# Drivers of Forest Change in the Greater Mekong Subregion

## Vietnam Country Report

# USAID Lowering Emissions in Asia's Forests (USAID LEAF)

## Drivers of Deforestation in the Greater Mekong Subregion
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The USAID Lowering Emissions in Asia's Forests (USAID LEAF) Program is a five-year regional project (2011-2016) focused on achieving meaningful and sustainable reductions in greenhouse gas (GHG) emissions from the forest-land use sector across six target countries: Thailand, Laos, Vietnam, Cambodia, Malaysia and Papua New Guinea.

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# Abbreviations

CPC Commune People Committee

FAO Food and Agriculture Organization of the United Nations

FM Forest Management

FMB Forest Management Board

FSC Forest Stewardship Council

LURC Land use right certification

MARD Ministry of Agriculture and Rural Development

MONRE Ministry of Natural Resources and Environment

NGO Non-Governmental Organization

NTFPs Non-timber forest products

PES Payment for environmental services

PFES Payment for forest environmental services

REDD+ Reducing Emission from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

SFE State Forest Enterprise

SFM Sustainable Forest Management

TEV Total economic value

UNDP United National Development Program

VND Vietnam Dong (currency)

GSO Vietnam General Statistics Office

# Acknowledgements

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# Executive summary

The forest cover of Vietnam has slightly increased from 35.8% in 2002 to 39.7% in 2013, owing to the significant expansion of forest plantations established for commercial purposes. However, the remaining natural forests are still decreasing and have become increasingly degraded due to a variety of causes. Deforestation and forest degradation in Vietnam is mainly driven by increasing demand for agricultural crops to meet local food needs and high value plantation products (rubber, coffee) destined for international markets. Insufficient recognition of local communities' rights to forestlands and ineffective governance both exacerbate the problem. To tackle deforestation and forest degradation, Vietnam forestry policy should aim towards two key objectives: (i) sustainable management of the remaining high conservation value natural forests for biodiversity conservation and long term provision of forest products and environmental services and (ii) improving incomes and livelihoods of forestland owners. To reach these goals, it is necessary to establish a permanent national forest estate to promote strict protection of important natural forest ecosystems by state agencies. More importantly, forest policy should emphasize application of market instruments to generate economic benefits for forestland users and should aim to improve public participation in forest governance.

# 1 Overview of trends in forest and land use sector

According to Vietnam Ministry of Agriculture and Rural Development (MARD) official statistics, national forest cover rose from 35.8% in 2002 to 39.7% in 2013; equivalent to 13.9 million hectares. Of this, about 10.4 million hectares were natural forests and 3.5 million hectares were forest plantations. Figures published by FAO are slightly higher than the MARD data, but with a similar trend (Figure 1, Table 1).

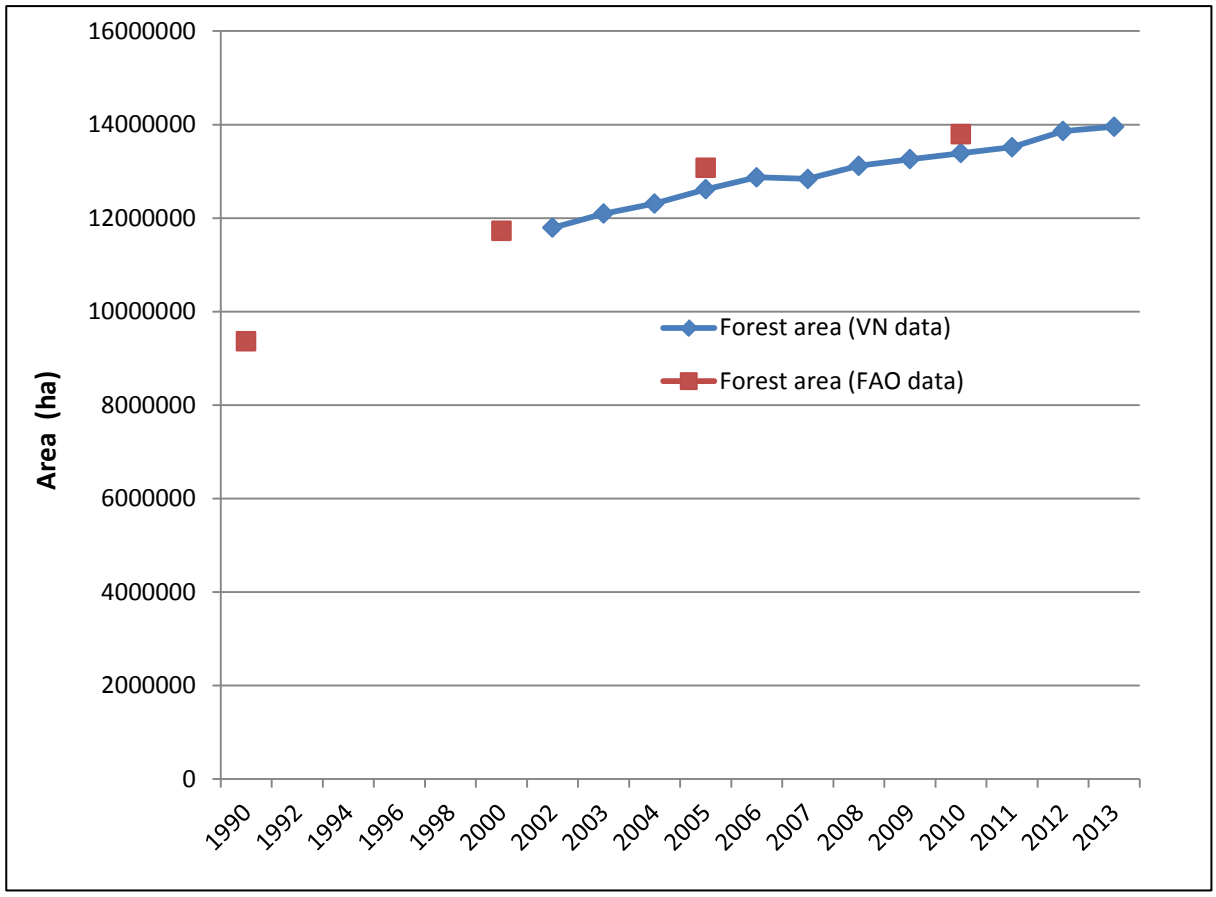


**Figure 1: Change in forest area in Vietnam during 2002 – 2013**

Sources: MARD (2014), FAO (2010)

The net increase in forest areas is mainly due to significant expansion of plantations (Table 1). Natural forest area, on the other hand, has remained almost unchanged. Between 2003 and 2013, the total area of natural forests in Vietnam increased by just 1,390 ha, mainly from natural regeneration of forest on fallow land used for shifting cultivation and promotion of natural forest regeneration (called *natural regenerated areas*) through protection activities funded by the government. However, there is no official document clearly showing whether "*natural regenerated areas*" are successfully becoming forests. In reality, most of the remaining natural forests in Vietnam are classified as degraded and poor natural forests in terms of standing timber volume. Approximately 75% of natural forests in Vietnam are classified as regenerated, degraded and poor natural forests (FAO, 2010; MARD, 2014).

According to official data from MARD, a total of 968,769 ha of natural forest areas (mainly medium and rich forests) were lost between 2002 and 2013, equivalent to 9.3% of the total natural forest area in 2013 (MARD, 2014). On average, nearly 80,731 ha of natural forests disappeared each year, equivalent to an annual rate of 0.8%. FAO figures show a similar negative trend and the loss of natural forests is continuing, although at a slower rate recently (Table 1).

**Table 1: Forest area change in Vietnam**

| | Forest area (MARD data) | | | | | | Forest area (FAO data) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Natural forest (1000 ha) | Plantations (1000 ha) | Total area (1000 ha) | Forest cover (%) | Annual rate of change in natural forest | | Total (1000 ha) | Forest cover (%) | Primary Forest Annual change rate | |
| | | | | | 1000 ha/yr | % | | | 1000 ha | % |
| 1990 | NA | NA | NA | NA | NA | NA | 9363 | 27.3 | -20 | -6.94 |
| 1999 | 9,471 | 1,524 | 10,995 | 32.1 | NA | NA | | | | |
| 2000 | NA | NA | NA | NA | NA | NA | 11,725 | 34.2 | -20 | -14.59 |
| 2002 | 9,879 | 1,914 | 11,793 | 35.8 | 54.5 | 0.6 | | | | |
| 2003 | 10,005 | 2,090 | 12,095 | 36.1 | 35.0 | 0.3 | | | | |
| 2004 | 10,104 | 2,206 | 12,309 | 36.7 | 43.6 | 0.4 | | | | |
| 2005 | 10,283 | 2,334 | 12,617 | *37.0* | 36.8 | 0.4 | 13,077 | 38.2 | -1 | -1.21 |
| 2006 | 10,410 | 2,464 | 12,874 | *37.7* | 35.6 | 0.3 | | | | |
| 2007 | 10,284 | 2,553 | 12,837 | *38.2* | 79.6 | 0.8 | | | | |
| 2008 | 10,349 | 2,770 | 13,119 | *38.7* | 61.0 | 0.6 | | | | |
| 2009 | 10,339 | 2,920 | 13,259 | *39.1* | 66.1 | 0.6 | | | | |
| 2010 | 10,305 | 3,083 | 13,388 | *39.5* | 140.7 | 1.4 | 13,797 | 40.3 | | |
| 2011 | 10,285 | 3,230 | 13,515 | 39.7 | 39.3 | 0.4 | | | | |
| 2012 | 10,424 | 3,438 | 13,862 | 39.9 | 46.3 | 0.4 | | | | |
| 2013 | 10,398 | 3,556 | 13,954 | 39.7 | 101.8 | 1.0 | | | | |

Sources: MARD (2014), FAO (2010)

Forests in Vietnam are classified into three categories according to their designated use or purpose:

(i) Special-use forests (2,082 million ha or 15% of the total forests) are designated for the purpose of biodiversity conservation such as protected areas, natural parks and natural reserves;

(ii) Protection forests (4.66 million ha or around 33%) are established for environmental protection purposes such as watershed and soil protection; and

(iii) Production forests (about 7 million ha, accounting for 50%) are used mainly for timber production.

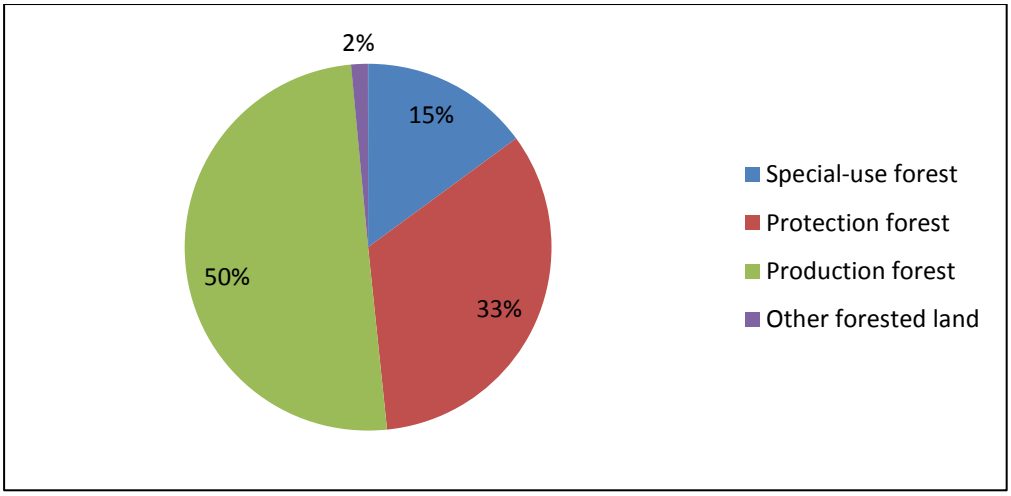


**Figure 2: Forestland classification by purpose in Vietnam in 2013**

Source: MARD (2014)

In Vietnam, all forestlands (consisting of forests and bare lands planned for forestry purposes) are officially claimed as state property. The government allocates land use rights to different economic entities, including state-owned organizations (e.g., forest management board (FMBs) authorized to manage special-use forests and protection forests, and state-owned forestry enterprises/companies (SFEs) mandated to manage protection and production forests); individual households; communities; army units; commune people's committees (CPCs); and other economic entities (e.g., joint venture companies) that are authorized to manage protection and production forests.

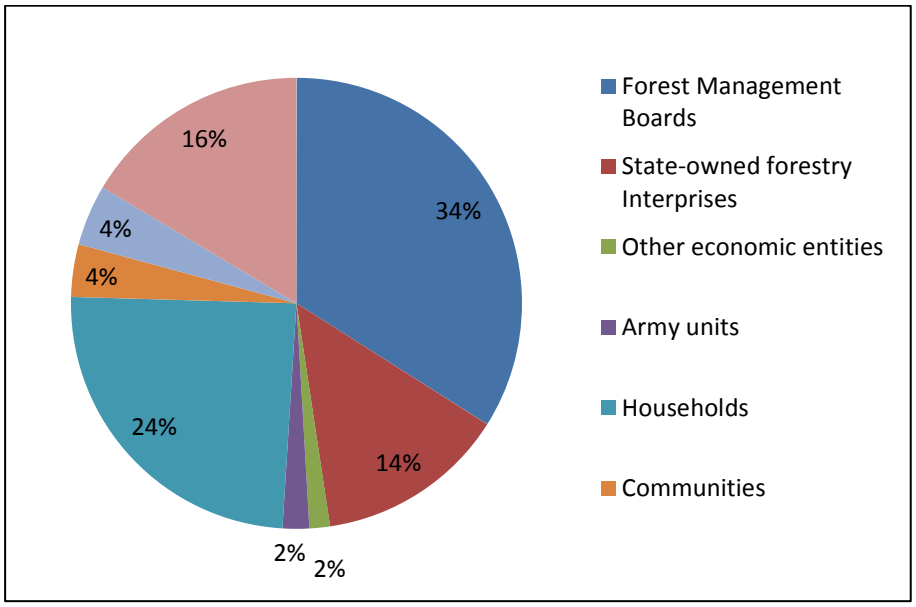


**Figure 3: Forestland classification by management systems in Vietnam in 2013**

Source: MARD (2014)

According to a MARD December 2013 census, SFEs currently manage 1.9 million ha of forests (accounting for 14% of total forests). Of these, 75% are natural forests and the remainder are plantations. The main tasks of SFEs are to manage and use the forests for biodiversity conservation, environmental protection, and production. SFEs receive government budgets for conducting forest protection activities, and some SFEs have government quotas to harvest timber for commercial purposes. SFEs are also authorized to contract their forests to local people for forest protection. Across Vietnam, many SFEs face

conflicts with local people and communities over the forestland assigned to the SFEs. This is considered the most persistent and challenging issue for most SFEs in Vietnam.

FMBs control nearly 4.2 million ha of forests (around 34% of total forests), primarily special-use forests and protection forests for biodiversity conservation and environmental protection purposes. Of these, around 85% are natural forests and the remaining are forest plantations. FMBs receive government budgets to implement their tasks. Similar to SFEs, FMBs also have rights to contract local people for forest protection.

Around 3.4 million ha of forests (approximately 24%) have been allocated to individual households, of which 55% are natural forests. So far, more than one million households have been involved in forestland allocation programs. Local households have been allocated forests for protection and bare forestlands for long-term forestry purposes. They are legally acknowledged as key forest actors and receive land use right certificates (LURCs) with clear rights and duties to their forestlands. Many but not all households have received LURCs. In many areas, the boundaries are not clearly demarcated and the boundaries on LURCs do not match with the actual boundaries on the ground, leading to forestland use conflicts in many places in Vietnam (Phuc and Nghi, 2014).

CPCs currently manage around 2.3 million ha (equivalent to 16% of the total forests), of which 1.9 million ha are natural forests. CPCs are however just a local administrative unit, not a forest management agency. The government gives CPCs rights to temporarily manage some forestlands, which they have not yet allocated to other entities. While the Vietnamese government has made some efforts to reallocate areas under CPC management to local communities or households, only a small portion of the 2.3 million ha has been officially reallocated and many forests are still under the management of CPCs. Such forests are at high risk of being treated as "open access" resources because CPCs in general are unable to effectively manage these areas due to a lack of both human and financial resources (Tuan, 2011).

In reality, community forest management (CFM) is a *de facto* forest management system existing in parallel with the state and private forestland management systems. In CFM, forestlands are managed collectively by local communities, groups of forest users, or social organizations such as farmer unions, women's associations and youth groups. Currently, about 1.13 million ha of forest (85% of which are natural forests) are managed under this system. Local communities or groups of forest users have traditionally claimed these forests as their common-pool resources and have managed the forests for their common benefits. A number of studies show that local communities with their diverse local institutions and customary rules are able to manage their common-pool resources in a sustainable way (Tuan, 2007; Ngai, 2008; Tuan, 2011). However, in Vietnam local communities and local social organizations are not yet recognized as legal entities by the Land Law despite their informal rights to forest resources. There is thus a significant gap between the *de jure* (officially allocated by authorities) and *de facto* (informally claimed and recognized by local community themselves) rights over common-pool resources, which is one of the key challenges in community forest management in Vietnam (Tuan, 2011).

# 2 Drivers of deforestation and forest degradation

Few reports on drivers of deforestation and forest degradation in Vietnam are available and the existing literature is mostly qualitative description of the direct causes of forest loss from 1990-2010 (Winrock, 2011; Thuy *et al*., 2012). The drivers of deforestation and forest degradation in Vietnam vary greatly from region to region and from one historical period to another (Hoang *et al*., 2010). This section presents a review of the direct and underlying drivers of deforestation and forest degradation in Vietnam during the last 12 years.

## 2.1 Direct drivers

According to the National Forest Inventory and Statistics data, a total of 968,769 ha of natural forests and about 1.18 million ha of plantations were lost between 2002 and 2013 due to a variety of causes. The main direct causes are:

(i) logging (both legal and illegal);
(ii) forestland conversion to infrastructure and high commercial perennial plantations;

(iii) forest fire;
(iv) insects and diseases; and
(v) other causes, mainly land conversion into annual crops by local people (MARD, 2014).

Figures 4 and 5 present the forest area loss by causes for natural forests and plantations, respectively.

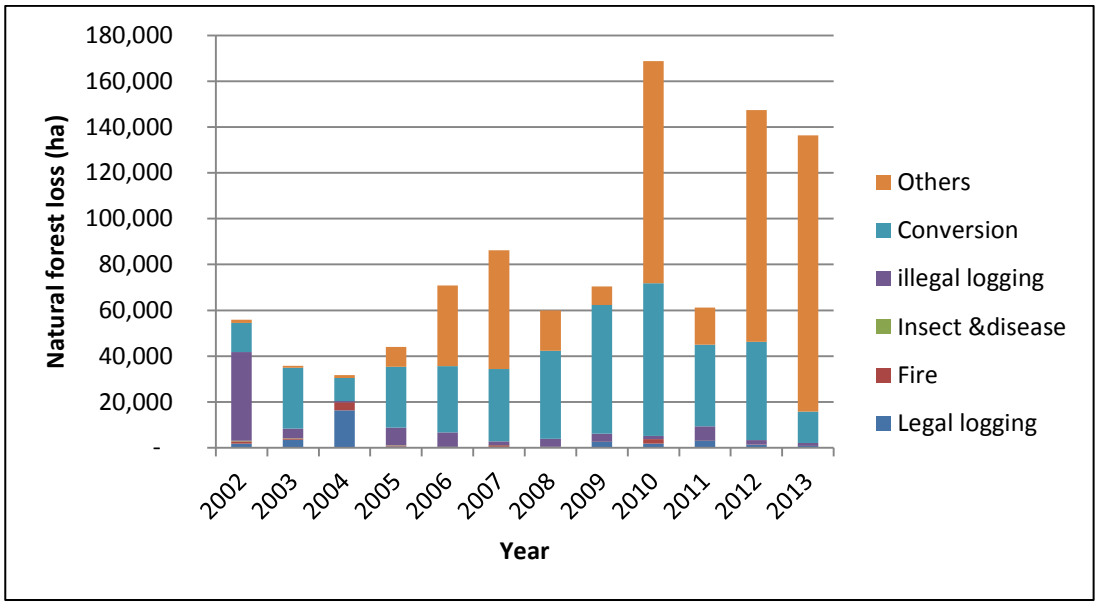


**Figure 4: Natural forest loss in Vietnam by causes**

Source: MARD (2014)

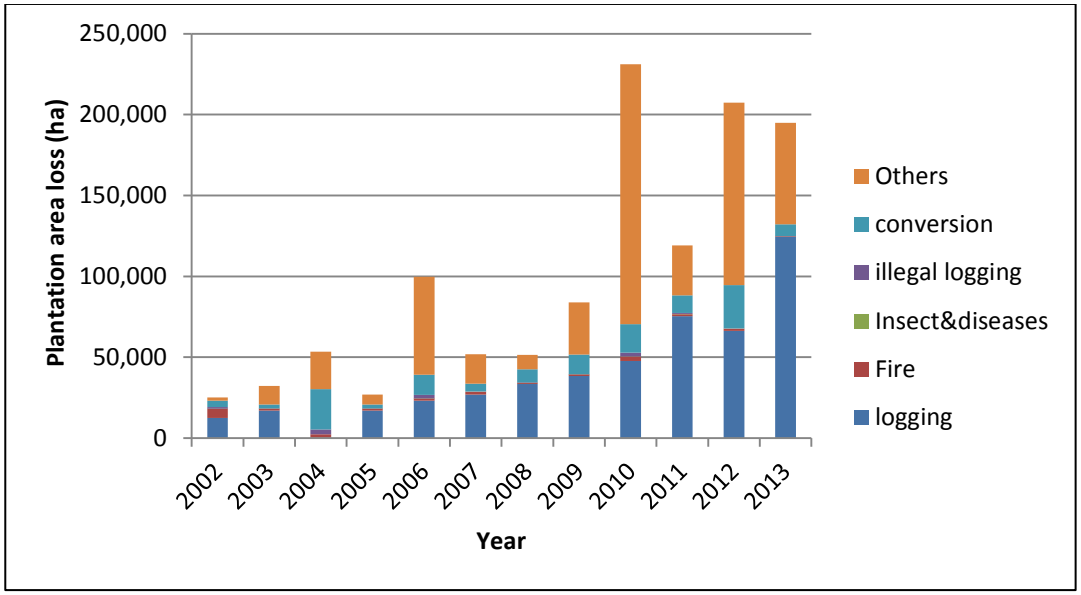


**Figure 5: Plantation loss in Vietnam by causes**

Source: MARD (2014)

### *2.1.1 Drivers of natural forest loss*

### *Forestland conversion*

Forest conversion to other land uses is identified as the key direct driver of deforestation in Vietnam and can be further classified in terms of actor and purpose of the land use changes:

(i) forest conversion to annual crops and commercial perennial plantations at household scale by local people, and

(ii) official forest conversion to infrastructure and commercial perennial plantations by both state-owned companies and private companies.

*Forest conversion to annual crops and commercial perennial plantations at household scale by local people* has often been claimed as the major direct driver of deforestation in Vietnam. The total natural forest loss in the past 12 years from this cause is estimated at almost 460,000 ha, accounting for 47.5% of total forest loss. This conversion takes place in mountainous regions that are home to ethnic minorities with high poverty rates and whose livelihoods heavily depend on upland uses (Sunderlin and Huynh, 2005). In Northern Vietnam, local people mainly practice swidden agriculture to grow food crops like corn, cassava, and upland rice for food security and additional cash. In the Central Highland and the Southern provinces of Vietnam, upland cultivation activities are more market-oriented.

Natural forests have often been cleared to establish commercial high value plantations for cash generation, mainly rubber, coffee, pepper, and some fast-growing timber plantations (primarily Acacia plantations). In coastal zones, many mangroves have been cut down for shrimp farms. This type of forest conversion will likely increase in the future and is considered one of the most outstanding challenges in forest management, especially in the context of increasing demand for food and cash crops in the mountainous regions of Vietnam.

### *Official forest conversion to infrastructure and commercial perennial plantations by companies*

To stimulate economic growth, Vietnam has implemented rapid and large-scale infrastructure development. Many hydropower dams and large-scale commercial agriculture plantations (e.g., rubber, coffee) were established by both state-owned and private companies in forest areas. As a result, large areas of forests were lost. Between 2002 and 2013, a total of nearly 390,000 ha of natural forests were officially converted to the other land uses, accounting for 40.2 % of the total natural forest loss. For example, more than 15,000 ha of natural forests were destroyed in the construction of dams along the Dong Nai River (Thuy*et al*, 2012). The conversion activities occurred most intensely during 2008-2012 (Figure 4). However, more recently hydropower development has slowed down as the government responds to the significant negative environmental and social impacts of hydropower construction. In 2014 the Prime Minister rejected 424 (about 34%) proposals of hydropower dam construction (Quang, 2014). In additional, MARD also issued several new regulations restricting conversion of natural forests to other land uses. This cause of deforestation will therefore likely decrease in the near future.

### *Logging (both illegal and legal)*

Logging is ranked as the third largest cause of forest loss in Vietnam, contributing to 11.1% of total natural forest loss. Of this, illegal logging resulted in 76,557 ha loss (or 7.9% of the total natural forest loss) and legal logging resulted in 32,991 ha loss (or 3.4% of the total natural forest loss). Illegal logging is mainly done by people living in or near forests for constructing homes and generating income. Illegal loggers are mainly poor local villagers, who sometimes work as hired laborers for illegal timber traders. Legal logging operates under a licensed quota on exploitation, issued by the government for SFEs. Illegal and even legal logging once was considered one of the major threats to biodiversity in Vietnam, especially in the 1990s. However, it has lessened in the last few years due to a logging ban imposed by the government and because of scarcity of remaining rich natural forests.

### *Forest fire, insects and diseases*

Forest fires and insects and diseases are not considered serious causes of deforestation and forest degradation in natural forests. According to MARD (2014), the total forest loss from these causes from 2002 to 2013 was 9,500 ha, accounting for just 1% of the total natural forest loss.

### *2.1.2 Drivers of plantation loss*

In Vietnam individual households establish plantations with fast-growing monoculture timber species (mainly Acacia and Eucalyptus species) for chip wood, pulp and paper, and timber. In the last decade, timber plantations have been converted to other commercial plantations and cash crops (e.g., rubber, coffee, cassava). This conversion is a major cause of plantation loss, accounting for nearly 45% of total plantation loss. Other important causes include official land conversion to infrastructure projects by both state-owned companies and private companies (mainly hydropower dams and roads) and fires (about 1.7%). The area of plantation loss due to illegal logging, insects and diseases is rather small, just 0.9% and 0.1% of the total loss respectively (Figure 5).

From the above analysis, it can be concluded that the key driver of deforestation and forest degradation in Vietnam is conversion to other land uses, especially agricultural production and high value plantations.

## 2.2 Underlying drivers

The main underlying causes of deforestation and forest degradation in Vietnam are:

(i) demand for agricultural crops and high value plantations,
(ii) insufficient recognition of communities' rights to land and forests, and
(iii) ineffective forest governance (Tuan, 2011; Thuy *et al*, 2012).

The first cause is a market-driven force while the second and third causes are factors exacerbating existing drivers of deforestation and forest degradation. Figure 6 presents the underlying causes and their relationship with the direct drivers of deforestation and forest degradation in Vietnam in recent decades.

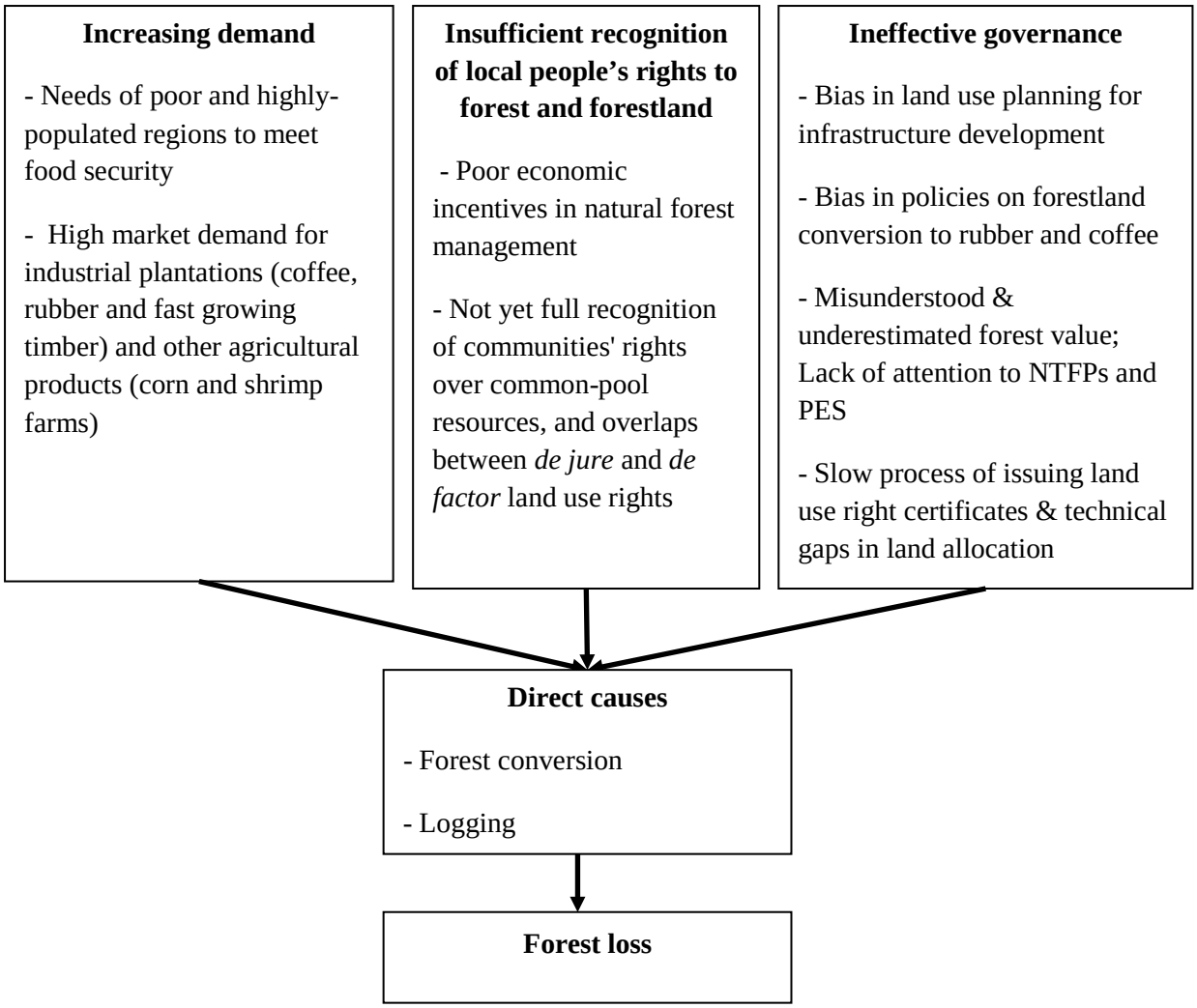


**Figure 6: Underlying causes of deforestation and forest degradation in Vietnam**

### *2.2.1 Increasing demand for agricultural crops and high value plantations*

Increasing demand for use of forestlands for agricultural crops and commercial plantations is the key underlying cause of forest clearing in Vietnam's mountainous regions. In Vietnam, forests are mainly located in mountainous regions home to nearly 25 million forest-dependent ethnic minorities whose poverty rates are highest in the country (Sunderlin and Huynh, 2005; Cuong, 2012; GSO, 2014). The local populations lead subsistence livelihoods and depend heavily on upland agricultural production and forest product collection. Crop cultivation and livestock raising on the uplands are the two major sources of income for local people, contributing to at least 50% of total household income (Cuong, 2012; JIPFRO, 2014). Due to population growth and lack of suitable area for paddy cultivation, the local communities need increasing land for crop cultivation to meet food security and earn cash (Rademaekers *et al*., 2010; JIPFRO, 2014).

Similar to many other tropical forest countries, economic growth based on the export of primary commodities and an increasing demand for timber and agricultural products in a globalizing economy are the main indirect drivers of deforestation and degradation in Vietnam. Vietnam's economy still depends heavily on agricultural and natural resource export and the country has recently become one of the world's largest exporters of coffee, rubber and shrimp (GSO, 2014). The high market demand for these products has resulted in significant conversion of forests to coffee and rubber plantations in mountainous regions (especially in Central Highland) and to shrimp farms in coastal zones.

### 2.2.2 Insufficient recognition of local people's rights to forests and forestlands

The total benefit that can be received from forest management is an important determinant of incentives for forest managers. In order to halt deforestation, the Government of Vietnam allocates, contracts, or leases natural forests to local households for protection purposes. Local people have responsibilities to protect the entirety of the forests. In exchange, they receive financial support from the government for their patrolling activities and are allowed to collect some non-timber forest products (NTFPs). However, the financial support is small (around 50,000-100,000 VND or 2.5-5.0 US$)/ha/year). Local people also can hardly derive significant income from the forests since most forests allocated to them are poor and degraded (Bien, 2011; Tuan, 2012). As a result, they lack the incentives to invest in natural forest protection and management.

Many local communities have traditionally managed their communal forests for their own benefits. However, their traditional rights over the resources have not been fully recognized (Sikor, 2001; Tuan, 2007; Tuan, 2011). In some places, local authorities allocated forests traditionally managed by local communities to other entities (e.g., individual households or SFEs) without full consideration of communities' customary rights. Local communities therefore often do not acknowledge other actors' use rights over the forests, leading to conflicts between formal and informal claims to forest resources (Tuan, 2007; Tuan, 2011).

### 2.2.3 Ineffective governance

Many underlying causes of deforestation and forest degradation in Vietnam can be traced to policies that prioritize infrastructure development (Thuy et al, 2012). In order to improve infrastructure for national economic growth, the government has allocated considerable national budget and strongly encouraged private sector investment in infrastructure development, especially in transportation and electricity. Inappropriate infrastructure projects such as roads and hydropower dams have adversely affected the biodiversity of many protected areas and livelihoods of local communities in the construction sites and downstream areas. So far, more than 1200 (mostly small) hydropower plants have been constructed and proposed in Vietnam (Quang, 2014). As a result, thousands of hectares of natural forests in mountainous regions have been cleared and thousands of hectares more have been removed for building new settlements and creating new agricultural lands for displaced communities.

Favoring allocation of forestland for conversion to rubber and coffee plantations has also resulted in disappearance of large areas of natural forests since the late 2000s, especially in the Central Highland provinces. The policy of the government on rubber plantation development (up to 800,000 ha by 2020) allowed so-called "*poor* and *degraded*" natural forests to be converted to rubber plantations, and many natural forests have hence been clear-cut. By the end of 2012 almost 910,500 ha (over 100,000 ha more than the maximum proposed area by 2020) had been converted to rubber plantations. Many scientists at a September 2013 national workshop on forestland conversion to rubber plantation strongly pointed out that most newly established rubber plantations were converted from natural forests that were not really "poor and degraded" (Hung, 2013).

In terms of forest valuation, total economic value (TEV) is still a new concept to foresters in Vietnam, particularly for local forestry authorities. For a long time, the value of forests in Vietnam was often narrowly defined in terms of timber value. Misunderstanding of total forest value have led to inappropriate use and management of natural forests. Many legal and technical guidelines simply classify forests into "rich" and "poor" categories based on standing timber volume, with insufficient or no consideration of other important values of forest ecosystems such as NTFPs and ecosystem services. Therefore, many "poor" forests that were converted to rubber plantations might have been high value in terms of NTFPs and ecosystem services (Hung, 2013).

The forestland allocation policy in Vietnam has created a significant positive change in the use of bare forestlands. However, some issues remain regarding the accuracy and equity of implementation of forestland allocation. Many households have not yet received LURCs, which may create difficulties (e.g., low compensation) if allocated forest is retaken by the government for other land uses such as dam construction. Forestland users without LURCs also cannot benefit from the government's concessionary loans for forestry development. In addition, unclear demarcation of forestland boundaries in the field due

to top-down approaches and lack of local participation has caused conflicts over forest use and management (Tuan, 2007; Bien, 2010; Tuan, 2011).

In forestland allocation, forestland use rights have been handed over to different economic entities, including state (e.g., SFEs and FMBs) and non-state actors (e.g., households and individuals), but the former have been given greater priority. About 15% of the total forest area, comprising mostly rich and medium forests, is still managed by around 150 SFEs, while millions of poor local households are managing just 24% of the total forest area, comprising mainly poor and degraded areas. This imbalance in forest allocation has caused conflicts between local people and SFEs. In many places, local people do not respect the rights of SFEs over forestlands and engage in illegal land encroachment and logging inside the SFE boundaries. SFEs generally have very weak human resources and are unable to stop these activities. As a result, many forests under SFE management have been cleared and conflicts over forest and bare forestland uses between local people and SFEs has become commonplace in mountainous regions of Vietnam (Bien, 2010).

Overlapping responsibilities in forestland management is another factor exacerbating deforestation and forest degradation. An area of forestland is under the management of two ministries: Ministry of Natural Resources and Environment (MONRE) and Ministry of Agriculture and Rural Development (MARD). MONRE is responsible for issuing LURCs while MARD is in charge of forestland use planning and management. Additionally, there are some differences in land classification systems between MARD and MONRE. These have caused misinterpretation and functional overlap in forestland management, especially where there is a lack of effective cooperation between local offices of MARD and MONRE (Tuan, 2011; Ha, 2012).

# 3 Drivers of sustainable forest management, forest conservation, afforestation and reforestation

In contrast to the drivers of deforestation and forest degradation, there are also factors that promote sustainable forest management policies and practices in Vietnam. These positive drivers generate demand for sustainable forest management and can be grouped into three different levels from global, national to local (Table 2).

**Table 2: Drivers of sustainable forest management, conservation and forestation in Vietnam**

| Level | Drivers | Sources |
|---|---|---|
| ***Global*** | i) *Key international agreements on environmental protection to which Vietnam is a party*:<br>- Convention on Biological Diversity (CBD), signed 1992<br>- Convention on International Trade in Endangered Species (CITES), signed 1994<br>- Kyoto Protocol to the UN Framework Convention on Climate Change, signed 1998 | Thuy *et al.*, 2012<br><br>UNFCCC, 2012 |
| | ii) *Key international agreements/institutions on market integration to which Vietnam is a party/member:*<br>- Forest Law Enforcement, Governance and Trade (FLEGT), signed 2010<br>- WTO, signed 2007 | Thuy *et al.*, 2012<br><br>WTO official website |
| | iii) *International standards on sustainable forest management (e.g., Forest Stewardship Council or FSC)* | Thorsten & Tuan, 2013 |
| | iv) *Potential markets for forest ecosystem services (e.g., carbon credits in REDD+)* | MARD, 2013 |
| | v) *International movements in forestry management introduced by NGOs in Vietnam* (e.g., community-based forest management, co-management and participation, decentralization, SFM) | Tuan, 2011 |
| ***National/sectoral*** | vi) *National economic reform from state management to market driven*<br>vii) *High risk of environmental problems*: climate change (e.g., sea level rise), flooding, soil erosion & desertification, high rate of biodiversity loss<br>viii) *Government demand for poverty elimation and rural development*, of which forestry protection and development is one component | MARD, 2007 |
| | ix) *Demand for improved effectiveness and efficiency of forestry operations* (e.g., timber production and wood processing) | MARD, 2013<br>Tuan, 2014 |
| ***Local*** | x) *Needs to solve environmental issues that negatively impact local livelihoods* (e.g., soil loss and degradation, landslide, flooding)<br>xi) *Needs of SFM at landscape level to ensure sustainable livelihoods in mountainous regions*: forests supporting other income generations (e.g., sloping cultivation)<br>xii) *Needs to improve net income per unit of forestland*, thereby significantly contributing to household income<br>xiii) *Increased public awareness* | Cuong, 2012<br>MARD, 2014 |

The international agreements on environmental and biodiversity protection to which Vietnam is a party (e.g., CBD, CITES) are external forces that have contributed to the establishment of a dozen of protected

areas in Vietnam in the last three decades, as well as the issuance of the Vietnam Law on Biodiversity in 2008. Other external regulatory and market forces that influence Vietnam's sustainable forest management policies include international requirements for forest products (e.g., FSC) and potential markets for forest ecosystem services (e.g., carbon credits in REDD+). Vietnam is now deeply integrated into global markets and has become a major wood product exporter, with an estimated total export revenue of about 6.5 billion USD in 2014. However, this industry does not yield high net benefit as Vietnam has to import about 80% of FSC timbers for wood processing (Tuan, 2014). In order to access markets with premium prices, forestry products (e.g., timber, wood products) have to meet technical requirements of international standards and norms (e.g., FSC, FLEGT), which usually include principles and criteria of sustainable forest management in terms of economic efficiency, environmental protection and social support. These requirements create both market barriers and incentives for forest management units to reform their forestry governance towards SFM, in order to meet the demand for certified timbers for the wood-processing sector of Vietnam and international market. Vietnam's commitment to fulfill international agreements on biodiversity conservation and REDD+ programs are additional drivers for ensuring biodiversity conservation and sustainable provision of forest ecosystem environmental services.

At the national and local levels, the main direct drivers for promoting SFM, biodiversity conservation, and afforestation and reforestation in Vietnam can be identified as the following:

*Demand for sustainable development and poverty reduction*: In the context of high poverty rates and increasing population (GSO, 2014) and low forestland productivity in mountainous regions (MARD, 2007), there is a need to improve local livelihoods and promote sustainable forestland use in mountainous regions. This has been a key driver of sustainable forestland management in Vietnam. The mountainous regions are characterized by sloping lands (classified as forestlands by the government), upon which local people heavily depend for livelihoods and income generation (e.g., through terrain field practices, cattle raising, and plantation establishment). As a result, sustainable use of sloping lands in terms of both improving land productivity and soil protection is necessary to improve local people's livelihoods and environment protection. These objectives cannot be achieved without sustainable management of forests as they provide critical environmental services such as water regulation and soil loss prevention.

*Response to increasing environmental risks and hazards.* Vietnam is facing increasing environmental risks and hazards both at national and local levels. At national level, Vietnam is one of the most vulnerable countries in Southeast Asia to climate change impacts (e.g., projected high sea level rise and increased frequency of tropical storms with associated flooding and landslides) (Yusuf and Francisco, 2009; IHEN, 2010). At local level, unsustainable development of hydropower dams in mountainous regions has caused significant environmental and social costs, including biodiversity and forest loss and negative impacts on downstream communities (UNDP, 2013). Sustainable forest management in mountainous and coastal zones is considered an appropriate means to mitigate these negative impacts as well as to reduce deforestation and forest degradation, a major cause of climate change.

*Decentralization movements* and *increasing public awareness* in forestry are important drivers of positive changes in forest resources management. Since the 1990s, the country's economic reform has led to decentralization initiatives in forestry. Vietnam forestry sector has shifted from heavily centralized management to social forestry with key policies on forestland allocation and contraction to individual households. More recently, increasing public awareness on environmental protection, especially via public media and social organizations, has prompted policy makers, particularly central parliament members, to issue legal regulations on logging ban and rejection of many proposed hydropower plants. In addition, non-government organizations working in forests (e.g., WWF, GIZ, and JICA) have introduced and piloted some forest management approaches to Vietnam such as community-based forest management, co-management, and sustainable forest management.

*Inefficient system of state-owned forest enterprises* underscores the need for restructuring SFEs to improve the efficiency of state forest management. The Government of Vietnam has issued a legal framework guiding the restructuring of SFEs (MARD, 2007*).*

# 4 Policies and measures (PAMs) addressing deforestation and promoting sustainable forest management, forest conservation, afforestation and reforestation

Until the early 1990s, the management, exploitation, processing, and distribution of Vietnam's forest resources were controlled exclusively by the State (Sikor, 1998). Since the late 1990s, in line with the country's "Doi-Moi" economic renovation, Vietnam's forestry sector has undergone a significant shift from a heavily centralized system with only state forestry to a market-oriented system with multiple entities, including individual households and the private sector. Approximately 200 legal documents related to forestry management have been issued since 1990s, ranging from high-level legal documents (e.g., laws) issued by the National Assembly to ministerial guidance issued by MARD. A review of the key PAMs addressing deforestation and promoting SFM in Vietnam is presented as follows.

## 4.1 PAMs addressing deforestation and forest degradation

In order to encourage investment in forestry development, forestland use rights have been handed over to different economic entities, including non-state sectors (households and private actors) for long-term management although the government still retains state ownership over forestland. A number of laws, decrees and decisions regarding forestland allocation and contraction have been promulgated. These key legal instruments are the Law on Forest Protection and Development (1992) (revised 2004), the Land Law (1993), Decree 02 (1994), Decree 01 (1995), and Decree 163 (1999).

The Law on Forest Protection and Development (1992) and the Land Law (1993) reconfirmed state ownership of forestland but introduced the concepts and principles for devolving land use rights of different types of forestlands to both state-owned organizations and non-state economic entities. The government allocated land use rights to economic organizations, individuals, and households for stable and long-term uses (up to 50 years for forestland) (Art.1). Forestland users are entitled to exchange, transfer, lease, and inherit their land use rights. They have the responsibilities to use the land in accordance with the purpose designed by the government.

On the basis of the laws, a series of government decrees and decisions were issued in order to guide allocation, lease, and contracting of forestlands to different stakeholders. Decree 02 (1994) shaped the legal framework for allocating forestland to organizations, households, and individuals for forestry purposes. By this decree, special-use forests and protection forests (mostly natural forests) are to be allocated mainly to FMBs (Arts. 7, 8). Production forestlands (mostly bare lands) are to be allocated to SFEs, individual households, and private companies. Forestland users are entitled to receive LURCs. So far, around 1.7 million ha of forestlands (mainly bare lands) have been allocated to hundreds of thousands of households for long-term forestry production (up to 50 years).

Decree 01 (1995) and Decree 163 (1999) deal with lease and contraction of forestlands to households and individuals for forestry uses. State organizations including SFEs and FMBs are authorized to contract their forestlands to households and individuals for protection and reforestation. Households and individuals in these cases have roles as hired partners of the state-owned organizations. As such, their rights over the contracted forestlands are less in comparison with their rights over the allocated forestlands under Decree 02 (1994). For natural forests, land users are not given the right to LURCs. Instead, they received annual payment from the government for their forest protection activities (around 50,000-100,000 VND or 2.5-5.0 US$/ha/year). In reality, local people can hardly derive significant income from contracted forests because of the low payment for patrolling activities and poor quality and value of the allocated forests. This policy mainly focuses on protecting forests rather than improving the living standards of local people (Bien, 2010).

During 1998- 2010, in order to halt deforestation and increase forest cover to 43% by 2010, the government implemented publicly funded forestry projects under the Five Million Hectares Reforestation Program. The Program supported SFEs and local households in implementing afforestation and reforestation. The government provided seedlings, fertilizers, and some labor payments for plantation establishment, natural forest protection and tending activities.

## 4.2 PAMs promoting sustainable forest management, forest conservation, afforestation and reforestation

Policies and measures (PAMs) to promote SFM in Vietnam were introduced in the late 2000s. The key initiatives/policies for promoting SFM in Vietnam include social forestry, SFM programs funded by GIZ, forest certification, payment for forest environment service (PFES), REDD+, and restructuring of state-owned forestry enterprises.

The Community Forestry Program (2007-2012) was aimed at forestland allocation to local communities for protection and management in some pilot provinces. The major outcomes of this program include the allocation of nearly 50,000 ha of natural forests to dozens of local communities and a technical guidance on participatory forestland allocation and planning for villages.

Vietnam is the first country in Asia to initiate a nationwide PFES scheme. In 2008, Decision 380 established conditions to support PFES pilot projects in Lam Dong and Son La provinces, and in 2010 Decree 99 mandated the implementation of PFES nationwide starting from 1 January 2011 (Thuy *et al*., 2012). Decree 99 defines four types of forest environment services: watershed protection, landscape amenity, carbon sequestration, and provision of spawning grounds. So far, there has been a guideline and procedure on payments for the two services of watershed protection and landscape amenity through a public payment mechanism with heavy control of the government. The service users of these services (e.g., hydropower plants, water supply plants, ecotourism companies) must pay a fixed payment of 20 VND/kWh, 40 VND/cubic meter of water and 1–2% of gross revenue for ecotourism activities. The service providers (e.g., household managing forests) can receive up to 85% of the gross revenues of the payments (deducting 10% for a management fee and 5% for a reserve fund). The PFES is considered a breakthrough policy in Vietnam's forestry sector and underwent numerous refinements and improvements during the pilot phase (Thuy *et al.*, 2013). It created a legal framework for adequate evaluation of the total economic value of forest environment services, which will increase income from forest management for forest owners.

Sustainable forest management is one of the priorities of the Vietnam Forestry Development Strategy 2006-2020, which includes an objective to achieve certification for 30% of the total production forest area by 2020. However, until the end of 2012 the total certified area of forests was just about 45,000 ha (less than 1% of the total forest area in Vietnam). Thus, it is essential for Vietnam to develop a legal framework and technical guidelines for promoting forest certification, especially given Vietnam's commitment to fulfill requirements of several timber legality regulation such as Illegal Timber Regulation/FLEGT (EU) and the Lacey Act (USA). A German-funded program on promoting SFM and FSC certification was conducted for nearly 10 years (2003-2013) and supported the implementation of SFM plans and preparation of forest certification for some SFEs. Two SFEs developed SFM plans and practiced and received FSC Forest Management (FM) certificates. More recently, WWF has supported hundreds of households in Quang Tri province to form dozens of small forest certification groups to follow SFM plans for their timber plantations and receive FSC-FM. SNV Vietnam is also piloting a project to use FSC certification to promote a wide range of ecosystem services that are currently not adequately covered in SFM. In addition, MARD issued a decision at the end of 2014 guiding SFM planning procedure and providing an index of principles and criteria for forest certification.

Restructuring SFEs is another key policy in forestry sector, following Decree 200 (2005) on the shift of SFEs towards forest companies. 256 SFEs have been shifted into 148 forest companies, 3 joint-stock companies, and 91 FMBs, while 14 ineffective SFEs were dissolved entirely. Currently, 10 of the 148 forest companies are under central management and the remaining 138 SFEs are managed by provincial people's committees. Still, forest companies and SFEs continue to receive priority in attaining forestland access. Though nearly 600,000 ha of forestlands of SFEs were reallocated to local people, some studies show that the forestland areas handed over are generally impoverished and insufficient compared to local people's needs of forestlands for cultivation (Phuc and Nghi, 2014).

The REDD+ program in Vietnam started just a few years ago with the goal to reduce deforestation and forest degradation. Vietnam is one of the nine countries initially identified for country programming under the UN-REDD Program. It is also one of the first countries to receive approval for the Readiness Project Identification Note (R-PIN) under the World Bank's Forest Carbon Partnership Facility (FCPF).

Since 2009, many activities have been implemented in Vietnam to prepare the country for a future REDD+ mechanism. In 2010, MARD established the National REDD+ Network and REDD+ Working Group to raise awareness on REDD+ and build capacity at national and provincial levels to coordinate activities by ministries, international agencies and other organizations.

## 4.3 Major gaps of Vietnam PAMs addressing deforestation and forest degradation

The policies since the 1990s have changed the forestry system of Vietnam into a social and market-oriented system with fundamental changes in property rights over forest resources and forestland. These policies have created some remarkable positive results for Vietnam forestry sector. Millions of hectares of forests and forestlands have been allocated or contracted to different economic entities, which has created incentives for local households to participate in forest protection and invest in plantation development. On the other hand, there are still some challenges and constraints in PAMs addressing forest degradation and deforestation in Vietnam.

### *4.3.1 Policies on forestland allocation and contracting*

#### *Remaining large forest areas with high risk of unsecured land use rights*

Although decentralization in forestland management has been implemented for almost 20 years in Vietnam, the process of forestland allocation and contracting has not yet finished. Many forests and forestlands are still facing high risk as "open-access" resources for the following reasons:

(i) Approximately 2.3 million ha of forestland comprising mostly natural forests (or nearly 17% of the total country forest area) have not yet been allocated to any legal entities and are temporarily under the management of commune people's committees (CPCs). In reality, such forests can be considered public goods as CPCs are public administrative organizations, not forestry management units. These forests are often protected by a security team under CPC's command. In many places, CPCs are often unable to effectively manage these areas due to lack of staff and budget. Many field studies show that the forests under CPC management face high risk of being treated as "open access" resources (Sikor, 2001; Tan, 2006; Tuan, 2007; Bien, 2010).

(ii) The process of issuing forestland certificates has trailed behind forestland allocation. According to MARD data, by December 2011, 86.3% of total allocated forestlands had been awarded LURCs. This means nearly 14% of the allocated forestlands have not been formally recognized through an LURC. These forest owners could bear risks associated with unsecured property rights over their forestland in case of land conflicts or conversion to other land uses. In addition, the uncertified forestland cannot be used as collateral for bank loans.

(iii) Local communities and social organizations currently manage approximately 1.13 million ha of forests. Although local communities have been informal owners of the forests for generations, their use rights are not yet fully recognized as those of individual households.

#### *Inequity in forestland allocation*

Many studies show that there is an equity issue in forestland allocation among different economic entities, both in terms of the quantity and quality of allocated forestlands. According to a MARD census in 2013, FMBs currently control 34% of the total forests and SFEs manage 13.6%. This means that state-owned organizations (FMBs and SFEs) control almost 50% of total forests in Vietnam, while hundreds of thousands of ethnic households in mountainous regions account for just 24% of the total forests. SFEs and FMBs have also often received valuable forests and more productive forestlands while forests and forestlands allocated to individual households are mainly poor and degraded areas (Sunderlin and Huynh Thu Ba, 2005; Ha, 2012).

Inequality in forestland access has taken place not only among different entities but also among different wealth and power class. Better-off households, local officials and authorities, and local elites have sought to accumulate land and have received large areas of land while poorer households have had difficulty accessing land, resulting in disadvantages for marginalized individuals and groups (Tan, 2006; Ha, 2012; Phuc and Nghi, 2014).

These inequity issues in forestland allocation have created disadvantages for local people and led to conflicts in forest land uses among the different stakeholders in forestry management, including between local people and state-owned forestry organizations (e.g., SFEs and FMBs) and among local households (Ha, 2012; Phuc and Nghi, 2014).

### *Unclear boundaries and overlapping property rights*

In Vietnam, prior to forestland allocation, shifting cultivation activities were practiced under a communal property regime. Local people used to practice slash-and-burn for crop cultivation on sloping lands. During the fallow period, fields would become grassland for the village's common use and collection of firewood, vegetables, and herbs (Phuc and Nghi, 2014). The process of forestland allocation was mainly conducted by a top-down approach without sufficient consideration of the history of traditional forestland uses and lack of full participation of local people. This led to several conflict situations. In some places, several households were given LURCs for the same land plot. Conflicts between the *de jure* and *de facto* property rights have also occurred in many areas (Tuan, 2011; Phuc and Nghi, 2014).

### *4.3.2 Policies on SFM and afforestation & reforestation*

As previously mentioned, the forestland allocation polices and some government funded programs on forestation (e.g., Five Million Hectares Reforestation Program/Program 661) have created important legal frameworks for promoting natural forest protection and plantation establishment by setting up property right systems for non-state-owned entities. However, land allocation has not generated a "big push" in the forestry sector as it did in the agriculture sector[1] (Tan, 2006; Tuan, 2007). The poor forestry outcomes result from the following:

i) Unclear property rights and inequity in forestland allocation create conflicts and difficulties for local people's investment in forest development and protection.
ii) The government fund for forestry is rather limited. In Program 661 the government payment for local people in forest protection contracts was too small at 2.5-5 US$ per ha per year. Meanwhile, almost all forestlands allocated to households are classified as poor and degraded, resulting in insignificant opportunity of earning income from natural forest protection and forestland management. Forest owners therefore have little incentive to invest in natural forest management.
iii) The prospect for forestry investment differs between regions in Vietnam. In the remote Northern mountainous region with high poverty levels and a lack of road access, forestry investments are unattractive due to high production costs. A common afforestation policy thus hardly works well for all ecological regions of Vietnam (Sikor, 1998; Cao and Son, 2014).
iv) Establishment of commercial industrial plantations (mainly rubber, coffee, and pepper) with the advantages of high demand and annual harvesting often yield significantly higher economic returns than afforestation and natural forest management, which is characterized by long-rotations and low-net profit (Tuan, 2012; Phuc *et al.*, 2013). Therefore, forestland users often have a tendency to establish commercial industrial plantations rather than forest products production on their forestlands. Moreover, the policy on conversion of "degraded" forests to rubber plantations can be easily exploited in the absence of strong monitoring.

[1] After 10 years of agricultural land allocation to individual households by Decree 10 in 1986, from a serious food deficit country Vietnam has become the world’s second biggest rice exporter.

v) Low profit from timber plantation per unit area is common in Vietnam due to a lack of good genetically improved timber species and weak linkages between timber producers, wood processors, and certified timber buyers.
vi) The forestry administrative system in Vietnam emphasizes protection duties rather than provision of services to forestland users to ensure effective use of the allocated and contracted forestlands. The forestry management system has not caught up with the devolution of forestland use rights.

# 5 Lessons learned & need for revised PAMs related to forest change drivers

In the past decade, the forest cover of Vietnam has increased significantly due to establishment of plantations for commercial purposes, an outcome of policies that allocate forestland to different entities. However, natural forests have decreased and become increasingly degraded due to a variety of causes. Deforestation and forest degradation in Vietnam are mostly driven by forest conversion to other land uses (e.g., annual food crops, rubber, coffee, and hydropower dams) as a consequence of increasing demand for agricultural crops to meet local food needs and industrial and commercial plantations destined for the world's agricultural product markets. The devolution in forest management via forestland allocation to different economic entities has created a remarkable positive change in forestland use, with several millions of hectares of timber plantations established in the last decade. However, Vietnam has not fully succeeded in halting the loss and degradation of natural forests despite its policies on natural forest management. One key reason is that these policies have focused on regulations but lack economic instruments to incentivize investment in natural forest protection.

The key constraints of Vietnam's PAMs on forest management include insufficient recognition of local communities' rights to their forests; lack of sound benefit-sharing mechanism in natural forest management; inequitable forestland allocation; slow LURCs issuance; and slow reform of SFEs. In addition, a lack of effective policy instruments to address forest conversion to dams and large scale commercial plantations is another gap in Vietnam forest policy.

Promotion of forest product labeling (e.g., FSC certificates) and introduction of PFES and REDD+ are market-based instruments to increase benefits from forest services for forest owners. These policies have only been recently introduced but are highly promising in Vietnam. The PFES has been a breakthrough policy while forest certification has been behind schedule and REDD+ is still in early stages.

# 6 Proposed action plan

To more effectively tackle deforestation and forest degradation, Vietnam forestry policy should aim towards two key objectives:

(i) sustainable management of the remaining high conservation value natural forests for biodiversity conservation and long term provision of forest products and environmental services, and
(ii) improving incomes and livelihoods of forestland owners.

To reach these goals, it is necessary to establish a permanent national forest estate to promote strict protection of important natural forest ecosystems by state agencies. More importantly, forest policy should emphasize application of market instruments to generate economic benefits for forestland users and should aim to improve public participation in forest governance. A number of key recommendations to combat deforestation and forest degradation for the period 2015 to 2020 are as follows:

i) Establish a permanent national forest estate as soon as possible to protect the entirety of remaining important forest ecosystems as an essential strategy to respond to continuing loss of natural forests;

ii) Improve existing forest policies with focus on:

- Revising forestland allocation to households and local communities through speeding up the process of issuing LURCs and communal forest allocation to local communities and forest user groups,

- Completing key legal frameworks on natural forest management to increase economic benefits for forest owners, including: (i) benefit sharing mechanisms, especially on forest users' rights to NTFPs collection and development and use of open gaps on forestland for crop production; (ii) PFES and REDD+ to create significant income sources from forest environmental services, and (iii) SFM and forest certification to access certified timber markets with premium prices, and

- Accelerate administrative decentralization by quickly restructuring state-owned forestry enterprises and removing overlapping functions between MARD and MONRE to ensure clear, consistent, and efficient state forestry management.

iii) Set up new forest policy instruments (e.g., environmental offset policy and forest restoration deposit/bond) to prevent further forest loss and ensure forest restoration in any forestland conversion projects and programs (e.g., hydropower dams and road constructions).

iv) Develop a national program on high value timber plantation, including adoption of environmental-friendly and intensive cultivation practices and improved access to market to create significant income for forestland users as an indirect way to reduce pressure on natural forests.

# References


Bien, N.N. (2010). Report of sustainable forest management and development achievement, shortcomings and solutions. Presented at Annual Forest Partnership Meeting. Hanoi, Vietnam, 2 Feb., 2011.

Cao, T.T and Son, H.L. (2014). Timber value chain in Vietnam. Agricultural publishing house, Hanoi, Vietnam.

Cuong, N.V. (2012). Ethnic minorities in Northern mountains of Vietnam: poverty, income and assets. https://mpra.ub.uni-muenchen.de/40769/

Dang Quang. (2014). Loai bo 34% thuy dien nho va vua (rejection of 34% of the total small and medium size hydropower plans). www.nhandan.com.vn/mobile/chinhtri/item/21534202.html

FAO. (2010). Global Forest Assessment 2010- Vietnam Country Report. Rome, 2010.

General Statistic Office of Vietnam (GSO) (2014). Statistical data on Education, Health, Culture and Living Standards. www.gso.gov.vn/default_en.aspx?tabid=474&idmid=3

Ha. T.T.T. (2012). Forest Land Allocation with the involvement of Bac Kan people –Achievements of 3 PAD Project. Presented at the workshop "Forest Land Allocation: Policy and Practice." Tropenbos International Vietnam and the Forest Inventory and Planning Institute, 10 April 2012, Hanoi

Hoang. M.H, Thoa.T.T, Do.T.H, and Thomas, D. (2010). An assessment of options for reducing emissions from all land uses in Vietnam- ready for REDD+, ICRAF. Hanoi, Vietnam.

Hung, T,V. (2013). Issues on forestland conversion, online People newspaper of. Available at www.nhandan.com.vn/khoahoc/moi-truong/item/21305902

INHEN (2010). Climate change and its impacts in Vietnam, Vietnam Institute of Meteorology, Hydrology and Climate Change (IHHEM), Hanoi, Vietnam.

JIPRO (2014). Report of assessment of household incomes of local people in Dien Bien province. Tokyo, Japan.

MARD (2007). Vietnam Forestry Development Strategy 2006-2020. Hanoi, Vietnam.

MARD (2014). Reports on forestland use changes from 2002 to 2013. www.kiemlam.org.vn/Desktop.aspx/List/So-lieu-dien-bien-rung-hang-nam

Ngai, N.B. (2008). Project report of analysis of community forest management in the Northen Vietnam. Vietnam Forestry University. Hanoi, Vietnam.

Phuc, T.X and Nghi, T.H. (2014). Forest land allocation in the context of forestry sector restructuring: opportunities for forestry development and upland livelihood improvement. Tropenbos International Vietnam, Vietnam.

Prime Minister (1994). Government Decree No. 02/CP: Regulations on Forestland Allocation to Organizations, Households, and Individuals for Stable and Long-term Forestry Purposes. Hanoi, 15 January 1994.

Prime Minister (1995). Government Decree No. 01/CP: Regulations on Allotment of Lands for Agriculture, Forestry, and Fishery Purposes in State-owned Enterprises. Hanoi, 04 January 1995

Prime Minister (1999). Government Decree No. 163/ND-CP: Regulations on Forestland Allocation and Allotment to Organizations, Households, and Individuals for Stable and Long-term Forestry Purposes. Hanoi, 16 November 1999.

Prime Minister (2004). Government Decree 200/2004/ND-CP the Premier dated 3 December 2004 on Re-arranging and Developing state forest enterprises.

Rademaekers K., Eichler L., Berg J., Obersteiner M., Havlik P., (2010). Study on the evolution of some deforestation drivers and their potential impacts on the costs of an avoiding deforestation scheme. Prepared for the European Commission by ECORYS and IIASA. Rotterdam, Netherlands.

Sikor. T. (1998). Forest policy reform: from state to householdforestry. *In* Poffenberger . M (ed.) Stewards of Vietnam'sUpland Forest. Report number 10. AsianForestry Network, 118-138

Sikor, T. (2001). Allocation of forestry lands in Vietnam: did it cause expansion of forests in the northwest? Forest Policy and Economics 2: 1-11.

Sunderlin, W.D and Huyen, T.B. (2005). Poverty alleviation and forest in Vietnam, CIFOR. Bangor, Indonesia.

Tan, N.Q. (2006). Forest devolution in Vietnam: differentiation in benefits from forest among local households. *Forest Policy and Economics* 8: 409-420.

Thorten, S and Tuan, D.A. (2013). FSC FM audit of Truong Son forestry company. GFA certification, Germany.

Tuan, D.A. (2007). Governance structure and performance of communal forest management in Vietnam: case study from HoaBinh province, Vietnam. Ph.D dissertation, TU Dresden, Germany.

Tuan, D.A. (2010). Report of Opportunity cost analysis of forestland use in Quang Tri province. Submitted to WWF Vietnam. WWF, Hanoi.

Tuan, D.A. (2011). Report of boundary demarcation and participatory land use planning at KhauCa Reserve, Ha Giang province. Submitted to Santiago Zoo, USA.

Tuan, D.A. (2012). Report of final evaluation of project on community forest management Phase I. submitted to TFF, MARD.

Tuan, D.A. et al. (2011). Community forest management in Vietnam: recognizing the diversity of governance structure, Policy brief, RECOFTC & The University of East Anglia. Bangkok, Thailand

Tuan. D.A and T. Specht. (2014). Final evaluation of project on policy development for sustainable forest management and certification in Vietnam, a report submitted to Trust Fund for Forest (TFF), MARD.

Thuy, P,T,, Moeliono, M., Nguyen,T.H., Nguyen, H.T., Vu, T.H. (2012). The context of REDD+ in Vietnam: Drivers, agents and institutions. Occasional Paper 75. CIFOR, Bogor, Indonesia

Thuy, P.T., K. Bennet, V,T. Phuong, J.Brunner, L.N. Dung, N.D.Tien. (2013). Payments for forest environment services in Vietnam: From policy to practice. Occasional Paper 93, Bogor, Indonesia: CIFOR.

UNDP (2013). Analysis of environmental and social costs and risks of hydropower dams with case of study Song Trang # 2 Hydropower plant. UNDP, Hanoi, Vietnam.

Vietnam Government (1998). Decision No. 200/QD-TTg dated 3 July 1998 by the Prime Minister on objective, tasks, policies and organization for the establishment of five million hectares of new forest. Hanoi, Vietnam.

Vietnam National Assembly (1993). Land Law of 1993. 14 Hanoi, July 1993.

Vietnam National Assembly (2004). Law on Forest Protection and Development. Hanoi, 14 December.

Winrock International (2011). Rapid assessment of the political, legal and institutional settings, A report submitted to United States Agency for International Development Regional Development Mission for Asia (RDMA), Bangkok, Thailand

World Bank (2005). State forest enterprises reform in Vietnam: Review of policy and implementation framework for Decree 2000, World Bank technical note.

Yusuf. A.A and H.A. Francisco (2009). Climate change vulnerability mapping for Southeast Asia, EFPSEA, Singapore.