



**USAID**  
FROM THE AMERICAN PEOPLE



# **Opportunities for Private Sector Emissions Reduction from the Agriculture, Forestry and Land Use Sector in Lam Dong Province, Vietnam**

---

**Tran Dai Nghia  
Greg Kannard**

**July 2015**

# CONTENTS

<b>ABBREVIATIONS</b> .....	<b>II</b>
<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1 Background .....	1
1.2 Objectives.....	2
1.3 Methodology .....	2
<b>2 LOW EMISSIONS POLICY AND THE PRIVATE SECTOR</b> .....	<b>4</b>
2.1 Existing low emissions policy framework .....	4
2.2 Private sector involvement in low emissions policy implementation .....	5
2.2.1 Payment for Forest Environmental Services.....	6
2.2.2 Lam Dong Provincial REDD+ Action Plan.....	9
<b>3 EXISTING PRIVATE SECTOR AFOLU EMISSIONS REDUCTION EFFORTS</b> .....	<b>10</b>
3.1 Emissions reduction from the rice value chain .....	10
3.2 Emissions reduction from industrial tree value chains .....	12
3.2.1 Emissions reduction through commodity certification.....	13
3.2.2 Emissions reduction through participation in new value chains and intercropping .....	16
3.2.3 Emissions reduction during post-harvest product processing.....	17
3.2.4 Emissions reduction from the rubber value chain .....	17
<b>4 POTENTIAL ENTRY POINTS FOR FURTHER PRIVATE SECTOR AFOLU EMISSIONS REDUCTION</b> .....	<b>18</b>
4.1 Coffee, cocoa and tea.....	19
4.2 Rubber .....	22
4.3 Macadamia.....	23
<b>5 OPTIONS AND RECOMMENDATIONS FOR ENHANCING PRIVATE CONTRIBUTIONS TO AFOLU EMISSIONS REDUCTION</b> .....	<b>24</b>
<b>6 CONCLUDING REMARKS</b> .....	<b>26</b>
<b>ANNEX 1. RESULTS OF STAKEHOLDER ANALYSIS OF INDUSTRIAL TREE VALUE CHAINS IN LAM DONG PROVINCE</b> .....	<b>28</b>
<b>ANNEX 2. FIELD RESEARCH RESPONDENTS</b> .....	<b>33</b>

## Abbreviations

AFOLU	Agriculture, forestry and other land use
AMS	Australian Macadamia Society
DARD	Department of Agriculture and Rural Development
DONRE	Department of Natural Resources and Environment
FAO	United Nations Food and Agriculture Organization
FPDF	Forest Protection and Development Fund
FSC	Forest Stewardship Council
GHG	Greenhouse gas emissions
GoV	Government of Vietnam
Ha	Hectares
IDH	Sustainable Trade Initiative
IRSG	International Rubber Study Group
USAID LEAF	USAID Lowering Emissions in Asia's Forests
MARD	Ministry of Agriculture and Rural Development
NAEC	National Agricultural Extension Center
PFES	Payments for Forest Environmental Services
PRAP	Provincial REDD+ Action Plan
REDD+	Reducing Emissions from Deforestation and forest Degradation
SCP	Sustainable Coffee Program
SFC	State Forest Company
SFMP	Sustainable Forest Management Plan
SNR-i	Sustainable Natural Rubber Initiative
SNV	Netherlands Development Organisation
SCPA	Sustainable Coffee Producer Association
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VCCB	Vietnam Coffee Coordination Board
VGGS	Vietnam Green Growth Strategy
VITAS	Vietnam Tea Association
VNFOREST	Vietnam Administration of Forestry
VND	Vietnam Dong
VRG	Vietnam Rubber Group
WASI	Western Vietnam Central Highlands Agriculture and Forestry Science Institute

# 1 Introduction

## 1.1 Background

The approval of the Lam Dong Provincial REDD+ Action Plan, or PRAP, by the Provincial People's Committee on 21 January 2015, represented a significant achievement. It is now the cornerstone of the province's goal of reducing its greenhouse gas (GHG) emissions, and provides a leading example of a low emission land use plan that balances economic growth, environmental protection, social equity and a reduced emissions pathway for a sub-national entity.

Globally, the agriculture, forestry and other land use (AFOLU) sector is responsible for close to a quarter of all GHG emissions<sup>1</sup>, mainly coming from deforestation, livestock, soil and nutrient management, and, to a lesser extent, other land use and land use change.<sup>2</sup> In Vietnam, this figure is even higher.<sup>3</sup> The country's Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC) in 2010 reported total emissions of 151 million tons of GHG. Of this total volume of emissions, 53% was contributed by agriculture and land use, land use change and forestry.<sup>4</sup>

Avoiding deforestation is generally regarded as having the greatest mitigation potential, at a lower cost than afforestation/reforestation and other forest management interventions. Reducing GHG emissions from deforestation, in addition to forest degradation, is the main goal of the PRAP, which it plans to achieve through a suite of policies and measures aimed at realizing Lam Dong's forest cover target and, in the process, reducing the province's GHG emissions from its forest estate by 27% by 2020.<sup>5</sup>

Part of the PRAP's implementation will be financed from the government budget. However, additional financial resources will need to be found if it is to be fully operationalized. This money will likely be sourced from international donors and, hopefully, results-based REDD+ payments. As will be discussed later, there is little opportunity for the private sector to be involved in the implementation of the emissions reduction activities listed in the PRAP, nor great incentives for it to participate.

---

<sup>1</sup> Smith P., M. Bustamante, H. Ahammad, H. Clark, H. Dong, E. A. Elsidig, H. Haberl, R. Harper, J. House, M. Jafari, O. Masera, C. Mbow, N. H. Ravindranath, C. W. Rice, C. Robledo Abad, A. Romanovskaya, F. Sperling, and F. Tubiello, 2014, "Agriculture, Forestry and Other Land Use (AFOLU)", in *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

<sup>2</sup> GCF 2015, *Analysis of the Expected Role and Impact of the Green Climate Fund*, Green Climate Fund (GCF), GCF/B.09/06, 28 February 2015, Songdo, Republic of Korea.

<sup>3</sup> *Vietnam's Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC)* has been prepared and will be submitted in 2017.

<sup>4</sup> MONRE 2010, *Vietnam's Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC)*, Ministry on Natural Resources and Environment (MONRE).

<sup>5</sup> Lam Dong DARD 2014, *Report on Action Plan on Reduction of Greenhouse Gas Emissions through Efforts to Reduce Deforestation and Forest Degradation, Sustainable Management of Forest Resources, and Conservation and Enhancement of Forest Carbon Stocks*, Lam Dong Department of Agriculture and Rural Development (DARD), December 2014.

## **1.2 Objectives**

There is a definite clear need to engage the private sector on REDD+ action, more generally, given the key role of commercial activities in determining the fate of forests, and the significant existing shortfall of public funds available to finance planned and potential future activities. Further research into catalyzing private sector involvement in REDD+ in Vietnam is needed. However, it was not the main focus of the study at hand.

Rather, this study aimed to build on the contribution made by the PRAP to low emission development planning specifically in Lam Dong province, by identifying opportunities for private sector emissions reduction from the AFOLU sector, more generally, and not specifically through the REDD+ mechanism.

Several modes exist by which private AFOLU sector actors can become involved in emissions reduction efforts. However, the realization of this involvement must be incentivized by the anticipated provision of clear benefits from their investment, whether they be in the form of higher prices, increased sales, lower production costs or otherwise.

Hypothetically speaking, these benefits could in the future include carbon payments. However, given that they are generally shown to be currently insufficient to encourage private AFOLU sector investment in emissions reduction on their own, with particularly few opportunities for enterprises exerting efforts in Vietnam to gain additional revenues from participating in carbon markets for various reasons, they will not be focused on here.

Instead, this study prioritized identifying monetary gains not related to carbon payments, in addition to non-monitory benefits, that could potentially be generated by such efforts in Lam Dong. From this, the most attractive opportunities for private sector involvement in emissions reduction in the short-term were subsequently drawn out, giving due consideration to the existing enabling environment, along with what needs to be done to facilitate access to these “entry points” in the province.

## **1.3 Methodology**

This was done by adopting a value chain methodology. Specifically, an identification of the private actors with the greatest incentives and ability to drive emissions reductions at different points along selected AFOLU value chains in Lam Dong province (e.g., coffee, tea, cocoa, macadamia and rubber) was conducted, along with an evaluation of the main factors currently enabling and inhibiting such efforts. In addition, potential private sector involvement in facilitating the above value chain actors’ access to the most promising existing entry points, such as through the provision of finance and technical assistance, etc., was also analyzed.

Note that this study did not address GHG emissions from the services sector that contributes key inputs to AFOLU value chains, such as the transport and logistics, communications, and business services that companies use to link up the different stages of commodity production processes and facilitate their efficient functioning. This was for a number of reasons including:

- The contribution of services to AFOLU value chains in Vietnam is still very small;
- The service content of AFOLU value chains is generally small anyway; compared to manufacturing ones, etc.<sup>6</sup>; and
- Services, for the most part, are not a major source of emissions compared with on-farm and other sources from post-harvest product processing.<sup>7</sup>

In saying this, over the long term, as the value added by services to the sections of AFOLU chains in Vietnam increases, low emission interventions, such as the greening of transport and logistics, trials of virtual meeting techniques, etc., should also be investigated.

The required data and information for this study was collected during a desk review of related documents, as well as a set of semi-structured interviews with relevant experts and stakeholders. Those deemed relevant included:

- International experts and practitioners involved in low emission development projects or other initiatives in Vietnam;
- Government officials working for relevant agencies at the national and provincial levels; and
- Private sector representatives and business associations operating in Lam Dong province within one of the study's main value chains.

Interviewees are listed in the annex of this report. The report, however, does not directly cite them, unless they gave prior permission to do so. Rather, the results presented are based on a synthesis of the information and opinions provided. This assurance of anonymity to interlocutors was assured in order to ensure their candid responses to the questions posed to them.

This report presents the results of the study. In what follows, section 3 provides a background to government efforts in relation to low emissions strategy and policy development at the national level and in Lam Dong province. An analysis of existing opportunities for private sector involvement in the implementation of Lam Dong's key policies and strategies will then take place. Consideration will also be given into how they may be developed in a way to leverage additional private sector investment in the future.

Section 4 reviews the current contribution of private AFOLU sector actors to emissions reduction in Vietnam, and, specifically, existing efforts at developing value chains, or sections of value chains, with lower emissions in Lam Dong province.

Section 5 then attempts to identify desirable, effective mitigation activities that can be realistically carried out along the sections of the selected value chains in Lam Dong province, given the current operating environment. What can be done to greater facilitate the private sectors' access to these entry points will also be discussed.

---

<sup>6</sup> Escaith, H. 2013, "Measuring trade in goods and services", *International Trade Forum*, Issue 1: Employment and Entrepreneurship, April 2013, International Trade Center (ITC), Geneva, Switzerland.

<sup>7</sup> Gibbon, A., Baroody, J., McNally, R. 2014, *The Role of Voluntary Agricultural Certification Standards in Quantifying and Reducing Greenhouse Gas Emissions: Exploring the Cocoa, Coffee, Palm Oil and Shrimp Aquaculture Sectors*, SNV – Netherlands Development Organisation.

Section 6 suggests some of the most viable options private AFOLU sector actors in Lam Dong could take that could potentially result in reduced GHG emissions from their respective value chains in the immediate short term. It also provides a very brief set of general recommendations for improving the enabling environment for achieving their enhanced participation in emissions reduction efforts in the province over the long-term. Finally, section 7 contains some concluding remarks.

## **2 Low emissions policy and the private sector**

Like most of Asia's economies, Vietnam stands particularly vulnerable to the impacts of climate change. As a developing country, while it is currently not obliged to reduce its GHG emissions under the UNFCCC, the Government of Vietnam (GoV) has still shown strong public leadership around doing so in more recent times. A number of related policies have been established over the last several years at the national and more local levels. This includes in Lam Dong, with the approval of its PRAP at the beginning of this year.

This section provides a brief summary of government low emission policy development efforts in Vietnam to date. Existing opportunities for private sector involvement in those most relevant to this study, namely the Payment for Forest Environmental Services (PFES) program and Lam Dong PRAP, will then be analyzed, in addition to how they could be developed in a way to leverage greater private sector investment in them in the future.

### **2.1 Existing low emissions policy framework**

As just mentioned, while Vietnam has no legal obligation to reduce its GHG emissions, the GoV has still recognized the potential impacts of climate change on the country and taken initial steps toward sustainable, low emission development. Many of Vietnam's existing and future policy initiatives in this area will be driven by the government's desire to climate proof its agricultural systems, through which it participates so significantly in global value chains, as well as for the country's own food security purposes.

In relation to the AFOLU sector, one of the most significant policy decisions made has been No. 3119/QD-BNN-KHCH, dated 16 December 2011, of the Ministry of Agriculture and Rural Development (MARD) approving the program of GHG emissions reduction in the Agriculture and Rural Development sector up to 2020. This program's objectives are to promote green and safe agricultural production to produce low emissions and sustainable development, in addition to ensuring national food security, contributing to poverty reduction and effectively responding to climate change. In the process, it aims to reduce total GHG emissions from the agriculture and rural development sector by 20% (18.87 million tons of CO<sub>2</sub>e), while simultaneously ensuring that the agriculture and rural development growth target (also 20%) is reached, and the poverty rate is reduced according to the sectoral development strategy.<sup>8</sup>

---

<sup>8</sup> MARD 2011, *Decision No. 3119/QD-BNN-KHCH, dated 16 December, 2011, of the Ministry of Agriculture and Rural Development (MARD) on approving the programme of Green House Gas (GHG) emissions reduction in the Agriculture and Rural Development sector up to 2020.*

A number of other related policies have also been developed at the national level, including a suite aimed at, among other things, contributing to sustainable agriculture development under climate change. These include:

- National Target Program to Respond to Climate Change (2008);
- National Climate Change Strategy (2011);
- National Green Growth Strategy (2012); and
- National Action Plan to Respond to Climate Change (2012-2020);
- Prime Minister's Approval of the Restructuring of the Agriculture Program towards Value Added and Sustainable Development (No. 899/QD-TTg/2013);
- Prime Minister's Approval of the Restructuring of the Crop Production Sector in the period 2014-2015 and from 2016-2020 (No. 1006/QD-BNN-TT/2014).

Recent policy efforts aimed at forest management and conservation have also played a role in reducing the country's GHG emissions by contributing to the expansion and protection of forest areas. These include the Five Million Hectare Restoration Program (1998-2010), National PFES Program (2010) and National REDD+ Action Program (2012).

While a national level program, PFES was piloted and has been most successful to date in Lam Dong province. Some of the funds collected through it will be used to finance the implementation of Lam Dong's PRAP, which is one of the first of many REDD+ action plans that will be designed for various provinces across Vietnam, and represents an example of a low emission policy initiative at a sub-national level.

## **2.2 Private sector involvement in low emissions policy implementation**

According to the United Nations Food and Agriculture Organization (FAO), the private sector includes enterprises, companies or businesses, regardless of size, ownership and structure. They may operate at a local, national, regional or international level, in rural or urban areas. In relation to AFOLU, it covers all sectors of the food, agriculture, forestry and fisheries systems from production to consumption, including associated services such as financing, investment, insurance, marketing and trade.<sup>9</sup>

The importance of private sector financing in making an effective transition to low emission development is well recognized. While the private sector is already responsible for the largest share of climate financing (investing USD193 billion or 58% of the total amount<sup>10</sup>), the AFOLU sector in particular has, up until now, only attracted a fraction of this money. However, it is thought to represent arguably the greatest future impact potential for this investment.

Indeed, there is large potential for climate sensitive investment in agriculture and forestry by the private sector. The rising demand for food from an ever expanding global population, in addition to the anticipated changes in climatic conditions in much of the world's key

---

<sup>9</sup> FAO 2013, *Strategy for Partnerships with the Private Sector*, United Nations Food and Agriculture Organization (FAO), Rome, Italy.

<sup>10</sup> Buchner, B., Wilkinson, J., Stadelmann, M., Mazza, F., Rosenberg A. and Abramakiehn D. 2014, *The Global Landscape of Climate Finance 2014*, Climate Policy Initiative (CPI), November 2014.

production areas, will require the use of more sustainable practices to increase the caloric output per unit of land over the long term.

The implementation of many of these practices will not be aimed at, nor achieve, GHG emissions reduction. However, the uptake of many others can be done so with the direct objective of achieving co-benefits, including emissions reductions, or could realize lower emissions indirectly. For example, the need to safeguard and improve increasingly scarce water supplies may result in private AFOLU sector actors making the decision to afforest key areas of their production land, in order to enhance the generation of the water regulatory services provided by forest ecosystems. While the main aim of such afforestation may not be related to GHG, its implementation would result in some sequestration. For many private AFOLU sector actors in developing countries, such as Vietnam, especially smallholder farmers, improved food security, economic benefits and adaptation to climate change represent far greater incentives that should be bundled with GHG mitigation.

Many of Vietnam's national and sub-national policies, listed above, acknowledge the importance of private sector involvement. However, the extent of, or opportunities for, the private sector's participation in their implementation vary. As mentioned previously, PFES has been identified as one of the main anticipated funding sources of the Lam Dong PRAP, and represents one of the few opportunities for the private sector to be involved in its implementation.

### **2.2.1 Payment for Forest Environmental Services**

Mandated through Government Decree 99, PFES incentivizes select private sector users of forest environmental services, namely electricity (hydropower) and water utilities and tourism businesses, to pay for them. It does this by requiring them to "buy" the forest environmental services that they most benefit from under the law, e.g., watershed protection for hydroelectric power and water supply utilities, and landscape beauty for tourism businesses.

The companies involved contribute a small portion of their revenue into a centrally managed fund called the Forest Protection and Development Fund or FPDF. Specifically, 20 VND/KWh produced for hydroelectric power plants, 40 VND/m<sup>3</sup> of clean water produced for water supply companies and 1-2% of gross revenue for tourism businesses.<sup>11</sup> The fund is then used to incentivize other private sector actors, specifically state forest enterprises, farming communities, individual households, and/or others holding forested land titles, to enter into contracts whereby they are paid for providing forest environmental services, primarily through their protection of the forested land under their control.

Since its implementation in 2009, PFES has generated total revenue of VND 3,440 billion or approximately USD 162 million<sup>12</sup>, with it is estimated that payments will amount to VND 1,300 billion (USD 62 million) in 2015. Of this total, payments made by hydroelectric power plants account for nearly 98%, water supply companies for about 2% and tourism

---

<sup>11</sup> GoV 2010, *Decree No. 99/2010/ND-CP, dated 24 September 2010, of the Government of Vietnam (GoV) on the Policy on Payment for Forest Environmental Services.*

<sup>12</sup> VNFF 2014, *PFES Implementation Report, Vietnam Forest Protection and Development Fund (VNFF), Hanoi, Vietnam.*

businesses just 0.1%.<sup>13</sup> According to the Vietnam FPDF, such mobilization of financial resources has meant that PFES has not only increased the contribution of country's forestry sector to the national economy, but it has also reduced the financial burden of the GoV to protect and manage its forests.<sup>14</sup>

PFES payments flowing into the Lam Dong FPDF have been increasing year on year, totaling VND 530 billion (USD 24 million) during the period 2010-2014.<sup>15</sup> They will be used to finance VND 1,175 billion (USD 55 million) of the total VND 1,749 billion (USD 82 million) needed for PRAP implementation between now and 2020<sup>16</sup>, excluding the budget for REDD+ technical and capacity building activities still required to meet international REDD+ requirements. Once again, this money has been committed mainly for forest protection. In addition to the expectation that, after 2015, payments for such activities will come from carbon markets, or some other mechanism, and be based on the results of PRAP implementation, as measured by carbon dioxide emissions and removals.

While PFES can be considered successful in incentivizing private sector involvement in forest protection, by legally forcing some actors to pay for the forest environmental services they benefit from and paying others to give up their labor in protecting the forests that provide these benefits, there remains significant room for the program to be developed in a way to leverage additional private sector finance in the future. This extra money is needed in a number of provinces, including Lam Dong, where only 60 percent of the total forest area is under PFES, and the opportunity cost of forest protection is high compared to current payment levels.

Getting this additional financing, however, will generally require an official amendment to Decree 99 at the national level, and, in many cases, a range of supporting policies. A detailed assessment of the existing PFES mechanism, and provision of recommendations for desirable amendments to the program aimed at enhancing the private sector's role in its implementation, is far beyond the scope of this study. However, a summary of some of the most likely options identified through a review of the relevant literature and/or suggested by our interviewees in Lam Dong province is provided in Table 1 below.

---

<sup>13</sup> Pham, T.T., Bennett, K., Vu, T.P., Brunner, J., Le, N.D., Nguyen, D.T., 2013, "Payments for forest environmental services in Vietnam: From policy to practice", *Occasional Paper 93*, Center for International Forestry Research (CIFOR), Bogor, Indonesia.

<sup>14</sup> VNFF 2014, *Payments for Forest Environmental Services (PFES) in Vietnam: Findings from Three Years of Implementation*, Vietnam Forest Protection and Development Fund (VNFF), August 2014.

<sup>15</sup> Lam Dong DARD 2015, *Proposal to Encourage Businesses to Invest in Agriculture and Rural Development of Lam Dong Province*, Lam Dong Department of Agriculture and Rural Development (DARD).

<sup>16</sup> Lam Dong DARD 2014, *Report on Action Plan on Reduction of Greenhouse Gas Emissions through Efforts to Reduce Deforestation and Forest Degradation, Sustainable Management of Forest Resources, and Conservation and Enhancement of Forest Carbon Stocks*, Lam Dong Department of Agriculture and Rural Development (DARD), December 2014.

**Table 1: Options for enhancing private sector actor’s involvement in PFES**

Actors	Options for enhancing their involvement in PFES
Buyers	<p><b>1. Increase the contribution of tourism businesses</b>            As mentioned previously, tourism businesses contribution to PFES is currently just 0.1% of the total amount collected. This is mainly because fees are collected from only a small number of ecotourism companies. Some of our interviewees in Lam Dong suggested that all hotels and any other tourism businesses, whose gross annual revenue is in excess of a certain threshold, should make payments. They admitted, however, that this could be difficult given the significant high-level political interests involved in many such companies, and the difficulty convincing them of the value that landscape beauty contributes to their businesses.</p>
	<p><b>2. Make other types of private sector actors pay</b>            Other interlocutors in Lam Dong province were in favour of increasing the types of private sector actors that were required to buy forest environmental services. Some suggestions included industrial processing companies, such as bauxite and coffee processors, whose GHG emissions are above a certain amount. This will require the strengthening of institutional arrangements and provision of clear guidelines and procedures for the implementation of the third of the four officially targeted environmental services subject to payments under Decree 99, namely forest carbon sequestration and retention, and reduction of GHG emissions, with the latter extended to activities outside of the prevention of deforestation and forest degradation.</p>
Sellers	<p><b>1. Apply the K coefficient</b>            The non-application of the K coefficient, and the consideration given to the socio-economic and political contexts of the communities involved, in the PFES payment structure has shown to be crucial in gaining the backing of both buyers and sellers and the initial uptake of the program. The decision not to account for forest quality (K coefficient), however, is disincentivizing the participation of those potential sellers with the ability to best provide forest environmental services by undervaluing it in the payments they can currently receive. For the allocation of payments to be effective in achieving the most efficient provision of forest environmental services, the K coefficient will have to be employed in due course.</p>
	<p><b>2. Allow communities to legally enter into PFES agreements</b>            A rubber company in Lam Dong province reported it also held forest land that it was not allowed to develop plantations on. The company was eligible for PFES payments; however, it had not applied for them because they were insufficient to cover the costs involved in protecting the forest land from its heavy exploitation by surrounding communities. In this instance, it would be perhaps better to re-allocate the forest land to the community, and pay them to protect it, rather than having them continually exploit it. Unfortunately, however, under current laws, communities as an entity are not able to enter into PFES agreements. Amendments to the law allowing communities to receive PFES payments would enable the re-allocation of tracts of forest land similar to the one mentioned above to communities, which would no doubt result in an increased area of forest under PFES, and encourage the protection, rather than exploitation, of that forest.</p>

### 2.2.2 Lam Dong Provincial REDD+ Action Plan

The PRAP represents Lam Dong's plan to achieve a 27% reduction in GHG emissions, specifically from its forestry sector, by 2020 compared to 2010 levels.<sup>17</sup> Generally speaking, this is to be achieved through the implementation of various policies and measures aimed at reducing deforestation and forest degradation, sustainable forest management, and enhancing forest carbon stocks and quality. The decision to focus on the forestry sector is based on the evidence that avoiding further deforestation offers the greatest GHG mitigation potential, and the belief that afforestation and forest enhancement, etc., will sequester greater amounts of carbon than can be feasibly reduced in emissions through other means over the lifespan of the Plan.

Emissions reduction activities listed in the PRAP consequently relate primarily to forest planning, management and protection (see Section III of PRAP for greater details). The PRAP's involvement of the private sector in carrying them out will be incentivized by the provision of financial and technical support to pre-selected actors.

These private sector actors will mostly be forestry companies, which by and large are state owned, e.g., state forest companies (SFCs). Specifically, they will receive financial and technical support for their development of sustainable forest management plans (SFMP) and achievement of Forest Stewardship Council (FSC) certification. This support is aimed at helping them adopt the new systems, as well as covering the initial, up-front expense of doing so; for which the SFCs involved will reap benefits from over the long term, hopefully, in the form REDD+ payments, in addition to reduced production costs and a price premium accrued from the sale of their certified products.

Incentives will also be provided to select private sector actors' to encourage their involvement in activities aimed at reducing the future threat of agriculture production further encroaching on natural forests. This includes providing producers with technical support on planting techniques and inputs in the form of seedlings and fertilizer to establish agroforestry plantations on land they currently use for agriculture, which is inside areas zoned as forest land. The farmers involved will gain from the provision of enhanced environmental services from the forest established on the land, retain most of the direct benefits from their agricultural production, and be eligible for REDD+ payments to compensate them for any lost output, if and when they become available.

In terms of incentivizing private sector actors to use some of their own money in investing in the PRAP's implementation, the provision of non-specified encouragement for businesses to implement forestry projects on leased forest land, and assistance in the form of improved credit policies, to catalyze private sector investment in plantation forests on bare forestland, are listed. The cost and amount of hectares involved in the private sectors' implementation of forestry projects on leased forest land has not been estimated. However, it is estimated

---

<sup>17</sup> Lam Dong DARD 2014, *Report on Action Plan on Reduction of Greenhouse Gas Emissions through Efforts to Reduce Deforestation and Forest Degradation, Sustainable Management of Forest Resources, and Conservation and Enhancement of Forest Carbon Stocks*, Lam Dong Department of Agriculture and Rural Development (DARD), December 2014.

that VND 420.127 billion will be needed to establish the planned 5,610 ha of plantation forests on bare forest land.

It is unclear how much consideration private sector involvement, including through financing, was given during the PRAP development process. A number of other REDD+ Action Plans will be developed for other provinces in Vietnam in the near future, each with their own, possibly large, funding requirements. The selection of activities should consider their potential for attracting private sector investment, in addition to their ability to contribute to such plan's GHG emissions reduction goals.

Encouraging private sector investment in plantation forests on bare forestland represents an example of one such activity. However, the low return on plantation forests compared with many of the industrial tree crops commonly grown in Lam Dong may still result in a struggle to find such private sector investment.

### **3 Existing private sector AFOLU emissions reduction efforts**

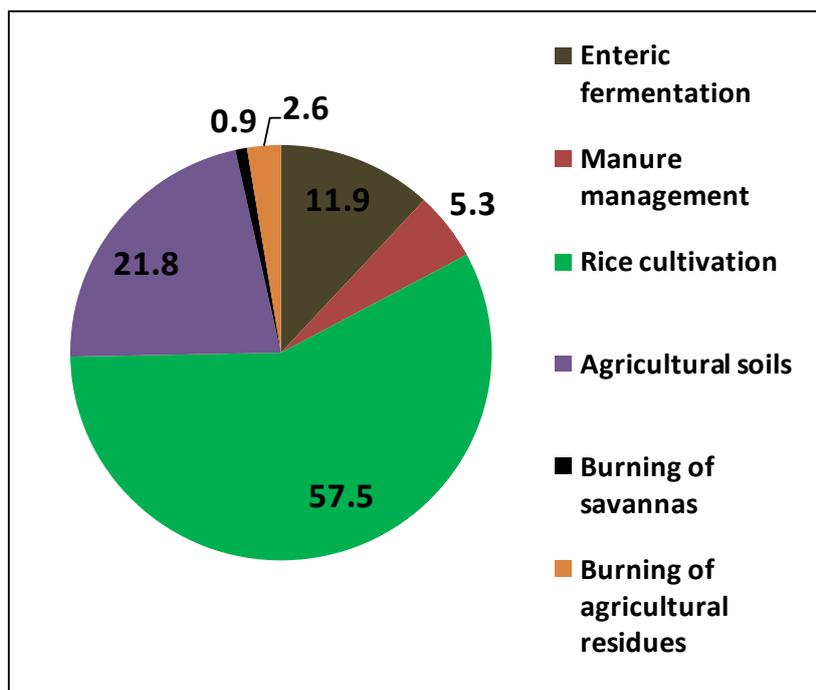
While the Lam Dong PRAP provides limited opportunity for private sector involvement in its implementation, Vietnam, more generally, has begun to tap into the great potential that the private sector can offer toward achieving the country's low emission ambitions. This includes in relation to the AFOLU sector, which, as mentioned previously, plays the largest role in Vietnam's emissions profile, in addition to remaining critical to the country through its contribution to economic growth, jobs and socioeconomic stability, with 60% of the population still active in it.

#### **3.1 Emissions reduction from the rice value chain**

Consistent with the main activities to reduce GHG emissions from the agriculture and rural development sector, as stipulated in Decision No. 3119/QD-BNN-KHCN discussed earlier, government efforts in this regard have been directed primarily at rice production and, to a lesser extent, livestock, fisheries/aquaculture, irrigation and rural environmental management, more generally. The focus on rice is not really surprising, given that its production is the largest emitter of GHG among the AFOLU value chains in Vietnam. Indeed, as can be seen in Figure 1, rice cultivation accounted for almost 58% of total emissions from the sector in 2000<sup>18</sup>, which is equal to approximately 30% of the country's total emissions.

---

<sup>18</sup> MONRE 2010, *Vietnam's Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC)*, Ministry on Natural Resources and Environment (MONRE).



**Figure 1: GHG emissions from agriculture in Vietnam (%)**

A number of programs and projects have consequently been implemented with the aim of reducing GHG emissions from rice farming, while enabling farmers to obtain economic benefits from implementing such reduction, in order for the crop's production to remain profitable for them. Most programs/projects have attempted to achieve this goal by working with rice farming communities to apply improved cultivation techniques, such as water irrigation and input savings, including System of Rice Intensification (SRI), Three Reductions and Three Gains (3G3T), One Must and Five Reductions (1P5G), and Alternate Wetting and Drying (AWD), etc.<sup>19</sup>

This includes the just completed Australian government-funded "Sowing the Seeds of Change" project. This project was implemented by SNV – Netherlands Development Organisation and its government partners, with the aim of increasing resilience to climate change, increasing incomes, strengthening the capacity of smallholder farmers, and reducing GHG emissions through improved rice production techniques, better market linkages and rice residue management.<sup>20</sup>

<sup>19</sup> SRI is a set of practices, principles and philosophies aimed at increasing the productivity of irrigated rice by changing the management of plants, soil, water and nutrients. 3G3T is a policy that aims to help farmers optimize their use of seeds, fertilizer and insecticides by promoting the reduction of three inputs (e.g., seed rates, fertilizer rates and insecticide use) to bring three benefits (e.g., increased income through increasing crop yields, rice quality and the production skills of farmers; lower exposure and risk due to pesticides; and an improved environment with less pollution from farm chemicals). 1P5G recommends that rice farmers must use certified seeds, and make five reductions (e.g., seed rate, fertilizer, pesticides, water, and post-harvest loss), to achieve three gains in relation to rice yield, rice quality and economic efficiency. AWD is a water saving practice where the crop is intermittently submerged and dried from 20 days after sowing until two weeks before flowering; that is, fields are allowed to drain until water below the surface reaches down to 15cm before re-flooding.

<sup>20</sup> SNV 2015, *Sowing the Seeds of Change: Community-based Climate Change Mitigation through Sustainable Rice Production*, SNV – Netherlands Development Organisation:

The implementation of such initiatives, however, has been focused largely on the main rice intensive regions (e.g., Red River Delta, North Central Coast and Mekong River Delta) and not the Central Highlands, including Lam Dong province, where the rice value chain has no significant presence. In fact, rice in Lam Dong is produced almost entirely for domestic use, with the provincial government planning to further reduce the area of land under its cultivation in the future. As a result of this, and given the numerous other initiatives focused on lowering GHG emissions from the rice value chain in Vietnam, it was not included in the analysis specifically related to Lam Dong province below.

### 3.2 Emissions reduction from industrial tree value chains

The AFOLU sector in Lam Dong is dominated by “industrial tree” value chains, otherwise known as cash crops. Table 2 shows the past, present and projected planted area of the main industrial tree crops in the province, which has a total area of 977,354 ha.

**Table 2: Planted area of Lam Dong’s main industrial tree crops in hectares (.000 ha) and as a percentage of the province’s total<sup>21</sup>**

Commodity	1999	2005	2009	2013	% of total area (2013)	Projected in 2020
<b>Total Forest</b>	618.5	607.3	602.0	600.4	61.4	591.5
<b>Nat. forest</b>	591.2	557.9	543.3	525.3	53.7	-
<b>Coffee</b>	87.6	117.5	141.1	155.2	15.9	150.0
<b>Tea</b>		26.5	23.3	23.6	2.4	25.5
<b>Cashew</b>	8.6	10.8	15.6	16.2	1.7	9.0 -10.0
<b>Rubber</b>	-	-	1.6	8.2	0.8	10.0
<b>Macadamia</b>			.005	1.1	0.1	22.0
<b>Cocoa</b>			.12	1.2	0.1	5.0

As can be seen, forest-based value chains dominate in Lam Dong, which is not surprising given that just under 60% of the province’s total land area is under forest cover, whether it is production, protection or special-use.<sup>22</sup> As mentioned previously, it is via the forestry sector that Lam Dong aims to achieve its 27% GHG emissions reduction goal by 2020, through the implementation of the PRAP.

The other main industrial tree value chain with a significant presence in Lam Dong is coffee. In the last 30 years, Vietnam has gone from having less than a 1% share of the global coffee

---

<http://www.snvworld.org/en/countries/vietnam/our-work/projects/community-based-climate-change-mitigation-through-sustainable>

<sup>21</sup> The data were taken from the *Scoping Report on Integrated Sustainable Water and Land Use*, jointly prepared by the Vietnam Institute of Policy and Strategy on Agriculture and Rural Development (IPSARD) and Sustainable Trade Initiative (IDH) in 2015, and from various 2015 Reports of Lam Dong Department of Agriculture and Rural Development (DARD) (i.e., Decision No. 1929/QD-UBND/2009 on Cocoa projection; Decision No. 846/QD-UBND/2009 on rubber projection; Decision No. 482/QD-UBND/2013 on tea projection; Decision No. 2897/QD-UBND/2014 on projection of Agriculture and Rural development of Lam Dong to 2020).

<sup>22</sup> Vu, T.D., Pham, N.B., Stephen, P., Tran, V.C., Grais, A., Petrova, S., 2013, *Land Use, Forest Cover Change and Historical GHG Emission from 1990 to 2010*, USAID Lowering Emissions in Asia’s Forests (LEAF) Program.

market to being the second largest exporter in the world.<sup>23</sup> Much of the expansion of the coffee value chain in the country has taken place in Lam Dong, as can be seen in Table 2, in which it has also been, and still is, responsible for much of the deforestation and forest degradation in the province.

The expansion of coffee cultivation in Lam Dong has been driven by market influences that have generally resulted in high prices for the commodity in more recent times. The international market is also increasingly demanding that the coffee they buy be certified, which has resulted in many coffee farmers in the province adopting sustainable production practices, in order to meet certification requirements. While their uptake is not directly aimed at achieving GHG emissions reduction, the adoption of some such practices does result in them. These will be discussed shortly, in addition to some practices during the post-harvest processing of coffee that a few companies are implementing for profit reasons, but are also resulting in emissions reduction.

In addition to coffee, most of the other value chains listed in the table (e.g., tea, rubber, macadamia and cocoa) were also analyzed for their emissions reduction potential, and will be similarly discussed below, with the exception of cashews. There are currently no private plantations or enterprises carrying out cashew processing in Lam Dong, while the provincial plan is to reduce the area of land under the nut by about 6,000 ha between now and 2020.

### **3.2.1 Emissions reduction through commodity certification**

The percentage of Lam Dong farmers of the industrial trees, coffee, tea and cocoa, implementing sustainable production methods has increased steadily in more recent years. This has been driven by a number of formal initiatives aimed at promoting and supporting farmers' achievement of sustainability certification, as well as the producers themselves, attracted primarily by the potential premiums attached to the sale of certified products. While lowering GHG emissions is not the main aim of certification bodies, in order to meet certification requirements for different sustainability standards, coffee, tea and cocoa farmers, including many in Lam Dong Province, are implementing a number of practices that reduce or sequester GHG emissions.

Gibbon *et al.* (2014) conducted a study evaluating how current agricultural certification standards for a number of value chains, including coffee and cocoa, addressed different sources of GHG emissions and sequestration associated with the primary level of commodity production.<sup>24</sup> These included: 1) initial forest conversion; 2) sequestration in trees and other vegetation; 3) soil carbon management; 4) use of organic and inorganic inputs; and 5) post-harvest product handling. In relation to the various coffee and cocoa certification standards they analyzed – e.g., Fairtrade International, Naturland, Sustainable Agricultural Network (Rainforest Alliance) and UTZ Certified – the results are summarized in Table 3 below.

---

<sup>23</sup> Techno Serve 2013, *The Sustainable Coffee Program: A Business Case for Sustainable Coffee Production in Vietnam*, Techno Serve.

<sup>24</sup> Gibbon, A., Baroody, J., McNally, R. 2014, *The Role of Voluntary Agricultural Certification Standards in Quantifying and Reducing Greenhouse Gas Emissions: Exploring the Cocoa, Coffee, Palm Oil and Shrimp Aquaculture Sectors*, SNV – Netherlands Development Organisation.

**Table 3: GHG emissions reduction through sustainable coffee and cocoa certification**

<b>GHG emission source</b>	<b>GHG reducing practice</b>
1. Initial forest conversion	<ul style="list-style-type: none"> <li>- All generally prohibit forest clearing for crop production, but to different degrees;</li> <li>- Some also require the taking of remedial actions for historical deforestation.</li> </ul>
2. Sequestration in trees and other vegetation	<ul style="list-style-type: none"> <li>- All require the planting and/or maintenance of trees in and around the farm;</li> <li>- Some also set rules around minimum shade cover.</li> </ul>
3. Soil carbon management	<ul style="list-style-type: none"> <li>- All have requirements around the use of best management practices to reduce soil erosion and soil carbon loss.</li> </ul>
4. Use of organic and inorganic inputs	<ul style="list-style-type: none"> <li>- All require good practices to be followed in the use of organic and inorganic inputs;</li> <li>- Only some discuss chemical inputs from a GHG perspective.</li> </ul>
5. Post-harvest product handling	<ul style="list-style-type: none"> <li>- All have requirements to favour reducing energy use or increasing the use of renewable energy sources;</li> <li>- Some also require farms to record energy use and improve efficiency.</li> </ul>

Up until now, farmers of approximately 40,000 ha of Robusta coffee in Lam Dong have achieved either 4C, Rainforest Alliance or UTZ certification.<sup>25</sup> Similar information is not currently available for tea and cocoa. However, the provincial plan is for 23,000 ha of tea in the province to be certified as “clean” by 2020, with the amount of certified cocoa produced also increasing significantly.

Certification brings long-term environmental, social and economic benefits. While as mentioned previously, producers are primarily attracted by the potentially higher prices for their commodities and access to stronger markets that certification can bring, there are other benefits, which are equally, if not more, significant. Indeed, price premiums, particularly for certified coffee (which according to some of our interviewees have occasionally been negative) in more recent times, are often not enough on their own to cover the cost of implementing the new or improved practices required to comply with standards. Other benefits must be obtained to ensure a positive net economic result for farmers. Table 4 presents a brief summary of the costs and benefits of commodity certification.

The Sustainable Trade Initiative (IDH) has been at the forefront of many of the formal initiatives aimed at helping farmer’s achieve the sustainability certification standards mentioned above. Its flagship program in Vietnam is arguably the Sustainable Coffee Programme (SCP). Implemented in coordination with SNV, the aim of the SCP is to increase the share of coffee that is produced in Vietnam using sustainable practices from 8% to 25% by 2015. It aims to achieve this goal by supporting coffee farmers to increase their production, yields and export availability of sustainably grown coffee through the effective

<sup>25</sup> Lam Dong SCPA 2015, Statistical Data Reported by the Lam Dong Sustainable Coffee Producer Association (SCPA).

implementation of certification standards, improving farmers' access to finance, as well as introducing efforts to mitigate the effects of climate change.<sup>26</sup>

**Table 4: Costs and benefits of commodity certification**

Costs	Benefits
<ul style="list-style-type: none"> <li>- Expenses incurred implementing the new/improved production practices required to meet sustainability standards</li> <li>- Cost of guidance/assistance needed in adopting the more advanced technical solutions</li> <li>- Labor time spent developing capacity to implement, implementing and maintaining the sustainable production system</li> <li>- Additional resources spent meeting social criteria, such as on increasing the salaries of employees and occupational safety, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Potential commodity price premiums</li> <li>- Access to new/stronger markets</li> <li>- Increase in farm efficiency/productivity</li> <li>- Reduced production costs, such as for agrochemicals due to less plagues and diseases, etc.</li> <li>- Enhanced social benefits, such as better organization on and between farms, superior access to training and education, improved reputation of producers in their communities due to their investments in sustainability, etc.</li> <li>- Generation of greater non-use environmental values, including improved biodiversity and landscape beauty</li> </ul>

Thousands of coffee farmers, including large numbers in Lam Dong, have already received training in sustainable coffee production under the SCP, with many more planned to be trained in the future. This is in addition to the SCP's development of a National Coffee Sustainability Curriculum that will form the backbone of future sustainability activities and training.<sup>27</sup>

The SCP's field level projects are co-financed by IDH and nine private sector firms, including the four main coffee roasters globally, namely: Nestlé, Mondelēz International, D. E. Master Blender 1753, and Tchibo.<sup>28</sup> It therefore represents an example of private "owners" of a value chain looking back and investing in the "greening" of tasks completed by other private actors in the upstream sections of their value chain.

In addition to the SCP, IDH is also implementing similar public-private type initiatives in relation to tea and cocoa in Vietnam, including Lam Dong province. Specifically, the:

- *Tea Program*: responding to the requests of private company, Unilever, and the Vietnam Tea Association (VITAS), and in alignment with the sustainable tea agenda of the Minister of Agriculture and Rural Development (MARD), the Tea Program was developed with the aim of upscaling sustainable tea production in Vietnam. As part of the program so far, IDH and Unilever have contracted Rainforest Alliance to train 20,000 tea farmers, including many from Lam Dong province, and produce 30,000 tons of sustainably grown tea by 2015.<sup>29</sup>

<sup>26</sup> SNV 2014, *Coffee and Climate Factsheet*, SNV – Netherlands Development Organisation.

<sup>27</sup> The National Coffee Sustainable Curriculum was developed by the Vietnam Academy of Agricultural Science (VAAS), with support from IDH, and endorsed by VNCCB in 2014.

<sup>28</sup> IDH 2015, *Our Programs: Coffee*, The Sustainable Trade Initiative (IDH): <http://www.idhvietnam.com/en/coffee>.

<sup>29</sup> IDH 2015, *Our Programs: Tea*, The Sustainable Trade Initiative (IDH): <http://www.idhvietnam.com/en/tea>

- *Cocoa Program*: financially and strategically supported by IDH and technically by HELVETAS – Swiss International Cooperation, the Cocoa Program aims to work with producers in Vietnam, including in Lam Dong province, to promote improved cocoa productivity and quality through the implementation of cocoa plantations and production, in addition to ensuring its sustainability in value chains. Responding to the growing interest in sustainable cocoa production, the program is now expanding to also include other private sector players, such as Puratos Grandplace.<sup>30</sup>

There have been numerous other public, private and public-private initiatives in Lam Dong province aimed at driving sustainability through the coffee, tea and cocoa value chains, including some initiated by local producer associations and/or farmer cooperatives on their own. As mentioned earlier, the main goal of such efforts is the achievement of sustainability standards and certification, which are not specifically aimed at reducing GHG emissions, but rather address environmental impacts from farming and processing, more generally. In saying this, as detailed above, such schemes do encourage some activities that result in reduced GHG emissions either purposely or not.

### **3.2.2 Emissions reduction through participation in new value chains and intercropping**

As can be seen in Table 2, the planted area of macadamia trees will increase significantly between now and 2020. Macadamia is currently considered a so-called “billion dollar tree” in the country, with the GoV establishing policies to encourage its development. This includes Decree No. 210, stipulating that the State would provide financial support of VND 15 million per ha for macadamia projects in excess of 50 ha.<sup>31</sup>

Banks have also expressed a willingness to provide loans to farmers in recognition of the high value the tree can bring, whether planted on its own, in replace of aging coffee, rubber or cashew trees, or intercropped with other trees, such as coffee and cashews. From the field work for this study, it appears that the system currently favored by farmers in Lam Dong is to intercrop macadamia in established coffee plantations. Macadamia produces higher yields than coffee, in addition to fetching a higher market price at present.

Early evidence suggests macadamia could also be a new “carbon-friendly” option, with significant carbon sequestration potential. A research project completed by Australia’s Southern Cross University’s Centre for Regional Change Studies found that macadamia trees were able to sequester four tons of carbon dioxide per ha per year.<sup>32</sup> This is not much less than the on average 5.18 tons per ha per year for natural broad-leaved evergreen forest.<sup>33</sup>

---

<sup>30</sup> IDH 2015, *Our Programs: Cocoa*, The Sustainable Trade Initiative (IDH): <http://www.idhvietnam.com/en/cocoa>

<sup>31</sup> GoV 2010, *Decree No. 2010/2013/ND-CP, dated 19 December 2010, of the Government of Vietnam (GoV) on policies encouraging investment by enterprises in the agriculture and rural sector.*

<sup>32</sup> SCU 2008, “Research shows macadamia industry is “carbon friendly””, *Media Release*, Southern Cross University (SCU), 21 October 2008.

<sup>33</sup> Bui, B.H. and Pham, T.A. 2014, *Forecasting CO<sub>2</sub> Sequestration of Natural Broad-leaved Evergreen Forests in Dak Nong Province, Vietnam*, Tay Nguyen University, Vietnam.

### **3.2.3 Emissions reduction during post-harvest product processing**

The primary processing of coffee and cocoa is also carried out in Lam Dong province, as it must occur within a short time after the crop has been picked. Specifically, the crops must be rid of its “fruit” and dried before export or further processing.<sup>34</sup> The biggest potential source of GHG emissions at this point along the value chain is the methane produced during the fermentation process of the fruit that takes place using wet processing.<sup>35</sup>

In relation to coffee, wet processing is generally only used for the Arabica type, which currently does not have a significant presence in Lam Dong. Indeed, most of the coffee produced in the province is the Robusta variety, which generally undergoes dry processing, whether it is done in the sunshine or through mechanical means. Cocoa produced in Lam Dong province generally undergoes similar dry processing. If done by mechanical means, GHG emissions will depend on the type of fuel used.

Traditionally, dry coffee processing in Lam Dong carried out with machines has been done using firewood or fossil fuels, such as coal. Some processes in the province, which previously used coal, however, have started using a coffee waste product, namely the husks. One of our interviewees from the ACOM company said that the decision to move from coal to husks was easy as the husks were free, coming still attached to the coffee they purchased from collectors, and any additional husk needs could be purchased at a cheaper price than coal, with large positive net gains still made when fuel efficiency was factored in.

The upfront costs involved in adopting the new practice were also minimal, as their existing drying machine could be fueled by the coffee husks, with no modification to the technology required. While the burning of coffee husks emits less GHG than coal, the smoke produced by the husks is a darker color than that of coal, which resulted in some complaints from the neighboring community about the visual pollution it caused. As a result, some costs have to be incurred treating the color of the smoke, but they are minimal.

Another one of our interviewees, however, said that their company sold their coffee husks and used the money to buy firewood to fuel their drying machines. Firewood in Lam Dong is cheaper than coffee husks, but its collection has been identified as a source of forest degradation in the province. There were also some debates about the efficiency of the competing fuel sources, with some claiming that coffee husks were, in fact, better value than firewood despite their higher price.

### **3.2.4 Emissions reduction from the rubber value chain**

The presence of the rubber value chain in Lam Dong province has increased significantly in the last five or so years, as can be seen in Table 2. This has been driven by the recent general profitability of the crop (although prices have dropped in very recent times due to supply exceeding demand), in addition to the stability of its price on the global market, which has resulted in many investors favoring it over other cash crops, such as coffee.

---

<sup>34</sup> Gibbon, A., Baroody, J., McNally, R. 2014, *The Role of Voluntary Agricultural Certification Standards in Quantifying and Reducing Greenhouse Gas Emissions: Exploring the Cocoa, Coffee, Palm Oil and Shrimp Aquaculture Sectors*, SNV – Netherlands Development Organisation.

<sup>35</sup> Sevenster, M. and Verhagen, J. 2010, *GHG Emissions of Green Coffee Production: Towards a Standard Methodology*, November 2010, Delft, CE Delft, The Netherlands.

Like coffee, however, the development of the rubber sector has been responsible for much of the deforestation in Lam Dong in more recent times. The provincial government recently revised down the planned expansion of the industry, in line with policy at the national level, including reducing forest areas to be converted into rubber in the future.<sup>36</sup>

No great examples of GHG emissions reduction from the rubber value chain in Lam Dong were discovered during field research in the province. The technical guide for rubber plantation and production, issued by the Vietnam Rubber Group (VRG), suggests the use of some practices that could potentially reduce GHG emissions, including the use of soil covering legumes, such as Mucuna or Kudzu, as a soil erosion (and soil carbon loss) control measure during the crop establishment period.<sup>37</sup> However, it appears their implementation has been far from wide-scale.

#### **4 Potential entry points for further private sector AFOLU emissions reduction**

As elaborated in the previous section, private sector actors in Lam Dong are already making efforts to lower the amount of GHG emitted during the completion of AFOLU value chain tasks. Such efforts are largely being made due to the economic benefits of doing so, rather than legal regulations requiring them to. This section will outline other realistic opportunities for expanding on these initial efforts, given the existing operating environment in the province.

In making this evaluation, consideration was given to the potential barriers to private sector investment in different low emission value chain activities. Generally speaking, most of these have to do with the risk-reward relationship of the investment itself. However, others are related to low technical or other capacity levels.<sup>38</sup> Figure 2 shows the typical barriers to private low emissions investment, more generally.

Suggestions on what can be done to facilitate the private sector to overcome such barriers to their low emissions investment will also be made.

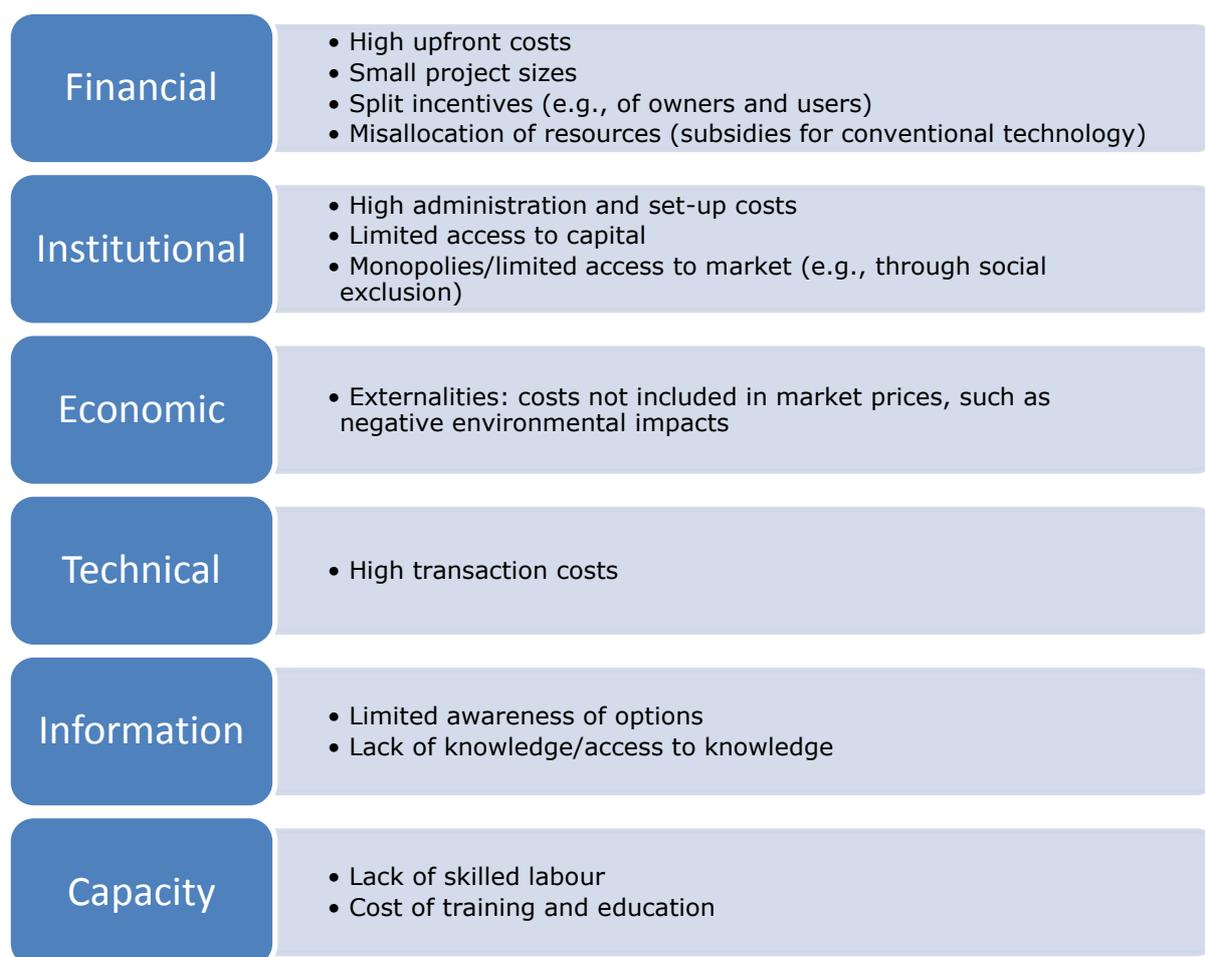
---

<sup>36</sup> Lam Dong DARD 2014, *Report on Action Plan on Reduction of Greenhouse Gas Emissions through Efforts to Reduce Deforestation and Forest Degradation, Sustainable Management of Forest Resources, and Conservation and Enhancement of Forest Carbon Stocks*, Lam Dong Department of Agriculture and Rural Development (DARD), December 2014.

<sup>37</sup> VRG 2013, Circulation No. 3037/CSVN-LDTL, *Guide for the Establishment of Legume Soil Covering Species*, Vietnam Rubber Group (VRG).

<sup>38</sup> Averchenkova, A. 2014, *Mobilising Private-Sector Engagement in LEDS and NAMAs: Lessons Learned from the UNDP's Low Emission Capacity Building Programme*, Low Emissions Capacity Building Programme, United Nations Development Programme (UNDP).

**Figure 2: Typical barriers to private low emissions investment<sup>39</sup>**



#### **4.1 Coffee, cocoa and tea**

Agricultural sustainability standards are not specifically aimed at maximizing GHG emissions reduction. However, increasing the number of hectares of coffee, cocoa and tea under certification in Lam Dong probably represents the best way to enhance the private sector's contribution to it in the province in the short term.

As discussed in section 3.2, many of the activities encouraged by the main certification schemes do result in reduced GHG emissions. In relation to coffee and cocoa, for example, they are achieved through: prohibiting forest clearing for crop production; sequestering carbon in trees maintained in and around farms; employing practices that reduce soil carbon loss; proper use of organic and inorganic inputs; and more carbon friendly energy use in post-harvest product processing, etc.

The implementation of some of these activities could potentially be modified to enhance the amount of GHG emissions reduced. However, farmers would have to be incentivized to do so by having it demonstrated to them that it would result in additional benefits (e.g., shading trees, soil erosion control, etc.). This extra effort will not affect their certification status, and, hence, no additional price premium would be obtained, nor would access to

<sup>39</sup> GIZ 2013, *NAMA Tool*, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

new markets. They would have to be incentivized by either lower production costs or revenue from the sale of additional products, such as fruits from inter-cropped fruit trees, e.g., durian, macadamia or timber from *Cassia siamea* trees.

Table 4 analyzes the possible benefits that coffee and cocoa farmers could obtain from modifying their production systems to further reduce GHG emissions. As can be seen, there are opportunities, with the following showing particular potential for implementation and/or up scaling in the relative short term:

- Enhancing sequestration and reducing GHG emissions via soil carbon loss through the use of other industrial trees, with higher carbon storage and economic potential, as shade trees and wind breaks on plantations;
- Using lower emitting crop waste as a fuel in dry processing, and the residue from processing, particularly wet, as a fertilizer instead of higher GHG releasing agrochemicals.

These would be relatively easy to implement, as they are not a huge technical advancement on what certified farmers are already doing to meet existing sustainability standards. According to our interviewees in Lam Dong, the training and education of producers in the new techniques represents the greatest cost of achieving certification, more so, say, than any material expense involved. These trainings/costs have been generally covered by either large private companies, public projects (many of which are internationally funded), or public-private partnerships. These groups have also all played a significant role in relation to raising awareness of sustainability certification, and the associated benefits of achieving it, amongst farming communities in the province.

**Table 5: Costs/benefits of carbon-friendly modifications to production systems**

<b>GHG emissions reducing activity</b>	<b>Qualitative cost-benefit analysis</b>
1. Implement enhanced remedial actions for historical deforestation	<ul style="list-style-type: none"> <li>- Such actions could include conducting greater afforestation or forest restoration on plantations that were previously natural forest;</li> <li>- Enhancement of forest environmental services would likely reduce production costs, however, demonstrating this benefit to farmers would be difficult;</li> <li>- Conversely, the costs involved in having less land available for cropping would be obvious to them by way of smaller yields and, hence, less revenue.</li> </ul>
2. Enhance carbon sequestration through the better use of shade trees	<ul style="list-style-type: none"> <li>- Similar to conducting afforestation or forest restoration, increasing the number and/or volume of shade trees on plantations would result in greater carbon sequestration;</li> <li>- Shade trees that also provide direct monetary benefits, in addition to carbon advantages over the established crop, may remove less GHG than the use of native forest species; however, they are more likely to be adopted by farmers, especially if the economic gains are significant;</li> <li>- Possible shade tree options in this regard could include intercropping with macadamia (to be discussed in greater detail below), Acacia and even possibly large, high value fruit trees, such as durian.</li> </ul>
3. Further reduce soil carbon loss by improved plantation design	<ul style="list-style-type: none"> <li>- In addition to increasing crop productivity through providing shade and sequestering carbon, the industrial tree species mentioned above, or others, could be used to form wind breaks and limit soil erosion from plantations;</li> <li>- Once again, this would provide farmers with direct monetary benefits, in addition to further reducing GHG emissions via soil carbon loss.</li> </ul>
4. Further decrease the application of agrochemicals in favour of organic inputs and better soil management	<ul style="list-style-type: none"> <li>- The application of agrochemicals as fertiliser to increase crop yields releases high levels of GHG emissions;</li> <li>- Switching to organic alternatives, such as the fruit waste mentioned below, would decrease emissions significantly and probably also result in a considerable reduction in input costs;</li> <li>- The adoption of better soil management techniques, more generally, would lessen the need to use fertilisers, leading to lower GHG emissions and costs for producers.</li> </ul>
5. Use even less energy or sources that emit less GHG during post-harvest product handling	<ul style="list-style-type: none"> <li>- Use of solar drying could be increased, however, those already using machines in the dry processing of harvested crops could be put off by likely losses in productivity;</li> <li>- A better option would be to switch to low cost, lower emissions fuel alternatives, such as coffee husks, instead of coal or firewood, which has been directly linked to forest degradation in Lam Dong;</li> <li>- While not currently used significantly in the province, as mentioned above, wet processing produces a residue that could replace higher emitting synthetic fertilisers on plantations, instead of potentially ending up in waterways where it would release additional GHG.</li> </ul>

The networks established through such initiatives would be ideal for gaining access to already certified farmers who might be interested in modifying their existing production practices towards lowering GHG emissions. However, the facilitating bodies may be more interested in directing any additional resources they have at simply increasing the number of certified farmers, which would still result in emissions reduction anyway.

As mentioned previously, such certification standards are not specifically aimed at maximizing GHG emissions reduction, but rather addressing environmental impacts, more generally, with the goal of ensuring the long-term sustainability of production. This is supply driven, in that it lowers production costs, and demand driven, with consumers (particularly in Western countries) increasingly requiring that the products they buy are environmental friendly.

While it is currently difficult to determine how much concern there is among producers and consumers specifically for climate change at present, it is likely to increase over time. In line with this, it would be expected that sustainability standards will similarly evolve, with greater priority gradually given to low emissions practices by the certification bodies.

## **4.2 Rubber**

No great examples of GHG emissions reduction from the rubber value chain in Lam Dong were discovered during field research in the province. As mentioned previously, the government recently revised down the planned expansion of the industry, in line with policy at the national level, including reducing forest areas to be converted into rubber in the future. Limiting GHG emissions through such reductions in the planned future conversion of forests for rubber development, or similar means, such as maintaining forest cover on, or reforestation, the tops of sloping land set aside for rubber, probably represents the most viable short-term option. In saying this, in the past, this has resulted in the leakage of the activity from Vietnam to Laos and Cambodia.<sup>40</sup>

Sustainability initiatives in rubber are slowly emerging globally, but are yet to be strongly established, including in Vietnam. One such initiative is the Sustainable Natural Rubber Initiative (SNR-i), which is being driven by the Singapore-based International Rubber Study Group (IRSG), which launched the pilot phase at the beginning of this year. The SNR-i aims to draw up a plan for the industry, and ultimately a set of sustainability standards, much like what the Roundtable on Sustainable Palm Oil did in the tropical oil seed industry.

As mentioned, moves towards sustainable rubber production in Vietnam, including Lam Dong, are still very much in their infancy. However, it was the main theme of a seminar jointly held by the VRG and IRSG in Ho Chi Minh City late last year, suggesting that the local rubber industry is starting to pay more attention to the issue.

A very select few Vietnamese companies have also achieved FSC certification for the natural rubber they produce. These include the Dau Tieng and Dong Nai rubber companies in Binh Duong and Dong Nai provinces, respectively, which have collectively achieved FSC

---

<sup>40</sup> Global Witness 2013, *Rubber Barons*, Global Witness Report, 13 May 2013.

certification for 11,696 ha of rubber plantations in total.<sup>41</sup> Promoting FSC certification and assisting other rubber companies, including ones operating in Lam Dong province, achieve it, is perhaps the most obvious way to push the industry towards sustainability and on a lower emissions path.

### 4.3 Macadamia

Excitement abounds surrounding the economic potential of macadamia in Lam Dong, before any consideration has been given to its low emissions potential. While the macadamia plantation projection for the whole country is 10,000 ha by 2020, the Lam Dong government, on its own, plans to have 22,000 ha established in the province by the same year.<sup>42</sup>

Preliminary research suggests macadamia production is carbon-friendly, although further investigation is probably needed to properly establish its low emission credibility vis-à-vis other industrial tree crops already with a significant presence in the province. If they can be verified, the development of what is essentially a new “business model” will encounter many of the same barriers faced when trying to operationalize any value chain in a new locality. It is probably easy to suggest that such barriers would be more extensive than those that must be overcome to drive low emissions through already established value chains.

Efforts are already being made, however, to facilitate macadamia development in Vietnam more generally, and specifically in Lam Dong province. As mentioned previously, the GoV has offered financial support for projects in excess of 50 ha. At present, the global market for the nut is not large, however, with it consumed as is, or processed and used as an input in only a limited number of sub-chains. The development of the industry in Vietnam needs to be done carefully, in order not to oversupply related value chains in the short term, as they gradually broaden over the medium to long term.

A better option moving forward in the short term might be to intercrop macadamia with other existing industrial tree crops, such as coffee, like we are already seeing in Lam Dong. In addition to currently being more profitable than coffee, macadamia could provide co-benefits, including improving coffee yields and lowering production costs by using their superior height to act as shade trees. As mentioned previously, shade trees also help conserve carbon found in the soil. This net carbon gain would be in addition to any sequestration advantage macadamia may have over coffee trees.

A macadamia seedling supplier interviewed in Lam Dong said that she sells them to would-be producers for 60% of the sale price, with the other 40% recouped after the first harvest, which occurs about 5-7 years after planting. At this point in time, a number of Australian macadamia companies have agreed to buy the nuts, with them essentially outsourcing the primary production arm of their value chains to Vietnam, presumably to take advantage of the suitable growing conditions and lower costs. This has been facilitated by the Australian

---

<sup>41</sup> Forest Trends 2012, “Forest certification in Vietnam: Summary of March 2012 workshop”, *Forest Trends Information Brief No.2*, May 2012.

<sup>42</sup> Lam Dong Provincial People’s Committee 2014, *Decision No. 2897/QD-UBND/2014 on Projection of Agriculture and Rural Development of Lam Dong Province to 2020*.

Macadamia Society (AMS), which has also provided technical support, backed up by the provincial Department of Agriculture and Rural Development (DARD).

Outsourcing is often perceived as a dirty word, but it is really just trade in tasks. Producers in Lam Dong are using their current comparative advantage, which is suitable growing conditions and cheap production costs, to attract tasks (e.g., primary production and possibly some processing) outsourced to them from the Australian macadamia companies that essentially own the value chain.

While such tasks are generally deemed low value, attracting them allows local producers to gain their initial access, from which time they can increase their involvement in the upstream sections of the value chain by finding other buyers of their produce, and, over time, chart their path downstream toward the higher value activities. A close as possible a relationship with Australian macadamia companies, perhaps facilitated by the AMS, would put them on the fast track by improving their access to information on the macadamia value chain, including sustainable cultivation techniques, processing, storage and branding.

## **5 Options and recommendations for enhancing private contributions to AFOLU emissions reduction**

As discussed in section 3, the government at both national and provincial levels in Vietnam has shown strong public leadership in developing a number of low emissions related policies over the past several years. Private sector involvement in one of the policies most relevant to this study, namely the PFES program, is significant, with some private actors essentially paying others to provide an enhanced provision of the forest environmental services that they benefit from.

Expanding the PFES program to incorporate more forest land, and greater numbers of private actors, is possible. Some of the most likely options identified during this study include: increasing the contribution of tourism businesses; make other types of private sector actors pay; apply the K coefficient; and allow communities to legally enter into PFES agreements. However, these would generally all require an official amendment to at least Decree 99 at the national level, which is realistically not going to happen in the immediate short term.

Opportunities for private sector involvement in the Lam Dong PRAP are far less significant, and could only be increased through a revision of the Plan or in its greater incorporation in future incarnations post 2020. A number of other REDD+ Action Plans will be developed for other provinces in Vietnam in the coming years, however, and the selection of activities for them should consider their potential for attracting private sector investment, in addition to their ability to contribute to such plan's GHG emissions reduction goals.

Agricultural sustainability standards are not specifically aimed at maximizing GHG emissions reduction. However, many of the practices that must be implemented in order to meet them do result in the reduction of some emissions, and increasing the number of hectares of coffee, tea and cocoa under certification in Lam Dong probably represents the best way to enhance the private AFOLU sector's contribution to it in the province in the short term.

As mentioned previously, a number of formal initiatives, whether they are public, private or a combination, such as the SCP, are already in place to promote and support farmers' achievement of sustainability certification. Some of the groups involved in implementing these initiatives could be approached to solicit their interest in financing/training farmers in modified techniques, which would still meet sustainability standards, but also enhance the amount of GHG emissions reduced at the same time. Likely groups could include large international companies already committing actions in relation to climate change, such as Nestlé (coffee), Unilever (tea) and Cargill (cocoa).

Two opportunities for modifying production systems to further reduce GHG emissions identified as showing particular potential for implementation and/or up scaling in the immediate short term include:

- Enhancing sequestration and reducing GHG emissions via soil carbon loss through the use of other industrial trees, with higher carbon storage and economic potential, as shade trees and wind breaks on plantations;
- Using lower emitting crop waste as a fuel in dry processing, and the residue from processing, particularly wet, as a fertilizer instead of higher GHG releasing agrochemicals.

As shown in Table 2, the provincial plan is to increase the planted area of macadamia trees in Lam Dong significantly between now and 2020. Macadamia could represent a good shade tree and/or wind break option, intercropped with other existing industrial tree crops, such as coffee, and providing a number of co-benefits, as discussed earlier. The AMS is already playing some role in facilitating the development of the value chain in Vietnam. They could possibly be approached to increase their involvement to include helping firm up macadamia's carbon sequestration credentials, and then promoting the trees as shade tree/wind break options, and assisting farmers of other industrial trees, such as coffee, who might be interested in macadamia, but not ready to completely switch crops, to establish them on their plantations.

Using coffee husks as fuel during the coffee drying process, instead of, say burning them off and/or discharging them into waterways, appears to be another easy short-term solution for reducing GHG emissions from the AFOLU sector in Lam Dong, with information seemingly the only real barrier to its wide-spread implementation in the province. ACOM or some other company could be requested to play a role in increasing awareness of the practice amongst other coffee processors, which would have to include evidence that it is a more economically efficient fuel source than firewood.

Rubber would be arguably the most challenging of Lam Dong's industrial tree value chains to catalyze private sector involvement in reducing GHG emissions in the province in the relative short term. As mentioned previously, moves towards any sort of "green" rubber production in Vietnam are still very much in their infancy, with only a select few companies achieving FSC certification for the natural rubber they produce. Attempts could be made to encourage and assist other rubber companies with operations in Lam Dong province to seek

FSC certification. However, this is a time consuming and expensive exercise<sup>43</sup>, and could only be achieved over the longer term.

Over the long term, other efforts could also be made to improve the enabling environment for achieving private actors' enhanced participation in GHG emissions reduction from the AFOLU sector in Lam Dong province. Firstly, the results of the stakeholder analyses represented in figures 3-7 in Annex 1 show that there has been a distinct lack of private sector participation in the decision-making and/or policy development processes of all the industrial tree value chains, with the exception of coffee, where it is represented on the Vietnam Coffee Coordination Board (VCCB).

The creation of similar mechanisms for private sector actors operating in these other value chains to participate in such processes would be beneficial by giving them a say in the development of their industries, including in relation to lowering emissions from them. Such bodies could also act as a platform for overcoming information and capacity related barriers to the private sectors investment in emissions reduction, which were the ones most frequently cited by our field research respondents.

Other barriers, however, also exist, including financial, which could be overcome to some extent through the offering of tax incentives, favorable credit, or alternate forms of support, etc., for private sector actors who invest in lowering emissions along their value chains. The development of a fund or resource pooling body to mobilize financial and technical resources that can be used to assist the private sector in its low emissions endeavors should also be considered.

## 6 Concluding remarks

The private sector provides some 90 per cent of jobs in developing countries, and is needed as an investor in sustainable agriculture and through innovation and investment in low-carbon and resource-efficient solutions.<sup>44</sup> This study aimed to build on the contribution made by the Lam Dong PRAP to low emission development planning in the province, by identifying existing efforts and future opportunities for private sector emissions reduction from the AFOLU sector, more generally, and not specifically through REDD+ and related mechanisms, such as the PFES program, where, as demonstrated, there is currently little scope for such actors further involvement.

It was found that some private AFOLU sector actors are already contributing to emissions reduction in Lam Dong through the implementation of more carbon-friendly production practices and technologies, although their numbers are not significant and could definitely be greatly increased in the future. Most GHG emissions are currently being reduced by the

---

<sup>43</sup> The Vietnam Rubber Group (VRG) spent around USD 200,000 for an FSC certification assessment of its 11,700 ha rubber plantation. See: Forest Trends 2012, "Forest certification in Vietnam: Summary of March 2012 workshop", *Forest Trends Information Brief No.2*, May 2012.

<sup>44</sup> EC 2014, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions: A Stronger Role of the Private Sector in Achieving Inclusive and Sustainable Growth in Developing Countries*, European Commission (EC), Brussels, Belgium.

province's producers of coffee, and to a lesser extent tea and cocoa, in their efforts to achieve and hold onto sustainability certification, which have shown to generally bring them positive net economic benefits.

Such sustainability standards are not specifically aimed at achieving emissions reductions. However, as described above, many of the practices that must be implemented in order to meet them do result in the reduction or sequestration of GHG emissions. Increasing the number of certified farmers, in addition to modifying some related activities to enhance the amount of emissions they reduce, is perhaps the most realistic option for increasing private actors' contribution to emissions reduction from the AFOLU sector in Lam Dong in the short term. Over the medium to long term, efforts can also be exerted to improve the enabling environment for achieving their enhanced participation in emissions reduction in the province, through a variety of ways, as suggested in the previous section.

## Annex 1. Results of stakeholder analysis of industrial tree value chains in Lam Dong province

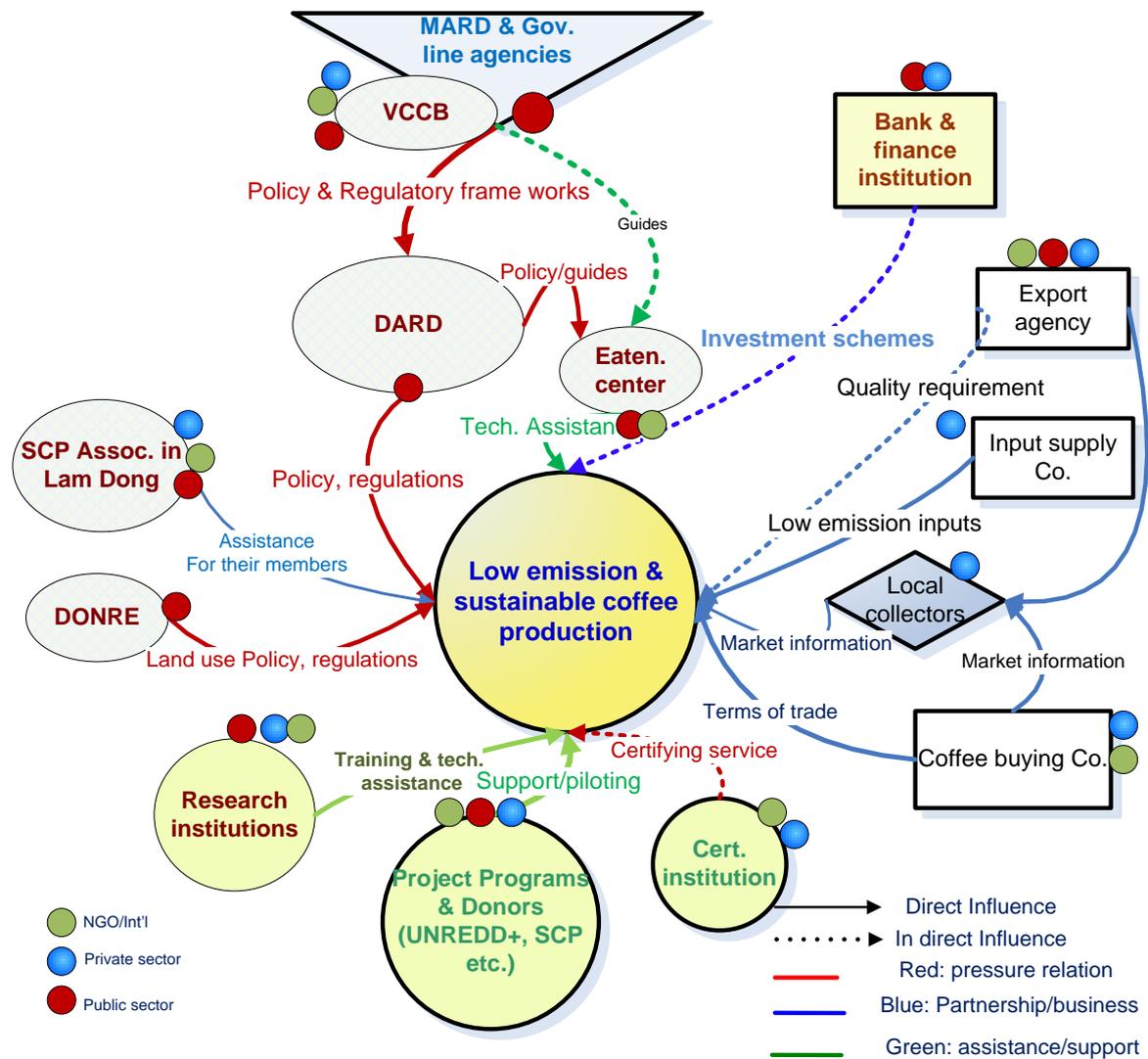
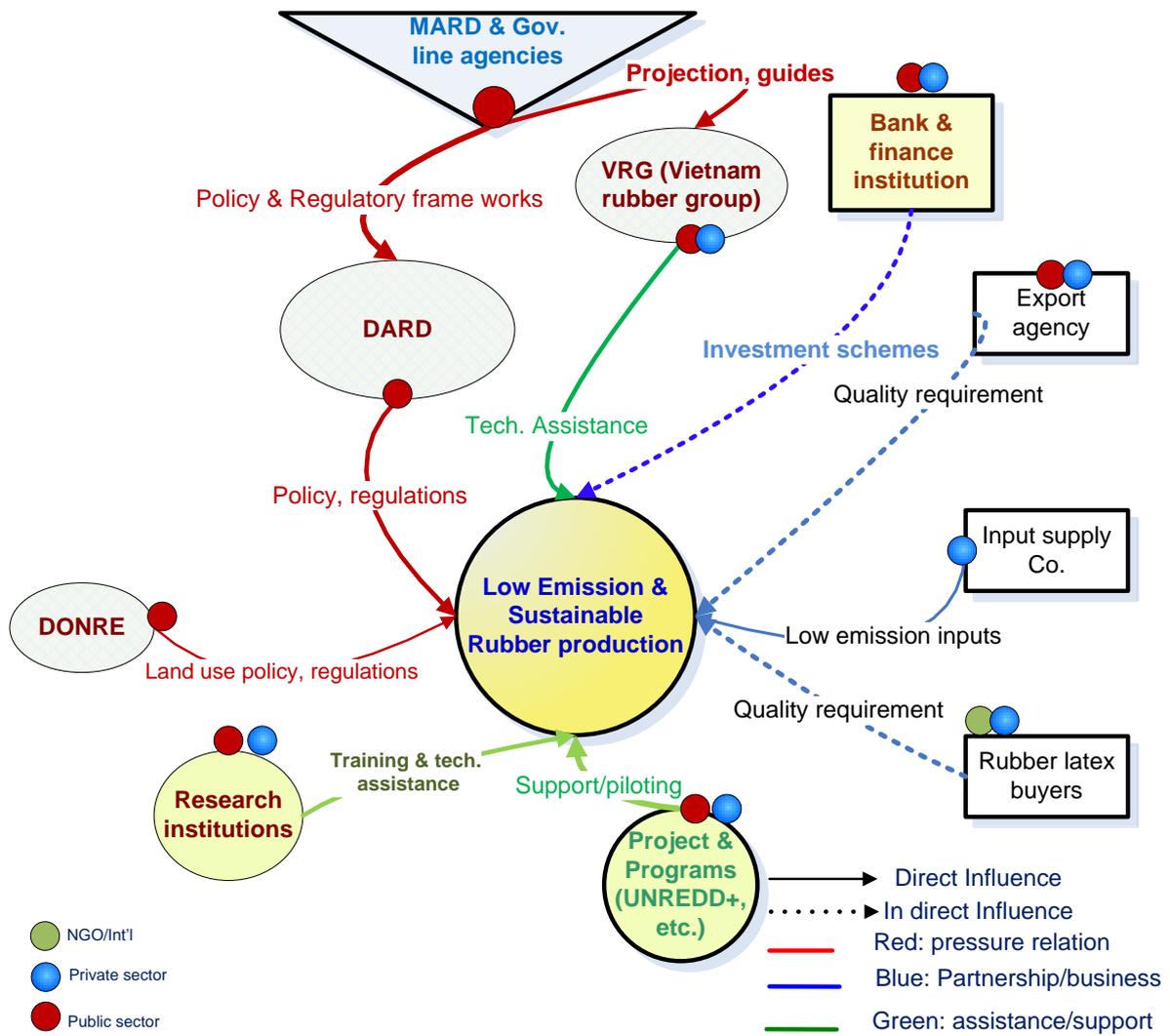
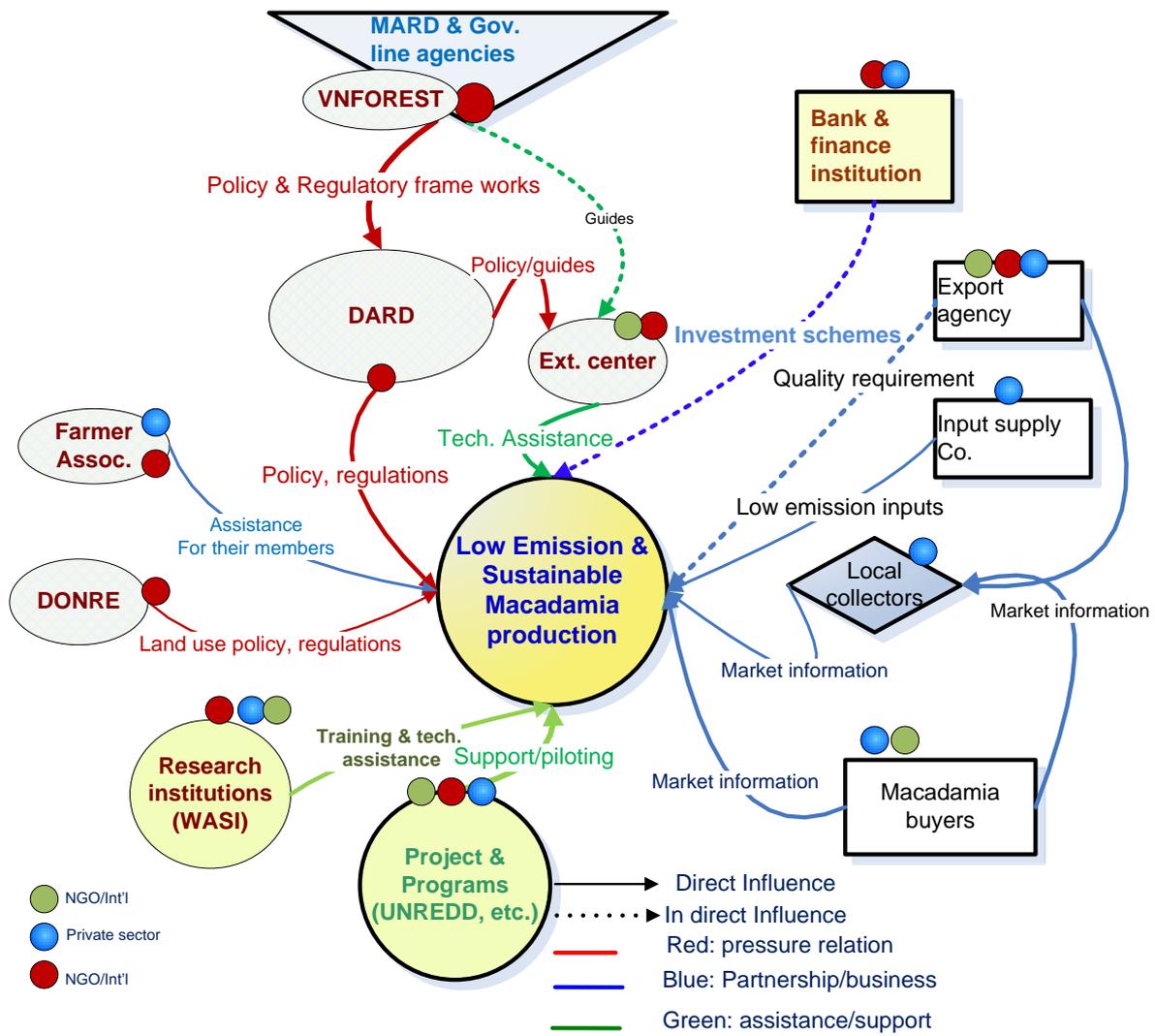


Figure 3: Stakeholder mapping and analysis for low emission and sustainable coffee production

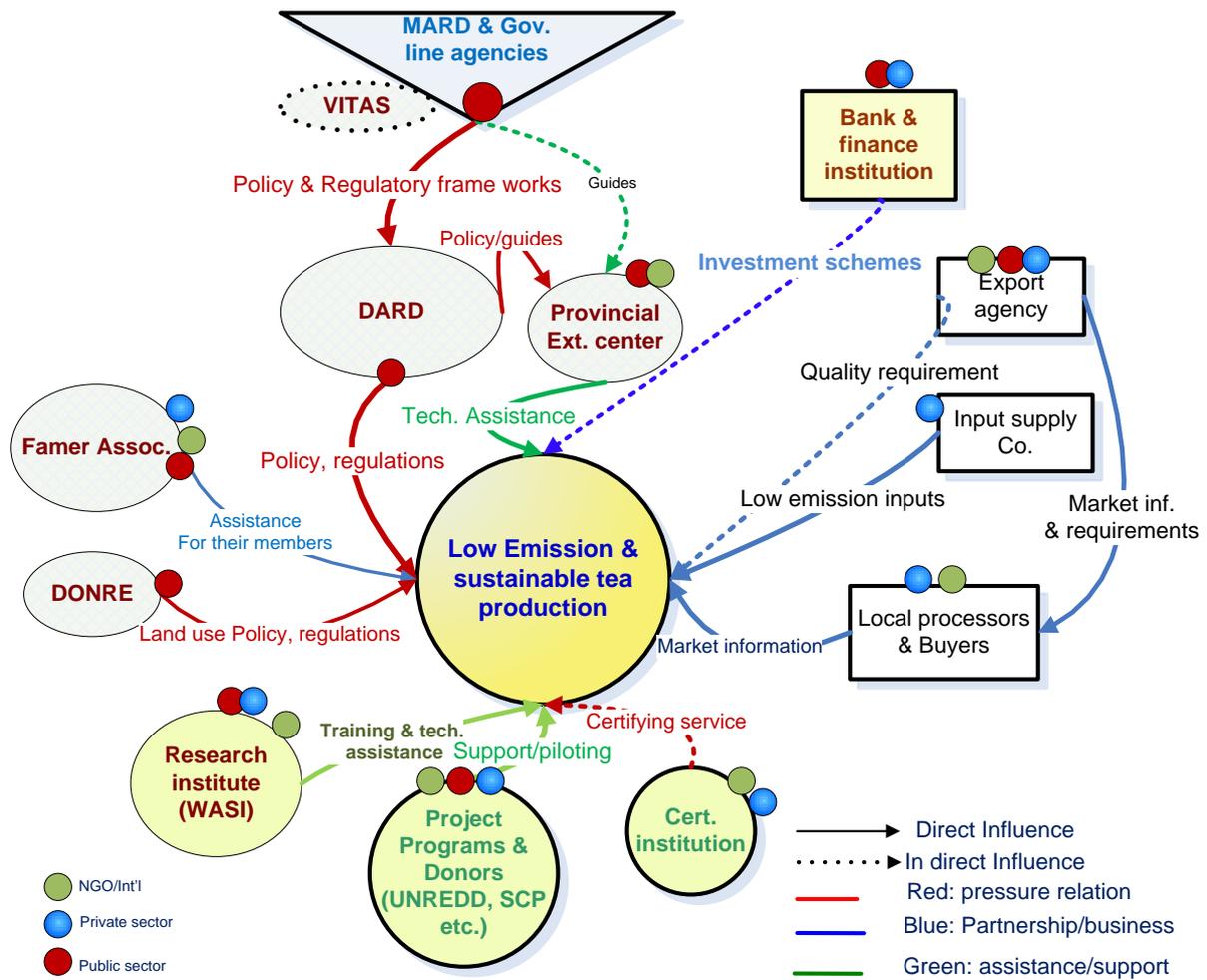




**Figure 5: Stakeholder mapping and analysis for low emission and sustainable rubber production**



**Figure 6: Stakeholder mapping and analysis for low emission and sustainable Macadamia production**



**Figure 7: Stakeholder mapping and analysis for low emission and sustainable tea production**

## Annex 2. Field Research Respondents

The following individuals were interviewed in either Lam Dong Province or Hanoi, Vietnam, in May, 2015. The purpose of each interview was to gather understandings and opinions (as well as data and literature) with regards to private sector emissions reduction from the AFOLU sector in Lam Dong province.

Name of Respondent	Position, Organization
Flavio Corsin	Country Director, IDH Vietnam
Tran Thi Quynh Chi	Initiative Sustainable Landscapes (ISLA) Manager, IDH Vietnam
Nguyen Do Anh Tuan	Director General, Vietnam Institute of Policy and Strategy on Agriculture and Rural Development (IPSARD)
Nguyen Ngoc Luan	Coffee expert in charge of supporting the implementation of sustainable coffee production in Lam Dong province, Agroinfo, IPSARD
Le Thi Ha Lien	Institutional Coordinator of the SCP and Acting Director of Agroinfo, IPSARD
Nguyen Van Son	Vice Director, Lam Dong DARD
Bui Van Hung	Vice Director, Lam Dong DARD and Director of the Provincial Project Management Unit (PPMU) of UN-REDD+ in Lam Dong province
Nguyen Tuyet Hau	Officer, Crop Production Division, Lam Dong DARD
Vo Minh Tham	Vice Director, Lam Dong FPDF
Nguyen Van Viet	Chairman, Lam Dong Sustainable Coffee Production Association (SCPA)
Nguyen Thi Tuong Vy	Vice Chairwoman, Lam Dong SCPA
Nguyen Van Trung	Management Board Member, Lam Dong SCPA and farmer representative on VCCB
Vo Nhu Thanh Binh	Vice Director, Dong Nai Commerce & Trading Co., Lam Dong Branch
Stephan Mathieu	Mill Manager, ACOM Co., Bao Loc District, Lam Dong Province
Mr. Son	Technical Advisor, ACOM Co., Bao Loc District, Lam Dong Province
Mr. Hung	Assistant to ACOM Mill Manager, Bao Loc District, Lam Dong Province
Nguyen Thanh Chau	Chairman, Lam Vien Cooperative
Hoang Trung Thong	Management Board Member, Lam Vien Cooperative
Nguyen Trung Tam	Management Board Member, Lam Vien Cooperative
Pham Van Hoa	Management Board Member, Lam Vien Cooperative
Ho Thi Tach	Management Board Member, Lam Vien Cooperative
Pham Thi Hong Lam	Vice Director, Duc Anh Maca Co. Ltd.
Le Duc Tien	Director, Duc Anh Maca Co. Ltd.
Nguyen Van Tao	Director, Intimex Co. Ltd., Bao Loc District, Lam Dong Province
Doan Bac Son	Vice Director, Intimex Co. LMT., Bao Loc District, Lam Dong Province

Do Duc Tan	Sustainable Coffee Program Manager, Intimex Co. Ltd., Bao Loc District, Lam Dong Province
Le Mau Phuc	Director, Bao Lam Rubber JSC
Truong Dinh Khac	Manager, Bao Lam Rubber JSC
Nguyen Hoai Linh	Forest Protection Expert, Bao Lam Rubber JSC
Nguyen Tan An	Rubber Technical Officer, Bao Lam Rubber JSC
Nguyen Ngoc Chanh	Director of Team and Coffee Processing and Trade, Tam Chau Co. Ltd.
Nguyen Van Doai	Cocoa Fermentation and Processing Facility, Da Oai District, Lam Dong Province