil. Forests act as carbon sinks, absorbing CO₂ from the atmosphere that causes a change in the global climate. The value of forests is more than just timber. Forests contain and preserve 75 percent of global biodiversity and are home to 50 percent of land-based species[18]. Scientists have calculated that tropical forests worldwide absorb 4.8 billion tonnes of CO₂ every year, which is around 18% of the carbon emitted annually through the burning of fossil fuels, substantially buffering the rate of climate change (Lewis et al. 2009)[19, 3]. Deforestation and forest degradation are major contributors to rising levels of CO₂ in the atmosphere and the associated changes in the earth's climate [20].

Forests have four major roles in climate change: they currently contribute about one-sixth of global carbon emissions when cleared, overused or degraded; they react sensitively to a changing climate; when managed sustainably, they produce wood fuels as a benign alternative to fossil fuels; and finally, they have the potential to absorb about one-tenth of global carbon emissions projected for the first half of this century into their biomass, soils and products and store them (in principle in perpetuity)[21].

Several documents such as the 8th National Socio-Economic Development Plan (2016-2020) specially mentions the implementation of the Reducing Emissions from Deforestation and Forest Degradation (REDD+) mechanism as a priority activity to mitigate climate change since 83 percent of Lao PDR's emissions are from land use change and the forestry sector. REDD+ⁱⁱⁱ and Forest Law Enforcement, Governance and Trade (FLEGT) are mentioned by the government of Lao PDR as key international mechanisms to contribute to the emission reduction commitments of the country.

In addition, the government has to consider how to address the direct causes of deforestation and forest degradation in order to reach forest and climate change related targets. International initiatives such as the EU-FLEGT (European Union- Forest Law Enforcement, Governance and Trade process mechanism, which after a decade of negotiations could support Lao PDR in achieving the targets in terms of sustainable forest management and forestry related climate change mitigation which mentioned in the Paris Agreement (Article 5).

ⁱⁱⁱ REDD+ stands for Reducing Emissions from Deforestation and Forest Degradation and the + includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. It is an international effort led under the United Nations Framework Convention on Climate Change (UNFCCC).

In September 2016 the Government of Lao signed a ‘Letter of Intent’ with the World Bank^{iv}. The acceptance paves the way to receiving REDD+ performance-based payments, the Emission Reduction Program area covers more than 35 percent of the national territory and accounts for 45 percent of all deforestation and degradation in terms of area. The total emission reductions and removals performance is expected to be approximately 10 million tCO₂e within seven years. After several years of slow progress regarding REDD+ (Vongviouk et al. 2016, Dwyer & Ingalls 2015), Lao PDR now has the chance to access performance-based payments. However, the institutional framework conditions have to be established and proposed interventions still need to be implemented.

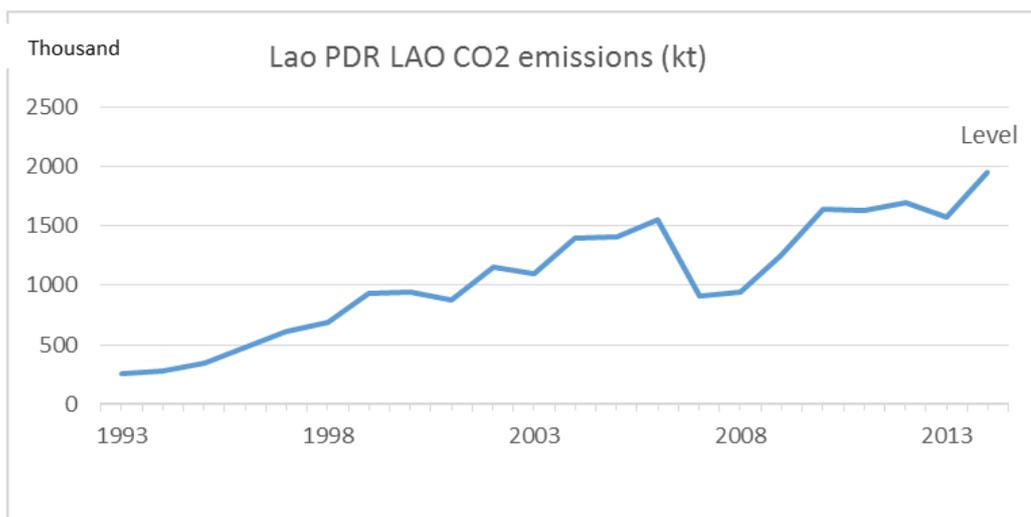


Figure 2. CO2 Emissions of Lao PDR (metric tons per capita)

Source: www.worldbank.org

Though Lao People’s Democratic Republic CO2 emissions (metric tons per capita) fluctuated substantially in recent years, it tended to increase through the 1993 - 2013 period ending at 0.3 metric tons per capita in 2013.

3. Overview of Forest Cover Policy in Lao PDR

3.1 Current status of Lao forests

Lao PDR has recently gained international attention for its efforts to increase forest cover. A number of assessments by the international organization and the government of Lao PDR have been undertaken to show the size and status of the forests in the country but accurate results are available. As reported by the Department of Forestry as well as the latest published Forest Resources Assessment (MAF 2015; FAO 2014), forest cover increased between 2010 and 2015 by 1.3 percent annually. The current trend of increasing forest cover is explained by regeneration of fallow lands to forest. Dense forest with a canopy cover of over 70 percent decreased from 29.1 percent to 8.3 percent of total forest area, while open forest (<40 percent canopy cover) increased from 16.3 to 28.9 percent. At the same time large neighboring forest areas (>1.000 ha) decreased from 88 to 52 percent of the total forest area, while smaller forest areas (<100 ha) rose from 4.5 to 30.2 percent.

^{iv} “Letter of Intent” of the government of Lao PDR, which describes the policies that Lao People’s Democratic Republic intends to implement in the context of its request for financial support from the IMF. The document, which is the property of Lao People’s Democratic Republic, is being made available on the IMF website by agreement with the member as a service to users of the IMF website.

As a result, the rich forests of Lao PDR decreased dramatically without generating substantial revenues for the country with an established net deforestation rate of approximately 2 percent per year during the 1990s due to fiscal mismanagement and widespread corruption[22]. In 2015, the potential forest area including bamboo and areas used for shifting cultivation covered an area of 38.2 percent of the country (see Table 1; MAF 2015).

Table 1: National forest cover assessment 2015

	Current forest		Potential forest	
	Proportion 2010 (%)	Proportion 2015 (%)	Proportion 2010 (%)	Proportion 2015 (%)
North	33.9	39.9	57.1	53.0
South	47.2	55.5	34.3	22.4
Central	42.7	48.8	41.2	32.3
Lao PDR	40.2	46.7	46.0	38.2

Source: Ministry of Agriculture and Forest Statistics (Year 2015).

Lao policies that were promulgated since the 1990s, such as the land allocation program aimed to increase forest cover to 70 percent have had mixed results. However, such policies reduced access for upland cultivation and swidden farming^v and led to issues regarding food production and food security which has not been discussed widely within the government (Kenney-Lazar, 2016). In addition, the Global Forest Resources Assessment by FAO shows a forest area in Lao PDR in 2015 of 18.8 million hectares, 81.3% of Laos' total land area (see Table 2). The assessment reports an annual forest area loss of 0.7% between 1990 and 2000 after which, the forest area increased to between 0.8% (2000-2010) and 1% (2010-2015) then, Lao PDR received attention as one of the top ten countries in terms of annual forest area gain between 2010 and 2015. On the other hand, the Lao Country Report of the Global Forest Resources Assessment 2015 shows a steady decrease in primary forest area from 1990 to 2015 (see Table 2). The report mentions that 27% of forest areas in Lao PDR experienced significant reductions in canopy cover between 2000 and 2012[22].

^v *Swidden farming, also known as shifting cultivation or milpa in Latin America, is conventionally defined as "an agricultural system in which temporary clearings are cropped for fewer years than they are allowed to remain fallow" (Sanchez, 1976).*

Table 2: Forest area change in Lao PDR

Category/Forest area in ha	1990	2000	2005	2010	2015
Primary forest	1,592,000	1,438,000	1,358,520	1,276,130	1,193,730
Naturally regenerated forest	16,049,500	15,068,430	15,484,280	16,469,430	17,454,570
Planted forest	2,500	18,780	26,910	70,010	113,110
Total	17,644,900	16,525,990	16,869,710	17,815,570	18,761,410

Source: The United Nations Food and Agriculture Organization (FAO, 2014)

3.2 Registry for forest carbon in Lao PDR

Laos requires a national registry system for recording and tracking forest carbon activities on the ground, their associated carbon emissions and removals, national level emissions reductions and sub-national project activity emissions reductions[23, 90]. The registry for forest carbon would allow for the holding, transfer and retirement of credits, and ensure no double counting or resale of the same credits. The registry should ideally serve as a recording and tracking system for all carbon credits arising from Laos (REDD, Clean development mechanism under the Kyoto Protocol, UNFCCC and any other mechanism) integrating overall climate change activities in the country. The Water Resources and Environment Administration (WREA) serves as the Designated National Authority for Laos and could house and manage the overall carbon registry.

There are at least two options for Laos. It can either develop and manage its own national registry or use an established commercial registry service. The benefits of using an established commercial registry service are that they are already experienced in providing these services, have the technical capacity and infrastructure, and only need to adapt the system to meet Laos' and general REDD+ requirements. Laos can have a credible and operational system while saving effort and resources. The costs of using an established registry service should be compared to what it would cost Laos to develop its own system. For example, an internet-based system is an alternative ways which is automated and updated in real time, and allows for electronic inputs and submission of applications and forms, much of the registry's activities could be conducted online for convenient tracking and reporting, as well as effective auditing. Moreover, clear step-by-step rules and guidelines for all registry operations and procedures would be useful[23, 92].

3.3 REDD and REDD+ Implementation in Lao PDR

REDD+ has been identified as a key mechanism to increase the national forest area. Lao PDR has been participating in international REDD+ negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) to push for an agreement on REDD+ since 2007. It is engaged in several multilateral negotiating blocks, including the Association of South East Asian Nations (ASEAN), G-77 and China, and the UNFCCC's Least Developed Countries (LDCs)[24].

A new opportunity has developed for Lao PDR to be involved in the international carbon trading market. The Government supports a flexible yet internationally binding agreement for REDD+[24]. It aims to adopt fund-based mechanisms in the short-term, allowing for participation in the voluntary carbon market. However, it intends to use compliance markets in the longer term once international protocols have been agreed[25]. REDD is one of the key schemes under consideration

for the second commitment period post Kyoto Protocol for reduction of greenhouse gasses that will aid around 20 developing countries to make a credible estimate of their national forest carbon stocks and develop strategies to reduce deforestation and land degradation.

Table 3: The Framework of Lao PDR under REDD+ Readiness

REDD+ Readiness of Lao PDR	Framework under REDD+ Readiness
Phased 1	Begins with the development of an institutional and regulatory framework, national strategies and action plans, as well as a specific focus on capacity building.
Phased 2	Follow with the implementation of national strategies and action plans, including the development of sub-national activities, which involve capacity building, technology transfer and results-based demonstration activities at the sub-national level.
Phased 3	Including the results-based actions that are fully monitored, reported and verified at the national level. With regard to the scale, Lao PDR is likely to support the ‘nested approach’, which is a way to frame and integrate sub-national levels of REDD+ actions into the national system.

Source: www.redd-database.iges.org

Lao PDR supports the 3-phased approach acknowledged by the Cancun Agreements of COP-16. The government of Lao PDR aims to implement a number of REDD+ pilots, or demonstration activities, in collaboration with on-going projects supported by donor agencies as well as NGOs. In phase 1, for example, in which a national REDD+ regulatory framework is focused, the GOL plans to develop a ‘nested approach’ accounting system, a formal approval process and guidelines for REDD+ projects. As one of the options for this approach, provincial jurisdictions become a sub-national REDD+ system under the national REDD+ system, and REDD+ projects are nested within each of the provincial jurisdictions⁴. On the other hand, prior to establishing the REDD+ implementation framework outlined above and developing the National REDD+ Strategy, the role and responsibility of provincial governments in this regard should be clarified[26].

The Department of Forestry of Laos has engaged various stakeholders, including World Wildlife Fund (WWF) to prepare Lao PDR’ proposal for inclusion in REDD. The country’s extensive national protected areas and protected forests provide a strong basis for initial REDD strategies as they encompass about 50 percent of national forest cover, requiring stronger management. Under REDD, the country aims to raise public awareness of national and global benefits of participating in carbon trading. Land-use planning and titling programs are stepping stones to engage village communities in emission reduction including the phasing out of slash-and-burn agriculture[27].

In Champasak Province, where the WWF is engaged with government and communities in the ADB funded Biodiversity Corridor Initiative (BCI), could potentially be a pilot area for initial REDD development. The area has undergone extensive land-use planning and has delineated areas of

protected forest. Another potential area is the conservation forest within the Xekong Sustainable Forestry Project (XEFOR II) Project site in Xekong Province which set out to address the problems caused by unplanned commercial logging, including biodiversity loss[27].

4. Challenges Regarding Forest Cover Policy in Lao PDR

4.1 Trends of deforestation and forest degradation

Under decision 11/CP 7, the UNFCCC defined deforestation as “the direct, human induced conversion of forested land to non-forested land”. Human-induced conversion of forests to non-forested uses, is typically associated with immediate large reductions in forest carbon stock through land clearance. Forest degradation, the reduction in forest through unsustainable forest management, results in substantial reductions of forest carbon, but over a longer period of time. Together, forest destruction in turn contributes up to 20 percent of global carbon dioxide emissions. By stopping illegal logging, up to 17 million hectares of forest are estimated to have been protected from degradation and at least 1.2 billion tonnes of carbon dioxide emissions avoided over the last decade. Alternatively, if the trees saved were legally logged this could bring in US\$6.5 billion in additional revenues to the countries concerned[28].

Historically, long-term deforestation began with commercial and illegal logging operations entering areas of dense primary forests, often in inaccessible and remote areas. This sequence of deforestation applies not only to Lao PDR, but also to other countries in the region and beyond as documented by many studies. In many areas dramatic increases in the extent of coffee, rubber and industrial tree plantations have resulted in the fragmentation and loss of large areas of natural forests. In other areas, although the overall total area of forest appears to be relatively stable, there are extensive changes occurring due to shifting cultivation followed by rapid re-growth[29].

Forest degradation is mainly caused by illegal logging and unsustainable timber extraction from commercial logging activities. Shifting cultivation patterns also contributes, depending on the scale of its application, with a lesser impact if carried out on a smaller scale (patches of less than 1 ha). Natural forest fires may also contribute but, in both cases regrowth of swidden and burnt forest areas can be surprisingly rapid. Wood harvesting by rural households for domestic consumption most likely has a much less significant impact. Once fragmented and degraded, forests become more vulnerable to permanent conversion to agricultural. Economic, ecological and socio-cultural functions of natural forest have already seen major negative impacts on the livelihoods of the rural population of Laos due to declining resource productivity, and the loss of forest resources continues to increase as the environment deteriorates[1, 7].

Table 4: Contribution of Direct Drivers to Deforestation and Degradation in Lao PDR^{vi}

Sources	Impact	Projected Annual Forest Loss Rate	Remarks
Wood Extraction	Forest Degradation	Estimated between 0.97 to 1.57 million cu. m	Includes commercial logging, illegal logging& household consumption and the combined total represents the primary

^{vi} Primary source of data is the Project Annual Forest Loss Rate estimates in the REDDD-PP, (Unpublished). The estimate for industrial Tree Plantations is from Sixth National Socioeconomic Department Plans (2006-2010) and alternative estimates from Watt P., 2010.

		per year during the period from 2002 until 2009	driver of unsustainable deforestation and degradation and is a high Government of Lao PDR priority to control
Agricultural Expansion	Deforestation	Commercial 34,200 ha/year Small-holder 14,700 ha/year	Since 2007 Government of Lao PDR has placed successive moratoriums on new concessions.
Industrial Tree Plantation	Deforestation	6,000 ha/year	Government of Lao PDR is prioritizing tree plantations however deforestation occurs when plantations replace natural forest resources.
Pioneering Shifting Cultivation	Forest Degradation and Deforestation	57,300 ha/year degraded	Government of Lao PDR continues to make efforts to control shifting cultivation. However, such areas typically regenerate quickly.
Hydropower	Deforestation	13,100 ha/year	The rate is likely to increase further as many more new hydropower projects are built.
Mining	Deforestation	5,100 ha/year up to 14,100 ha/year	Only certain types of mining (such as large-scale bauxite strip mining) are likely to cause extensive effects. Thousands of smaller local artisanal mines are probably a bigger driver of deforestation at present.
Infrastructure	Deforestation	1,000 ha/year up to 2,000 ha/year	Direct impact may be relatively small but indirect impact especially due to increased accessibility due to road construction is much higher.
Urban expansion	Deforestation	Not significant except in Vientiane Prefecture where annual loss rate average -1.5%	Could also result in an overall positive change due to associated rural depopulation placing less pressure on forests.
Fire	Forest Degradation		Satellite imagery shows that during dry seasons Laos may have a very high frequency of forest fires. However, burnt areas typically regenerate very quickly.

As shown in Table 4, unsustainable wood extraction, pioneering shifting cultivation, agriculture expansion and industrial tree plantation development are probably the most significant drivers of deforestation and forest degradation. However, it is difficult to estimate total national wood extraction and although official government of Lao PDR quotas are clear, there are indications that

logging companies exceed their quotas while the amount of timber harvested by illegal operations may even exceed the quota itself. One estimate put illegal timber extraction level as high as 600,000 m³ per year in 2008 (Hodgdon, 2008).

4.2 Coordination among Sectors on forest land use

The national ministries with key procedural responsibilities related to the approval of concessions and the conversion of land and forests between line-ministries have varying responsibilities related to land and forest conversion and also have unclear and overlapping mandates for the assessment, oversight, monitoring, and compliance of land allocation and implementation. In addition, there are numerous laws, decrees, and regulations on land, investment, and forest management for which the various government agencies are responsible. However, despite a robust regulatory framework, the capacity to ensure legal compliance has been limited. Indeed, the concept of “legality” in relation to land-based investment is not necessarily reflected in national law. The right to operate in a certain area may be dictated by the entity that has authorized concession activity, rather than the legal basis upon which authorization was issued[30, 3].

4.3 Law enforcement and government

The problem of law enforcement and governance is mostly related to the implementation of the forest cover policy and to harvesting and utilization of timber and non-timber forest products. In spite of the governments’ efforts to regulate forest resource uses, there have been cases of unauthorized harvesting, utilization and trade of forest products at various levels[1, 59]. Weak enforcement of laws and regulations has led in many cases, to logging in forests that is not in accordance with the targets set in respective management plans; or to excessive cutting by those who have been allocated a logging plan; or to those cutting outside the boundaries to which their logging plan was set, or to excessive or inappropriate extraction of non-timber forest products. Similarly, weak enforcement of law and regulations has permitted, or not detected, cases of individuals or firms which go into conservation and protection forests and log or extract non-timber forest products[5, 59].

5. Lessons learned from some Asian Countries

Forestry in Asia has undergone major reorientation which must be reflected in the changes to forest policies. An affective contribution of forestry to sustainable development depends on the ability of the sector to reconcile tensions between the environment and development, and to establish a real partnership with forest dependent people who in many countries are among the poorest and have been marginalized from the benefits of development. Therefore, to understand how forestry policies are responding to the growing and more complex demand being placed on the sector we can look to other countries for best practices. In particular, what are the experiences of the countries in adapting or reforming their policies in order to integrate economic efficiency with social equity within a participatory mode of development while maintaining environmental stability?

Regarding the regional perspective, net forest area in creased between 2000 and 2010 by around 14 million hectares, reversing the downward trend of the preceding decade. Almost all of the increase in forest cover is confined to China, The Philippines, India and Vietnam while nearly all remaining countries have experienced loss of forest area. For this reason, this paper focuses on summarizing the best practices from some countries mentioned above, as noted below[31]:

Chinese Forestry Policy

Chinese forestry is still unable to meet the needs of national economic development or ensure the conservation of the environment and ecosystems—a situation which is critical^{vii}. First, the standing volume of forest is shrinking while the forested area is increasing each year and the forest cover keeps rising because of a major afforestation drive. On the other hand, the standing volume of the forest, particularly mature timber forests and over-mature forests, is dwindling, largely due to the expansion of middle-aged and young forests and a large annual consumption of forest resources which exceeds the supply. Secondly, the input of funds for afforestation is inadequate, due to the scarce financial resources of the state and the poor linkages existing in forestry production, (e.g., the income derived from timber marketing and processing does not go back to reforestation). The limited forest resources and shortage of funds are linked, and hinder the further development of forestry.

At present, joint efforts are increasing in mountain afforestation, with 30 million ha of hills being allocated to farmers, and 40 million ha distributed under the responsibility policy/system. This policy states that those who plant trees shall own the trees and the hills, while jointly established plantations shall be shared by the partners.

A new, more private forest ownership system has developed, in conjunction with the socialist public ownership system which still predominates. This is an attempt to gain the full benefit from the advantages of different types of ownership. Within the management system, more power has been transferred to enterprises in terms of personnel, funds, materials as well as production, supply and marketing. As a result, enterprises are becoming commodity oriented. Some state forest farms have been transferred to counties (district) and some 110,000 collective forest farms, which used to be owned by communes and production brigades, are gradually becoming independent bodies, assuming sole responsibility for profits and losses[32, 20]. This represents a new type of collaborative economy. Various forms of contract systems have been applied to properly separate ownership and management. Consequently, the issue of egalitarianism is largely avoided.

Furthermore, a unified marketing and purchasing system in the collective forests in southern China has been replaced by negotiated purchasing and selling. In the State Forest areas in northeastern China, the state monopoly in products has been lifted. Apart from timber, efforts have also been in the production sector, and compensate long-term projects instead of running the projects which provide immediate benefits. At present, the value of non-timber products accounts for one-quarter of the total production[32, 18].

Philippines Forestry Policy

The first comprehensive revision of the forestry policy of Forest Act 1904 occurred with the Forestry Reform Code of 1974. Primary focus was on the industrial forestry sector including abolition of short-term permits and the granting of 10 to 25-year licenses, establishment of forest plantations and mandatory investment in processing facilities. It also reiterated provisions of earlier regulations concerning pasture leases, conversion of mangroves to fish ponds and salt beds and the use of Public Domain land for various purposes such as agriculture, industrial sites and tourist resorts. Significantly however, the Code also contained provisions designed to improve tenure

^{vii} This paper is compiled from three presentations at the meeting by Xu Youfang (Vice Minister of Forestry of China) Yang Yuchow (Director General, Department of Foreign Affairs, Ministry of Forestry, China); and Li Lukang (Deputy Director General, Department of Foreign Affairs, Ministry of Forestry, China).

security for settlers occupying Public Domain land, the first policy-level shift away from regulatory approaches to control the spread of slash-and-burn farming, and to deal with the socio-economic realities of this problem[32, 124].

A Revised Forestry Code in 1975 extended the earlier issuance to include the concept of multiple-use, advancement of forestry-related science and technology, rehabilitation of degraded ecosystems, encouragement of wood processing and the gradual phase-out of log exports. Later promulgations strongly emphasized regulatory prescriptions and tightening of central government control. At the same time, the concept of social forestry began to emerge as the basis for a new direction in forestry policy.

Since 1986, several factors have led to significant improvements in the consultation process for policy development. First, increased international NGO involvement in environmental issues has led to organization of lobby groups demanding a role in policy formulation. Although many of these groups lack a comprehensive understanding of cause-and-effect dynamics in the forestry sector, their aggressive advocacy of issues helps ensure a high degree of transparency in policy formulation.

Secondly, the Department of Environment and Natural Resources (DENR) has devolved much of the authority and responsibility previously held by its central office to more than 200 regional, provincial and community offices. In their day-to-day contact, these field offices are able to facilitate consultation and dialogue on new initiatives with those most directly affected. A policy environment that is responsive, practical and realistic will help these offices to effectively implement any policy directives.

Thirdly, deliberate government encouragement of NGOs, people's organizations and multi-sectorial participation has created an environment conducive to dialogue and consultation. Finally, decentralization of powers has occurred in many areas of political and economic decision making. Local officials now exercise authority over many matters formerly controlled by the central government. Significantly, the Local Government Code (presently in the final stages of legislative enactment), transfers authority over forest resources to provincial and municipal governments.

Lessons from the past make it clear that policy reform is long overdue. The favorable response to new 'people-oriented' policies furnishes encouragement that reform can reverse negative trends and place forestry in the forefront of rural development in the Philippines as in other tropical countries. The concept of 'Forests for People' is not new. The challenge is converting this concept into practical programmes and projects that make sense to those on whose behalf the concept has long been advocated[32, 137].

In the Philippines, there is confidence that new initiatives exemplified by the Community Forestry Programme^{viii}[33], Contract reforestation with the Forest Land Management Agreement (FLMA)^{ix}

^{viii} Community Forestry Programme (CFP), long term management contracts over natural forests are awarded to local residents. Contracts include authority to practice sustainable harvesting of forest products through labor-intensive systems, using draft animals for primary extraction. Communities are allowed to use, sell and process the products they harvest. Ownership of the benefits creates strong incentives for conservation through sustainable forest management.

^{ix} Contract reforestation employs upland occupants to develop tree farms and plantations. After completing a three-year planting and maintenance contract, the young tree farms/plantations are turned over to the occupants under a 25-year Forest Land Management Agreement (FLMA) that is renewable up to 50 years. The occupants are authorized to implement sustainable harvesting, and to use, sell and process whatever is grown on the site. To retain this privilege,

and a revitalized Integrated Social Forestry Programme (ISFP)^x can make a difference. Administratively, the policy instruments are in place but these must eventually be consolidated in legislation which ensures against a return to ineffective policies of the past[32, 124].

6. Conclusion

The main purpose of the Forest Cover Policy in Lao PDR was initiated with the awareness of the importance of forests to stability and development, and with the recent decline in their area, the focus has been placed on protection, rational utilization of the existing forests, conservation and the expansion of forest cover of the country. At the same time, taking into account the prevailing domestic and international conditions, the government has to balance this with socio-economic development.

There are still indirect factors which cause deforestation and forest degradation. *Governance issues*: lack of transparency in decision making, corruption, and weak law enforcement and power imbalances contribute to this; *Institutional issues*: weak and insufficient capacities within agencies and local authorities contribute to the failure to properly plan, supervise and control forest-related activities; *Regulatory framework issues*: improper implementation of government policies, regulations and programs, inconsistencies in legislation, investment promotion measures and shortcomings in implementation of land use planning due to lack of qualified staff, equipment and funds; *Economic factors*: including national and local development priorities, regional and national economic growth and steadily increasing investment in mining, hydropower and other infrastructure development, wide spread rural poverty, insufficient land access and tenure security in rural areas, limited awareness of land and resource use rights; *Market issues*: the increasing accessibility of forest areas, strong domestic, regional and international demand for timber and forest products; *Environmental issues*: more severe droughts in combination with a rise in the frequency of lightning strikes under altered climate conditions could together both stress forests and increase the extent and damage caused by natural forest fires.

The government should consider some programmes which provide the alternative opportunities to farmers and villagers. Such as slash-and-burn eradication should be continued by providing permanent job creation support to rural livelihoods; strengthening of the capacity of village forestry volunteers in forest planting, caring and management techniques as well as the use of village forests could also be implemented; enhancing the management capacity of relevant parties is critical for sustained use of forest resources, and how society responds to environmental issues (environmental tax); clarify who has responsibilities for enforcement by making it explicit and public who has the right to authorize logging; and establishing a cross sectorial program consisting of forestry, police, customs and others for detection and suppression of unauthorized harvesting and trade of logs and non-timber forest products.

Therefore, the government of Laos has taken some action to reduce the main causes of deforestation and forest degradation and combat illegal logging including addressing the drivers of deforestation and forest degradation. In terms of REDD+ and the Emission Reduction Program, the country could develop a functioning Measurement, Monitoring, Reporting and Verification (MRV) system, a REDD+ Strategy, Benefit-Sharing and Distribution System as well as a Safeguards

the beneficiaries are required to comply with replanting obligations and to reimburse initial development costs through a production sharing arrangement with government.

^x Integrated Social Forestry Programme (ISFP) grants tenure security to occupants of denuded public-domain lands, assistance in converting these areas into viable agro-forestry farms and training in social and entrepreneurial skills with a view to development of organized, economically self-reliant communities.

Information System (SIS) in order to access results based payments. Ideally, all of this needs to be operational in the next two years. If this is done, Lao PDR can take advantage of the momentum to improve forest governance and protect and sustainably manage the remaining forest resources.

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