



Financing options for enhancing the value and productivity of production forests in Viet Nam

Accelerating green growth by investing in forests

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Client

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
BAU	Business as usual
CO ₂	Carbon dioxide
CoC	Chain of custody
DARD	Department of Agriculture and Rural Development
DFI	Development Finance Institution
ER-PD	Emissions Reduction Program Document
EU	European Union
FAO	Food and Agriculture Organization
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program
FPD	Forest Protection Department
GAFSF	Global Agriculture and Food Security Program
GDP	Gross domestic product
GoV	Government of Viet Nam
HWP	Harvested wood products
IFC	International Finance Corporation
IREN	Institute of Resources and Environment – Hue University
IRR	Internal rate of return
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
LURC	Land use rights certificate
MARD	Ministry of Agriculture and Rural Development
MPI	Ministry of Planning and Investment
NAFOCO	Nam Dinh Forest Products JSC
ODA	Official Development Assistance
PC	People’s committee
PFES	Payments for forest environmental services
PFMB	Protection forest management board
REDD	Reducing emissions from deforestation and forest degradation
R-PP	Readiness Preparation Proposal
SFC	State forestry company
SMEDF	Small and medium enterprises development fund
SNV	Netherlands Development Organization
tCO ₂ e	Tons of carbon dioxide equivalent
USD	United States Dollar

VBARD	Viet Nam Bank for Agriculture and Rural Development (VBARD).
VBSP	Viet Nam Bank for Social Policy
VIFORES	Viet Nam Timber and Forest Product Organization
VND	Vietnamese Dong
VNFF	Viet Nam Forest Protection and Development Fund
VNFOREST	Viet Nam Administration of Forestry
WWF	World Wildlife Fund

1 INTRODUCTION: FORESTRY FOR GREEN GROWTH

Green growth¹ has been embraced by Vietnam, and the approval of the National Green Growth Strategy in 2012 underlines its importance for the Government of Viet Nam. In line with its climate mitigation and adaptation targets, the Strategy sets the objective of achieving inclusive economic growth while reducing greenhouse gas emissions by 8-10% by 2020. The forestry sector plays a key role in achieving mitigation goals, both through afforestation and reforestation projects to increase forest cover to 45% by 2020 and through reducing emissions from deforestation and forest degradation (known as REDD+). The timber industry of Viet Nam has the potential to sequester more than 70 million tons CO₂ by 2040 (World Bank 2017).

In addition to environmental benefits, the forestry sector and its contribution to timber processing play an important role in Viet Nam's economy. This furniture industry depends massively on the import of sustainably produced, certified logs because domestic forestry production is focused on short rotation plantations production of chip wood, and products that are generally not certified by a sustainability standard. Increasing the production of legally produced, high quality, large dimension timber in Vietnam has great potential to contribute to economic and social objectives. Meeting Vietnamese demand for harvested wood products (HWP) through domestic production could create nearly 250,000 full-time jobs and add nearly USD 5 billion to the Vietnamese GDP by 2040 (World Bank 2017).

This report is part of the project 'Business Models in the context of REDD+', financed through the German International Climate Initiative (ICI) by the German Federal Ministry for the Environment (BMUB). Against the background of green growth in Viet Nam, the project has developed appropriate and feasible business models that meet three criteria:

1. Significant mitigation potential: sequestration of forest sector greenhouse gas (GHG) emissions in the context of REDD+
2. The models promote profitable investments and are viable independent of REDD+ investment
3. The models are fully in line with policy priorities and strategies for the sector, as well as driven by the interest of land owners

The project strategy is to support Viet Nam in triggering a transformational change that successively replaces the increasingly less profitable Acacia wood chip business model with production of high-value timber for sawn logs. The models demonstrate how Viet Nam can achieve its policy objectives for the sector: increasing the income of forest owners and the overall economic performance of the sector, significantly enhancing carbon sequestration in the context of REDD+, reducing the import dependency for its processing industry, and improving the biodiversity of its production forests.

One of the key challenges (in addition to technical challenges and the enabling environment) is the financing gap associated with transitioning to longer rotation forest plantations, as the models require significant investments while cash flows break even years after. Forest owners and

¹ The green growth concept offers the promise of economic benefits and job creation by protecting and restoring "natural capital." It recognizes that economic activity is dependent on the natural environment and promotes investments in the environment as a means of increasing sustainable growth.

policy makers consider this a primary obstacle. This report analyzes the barriers to implementing the models with a focus on financial barriers to implementation. Its objective is to assess the existing financial incentives and options for the business models and to evaluate their appropriateness for achieving the goals of the GoV. The findings builds on extensive UNIQUE research on business models for sawn log production under different forest management schemes.

In order to investigate financing options for sawn log production, the authors of this report reviewed literature and policies, and discussed these topics with many experts in Viet Nam in March 2017, including: the Institute of Resources and Environment – Hue University (IREN), the Department of Agriculture and Rural Development (DARD), the Forest Protection Department (FPD), Phong Dien SFC, Viet Nam Forest Protection and Development Fund (VNFF), the International Finance Corporation (IFC), the World Bank, UN-REDD, VBSP, VBARD, the Netherlands Development Organization (SNV), the Forest Protection Management Department, the Viet Nam Timber and Forest Product Organization, (VIFORES), the German Development Bank (KfW), the Management Board of Forest Projects, and the Asian Development Bank (ADB). The authors would like to thank these organizations for their contributions to the report. Based on the insights provided and the subsequent analysis of all sources, the report derives recommendations for how the Government of Viet Nam (GoV) and international development institutions can better support forest owners and help facilitating a significant implementation of the business models.

2 BACKGROUND: POLICIES THAT HAVE ENABLED FOREST TRANSITION IN VIET NAM

After seeing forest cover fall from 43% to 27% between 1943 and 1990, the Government of Viet Nam (GoV) took many steps to reverse this trend and increase forest cover (MARD 2017). The Land Laws policies of 1993 and 2003, several different logging bans, and the “5 million hectare program” have played an important role in halting deforestation and encouraging reforestation (Pistorius 2016). Forest cover was restored to 41.5% by 2014 and the GoV has the objective of achieving 45% forest cover by 2020. Acacia has made a significant contribution to the rehabilitation of soils and created a basis for taking the next big step towards sustainable management of forests.

However, while forest cover has returned, the quality of existing natural and plantation forests is low. 9% of evergreen broadleaf forests are classified as rich (greater than 200 m³ of timber per hectare), 22% are classified as medium (100-200 m³ of timber per hectare), 21% are classified as poor (less than 100 m³ of timber per hectare), and 48% are classified as regrowth (meaning that they are degraded but improving) (MARD 2016). Of the 14.3 million hectares of forest in the country, more than 4.1 million hectares are short-rotation plantations, typically Acacia, managed for chip wood production and export (FPD 2017). Of the 23.69 million m³ of timber produced in 2016, 15 million m³ were exported as chip wood. This chip wood is then processed and sold on for as much as ten times the price paid to the Vietnamese company. Meanwhile, due mainly to its large furniture industry, Viet Nam imports six million m³ of high-quality timber every year (VIFORES interview). By restructuring its forest sector, Viet Nam could increase value-added and improve its trade deficit, in addition to the social and environmental benefits.

Viet Nam now faces to an important inflection point to ensure that the improvement of forest cover continues by increasing the economic and ecological quality of existing forests. The GoV has taken many steps to increase forest cover and restructure the forestry sector. The Forestry Development Strategy 2006-2020 includes the objectives to increase the value of forestry exports and reduce the dependency on imports for timber through, amongst other means, transitioning away from short rotation, plantations for chip wood processing to long rotation, sawn log production. The Strategy sets the target of producing six million m³ of sawn timber annually by 2020.

Decision No. 1565/QĐ-BNN-TCLN from 2013 is focused on increasing the value of forest products from plantations. This includes incentives for shifting from short-rotation to long-rotation plantations, with the objective of increasing long-rotation plantations for sawn logs to 40% of production.

In 2015, under Decree 75/2015/ND-CP, the GoV has established incentives for protecting natural forests and establishing production forests in regions with ethnic minorities and mountains areas. Specific to production forests, the Decree offers subsidies for seedling, fertilizers, and employment costs for forest establishment. The Decree also offers loans to forest owners via the Viet Nam Bank for Social Policy (VBSP) and the Viet Nam Bank for Agriculture and Rural Development (VBARD) with repayment periods sufficiently long to support sawn log production. However, only limited funds have been available through this program by the time of publishing this report.

In 2016, the GoV took further steps to promote sawn log production with Decree No. 38/2016/QĐ-TT. Decree 38 provides subsidies for establishing plantations that will not be harvested for at least 10 years. In theory, further support is available for plantation management, including assistance paying for sustainable management certification fees. However, this support is dependent on provincial budgets and has not been made available by the time of publishing this report.

More recently, Official Letter No. 74/TTr-TCLN-VP from January 2017, established the annual work plan for the Viet Nam Administration of Forestry (VNFOREST), including increasing sawn log production as a priority.

Also in 2017, the GoV set specific targets for sawn log production and set aside dedicated funds for this goal under Decision 886. The GoV aims to plant 200,000 hectares of plantations for “large timber” and transition another 90,000 hectares of short rotation plantations to large timber production. A fund supporting these initiatives and others will be financed with VND 59 trillion (USD 2.6 billion).

The GoV has concluded negotiations with the European Union (EU) in 2017 concerning illegal logging in Viet Nam. The signed Voluntary Partnership Agreement (VPA) addresses illegal logging in Viet Nam and promotes the sale of verified legal timber products from Viet Nam to the EU (Saigon Times Daily 2017). The wood associations of Viet Nam (Viet Nam Timber and Forest Product Association, Handicraft and Wood Industry Association of HCM, Binh Duong Furniture Association, and Forest Products Association of Binh Dinh) have all expressed support for this measure.

At the time that this report was published, the GoV was finalizing a revised Forestry Law. The revision of the law is an important step in Viet Nam’s forest transition and will set for laws and regulation for the management of forests. The Law encourages the establishment of high-value forests, such as those promoted in this report.

Aside from policies related directly for forest production, the GoV has also taken steps to increase private ownership of forestry enterprises. State forestry companies (SFCs) were initially established by the GoV to promote forest cover increase and the GoV continues to own and manage these companies, with implications for forest management. Ownership of SFCs and other state-owned enterprises are to be “equitized,” per Decree 59, established in 2011. Given the large amount of forests controlled by SFCs, this will have a dramatic impact on forest management. As discussed in greater detail below, private ownership of forest companies has important impacts on the financing options available to these companies. Decree No. 118/2015/ND-CP further laid out details for the process of equitization.

Given that Viet Nam had successfully addressed deforestation before REDD+ entered the international policy dialogue, REDD+ in Viet Nam is considered to compliment Viet Nam’s existing activities (Hoan and Catacutan 2014). In 2009, the GoV’s request for financing support for the readiness process was approved by the board of the UN-REDD programme (UN-REDD 2010). Viet Nam presented its REDD Readiness Preparation Proposal (R-PP) in 2010 to the World Bank’s Forest Carbon Partnership Facility (FCPF) to obtain support from the RCPF’s Readiness Fund (Pham et al. 2012). The Prime Minister approved the National REDD+ Action Plan (NRAP) in 2012 and linked the NRAP to the Green Growth Strategy in 2014 (decisions 799/QĐ-TTg and 403/QĐ-TTg) (Pistorius et al 2017). A revised NRAP was submitted in 2017 and the GoV has also successfully submitted a revised emissions level to the UNFCCC (decision 419/QĐ-TTg).

3 PROMOTION OF SAWN LOG PRODUCTION

3.1 Production models

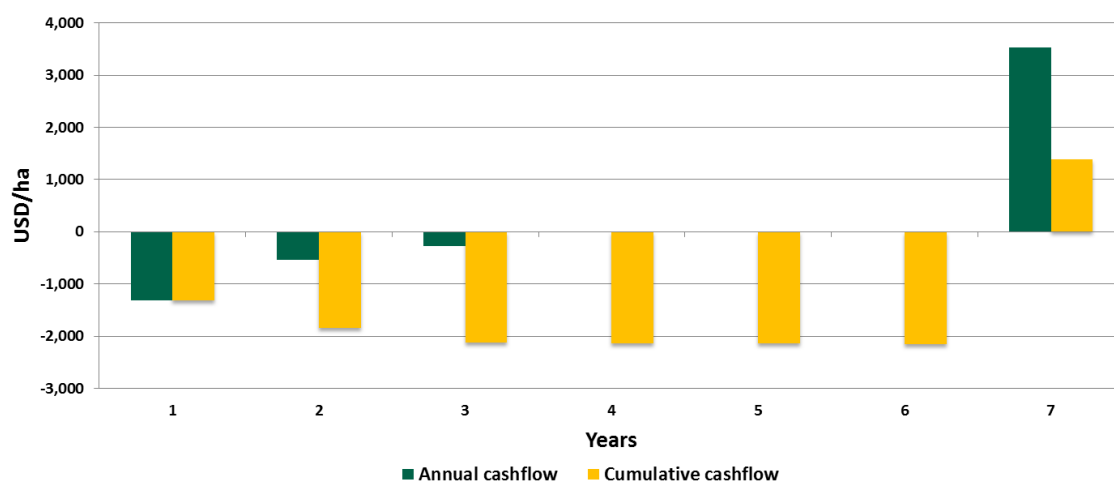
Current plantation management is dominated by short-rotation cycles (4-7 years) producing a combination of chip wood and sawn logs from Acacia. In order to maximize sawn log production, longer rotation cycles of at least 10 years are necessary. Transformation of plantations to longer rotations and the production of sawn logs could generate significant revenues and attract private investment. The Emissions Reduction Program Document (ER-PD) for Viet Nam estimates that USD 93.8 million will be invested in the North Central Coast region alone, resulting in USD 241.9 million in revenues (MARD 2016a).

UNIQUE has developed two sawn log production models: a long-rotation with Acacia and a model that introduces native species alongside Acacia in a 30 year rotation. Aside from the economic benefits of these alternative models, the models also sequester additional CO₂, contributing to the GoV's climate change mitigation goals. UNIQUE's models assume that quality sites are selected and professional management of plantations. Growth assumptions are within the GoV's target range for plantation productivity.

3.1.1 Business as usual: short-rotation Acacia plantations

Specific practices vary depending on the forest owner and location-specific characteristics. Acacia plantations are typically planted at high density (1,667 trees per hectare) and receive weeding and other maintenance in early years. For the purposes of modeling cash flows, UNIQUE assumed that there is no thinning and that the plantation is clear-cut harvested in year 7, with a harvest of 122 m³ per hectare. Figure 2 depicts the projected annual and cumulative cash flows from one rotation of the business as usual (BAU) model.

Figure 1: BAU (7-year Acacia) cash flow projections

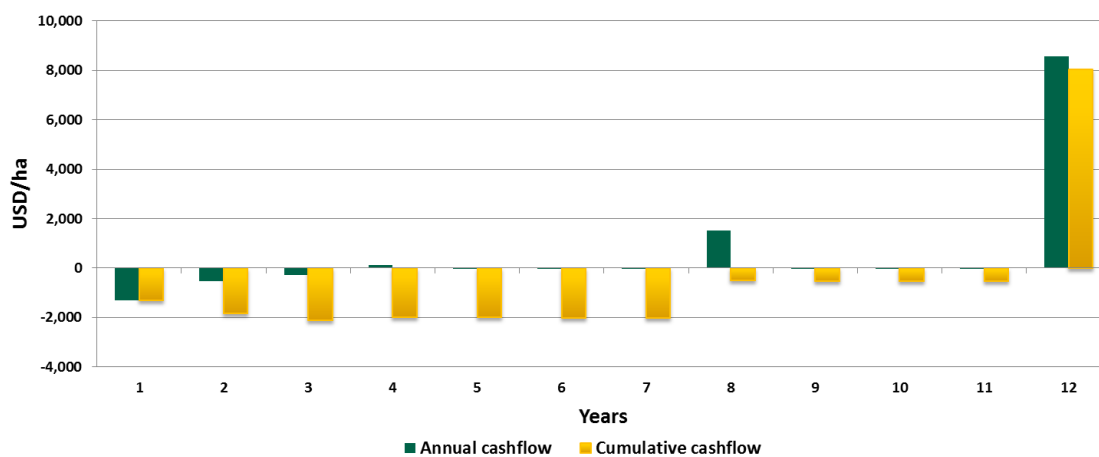


Establishment of plantations in year 1 represents the greatest cost, at an estimated USD 1,309 per hectare. There are minor intermediate management costs, such as weeding in the plantation. Since there is no thinning, revenues come entirely in year 7, generating USD 4,842 per hectare, assuming a sale price of USD 27 per m³ and USD 69 per m³ for sawn logs. The combined cash flows result in an internal rate of return (IRR) of 15.8% over five rotations and 31 years.

3.1.2 Long-rotation Acacia plantations

UNIQUE has developed an alternative model for Acacia production that extends the rotation period to 11 years, allowing for increased production of high-diameter, sawn logs. The model assumes the same planting density and maintenance during the first three years. Thinning takes place at years four and eight, reducing the number of trees per hectare from 1,667 to 834 in year four to 417 in year eight. Between the two thinnings and final harvest, a total of 205 m³ per hectare are harvested. Figure 3 shows the project cash flows for the long-rotation Acacia model.

Figure 2: Long-rotation Acacia cash flow projections



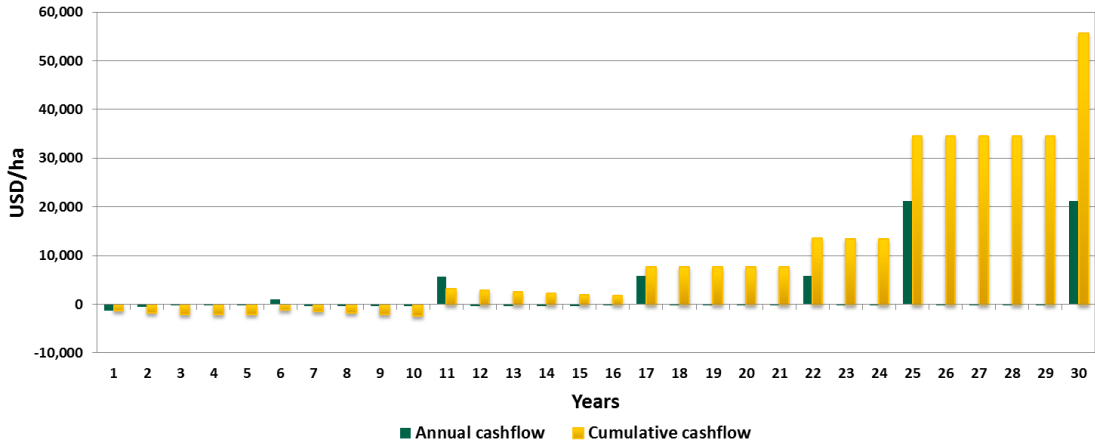
An important difference between the BAU model and the long-rotation Acacia model is the intermediate income from thinnings in year four and eight, with revenues of USD 354 and USD 2,044 per hectare. The final harvest results in revenues of USD 9,868 per hectare. Although two BAU rotations over the same time period would generate more total volume, the long-rotation Acacia model has a much higher IRR, of 19.1% over 2 rotations and 23 years. The higher profitability is mostly due to the higher prices associated with larger trees; 52% of the volume is sold at a price of USD 69 per m³, 23% is sold at USD 74 per m³, while only 25% is sold for chip wood prices received in the BAU model. Compared to chip wood production, sawn log production is much more profitable.

3.1.3 Combined native and Acacia plantations

UNIQUE has developed a third model that introduces different native species (*Tarrietia javanica*, *Dipterocarpus alatus*, *Hopea odorata*) into Acacia plantations. This model is only being implemented at small scale in Viet Nam and is not commercially demonstrated at time of publishing. Like the BAU model, the combined native and Acacia model starts with 1,667 trees planted per

hectare. Acacia individuals are harvested in years six and eleven and replaced with native species at half the density as Acacia. Native species are thinned in years 17 and 22. Under good conditions and proper management, a total of 387 m³ of timber are harvested over the 30 years. UNIQUE has estimated projected cash flows for the model, as shown in Figure 4.

Figure 3: Combined native and Acacia cash flow projections

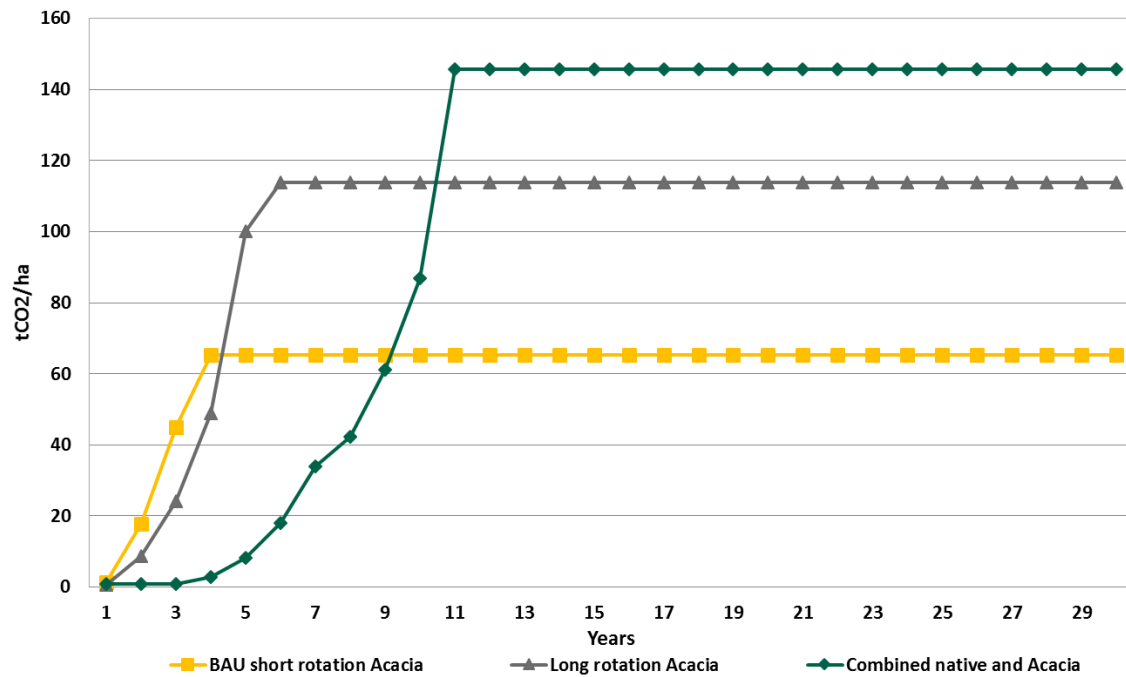


Establishment costs are similar to the other models, but the combined native and Acacia plan-
tation models has more intermediate costs related to planting of native trees. The largest inter-
mediate costs come at years 6 (USD 1,593 per hectare) and 12 (USD 2,403 per hectare). Thin-
nings result in significant intermediate revenues, but nearly 66% of the USD 69,713 in revenues
come from final harvests of the two native rotations. The IRR of the combined native and Acacia
model is 18.6% over 30 years, greater than the BAU model, but less than the long-rotation Aca-
cia. Even though total revenues from the combined model are higher than the long-rotation
Acacia model, the delay in revenues results in a lower IRR. This model makes up for the relatively
low productivity by selling timber at much prices: prices for native timber range from USD 165
per m³ to USD 360 per m³.

3.2 Carbon benefits of models

The proposed models improve the environmental benefits of planted forests, including the car-
bon sequestered. Figure 4 compares the long-term average net carbon benefits of the three
models on the planting sites.

Figure 4: Long-term equilibrium carbon stocks of models (UNIQUE 2016)



While the short-rotation Acacia model sequesters 65 tons carbon dioxide equivalent (tCO₂e) per her hectare in the long-term, the long-rotation Acacia model and the combined native and Acacia models sequester 114 tCO₂e per hectare and 146 tCO₂e per hectare, respectively.

In addition to carbon benefits, increasing rotation length reduces the soil degradation and erosion impacts of harvest. Long-term productivity of short rotation sites is likely to decrease relative to long rotation sites.

4 BARRIERS TO ALTERNATIVE PRODUCTION MODELS

Despite their high profitability, the two alternative production models, long-rotation Acacia and combined native and Acacia, face many barriers to implementation. Barriers are summarized in Figure 5.

Liquidity gap - A significant barrier to the long-rotation Acacia model is the liquidity gap associated with the investment needed for transitioning to longer rotation models. While the short rotation model hits the break-even point at year seven, the other two models don't break even until years 12 and 11.

Perceived risk – Related to the liquidity gap, the long-rotation models are perceived to be riskier for forest owners. Natural disasters, such as high winds or flooding, represent a threat to forest plantations and have destroyed plantations in the past. There are no insurance products available to mitigate such risks. By harvesting after fewer years, forest owners reduce their vulnerability to catastrophic losses.

Lack of exposure to models – Most forest owners are not exposed to long-rotation models and are not convinced of their economic viability. This is particularly a constraint for the combined native and Acacia model as no plantations exist yet that demonstrate the model at a commercial scale. While the wood chip value chain is well-established, there are little incentives or motivating factors for forest owners to invest in the business models of the future – although the need for the models is widely recognized. Many forest owners are reluctant to take the risk to experiment with a new model when they are familiar with the short-rotation chip wood model and know that it is profitable.

Lack of technical forestry management capacity – Other than weeding, the BAU model requires little management. The alternative models require much more intensive and sophisticated silvicultural management strategies, operational plans, and practices. Many forest owners have not managed plantations in such an intensive manner and do not have the capacities necessary for a successful implementation. This issue is particularly acute for smallholders.

Availability of high quality seeds and seedlings – There are few nurseries that grow quality seedlings of Acacia and the native species proposed for the models. This makes it more difficult and costly to introduce the proposed models. In addition, the nursery techniques are often insufficient – e.g. the required length seedlings are have to stay in the nursery is too long. The use of small containers in nurseries constrains the roots and significantly reduces the chances for a rapid and healthy growth of the individual trees. As a consequence, growth rates are far below their potential, and mortality rates are high – leading to the false conclusion that native tree species have little potential in Viet Nam.

Access to markets – Difficulty accessing markets constrains sawn log production in two distinct ways. First, many forest production areas are remote with poor physical infrastructure, making it difficult and thus costly to transport sawn logs to processing hubs and markets. Second, sustainability standards, such as set by the Forest Stewardship Council (FSC) and, are important for sawn logs to sell for the highest potential price and to be able to use them for export purposes. Chain of custody (CoC) certification of sawmills, particularly small mills close to forest areas, is rare. As of 2016, only 3% of productive forest areas have been certified under an internationally-recognized standard (Albrecht and Hung 2017).

Figure 5: Summary of barriers and solutions to proposed models

	Proof of concept 	Financing \$	Nurseries 	Plantations 	Harvest and transportation 	Value-added 	Market 
Barriers	▪ Lack of faith in viability of business models	▪ Liquidity gap ▪ Credit risk ▪ Supply of appropriate credit products ▪ Land tenure ▪ Perceived risk from wind, disease, fire	▪ Quality seedlings	▪ Technical management (e.g. forest inventory, pruning and thinning) ▪ Business management	▪ Poor infrastructure ▪ Social pressure to harvest early	▪ Shortage of high-quality inputs	▪ Accessing high prices offered in certain international markets
Solutions	▪ Demonstration plots ▪ Outreach to promote models ▪ Identify local champions	▪ Appropriate financing products ▪ Technical support for land tenure ▪ Insurance products	▪ Subsidies for nurseries ▪ Improving genetics	▪ Forest management trainings ▪ Business planning ▪ Transition to commercial management ▪ Privatization of SFCs	▪ Focus on accessible areas ▪ Community-based programs	▪ Investments in own supply chain to increase production of timber	▪ Link existing FSC promotion projects to business models

4.1 Specific barriers for different forest owners

Different forest owners face unique barriers to implementing the proposed models, especially in terms of accessing financing to overcome the liquidity gap. An SFC with 2,000 hectares of forests faces much different barriers than a household with 1 hectare, for example. As shown in Table 1 (MARD 2016b), there are four types of forest owners in Viet Nam: SFCs, households, protection forest management boards (PFMB), and commune-level people's committee (PC).² This report focuses primarily on the barriers and opportunities facing households and SFCs.

Table 1: Natural and plantation forests by ownership type (millions of hectares)

	Natural Forests	Plantation Forests
SFCs	1.0	0.4
Households	1.4	1.7
PFMBs	4.4	0.5
PCs	1.9	0.8
Others	1.5	0.3
Total	10.2	3.9

4.1.1 SFCs

Lack of experience operating as commercial entities – Like other state-owned companies, SFCs in Viet Nam are managed with the purpose of achieving country development objectives. SFCs have been established in order to manage harvest of forested areas and later to manage the reforestation of deforested and degraded land in the country. SFCs continue to operate as quasi or non-commercial entities and maximizing revenue is not a primary objective. More than two-thirds of SFCs' revenues from timber must be contributed to the state's budget, leaving very little to be reinvested in their operations (Le 2012). Additionally, SFCs sometimes reinvest revenues into activities outside of their core business of forestry. Amongst other issues, this has led to insufficient investment in forestry equipment and other capital, poor evaluation of financial performance, poor silvicultural management (Le 2014), and overly large number of employees for a given area of forest (World Bank 2016). The lack of experience operating as commercial entities hurts SFCs' ability to access finance in order to address the liquidity gap. Investors interviewed for the project reported that they would not lend to an SFC because of the lack of experience operating commercially.

As mentioned above, Decree No. 59 from 2011 sets out the objective to "equitize" (privatize) state-owned enterprises, including SFCs. However, the process of equitization has been slow to progress and few SFCs are now privately owned. Government entities are reluctant to give up

² Although important forest owners, PCs are not included in the subsequent investment options analysis as the location of PC land and other factors make them economics of the business models implemented with PCs are less attractive.

controlling stakes over companies that still serve social purposes. Even if SFCs are nominally privatized, it is unclear how effectively they will transition to operating as commercial entities. Domestic and foreign investors are likely to view investments in SFCs as risky.

Lack of incentives for SFC Directors – Directors of SFCs typically have five year terms for managing the companies. This job rotation practice is counterproductive for achieving the aspired transition of the forest sector. Directors have no incentive to delay revenues from harvest until after their terms are finished, making it very unattractive to implement long rotation models, especially if rotation lengths are 20 years and longer.

High levels of indebtedness – Many SFCs are characterized by high levels of outstanding debts. As of June 2012, the total estimated debt of SFCs was USD 83 million, or about USD 600,000 per SFC (World Bank 2016). Debt burden varies greatly by SFC, but this average level implies that many SFCs will encounter difficulties in securing additional financing to overcome the liquidity gap because of current debt levels.

Land tenure insecurity – Land use rights in Viet Nam are secured via Land Use Rights Certificates (LURC), also known as Redbooks. However, many SFCs' Redbooks are unreliable as boundaries are poorly defined and individuals often use SFCs' land without formal permission. There is often conflict between SFCs and communities on property borders. Given that the value of a forestry company is clearly tied to the amount of land that it reliably controls and manages, unreliable Redbooks make it difficult for investors to have confidence in SFCs. Moreover, current forest law prohibits SFCs from selling Redbooks, complicating the process of equitization of SFCs according to Decree 118 (World Bank 2016).

4.1.2 Households

Immediate need for cash – The liquidity gap is an issue for all actors implementing long-rotation plantation models, but particularly acute for households. Households are typically low income without the necessary accumulated wealth to extend forest rotation periods and delay income during these years.

Small forest areas – Households own comparatively small areas of forests, averaging two hectares of forest in the country. Table 2 shows forest size by owned by households in different districts in Thua Thien Hue province, for example. This makes them less able to manage the liquidity gap by slowly transitioning to longer rotations. While an SFC could, for example, convert 50 of its 1,000 hectares of its plantations to long rotation, financing the liquidity gap through revenues from the other 950 hectares, this strategy is not viable to a household with small forest holdings – in particular if they depend on forest income for their livelihoods.

Table 2: Size of forests owned by households by district, Thua Tien Hue province

Forest size (ha) owned by households in Thua Thien Hue province	A Luoi District	Huong Tra District	Huong Thuy District
< 0.5 ha	32%	17%	0%
0.5 – 1 ha	27%	24%	19%
1 ha – 2 ha	23%	32%	30%
2 ha – 10 ha	17%	25%	44%
> 10ha	1%	2%	7%

Land tenure insecurity – Households often have non-existent or unreliable Redbooks. This inhibits their ability to borrow money to fill the liquidity gap as secure land title is often linked to ability to access finance. The VBSP, for example, requires a LURC as collateral for loans to households.

Pressure to harvest – When one forest owner in a community would like to harvest, he or she often pressures neighbors to harvest at the same time. Companies that purchase and harvest timber offer better prices for larger areas.

Lack of technical knowledge – Silvicultural management practices are weak amongst many small households, making it difficult for them to measure harvestable volumes. Forestry administration service providers sometimes lack knowledge of proper techniques. Good management is more important for sawn log production than chip wood production.

4.1.3 PFMBs

Little commercial or production mandate – PFMBs are predominantly managed with the objective to increase forest cover and protect existing forests. They primarily own (degraded) natural forests, mostly classified as protection forest, and the comparably smaller areas of production forests they own are managed mostly with the objective of raising enough funds to pay their own staff.

5 FINANCING OPTIONS FOR MODELS

While there are other barriers to implementing the sawn log production models promoted by UNIQUE, the liquidity gap remains a primary one. There are a number of public incentives and investment options that can narrow the liquidity gap.

5.1 Direct subsidies

Decree No. 38 in 2016 – As of November 1, 2016, organizations, households, individuals, and communities are eligible for VND 8 million (USD 352) per hectare for long-rotation plantation establishment and VND 5 million (USD 220) per hectare for short-rotation plantation establishment. Assuming total costs over twelve years of USD 4,222 per hectare for the long-rotation Acacia business model, the VND 8 million subsidy represents more than 8% of total costs. Groups are also eligible to receive VND 500,000 (USD 22) per hectare for forest extension support, VND 300,000 (USD 13) per hectare for a reforestation survey, and 70% of the fee for sustainable forest certification (not to exceed VND 300,000 per hectare and with a minimum area of 100 hectares). However, limited resources have been made available under this policy and it is unclear if eligible groups have received any funds.

Decree No. 75 in 2015 – As of September 9, 2015, ethnic minorities and socio-economically disadvantaged households are eligible to receive VND 5 – 10 million (USD 352 – 702) per hectare for the establishment of timber or non-timber forest products (NTFP) plantations. USD 702 would represent more than 16% of total costs of the long-rotation Acacia business model. However, limited resources have been made available under this policy and it is unclear if eligible groups have received any funds.

Payment for Forest Environmental Services (PFES) – Under Decree No. 99, the GoV established a nationwide PFES policy to require that users of forest environmental services pay providers of these services. The collection and payment of fees is managed by the VNFF and 40 associated provincial-level funds. Hydropower companies are the main revenue sources for PFES; water providers are a smaller source. Production forests are eligible to receive PFES payments as long as they are in prioritized watersheds, as defined by the VNFF. PFES payments can be as high as 600,000 VND (USD 26) per hectare per year, but vary depending on the quality of the forest services provided, as defined by a “K-factor” calculated by VNFF. Depending on other factors, production forests typically receive 90% of the payment. However, in practice, few PFES funds have been disbursed for plantation areas because there is little correlation to plantation areas and watershed areas prioritized by PFES.

Under upcoming Decree No. 147, payments are expected to increase by 80%, to roughly 1 million VND (USD 47) per hectare per year. Assuming that this payment is discounted by 10% and is made every year during the long-rotation Acacia model, a production forest owner would receive USD 508, or more than 12% of total establishment and management costs.

All types of forest owners may receive PFES payments. In 2016, different forest owners received the following portion of PFES payments: PFMBs, 50.2%; SFCs, 12.2%; households, 21.5%; PCs, 10%; and other organizations, 6.1% (PFES 2016).

Decree No. 46 in 2014 – Individuals, households, organizations, and cooperatives that plant trees on their land are exempt from land rental fees. There were a number of other similar incentives, such as exemption from land use taxes, which have been phased out over the years.

Decision 109 in 2008 – Products made from plantation timber and from imported wood are exempted from export taxes.

Decision 886 in 2017 – The GoV aims to plant 200,000 hectares of plantations for “large timber” and transition another 90,000 hectares of short rotation plantations to large timber production. A fund supporting these initiatives and others will be financed with VND 59 trillion (USD 2.6 billion).

5.2 Reimbursable funds

5.2.1 Public investment

Decree No. 75 – As of September 9, 2015, ethnic minorities and socio-economically disadvantaged households are eligible to receive a loan of 15 million VND (USD 660) per hectare for loans of up to 20 years at an interest rate of 1.2% per year. USD 660 represents 15% of total costs for the long-rotation Acacia business model. VBSP and VBARD channel these resources from the Ministry of Finance of Viet Nam to households. However, limited resources have been made available under this policy and it is unclear if eligible groups have received any funds.

VBSP Revolving Fund – A World Bank project that closed in 2015, the Forest Sector Development Program, channeled loans to smallholder forest owners via the VBSP. With this support, the project was able to establish 76,571 hectares of plantation forests by 43,743 households, 73.2% of which met international certification standards (World Bank 2015). A key aspect to the success of the project in reaching so many households is VBSP’s outreach strategy. For rural areas without a VBSP bank location, VBSP establishes monthly meeting days, where VBSP loan officers meet members in a given commune. With this strategy, VBSP is able to service clients in 10,900 of Viet Nam’s 11,000 communes. The project had a repayment rate of 98%, which is attributed to VBSP’s outreach network and social pressure to repay loans. Lending under the World Bank project represents 0.38% of the VBSP’s outstanding loans (VBSP 2015).

Upon closing of the World Bank project, the VBSP established a Revolving Fund of USD 37 million using accumulated resources from the project to continue to support smallholder forestry through investments. Distinct credit products for three different forest investment types (short-rotation chip wood production, long-rotation sawn log production, transition of short-rotation to long-rotation) are available under the Revolving Fund and defined by a credit manual (VBSP 2013). VND 20 million per hectare is available for the short-rotation model, VND 25 million per hectare (USD 889) is available for the long-rotation model, and VND 10 million per hectare is available for the transition model. Other important lending terms include:

- Interest rate is set at 0.65% per month, or 7.8% annually
- Loan repayment schedule is variable depending on the needs of the investment; grace periods of up to seven years are available and loan tenors can be up to 15 years
- The borrower must have a LURC for the land
- The borrower must have a business plan demonstrating capability to repay the loan

- Accepted collateral for the loans are: LURCs, future assets (including timber), other assets
- The borrower must contribute at least 25% of the total project cost
- The borrower must be a household with legal residence in Quang Nam, Quang Ngai, Binh Dinh, Thua Thien Hue, Thanh Hoa or Nghe An provinces; the project area must be in these provinces

The credit conditions are favorable for encouraging households to establish new long-rotation plantations or transition from short-rotation to long-rotation. USD 889 per hectare represents 21% of total costs of the long-rotation Acacia business model. The interest rate is low compared to rates available on the commercial market and serviceable given the IRRs projected by UNIQUE. The grace period and loan tenor are generous and align relatively well with the cash flow profile of the Acacia long-rotation model. A challenge for households exists between year 8 and 12 (for the Acacia long-rotation model), when repayments on capital are expected, yet final harvest has not occurred. Fortunately, the Acacia long-rotation model assumes a thinning in year 8, which can help to service repayment of the loan.

Continued support from World Bank or other similar institutions is constrained by the GoV debt ceiling limit, which regulates the amount of outstanding debt that the GoV can owe as a percentage of gross domestic product (GDP).

SME Development Fund (SMEDF) – The SMEDF was established on April 17, 2013 by Decision No. 601/QĐ-TTg and has a total budget of VND 2,000 billion (USD 88.2 million). The objectives of the SMEDF are to improve competitiveness of SMEs, increase incomes, and create jobs. Forestry is not explicitly targeted by the SMEDF, but is included in the list of sectors prioritized by the Ministry of Planning and Investment (MPI). Important lending terms under the SMEDF include:

- The borrower must have a business plan demonstrating capacity to service the loan
- Each project can receive a maximum of VND 30 billion, and a maximum of 70% of total project investment costs; a borrower's own equity contribution should be at least 20% of capital needs
- Borrowers may not have preferential loans from other public finance institutions
- Loan tenor may not exceed seven years
- Interest rates will not exceed 90% of commercial lending rates; in 2016 lending rates for short term loans were 5.5% annual and 7% annual for long term loans.

As a stand-alone investment, the terms provided by the SMEDF are not appropriate for long-rotation Acacia model or the combined Acacia and native species model. Most importantly, the models require substantially longer repayment periods than seven years. The SMEDF could play a role in supporting transition to long-rotation sawn log production, but would have to be combined with forest owners' own resources or other resources.

Decree 106 in 2004 and Decree 20 in 2005 – Households are eligible to receive credit from government sources at preferential interest rates of 5.4% per year for investments in forestry plantations.

Decision 147 in 2007 and Decision 131 in 2009 – Households are eligible to receive government loans to establish plantation forests and associated production activities.

Decree 55 in 2015 – Forest managers can access loans for production at preferential terms and without providing collateral.

5.2.2 Private investment

Commercial banks – Commercial lending to the forestry sector is low as terms and conditions are not well-suited to forest owners. Terms vary from bank to bank, but can generally be characterized by the following:

- Most lending for agriculture and forestry is short-term (seasonal or 1-2 years); long term tenors (10 years) is typically only available to real estate sector
- Land title and machinery are typical collateral requirements for land use sectors
- Interest rates for short term loans are typically 13-14%; long term rates are higher

Timber processing companies – A number of timber processing companies operate in Viet Nam and, due to the deficit of sawn log production, seek to increase the quantity and predictability of supply of sawn logs. Companies provide credit to their suppliers in order to support transitions to longer rotation plantations, such as the long-rotation Acacia and combined native and Acacia business models.

Scansia Pacific, a supplier of IKEA, has three furniture processing factories in Ho Chi Minh City, Dong Nai, and Thua Thien Hue. Supported by the World Wildlife Fund (WWF) and the Food and Agricultural Organization (FAO), Scansia suppliers covering an area of 1,392 ha got FSC certification. Scansia then committed to providing loans to these households under the following terms:

- Households can receive VND 4 million (USD 126) per hectare per year after their plantations are six years old
- The interest rate is 0.2% lower than provided by commercial banks
- Loans are repaid upon harvest of timber and sale to Scansia
- Scansia commits to purchasing the FSC-certified timber for 15-18% higher than uncertified wood

Although still being implemented at a small scale, the Scansia model is well-suited to supporting households to transition from short-rotation models to the long-rotation Acacia and combined native and Acacia models because the loans only need to be repaid through the harvest of timber. Scansia is able to provide more generous terms than available on the commercial market because this strategy ensures that they have a secure supply of high-value timber. However, as the Scansia financing is only available from year six, it is not appropriate to support the establishment of plantations. It is important to note that Scansia is a supplier of IKEA and was influenced by IKEA's purchasing policy in this case. Further, the support of WWF and the FAO were crucial in this case as FSC certification increased the value and marketing potential of the timber products.

Another company, Nam Dinh Forest Products JSC (NAFOCO), which is a supplier of IKEA, worked with Yen Bai MARD to establish a 1,000 hectare demonstration model for certification (Go Viet 2017).

5.2.3 International investments

International investment in forestry is complicated by Viet Nam's land use ownership laws, which grants the use of land, but not its ownership. Transfer of land use rights is slowed by bureaucratic and administrative hurdles (USAID 2013). The importance of SFCs in the forestry sector creates further challenges for foreign investors, as many of these companies do not meet international standards for investment and investors are hesitant to invest in a state-controlled company. The process of equitization should help to alleviate these concerns.

International development banks such as the World Bank lend to Viet Nam's forestry sector via the Ministry of Finance and public lending institutions. While the World Bank's Forest Sector Development Program is evidence of the potential of this mechanism to channel funds to small-holder forest owners, public lending is constrained by the GoV's public debt laws. The GoV has established a public debt ceiling of 65% of GDP for 2016-2018. Public debt grew at more than 18% per year from 2011-2015 and public debt has officially reached 64.73%, although Prime Minister Nguyen Xuan Phuc announced that the public debt ratio has actually surpassed this limit (VNEXPRESS 2017). The ceiling on public debt constrains the ability of the GoV to borrow more money, including to support the forestry sector.

IFC – The IFC is a large lender to the forestry sector, with approximately USD 1 billion in investments worldwide. They are not currently lending to forest production in Viet Nam, but do have an investment in a Vietnamese furniture company as well as large forestry investments elsewhere in South East Asia, such as Indonesia. Relevant terms and conditions include:

- Minimum debt financing size varies by country, but typically they will not lend to projects that are smaller than USD 15-20 million
- IFC debt contribution to a project is normally 30-40% of total project costs; the project sponsor should invest as well
- IFC also lends to financial intermediaries, which then on-lend to producers in a targeted sector; this is a strategy for reaching sectors where businesses are too small to borrow directly from IFC
- Tenors of 7-10 years are available
- Interest rates are similar to commercial rates in the country
- In addition to debt, IFC can invest equity, often taking less than a 20% share of a company
- Restrictions lending to state-owned companies, which are seen as risky

In addition to lending their own capital, they also manage third-party donor funds, such as the FIP and Global Agriculture and Food Security Program (GAFSP) that can provide concessional terms to the forestry sector (and other sectors). Viet Nam is not a FIP eligible country. If projects meet the donors' development objectives, these funds allow IFC to offer improved terms:

- Longer tenors
- Interest rates are determined by a principal of "minimum concessionality," whereby the interest rate should only be as low enough to make the project financially viable; this allows the IFC to lend at lower rates
- Donor funds can take a "first-loss" or otherwise riskier position than the IFC would take, allowing the IFC to lend to projects that would otherwise be too risky

Households and SFCs are unlikely to borrow directly from the IFC. However, by on-lending through financial intermediaries or companies in the forestry value chain, the IFC can indirectly reach the forestry sector in Viet Nam.

ADB – The ADB has a private-sector lending arm that is broadly similar to the IFC, lending to large projects under commercial terms. The ADB lends to state-owned development banks and commercial banks, allowing them to impact small companies indirectly. Like the IFC, they also third-party donor funds, such as the FIP, that allow them to lend to high-impact projects under concessional terms. Insecure land tenure, the cash flow profile of forestry projects, and the lack of companies with appropriate risk profiles have been primary barriers to the ADB lending to the forestry sector in Viet Nam.

KfW – Under their projects numbered 1 to 10, the German Development Bank has a long history of successfully supporting the Vietnamese forestry sector, initially supporting an afforestation project 20 years ago in North Viet Nam and now working in 20 provinces. KfW does not lend directly to the private sector, but rather banks, such as VBSP or VBARD, who then on-lend to forest households. This lending is facilitated via agreements with the Ministry of Finance. Projects have generally focused on afforestation, land use planning, sustainable forest management, and financial support for households.

KfW is currently preparing another forestry project that will focus on sustainable forest management and certification of plantation forests that will lend to forest companies via a state-owned bank. Certification is complementary to the long-rotation Acacia and combined native and Acacia business models because there is a greater price premium for the high-value timber produced by these models. The project will also support investments in forest plantation productivity, including transitioning Acacia plantations to native species.

World Bank – Beyond the Forest Sector Development Program that supported the forestry sector via the VBSP, the World Bank has a long history of working on forests in Viet Nam. This includes projects to improve land governance, encourage green growth, increase climate resiliency, and improve planning. The project that provides most direct support to forest managers is the Forest Sector Modernization and Coastal Resilience Enhancement Project. Forest managers in coastal areas will be eligible to receive grants for pre-approved investment types that encourage the protection of coastal forests.

Private investors – For reasons of land use rights and state-ownership of companies, private foreign investment in productive forestry is low. If SFCs are equitized and business management improves, they may be attractive investments for foreign private investors. Joint ventures between Vietnamese companies and foreign investors are an appropriate structure to consider for investments in plantations.

The wood processing industry is more privatized than primary production (95% of Viet Nam's 3,000 wood processing enterprises are privately owned), making them more appealing to foreign investment (European Timber Trade Federation 2017). A big international buyer, such as IKEA, may see potential to invest in the quality of its supply chain via wood processing enterprises. Such an arrangement will likely become more appealing to international buyers as demand for certified timber products grows and there is corresponding need to ensure availability of supply.

5.3 Summary and analysis of financing options

While there are many different programs that could support the long-rotation Acacia and combined native and Acacia business models (summarized in Table 3), large-scale implementation of these models will remain low without more targeted support. Programs that were established to provide grant financing to the forestry (especially Decrees 38 and 75) have not been assigned adequate resources and thus have not achieved their potential. With some notable exceptions, most investment options in the country do not match the needs of long rotation forestry.

The potential for finance to support sawn log production is much higher for the long rotation Acacia model than the combined native and Acacia model. The combined native and Acacia model has not been demonstrated adequately at a commercial scale in order to attract financing. Forest managers and investors are not yet convinced of its commercial viability. Moreover, non-financial barriers, such as the lack of availability of quality seedlings and technical management skills mean that the model could not yet be implemented under commercial conditions. The below analysis of financing options primarily applies to the long rotation Acacia model.

Table 3: Options for Investment

	SFCs	Households	PFMBs
Decree No. 38	N/A	Eligible for subsidies for 8% of long-rotation Acacia total costs; few resources have been disbursed	N/A
Decree No. 75	N/A	Ethnic minority groups are eligible for subsidies for 16% of long-rotation Acacia total costs; also eligible to receive low-interest loan representing 16% of total costs; few resources have been disbursed	N/A
Decrees No. 106, 20, and 147 and Decision No. 131 and 55	N/A	Eligible for loans on preferential terms	N/A
PFES	Priority forest areas are eligible to receive payments representing 12% of total costs of Acacia model	Priority forest areas are eligible to receive payments representing 12% of total costs of Acacia model	Priority forest areas are eligible to receive payments representing 12% of total costs of Acacia model
VBSP Revolving Fund	N/A	Households in eligible provinces may receive loans representing 21% of total costs of the long-rotation Acacia model; lack of LURCs is the greatest financial barrier to receiving financing; despite long tenors, households may struggle to service loan after expiry of grace period	N/A
SMEDF	N/A	Terms will not support establishment of long rotation models, but may be appropriate to support transition from short-rotation to long-rotation	N/A
Commercial banks	Terms are unfavorable to support business models	Terms are unfavorable to support business models	N/A
Development finance institutions (DFIs) (IFC, ADB, KfW)	SFCs' required investment volumes are likely too small to receive direct financing from DFIs;	Households are too small to receive direct financing from DFIs; intermediaries such as financial institutions and processing companies allow	N/A

		DFIs to finance households indirectly	
Processing companies	Loans provided by companies such as Scansia can support transition from short rotation to long rotation models	Loans provided by companies such as Scansia can support transition from short rotation to long rotation models	N/A

Forest managers are eligible to receive a wide range of direct subsidies and low-cost financing from the GoV. Grants could play an important role in incentivizing long rotation forestry models, especially given that these models are not yet implemented at scale. Incentives for forest protection under the PFES scheme could be adjusted in order to channel more support to production forestry. PFES funds can play a catalytic role in attracting investment to the forestry sector. Financing comes primarily via the state controlled banks, the VBSP and VBARD or the SMEDF. While there are ample financing opportunities, few credit products offer the terms and conditions required to address the liquidity gap associated with long rotation forestry. Specifically, the grace periods and tenors on offer are generally too short to match the cash flow profile of the proposed business models. The Revolving Fund of the VBSP and its long grace periods and tenors is best suited to finance long rotation forestry models. It should be carefully monitored and evaluated to consider its effectiveness in lending to these activities. In addition to the grace period and tenor of credit products, credit risk related to land tenure, business management, credit history, and other factors are significant barriers for forest managers to receive financing. SFCs are unlikely to attract finance for long rotation models unless business management, indebtedness, land tenure security, and incentive structures are improved.

Terms from commercial banks do not match the needs of forest managers seeking to implement long rotation forestry models. However, timber processing companies (e.g. Scansia) are increasingly providing credit products to their suppliers to incentivize sawn log production. Given the alignment of incentives between timber processing companies and the production of sawn logs, this is a promising financing model for the future.

International sources of financing for forestry are primarily limited to the development banks, which channel resources via local banks. Should conditions improve for international private sector investment, there is significant potential to increase resource flow to the sector. International investors can form joint ventures with forest managers for large scale investment, but this has not been pursued. International buyers, such as IKEA, may choose to invest in their supply chain via intermediate processing companies. SFCs could become a more attractive option to private investors as they are equitized and business management improves. Clear guidance from the GoV on land management, joint venture models, and foreign investment policy would encourage private investment.

The regional availability of financing varies depending on the funding source. Grant resources, such via Decrees 38 and 75 have largely not been assigned to provincial governments, limiting the effectiveness of these programs. The Northeast Region, the North Central Coast, and the South Central coast, in order of priority have been designated as timber production areas for the country. The VBSP Revolving Fund, which was originally supported by the World Bank Forest Sector Development Program, focused on five provinces in the North Central Coast. Since PFES

funds are linked to hydropower operators in specific watersheds, regional availability of PFES funds varies significantly, depending on funds paid into PFES by hydropower operators.

6 RECOMMENDATIONS

The authors recommend several steps in order to promote high value forest business models and achieve the GoV's goals of transforming the forestry sector.

Increase donor support for Viet Nam's forestry sector, including via the Green Climate Fund.

The Vietnamese forestry sector has enormous potential to create jobs, increase economic growth, reduce foreign exchange losses, and increase carbon sequestration. Furthermore, the profitability of the business models means that relatively small amounts of resources can have a large impact. The country faces an important inflection point in the process of reversing deforestation and improving forest cover quality.

Prioritize high value-added forestry with development resources lent to the GoV. The GoV's debt ceiling places limits on the level of debt that the GoV can assume as a percentage of GoV. Any increased international donor support is contingent on the GoV prioritizing the sector. Given the high level of social and environmental impact of the long-rotation Acacia and combined native and Acacia business models as well as their alignment with development objectives, the GoV should prioritize the forestry sector and in particular the production of sawn logs through the proposed business models to receive international funds. Currently available programs are not adequate to achieve development objectives of the forestry sector.

Shape credit products to better fit the needs of long rotation forestry models, such as available through the Revolving Fund of the VBSP. The unique terms available from VBSP, in particular the generous grace periods and tenors, are most closely aligned with the financing needs of the long rotation business models. This lending program should be studied closely to learn how successful it is at promoting sawn log production and what portion of loans support short versus long rotation forestry. Beyond the terms offered by VBSP, the bank's outreach program should be replicated in order to reach rural households.

Streamline the existing programs supporting the forestry sector. There are currently a wide-range of grants and subsidized loans available to forest owners for transition to long-rotation forestry. However, no one policy or program on its own is sufficient to support the transition. Forest owners should have a "one-stop" program with the following characteristics:

- Technical support for sustainable forest management plans and certification, including to forest extension agents of the forestry administration
- Support the establishment of smallholder associations and other groups
- Demonstration plots of innovative business models
- Business development support, including financial planning, business management, and access to markets and finance
- Low-interest loans with long grace periods and tenors
- Guarantees or other products to absorb credit risk
- Direct subsidies for targeted communities
- Insurance options

Allocate resources to existing programs. Decrees such as 38 and 75 could help to catalyze transition in the forest sector, but little or no resources have been assigned to these programs at a regional level. Decree 886 also promises significant resources to the forestry sector.

Use donor funds to absorb credit risk. The creditworthiness of forest owners is the number one concern for investors that would like to invest in forest transition in Viet Nam. Donors can have a catalytic impact by using their resources to take a portion of this credit risk. A credit guarantee facility or sub-ordinated debt fund could take on some of this risk and spur investment into the sector.

Support the establishment of forestry insurance schemes. Similar to investors' concerns, a primary obstacle discouraging forest owners to transition to long rotation business models is the perception of risk. The prospect of losing a long-term investment to wind, pests, fire, or other disasters is understandably a deterrent for forest owners.

Target timber processing companies as intermediaries to up-scale the adoption of long rotation business models. Given their need to increase supply of sawn logs, Vietnamese timber processing companies, such as Scansia, have incentives that align with the objectives of the GoV to promote sawn log production. Companies' relationships with forest owners means that they are well-placed to channel investments. Existing loan programs are well-structured to support transition from short rotation to long rotation.

Facilitate private sector investment. Although private sector investment plays a limited role in the forestry sector in Viet Nam, high private investment in agriculture suggests there is potential to reverse this trend. Clear guidance from the GoV on land management, joint venture models, and foreign investment policy could increase private investment. Risk sharing mechanisms, such as credit guarantees or subsidized insurance, could also encourage private investors. The issuance of green bonds for the forestry sector would further help to attract investment to the sector.

Accelerate the process of equitization of SFCs. SFCs are often managed with a range of social, environmental, and economic objectives. The lack of a pure commercial motive remains a barrier to receiving debt financing. Privatization of SFCs would increase investor confidence and attract respective investments in two member companies. However, for those companies to be equitized, it is crucial that hindering regulations are modified, and that directors have effective incentives to invest and to advance from business as usual scenarios.

Prove viability of models by establishing demonstration plots, including on PFMB land, especially of the combined native and Acacia business model. Until proof of concept is demonstrated and forest owners are convinced of the economic benefits of the proposed models, adoption rates will remain low. The use of native species in particular is viewed with significant skepticism as its financial viability has not been demonstrated. PFMBs, given their mandate to increase forest cover and protect existing forests mostly without commercial considerations, are well placed to act as promulgators of the business models. Given that the commercial viability of the combined native and Acacia business model is less well established, PFMBs can play an important role in promoting this model by integrating native species into existing plantations. The establishment of demonstration plots should be combined with outreach activities to SFCs and households in order to increase adoption of business models that include native species. Integrating native species into existing Acacia plantations is also well-aligned with PFMBs mandate to increase environmental benefits from forests.

Promote nurseries that produce high-quality seedlings, especially of native tree species. The lack of high quality seedling is a major technical barrier to the large scale adoption of long-rotation Acacia and combined native and Acacia business models. Without high-quality seedlings,

productivity of forest plantations will remain low, reducing the economic incentive to adopt long-rotation business models. In the long term, nurseries with commercial objectives should be promoted in order to guarantee the financial sustainability of seedling production.

Address other non-financial barriers to long rotation forestry models. Land tenure insecurity makes it difficult for forest managers to make long-term plans and to receive financing. Additionally, the business management skills and the commercial mindset of forest managers should be improved to encourage long-term investments.

Long rotation forestry models can make an enormous contribution to the economic and environmental objectives of Viet Nam. The GoV has taken important steps and revised key policies to create a suitable enabling environment for transformative change. The result is a dramatic recovery in forest cover in the country and a growing forestry sector. However, more and better targeted policy efforts are required to streamline the different policy instruments, to remove barriers for the successful implementation and to catalyze significant investments in the forestry sector – public, as well as private sector investments. While there are risks associated with lending to forestry, the benefits are palpable and go far beyond economic returns, providing significant social and environmental benefits.

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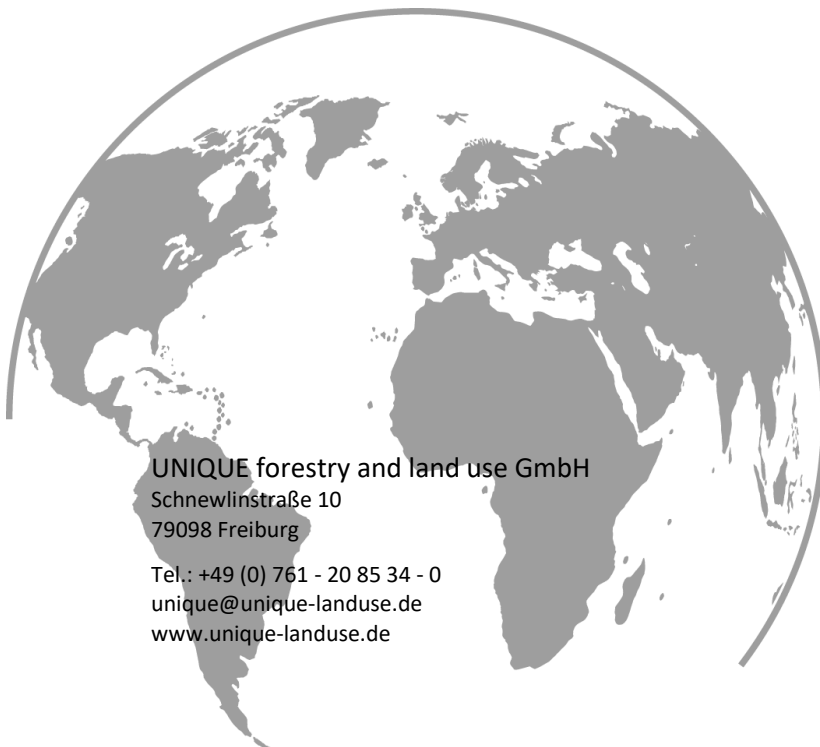
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