

# How to Finance Sustainable Landscape Management - Experiences from Agrobanco's Green Bank Project

The Building of a Green Bank - What We Can Learn from Agrobanco Peru's Bottom-up Examples of Sustainable Landscape Finance

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**Registered offices:**  
Bonn and Eschborn, Germany

Friedrich-Ebert-Allee 40  
53113 Bonn  
T +49 (0)228 - 44 601 542  
F + 49 (0)151 - 62 452 782  
E [cf-ready@giz.de](mailto:cf-ready@giz.de)  
I [www.giz.de](http://www.giz.de)

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# 1. ABOUT THE AUTHOR

Torsten Böttcher worked for Agrobanco Peru between May 2015 and March 2019 as part of the Integrated Experts Programme of GIZ's Centre for International Migration (CIM)<sup>1</sup>, which helps institutions hire specialists and experienced managers from the EU with skillsets unavailable on the local labour market. His responsibility was to develop a green finance and sustainable forestry loan department and to develop sector specific credit products. In his role, he travelled the Amazon region extensively on a monthly basis with the aim to finance a wide range of different forest projects. Before Torsten graduated from the University of Applied Science and Arts in Göttingen (HAWK) with a BA Sc. in Forest Economics, he worked as an Investment Consultant at Merrill Lynch in London from 2005 to 2011. Additionally, Torsten holds a level 6 certificate in Private Client Investment Advice and Management from the Chartered Institute for Securities and Investments in London.

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<sup>1</sup> CIM Integrated Experts: Centre for International Migration and Development ([www.cimonline.de](http://www.cimonline.de))

## 2. EXECUTIVE SUMMARY

Forest landscapes matter for countless reasons – including their crucial role in achieving Nationally Determined Contributions (NDCs) and Sustainable Development Goals (SDGs). Substantial finance is needed to conserve forest landscapes and use them in the most sustainable way. To date, there haven't been enough use cases for sustainable landscape finance to draw viable conclusions from. To fill this knowledge gap, the objective of this report is to examine recent experiences from Peru's agricultural development bank "Agrobanco" and draw conclusions on landscape finance within and beyond Peru. Empirical data is drawn from the rise and fall of Agrobanco's Green Finance and Forest Loan Department from 2014–2018. In addition to an analysis of the department's general development, four case studies are examined in-depth.

The report starts with an analysis of why Peru is an interesting case for investors in forest and landscape finance. The following section breaks down the recent history of Agrobanco and the reasons why it became a so-called "aggregator" (an institution who bundles small-scale bankable projects to larger investments which can be financed through capital markets) for landscape finance in Peru. In this context, key challenges for Agrobanco's landscape finance operations are examined, such as the great diversity of Peru's forests, its stakeholders, institutions and their implications for bankability and interest rates. Subsequently, empirical evidence from four case studies is presented. In these case studies, Agrobanco issued credits for the following activities: 1. Forest management by a company; 2. Forest management by an indigenous community; 3. Forest plantations and; 4. Agroforestry systems operated by smallholders. These case studies cover different user groups (companies, indigenous communities and smallholders) and geographical contexts (Peru's Amazon basin and the Andean highlands).

The final section draws the overall conclusion that sustainable landscape finance is challenging but possible. The experiences in Peru show the difficulties of finding a sound balance between economic, social and environmental aspects in landscape finance. Nonetheless, Agrobanco can be considered a pioneer in landscape finance, especially because it was an aggregator bank.

The case studies show that bankability (essentially the relationship between revenue, costs and risks) in landscapes finance in Peru is challenging due to several structural constraints, such as infrastructure and market development. The latter constraint became particularly evident in the case study

on forest plantations, where the lack of a well-developed timber value chain hindered the ability to clearly define a focus for the project. From a smallholder's perspective, Agrobanco's interest rates were high – however, from a bank's perspective, the interest rates were justified by the high investment risks. Under these conditions, interest rates add more risk to the projects, as they require credit holders to generate a high return to pay back loans.

The case of Agrobanco confirmed experiences from other countries: The core challenge of landscape finance lies in the high number of small-scale projects and their bankability. This essentially means that one size does not fit all. It is crucial that banks provide specific financial products for specific user groups and land-use practices. Agrobanco's prior experience in financing smallholder agriculture helped in developing financial products to meet this challenge. Agrobanco's presence on the ground (i.e. the ability to reach actors in remote rural areas) was also instrumental in this context. Nonetheless, credit schemes for complex endeavours as agroforestry systems (mixing agricultural and forest revenues) need further improvement over time.

Throughout the study, it becomes evident that in addition to access to finance, many credit holders need technical assistance for forest landscape management (such as extension services). Ultimately, the capacity of the credit holders in landscape management is a key success factor for finance projects. This became particularly evident in the lending operations for forest management, both with a private company and an indigenous community. The forest management case studies show that both entrepreneurial and technical capacities are essential (the latter particularly to guarantee traceability and legality of timber). For indigenous communities, financial literacy was an additional key success factor. When smallholders operate through an intermediary, it is crucial to ensure that social safeguards are met to avoid the abuse of asymmetries in knowledge and power.

In conclusion, the experiences of Agrobanco's Green Finance and Forest Loan Department provide valuable lessons for landscape finance in Peru that can be useful for different contexts. Agrobanco's story presents a government's effort to advance smallholder farmers from the poorest regions and the difficulties such an endeavour entails. Despite the challenges that still lie ahead, Peru holds great potential for landscape finance, especially for forest and landscape restoration.

### 3. INTRODUCTION

It is commonly agreed that the world requires enormous amounts of investment to achieve different objectives such as the Sustainable Development Goals, the Nationally Determined Contributions for the Paris agreement or the Bonn Challenge — which aims to restore 350 million hectares of deforested and degraded land worldwide. In particular, the Paris Agreement, with its goal to limit global warming to 2°C, intentionally generates an urgency to solve the climate finance issue as it requires strict commitments and deadlines by signatory countries to reduce greenhouse gas (GHG) emissions.

Efforts to increase global environmental sustainability are taking place in tandem with a growing and increasingly affluent human population, which is putting ever greater strain on land and natural resources (World Bank and International Monetary Fund 2016). Hence, it has become a vital part of climate action to preserve landscapes and forests and step up work to reforest vast areas. At the same time, agricultural development is crucial to providing job and income security and enhancing overall well-being for millions of people living in rural areas. Unfortunately, these development efforts go hand in hand with deforestation. Thus, it is paramount to develop alternative approaches that preserve landscapes, ensure sustainable forest management and serve to secure economic prospects for a large proportion of the global population. The financial sector can play a key role here by providing investment solutions that take account not only of the risks and profitability of forest projects, but also of their environmental and social risks and opportunities.

In the present report, the focus lies on the agriculture, forestry and conservation finance sectors, which will be grouped under the term ‘sustainable landscape finance’. In 2014, Credit Suisse, together with the WWF and McKinsey, estimated that conservation finance would require investments in the amount of USD 200 billion to USD 400 billion a year (Huwyler et al. 2014). The World Economic Forum estimated agriculture and forestry require annual “green” investments of USD 229 billion (WEF 2013). However, according to the Climate Policy Initiative, only approximately 0.2%, or USD 9 billion, of international climate finance is currently directed towards sustainable landscapes (CPI 2018). The contrast between capital requirements and actual funding provided is staggering.

Representatives of the financial sector often mention that there are two primary reasons for this gap in sustainable landscape finance: (1) the scarcity of bankable investment opportunities and (2) the small size and non-scalability of projects (Huwyler et al. 2016, Clark et al. 2018). One proposed solution is to establish organisations with the capacity to administer many small, bundled investments in order to create large enough stakes to qualify for financing through capital markets; so called aggregators.

Against this backdrop, the experience of Peruvian agricultural development bank Agrobanco in building a green bank can provide some interesting insights. In 2014, the bank set out to develop and integrate capabilities to finance climate change adaptation and mitigation investments. With a focus in developing loan products to finance natural forest management, reforestation, and agroforestry for smallholder producers, it offered an opportunity to connect large-scale climate finance with local, small-scale sustainable landscape projects; positioning itself as an investment aggregator.

The case of Agrobanco is an interesting example for several reasons:

1. Stable and consistent economic growth has made Peru one of the most interesting destinations for foreign investors in Latin America.
2. Continuous deforestation of its vast Amazon rainforest region accounts for more than half of the country’s GHG emissions, which is why it offers ample opportunities for impact investors to invest in sustainable landscape projects.
3. Through Agrobanco, the country benefited from a fast growing agricultural bank dedicated to small producers with the operational structure to reach Peru’s rural regions.
4. The bank had the funding and political backing to become a green bank with a particular focus on sustainable landscape finance.

The following report describes the development of the Green Finance and Forest Loan Department as part of the green bank project and uses four case studies to explore the potential and difficulties of sustainable landscape finance. In particular it will show:

- › How Agrobanco built a loan portfolio of 1,676 loans worth PEN 50 million (USD 16.7 million) in 2016 and 2017.
- › The challenges of landscape finance — such as high interest rates, the great heterogeneity of the sector or the weak business cases that many clients present.
- › The way Agrobanco established and navigated an interest rate with little to no room to lower it.

- › How Agrobanco financed, for the first time, the sustainable timber harvest of members of an indigenous community in the Amazon rainforest.
- › How an innovative approach to agroforestry enabled the bank to finance smallholder reforestation activities and mitigate the timber market risk and the risk of the long production cycle.
- › That an institutional crisis at the bank led to the unfortunate closure of the green bank project and the key takeaways we can gather from its outcome.

The lessons which can be drawn from Agrobanco's green bank project are manifold and highly relevant for understanding the challenges of sustainable landscape finance in the field. Hopefully, it will contribute to finding vital solutions for mainstreaming climate finance.

# 4. WHY PERU IS INTERESTING FOR SUSTAINABLE LANDSCAPE INVESTORS

## KEY TAKEAWAYS

- › Strong and stable economic growth over the last 20 years combined with a good score in the World Bank's Ease of Doing Business Ranking make Peru one of the most interesting investor destinations in Latin America.
- › Land use, land-use change, and forestry together with agriculture, are responsible for 65% of Peru's greenhouse gas emissions. Sustainable landscape restoration provides ample opportunities for impact investors.

## 4.1 PERU FROM AN INVESTOR'S PERSPECTIVE

Peru has one of the fastest growing economies in the world. Based on purchasing power parity, GDP per capita increased by 10% per annum between 2007 and 2017, from USD 5,202 to USD 13,434. Further, the total GDP almost quadrupled between 1997 and 2017, increasing from USD 58.148 billion to USD 211 billion.<sup>2</sup> Peru has rich deposits of copper, silver, gold, lead, zinc, natural gas, petroleum and urea. Besides mining, agriculture, oil, fishing, textiles, and chemicals are the country's key export sectors. Exports increased from USD 6.8 billion in 1997 to USD 44.2 billion in 2017. The strong GDP growth of the last decade went hand in hand with prudent monetary and fiscal policies, reducing public debt levels from 32.2% GDP in 2006 to 23.2%<sup>3</sup> in 2016; keeping inflation in line with one of the lowest inflation rates in the region, fluctuating between 3% and 3.5%. In the World Bank's Ease of Doing Business Ranking, the country comes third in Latin America, head to head with Colombia and just behind Chile (World Bank 2018). Peru offers a favourable, modern legal framework for foreign investors, a large and young workforce and a strong and growing domestic market. It has also signed numerous free trade agreements covering all of the world's key markets and over 90% of its exports (EY 2016).

Peru's favourable conditions have attracted steadily rising foreign direct investments (FDI), and its current FDI stock totalled 47.4% of GDP (USD 98 billion) in 2017 (UNCTAD 2018), similar to the OECD average.

## 4.2 PERU'S SUSTAINABLE LANDSCAPE

### INVESTMENT OPPORTUNITIES

Peru's population-wide poverty rate fell from 49.1% in 2006 to 21.7% (6.9 million people) in 2017. Yet, there are stark differences in the poverty rate between the country's rural and urban areas. In urban areas, the poverty rate is reported at 15.1%, while in rural areas the rate is far higher at 44.4%. Rural poverty is greatest in the mountain and Amazon regions at 48.7% and 41.4% respectively, compared with 24.6% on the coast (INEI 2018a).

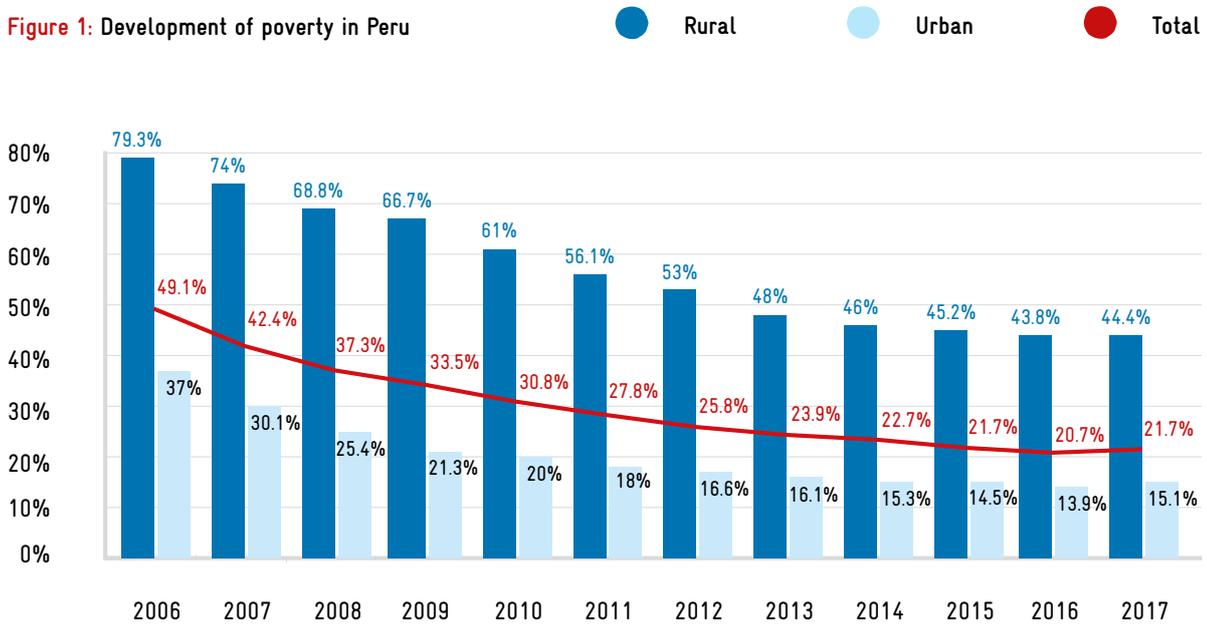
In rural areas, development is largely based on agriculture and extractive activities that depend on vulnerable ecosystems. Here, the agricultural sector employs 65% of the economically active population (iNDC 2015). In addition, Peru is experiencing prolonged domestic migration from the mountains that is especially high in the Amazon region, which puts considerable pressure on natural resources therein.

This has a significant impact on the country's GHG emissions. According to the national GHG inventory of 2012, the land use, land-use change and forestry sector (LULUCF) accounted for 50% and the agricultural sector and 15% of Peru's emissions. Within the LULUCF sector, 92% (86.7 MtCO<sub>2</sub>e) of emissions are generated through the conversion of forest land to agricultural fields and grassland (INGEI 2012).

<sup>2</sup> data.worldbank.org: GDP (current USD), accessed on 8 March 2019

<sup>3</sup> data.worldbank.org, accessed on 7 March 2019

Figure 1: Development of poverty in Peru



Source: INEI 2018a

Table 1: Migration to the amazon region

GROWTH OF CENSED POPULATION						
REGION	1940-2017	1961-2017	1972-2017	1981-2017	1993-2017	2007-2017
Lima	1,045%	367%	173%	100%	49%	12%
Loreto	480%	224%	136%	83%	29%	-1%
Madre de Dios	2,750%	847%	562%	327%	111%	29%
San Martin	758%	403%	262%	154%	47%	12%
Ucayali	2,973%	674%	312%	204%	58%	15%
Peru Total	373%	197%	117%	73%	33%	7%

Source: INEI 2018b

**Table 2:** Peru's GHG emissions by sector 2012

SECTORS	GHG EMISSIONS 2012 [GGCO2E]	CONTRIBUTION [%]
Energy	44,637.81	26.06%
Industry	6,063.54	3.54%
Agriculture	26,043.68	15.20%
Land use, land-use change and forestry	86,741.95	50.63%
Waste	7,822.59	4.57%
<b>Total</b>	<b>171,309.57</b>	<b>100%</b>

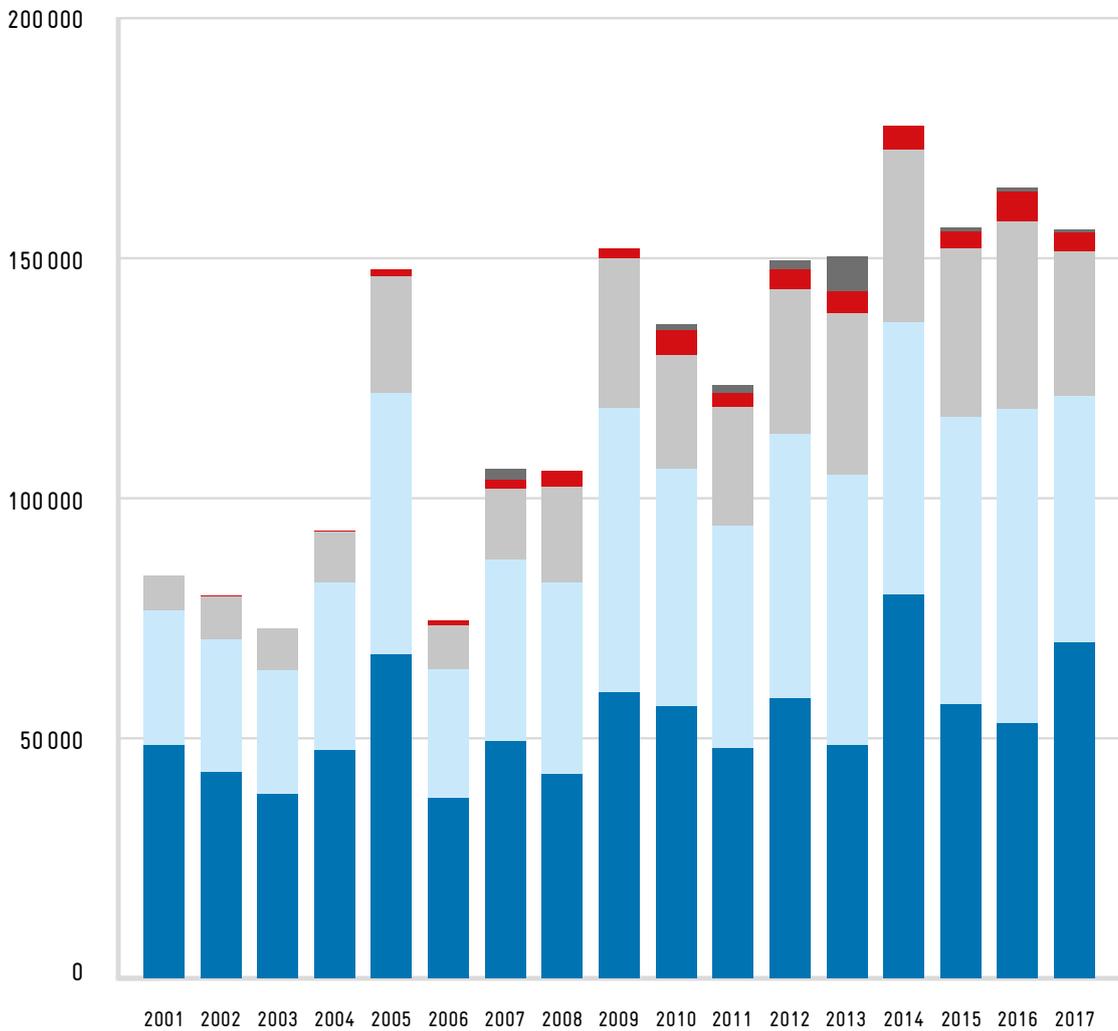
Source: INGEI 2012

**Table 3:** Emissions within the land use, land-use change and forestry sector 2012

SOURCE OF EMISSIONS	GHG EMISSIONS 2012 [GGCO2E]	CONTRIBUTION [%]
Land use, land-use change and forestry	86,741.95	-
Change in biomass and other woody stocks	14,777	17%
Decrease of primary forests (timber extraction, fuel wood and forest fire)	18,700	22%
Increase of biomass	(3,186)	(4%)
Cultivation of perennial crops	(738)	(1%)
<b>Land-use change</b>	<b>79,772</b>	<b>92%</b>
For agriculture	70,939	82%
For grassland	7,001	8%
For settlement	583	1%
For other use	1,248	1%
<b>Abandonment of cultivated land</b>	<b>(12,301)</b>	<b>(14%)</b>
Soil emissions and sequestration	412	0%
Others (non-CO2 gases)	4,081	5%

Source: INGEI 2012

Figure 2: Forest cover loss by size of plots in ha



Source: Geobosque 2019

Though the drivers for deforestation are much more complex and require a more differentiated approach, as recently argued by Ravikumar et al. (2017), smallholder farmers are nevertheless a very important factor for the land-use change (Verlarde et al. 2010). According to satellite data evaluations, the vast majority of deforestation takes place in small plots of 5ha or less (Geobosque 2019).

The role deforestation plays in GHG emissions is reflected in the country’s climate change strategy. As a signatory of the Paris agreement, Peru has committed itself to reducing its emissions by 30% in relation to the projected business as usual (BaU) scenario in 2030 (iNDC 2015). In 2010, the base year, Peru’s GHG emissions stood at 170.6 MtCO<sub>2</sub>eq and the emissions in the target year 2030 are projected to be 298.3 MtCO<sub>2</sub>eq (BaU). Peru is therefore targeting a reduction of 89.5 MtCO<sub>2</sub>eq of its projected increase by 2030.

As the LULUCF and agricultural sectors are such great contributors, a significant number of planned mitigation and adaptation initiatives are dedicated to these sectors and include measures such as agroforestry systems, sustainable primary forest management in concessions and community forest or reforestation of degraded areas. This offers ample opportunities for investors to generate an impact. Here, as explained in the next section, Agrobanco had been uniquely placed to address these measures from a financial perspective.

# 5. WHY AGROBANCO HAD GOOD POTENTIAL TO BECOME AN AGGREGATOR FOR SUSTAINABLE LANDSCAPE INVESTMENTS

## KEY TAKEAWAYS

- Agrobanco was the largest agriculture bank for smallholder producers in Peru, covering almost all rural regions throughout the country.
- The bank had a good foundation to become an aggregator of sustainable landscape investment, such as a solid operational structure, a successful business covering its fixed cost, funding through national and international banks, funds for project development and political backing.

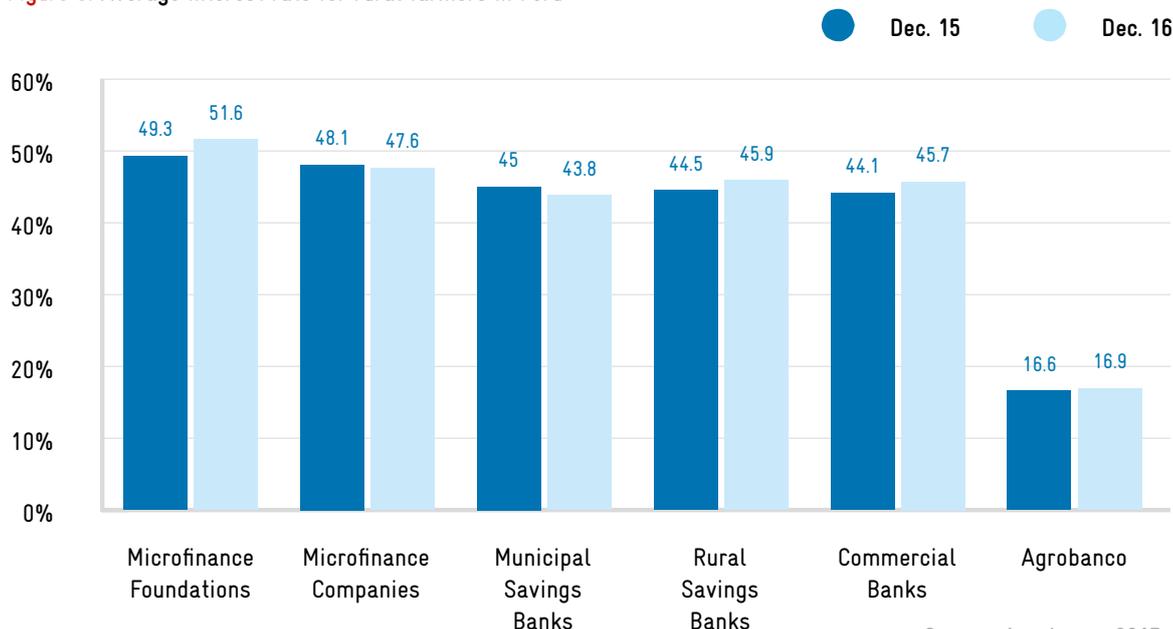
The bank was subject to the same conditions as any other commercial bank in the sense that it needed to be self-sustainable and cover its costs with the earnings it generated. Additionally, it managed funds on behalf of the Ministry of Agriculture, for which the bank used its infrastructure to lend the funds money to farmers on terms defined by the ministry. The largest and most significant fund was the AgroPeru fund, whose main purpose was to finance coffee farmers who were affected by the coffee leaf rust outbreak in 2012. The bank's client segment shifted over the years, but it always had a strong focus on lending to smallholder producers as well small and medium-sized enterprises.

## 5.1 AGROBANCO

Agrobanco was a state-owned agricultural bank incorporated under private law and supervised by the national banking regulator SBS (Superintendencia de Banca y Seguros). Its objective was to provide loans at market rates<sup>4</sup> to the agricultural sector, which included cattle farming, fish farming and forestry as well as the primary processing and commercialisation of the produced products (Agrobanco 2018).

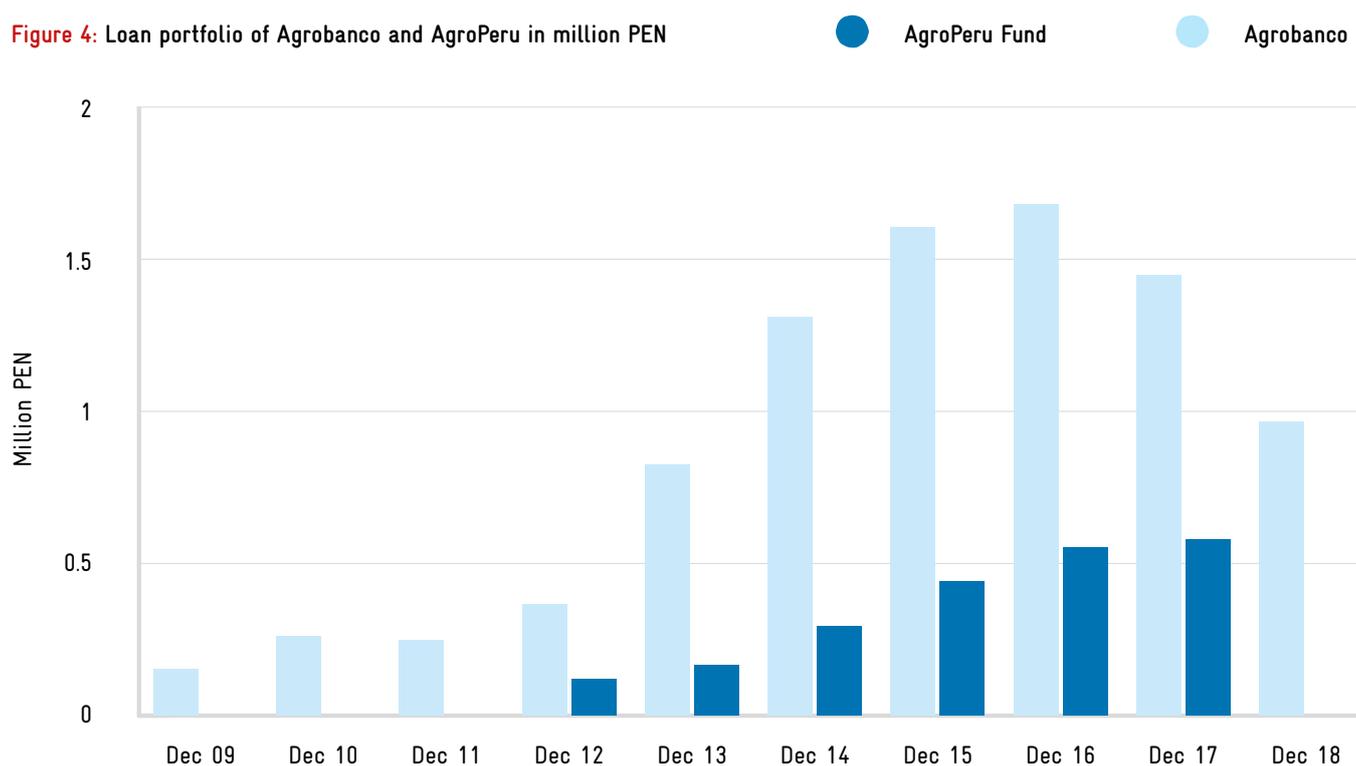
Agrobanco had around 80 branch offices in rural areas and was by far the single biggest agricultural lender by number of clients in Peru. The bank's market share reached 35% at its height in 2016 (Agrobanco 2016a+c), but later dropped below 25% in connection with the bank's deleveraging (Agrobanco 2018). For the bank, the most important crops by number of loans were coffee (additionally to the AgroPeru fund), cattle fodder, cacao, banana and potato. The bank also had a very concentrated exposure to grapes.

Figure 3: Average interest rate for rural farmers in Peru



Source: Agrobanco 2017a

<sup>4</sup> Market rate in this context does not mean the bank had to offer the same rate as other private sector institutions. It means it did not receive subsidies and set its rates according to its own economic means.

**Figure 4:** Loan portfolio of Agrobanco and AgroPeru in million PEN


Source: Agrobanco 2017a, Agrobanco 2018 and SBS 2019

**Table 4:** Agrobanco's loan portfolio 31. December 2017 (ex funds)

TYPE	NO. OF LOANS	(%)	VALUE DEC 2017	(%)
Coffee	12,560	20.7	164,216,105	11.5
Cattle fodder	11,358	18.7	152,736,495	10.7
Cocoa	7,933	13.1	74,056,024	5.2
Banana	4,824	8.0	48,400,719	3.4
Potato	3,176	5.2	36,490,169	2.6
Rice	1,496	2.5	56,516,359	3.9
Grapes	355	0.6	372,210,319	26.0
Others	18,979	31.3	528,058,322	36.8
<b>Total</b>	<b>60,681</b>	<b>100</b>	<b>1,432,684,511</b>	<b>100</b>

Source: Agrobanco 2018

When the bank began its transition to becoming a green bank it was positioned very well to undertake such a project. It was the most important bank for smallholder farmers in Peru. It had an operational structure spanning the entire country with a special focus on rural and remote regions where much of Peru's deforestation took place. Though still considered small, if measuring by balance sheet amount, it had experienced several years of strong

growth. It refinanced its lending through national and international commercial banks and had recently issued its first national bond. It was profitable and had the political backing following the COP20 in Lima. Thanks to this favourable environment, it was easy to attract attention from the international development co-operation and to find backers to fund the project.

## 5.2 THE GREEN BANK PROJECT

### KEY TAKEAWAYS

- › In 2014 at the COP20 in Lima, Agrobanco presented its plan to convert into a green bank in order to contribute to the countries iNDCs and to improve its risk management.
- › Agrobanco defined a green bank as a bank with an environmental and social risk management system, a system to measure and report its impact and with products to promote the sustainable development of the sector with a special focus on climate change adaptation and mitigation.
- › The green bank project was to be implemented with financial and technical support from the EU LAIF facility, the AFD and German Cooperation.
- › As it would take until 2017 for the EU LAIF development funds to arrive, Agrobanco started with its own resources to develop the green bank in 2015 and focused on the development of a lending department for forestry loans.
- › In 2016, Agrobanco ran into trouble due to its conventional business which developed into an institutional crisis. Consequently, the green bank project had lost its political backing by the time the EU LAIF technical assistance started in 2017.

In the spirit of the United Nation Framework Convention on Climate Change (UNFCCC) Conference of Parties (COP20) in Lima in 2014, Agrobanco decided to become a green bank. The bank had the potential to reach a large group of those who will be most affected by climate change in Peru and who, at the same time, cause a large proportion of the country's GHG emissions from LULUCF activities. From a climate finance perspective, the project was interesting because Agrobanco could aggregate small investments and provide an opportunity for impact investors to channel funds into sustainable landscape projects.

In order to implement the project, Agrobanco received funding via the European Union's Latin America Investment Facility (LAIF) to contract technical assistance and a dedicated credit line of EUR 50 million from the French Development Agency (AFD) to disburse green loans to Peruvian farmers (Agrobanco 2017b). The German Cooperation, implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH through its Contribution to the Environmental Objectives of Peru programme (ProAmbiente II), supported this

activity by enabling the hiring of a forest engineer with a banking background, through the Integrated Experts Programme of GIZ's Centre for International Migration (CIM)<sup>5</sup> in order to develop and implement a lending department for sustainable landscape finance.

While no widely recognised definition of a green bank existed at the time, Agrobanco defined for itself that a green bank employs an environmental and social risk management system (ESMS), measures and monitors the economic, environmental and social impact of its investment activities and offers financial products for sustainable investments, especially for climate change adaptation and mitigation. Furthermore, a green bank strives to reduce its own environmental footprint, by using less energy, for instance.

Even at an early policy stage, it was evident that Peru's iNDCs and thus the climate change and national forest strategy would place a strong emphasis on two goals: preventing deforestation and encouraging reforestation.

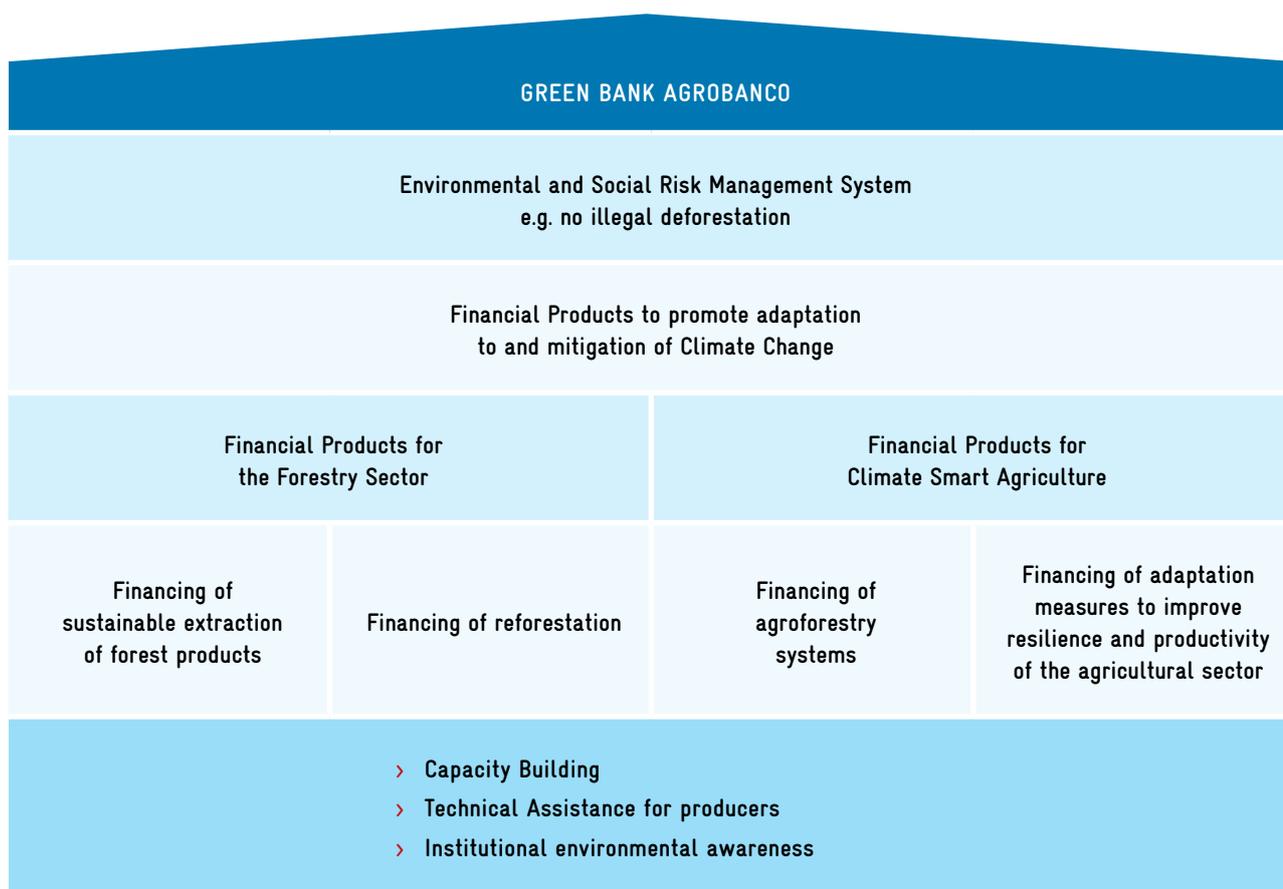


Figure 5: Emissions within the land use, land-use change and forestry sector 2012

Source: author

The bank identified four areas of action for climate finance:

1. Develop financial products to support reforestation and restoration of forest landscapes.
2. Support sustainably productive uses of forests, which rely on an intact forest system, to increase the value of a standing forest.
3. Foster compliance with legal frameworks in the forestry sector by making it more competitive through access to suitable finance options and exclude financing activities that involve deforestation and the illegal extraction of natural resources.
4. Reduce pressure on forests by assisting its main client base, smallholder agricultural producers, to increase their productivity and resilience and consequently refrain from financing expansion into forest areas.

For this reason, Agrobanco was interested in expanding its capacities in forestry and was looking to develop a special lending department for the sector and related activities.

As it ultimately took until 2017 for the technical assistance funded by the LAIF facility to arrive, the bank started in 2015 with its own resources and the help of the German Cooperation. The bank created a green bank project management unit comprising of three staff members within its business development department in order to oversee the development and integration of the green bank strategy. The first step was to develop a very basic definition of green loans. Without having yet developed the technical and technological capacity to score loans according to environmental impact, the bank defined green loans as loans that finance organically-certified production with an organic certification and as loans that are made to the forestry sector subject to the borrower operating within the legal framework of forest law. Subsequently, the bank used this definition to screen its existing loan portfolio, identifying around 10% of its loans as green. The second step focused on implementing a new lending department for green loans and sustainable forestry. It developed a special lending policy manual and new products for agroforestry systems, reforestation and sustainable forest management of primary forests.

In the meantime, Agrobanco conducted a call for proposals with assistance from the AFD in order to use the funds granted by the EU to contract consultants for the green bank. The tender was won by a consortium of GFA Consulting Group and Libélula Consulting, who started to support the green bank project in March 2017.

Unfortunately, in mid 2016, one year after the green bank project began, the bank's economic situation deteriorated quickly. By the time the LAIF technical assistance arrived, the green bank had lost much of its positive enabling environment. Agrobanco was struggling to survive and exchanged its supervisory board and management team four times in the coming three years in an attempt to contain the crisis. Its lending policy became extremely restrictive and all resources were directed towards loan recovery. With every management change, the green bank lost more support. By mid 2018, it was clear the bank would no longer be able to pursue the project. As a consequence, it cancelled its cooperation with LAIF, AFD and the German Cooperation (Agrobanco 2019a). The green bank stopped before it had really started.

However, what had been accomplished so far and was probably the biggest success of the green bank project was the implementation of the new lending department including the new lending policy manual for forestry and forest related activities and the subsequent increase of loans to the sector. This had been realized with relatively little resources by building on internal capacities and building on the work of government and non government organizations that had implemented technical assistance projects with smallholder farms, as well as with research institutions and other government institutions such as the national forest service SERFOR.

Through changes to the general lending policy manual, a special forestry lending policy manual, and a newly developed environmental policy, the bank had laid the basis of implementing strong compliance in regard to avoiding financing illegal deforestation. It further developed and tested an environmental and social risk management system as well as a mobile phone app to geo-reference and detect whether it financed activities in illegally deforested areas.

With the financial support of the German Cooperation, Agrobanco contracted the International Centre for Research in Agroforestry (ICRAF), which developed a complete training program on agroforestry and climate change in order to help the bank scale up its future lending activities in sustainable landscapes. And finally, Agrobanco worked together with USAID on the issuance of a green bond to the national market in order to refinance the green portfolio once it was large enough.

If the bank had succeeded in fully developing and intergrading its environmental and social risk compliance structure as well as its impact measuring and reporting system it would have become the first successful example of a truly green bank and been the sought-after aggregator for sustainable landscape finance. Unfortunately, Agrobanco stumbled over poor lending decisions it had taken in 2013-2014 before it could accomplish its goal to become a fully fledged green bank. Ironically, the very compliance structure it was about to develop could have, at least in parts, helped to avoid the aforementioned bad loans. Nevertheless, Agrobanco has made some highly interesting advances in sustainable landscape finance which will be laid out in further detail in the following chapters and case studies.

## AGROBANCO'S CRISIS 2016-2019

In mid 2016, Agrobanco's delinquency rate suddenly almost tripled to 7.19% (Agrobanco 2017a ) and a new management team was installed; which subsequently re-evaluated the bank's loan portfolio. The following increase in provisions by PEN 150 million (ca. USD 50 million) lead to a year end loss of PEN 95 million. In 2017, the loan portfolio continued to deteriorate, and its delinquency rate would reach unsustainable levels. By the end of the year, Agrobanco reported another loss of PEN 339 Million, which reduced the Banks equity capital by 37.8%. The Peruvian government injected PEN 300 Mio between December 2016 and July 2017 and at the same time the bank implemented a strict savings program, reducing its headcount by 102 people to 474 by the end of 2017(Agrobanco 2017a); a measure it continued throughout 2018.

The bank's problems were due to loans granted in 2013 and 2014 that were concentrated in the coffee and grapes portfolio (Agrobanco 2017a, Agrobanco 2018). Following the coffee rust crisis in 2012-2013, Agrobanco heavily increased its exposure to the sector, through the AgroPeru fund and with its own balance sheet, by buying and refinancing coffee loans from other financial institutions and financing new plantations with four year duration loans to farmers who had lost their harvest due to the disease. By April 2016, Agrobanco had financed PEN 245 million in addition to AgroPeru fund's PEN 402 million (Agrobanco 2016c). When the loans became due in 2016-2017, the farmers had problems servicing their debt.

The situation differed in the grapes portfolio. By the end of 2016, Agrobanco's grape portfolio had risen to PEN 403 Mio and was concentrated in fewer than 35 companies (Agrobanco 2017a, Congreso 2018). In 2017, many of those experienced problems servicing their debt. As of yet, it is not entirely clear what exactly caused the portfolios' decline, and the question is part of an ongoing investigation by the Congress of Peru with expected results later in 2019 (LaRepublica 2018+2019, Agrobanco 2019e). However, from the outset it appears to be a mixture of bad lending decisions, insufficient compliance, and bad luck, as some of the companies struggled when Peru got hit by El Niño in 2015-2016 and then shortly after by El Niño costero\* (Agrobanco 2017f, Gestión 2018a).

Following publication of these issues something what could be called a "reverse bank run" happened. Agrobanco's clients started to speculate that the government would take over the bank and condone the debt. The result was that a large part of clients suddenly stopped paying their debt even though they had the financial means.

At that point, the bank did focus entirely on loan recuperation and neglected new loan generation. In 2018, the situation seemed to stabilize though loan generation still lacked behind previous levels and the true state of the bank is still unclear as the bank has delayed the publication of its annual report to supposedly end of August 2019 (Agrobanco 2019a+b+d+g).

\* In the aftermath of the global El Niño 2015-2016, Peru experienced a strong local weather event predominantly affecting the coast and was therefore termed El Niño costero (costal). Strong rain and flooding devastated the country from December 2016 until March 2017 affecting 1,600,000 people and causing 169 deaths (Ramírez 2017, INDECI 2017).

# 6. DEVELOPING A SUSTAINABLE LANDSCAPE FINANCE DEPARTMENT

## MAIN CONCLUSIONS

- › By leveraging existing internal and external resources the bank managed to develop a new lending department for sustainable landscape finance and build a loan portfolio of 1,676 loans worth PEN 55.7 million (USD 16.7 million).
- › Challenges Agrobanco had to overcome were the great heterogeneity of the forestry sector, the bankability of client's projects as well as its high interest rate and the general unfavorable enabling environment for forestry projects.

Given that over half of Peru's territory is covered by forest, it was important for the bank to broaden its offerings to include forest production. A wide range of client groups and stakeholders, such as farmers' associations, government departments and indigenous peoples, articulated their interest in products to finance the sustainable use of natural forests, agroforestry and reforestation. Thus, the bank made its first attempts to enter the sector in 2012, even before the green bank project was created. However, it quickly met barriers it could not overcome and, in the end, simply extended its agricultural machinery-lending programme to the forestry sector. After initial success, which saw the loan portfolio grow to PEN 20.8 million (approximately USD 6.3 million) in 2013, the portfolio decreased in the following years to just above PEN 8 million (around USD 2.4 million) in 2015.

The case of Agrobanco is an interesting example for several reasons:

1. Stable and consistent economic growth has made Peru one of the most interesting destinations for foreign investors in Latin America.
2. Continuous deforestation of its vast Amazon rainforest region accounts for more than half of the country's GHG emissions, which is why it offers ample opportunities for impact investors to invest in sustainable landscape projects.
3. Through Agrobanco, the country benefited from a fast growing agricultural bank dedicated to small producers with the operational structure to reach Peru's rural regions.
4. The bank had the funding and political backing to become a green bank with a particular focus on sustainable landscape finance.

In 2014, Agrobanco sought collaboration with the German Cooperation, implemented by GIZ, through its ProAmbiente programme. As part of its green bank project, the bank planned to establish a green finance and forestry loan department and to develop forest-specific capacities for the bank.

After a thorough analysis of the target group, its finance requirements and specific risks, it subsequently developed a sector-specific business strategy with a dedicated loan policy manual, products and sales strategy. It quickly became apparent that the term forestry was too narrow. Instead, the bank needed a department for sustainable landscape finance. With a strong focus on forest and deforested landscapes, the bank wished to finance restoration, such as reforestation and agroforestry, as well as the sustainable management of natural resources including timber and non-timber products.

Agrobanco structured the new manual in three sub-sectors: (1) natural resource management in concessions and native community land with timber and non-timber products (2) plantation forestry and (3) forestry within agroforestry systems.

This was important due to the differing nature of each activity and its respective client profiles. Natural resource management is a highly regulated activity. In the case of timber harvest, it involves the administration of vast areas. As a result, it is best suited to medium- and large-sized companies. On the other hand, harvesting non-timber products is mostly practiced by small farmers and indigenous communities.

Plantation systems, whether pure forest plantations or mixed systems such as agroforestry, are cultivated on private land and are therefore far less regulated. Within the plantation sector, pure forest plantations economically require a certain size and scale, which, like natural forests, means they are best managed by medium- and large-sized companies. The agroforestry system is best suited to small farmers, the bank's primary client target group.

**Table 5:** Agrobanco's sustainable landscape portfolio by number of loans

TYPE	2015	2016	2017	JUN 18	2018
Agroforestry Cacao	–	394	1,214	1,270	657
Agroforestry Café	–	62	86	90	1
Agroforestry Pecan nut	–	3	3	3	7
Sustainable Timber Production	13	31	86	98	61
Brazil nut	–	–	2	–	–
Camú-Camú (Myrciaria dubia)	–	16	77	101	47
Palm heart	–	–	20	23	19
Cochinilla (Dactylopius coccus)	–	1	27	33	18
Tara (Tara spinosa)	–	11	40	49	22
Bamboo	–	7	9	9	9
<b>TOTAL</b>	<b>13</b>	<b>525</b>	<b>1,564</b>	<b>1,676</b>	<b>841</b>

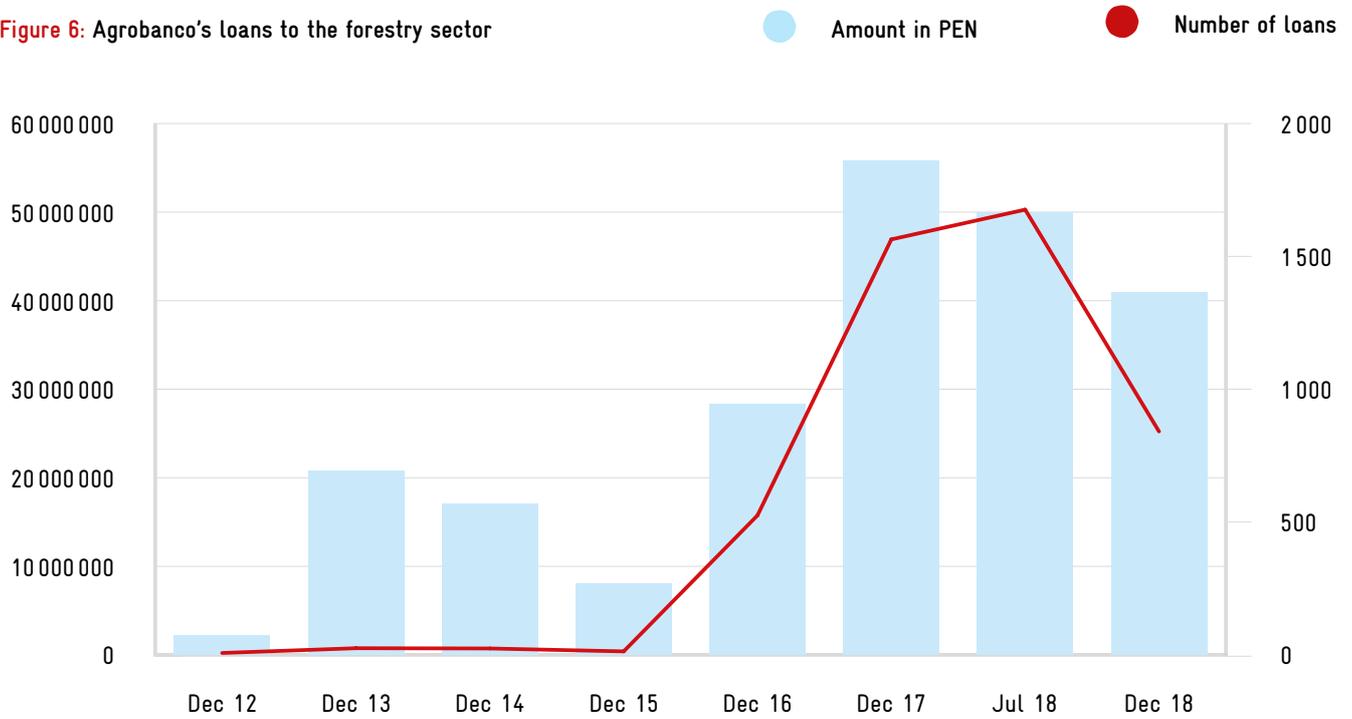
Source: Agrobanco 2019c

Agrobanco started to develop its new lending department from mid 2015 onwards and released its first products by the end of that year. It did so with few financial resources by leveraging internal and external supplies as the LAIF funds for the green bank would not be available until 2017. Once it had provided the overarching framework, the bank's wide branch network could gauge the demand and create ideas for specific loan products from the bottom up. At the same time, the bank looked for strategic collaboration with government and non-government

institutions which were implementing projects with producer groups to accelerate loan sales from the top down. Working with institutions like DEVIDA<sup>6</sup>, Alianza Cacao Peru, or Rainforest Alliance, gave Agrobanco access to a large number of potential clients at low operational costs and helped to mitigate some of the risks by providing technical assistance.

<sup>6</sup> Comisión Nacional para el Desarrollo y Vida sin Drogas - National Commission for Development and Life without Drugs

Figure 6: Agrobanco's loans to the forestry sector



Source: Boettcher and Schmidt 2017, Agrobanco 2019c

With the new focus loan generation picked up in 2016, Agrobanco started to finance a wide range of products reaching from agroforestry and sustainable timber production to Tara (*Tara spinosa*), Camú-Camú (*Myrciaria dubia*) or Cochinilla (*Dactylopius coccus*). Despite Agrobanco's increasingly difficult situation, sales were strong in 2017 until the bank practically stopped lending altogether and focused on solving its institutional crisis. In the end, Agrobanco had increased its sustainable landscapes portfolio from 13 to 1,676 loans and the value of the portfolio to PEN 55.7 million (USD 16.7 million) by 2018 (Agrobanco 2019c).

# 7. THE GREAT DIVERSITY OF PERU'S FOREST SECTOR

## KEY TAKEAWAYS

- › 57.8% of Peru's landmass is covered by forests, counting as the second largest extension of the Amazon rainforest after Brazil.
- › Between timber concessions and indigenous community land there are ca. 30 million ha of its 74 million ha where sustainable timber harvest is permitted, and 864,000 ha are concessioned for harvesting the Brazil nut.
- › Peru's current extension of forest plantations is insignificant, but the country has ample opportunities for reforestation and landscape restoration. Most opportunities are available for smallholder farmers with potential for where agroforestry presents itself as a good production systems.
- › Peru joined the Initiative 20x20 at COP 2014 in Lima and committed to the restoration of 3.2 million ha of degraded land.

One of the greatest challenges in developing a department for sustainable landscape finance proved to be the heterogeneity of the sector. Different legal access modalities depending on the forest ownership type, different legal frameworks for natural grown and planted forests, and the great variety of forest economy stakeholders, in addition to a huge number of different production systems and different tree species, required the bank to develop an enormous set of new know-how.

Peru's forestry industry is based almost entirely on the extraction of timber from primary forest. Its main production centres are Iquitos in Loreto, Pucallpa in Ucayali and Puerto Maldonado in Madre de Dios. From Iquitos, the timber is shipped either down-river to Brazil or up-river to Pucallpa. From both Pucallpa and Madre de Dios, roads lead to the main consumer centres, the largest of which by far is Lima. Apart from timber, Peru's natural forest produces a great number of non-timber products. The most important is the Brazil nut, which grows in Peru only in the forests of Madre de Dios, and has become an important export product for the region.

Forest plantations, on the other hand, do not play a great role. Though the state has been promoting reforestation for over 25 years, the results are mixed. The main production areas are in the mountains, including Cajamarca and Amazonas in the north and the Selva Central and Cusco in the centre of the country.

In theory, the country possesses a great potential for reforestation and has the objective to install 2 million ha of forest plantations (Initiative20x20 2019). However, most of the available land is in the hands of smallholder producers and so far, no larger forest company has managed to establish plantations of meaningful scale. Drawing from the experience at Agrobanco, many smallholder producers in the amazon region either practice some form of agroforestry system on their land or are interested in establishing one. Notwithstanding, few have production systems with a clear timber focus, making the possibility of contributing to a national timber market negligible. Indeed, a lack of market demand for timber from agroforestry systems proved to be a major challenge in the development of loans for smallholder forest plantations.

**Figure 7:** Map of Peru showing the three main timber production centres



## 7.1 ACCESS MODALITIES TO PRIMARY FOREST:

### CONCESSIONS AND COMMUNITY FOREST

Peru possesses 74 million ha of forests, which cover about 57.5% of the country (FAO 2015). 65.7 million ha are tropical humid forests (MINAM 2017), making Peru the nation with the second largest proportion of the Amazon rainforest after Brazil. It has set aside some 16.9 million ha as production forest to be concessioned for timber production and 863,778 ha of Brazil nut harvest concessions (OSINFOR 2019). Additionally, there are 13.5 million ha of community land where timber can be harvested legally.

According to Peruvian law, natural forests always belong to the state, regardless of whether they are found on private, indigenous-community, or state-owned land. In order to extract forest products, approval is required from the regional forest authority, with the procedure differing depending on the land tenure.

On state-owned land, a harvesting concession title has to be obtained, which the state grants for areas of between 5,000 and 40,000 ha in size and which are valid for 40 years. On non-state-owned land, it is the respective land title owner, i.e. the recognised community or private owner, who owns the harvest rights, though prior approval from the state is required before it can be exercised (SERFOR 2015).

In both cases, the harvest right owner has to elaborate a general management plan (PGMF, Plan General de Manejo Forestal) for the whole area earmarked for timber production. This requires that the area be divided into sub-plots. Each plot can only be harvested once within a 20 to 25 year period. In order to extract timber from a plot, the harvest right owner must produce a one to three year operational harvest plan (Plan Operativo, PO) and is also required to hire an officially licensed forest engineer that is registered with the national forest service (regente forestal). The forest engineer is responsible for fleshing out these documents and guaranteeing their accuracy. Both the general management plan and the operational harvest plan have to be approved by the regional forest authority before any harvesting activity can take place. If the land to be harvested includes

species controlled under the Convention on International Trade in Endangered Species (CITES), the national forest service in Lima must also visit the planned harvest area and verify each tree that may be harvested prior to approval of the operational plan (SERFOR 2015).

In order to prevent illegal activities, Peru has established the supervisory body OSINFOR<sup>7</sup>, which can visit the harvest area at any time before, during, or even years after the harvest to verify if the timber has been sourced in accordance with the permits and the approved operational plan (SERFOR 2015). Though it is very difficult to know how much illegal timber is harvested in Peru, the general perception is that it is a very high volume. However, the reasons for illegal harvest are more complex and require an understanding of how timber is harvested in the Amazon rainforest.

The operational harvest plan includes a tree inventory, which identifies the GPS position of each tree to be harvested, and calculates the volume of timber to be extracted. These harvest plans are crucial and function as a basis for the issuance of timber transport permits in order to ensure traceability and prove its

legal origin. Because of this, transport permits are prone to being used for illegal purchases, as they can be used to 'wash' illegally harvested timber. Because the permits are issued based on the information in the harvest plan, there is temptation to inflate the volume numbers of valuable species in that plan. For example, if the inventory of the approved harvest plan shows double the timber volume that is actually available, the plan holder can match the remaining permitted volume with illegally sourced timber. Another way to wash timber is to produce and seek approval for a harvest plan for an area which one never intends to harvest. The plan holder then buys the timber on the open market or harvests it somewhere else illegally and uses the legal papers to transport it.

## 7.2 THE STATE OF THE CURRENT

### PLANTATION FORESTRY

With a few exceptions, forest plantations in Peru are generally small in scale and managed in a highly artisanal manner. Though official numbers register around 1 million ha of plantation forests (SERFOR 2019a), a recent study estimated that the real number is closer to 500,000 ha and that most of it is dedicated to re-establishing environmental services, with just 50,000 ha or so (Held et al 2015) producing timber at the moment.

Depending on the geographic location, the business model differs. In the Amazonas region, one can find a small group of forest companies offering reforestation and plantation management services primarily for Peruvian investors. They are rather small in scale, with each company managing an estimated 200 to 4000 ha and in total probably not more than 10,000 ha<sup>8</sup>.

A far higher number of planted forests can be found in the Peruvian mountains. Over the last 25 years, Peru has spent a substantial amount of public money and effort on installing forest plantations. It is difficult to find exact figures for the total area reforested and afforested as well as money invested, as the country does not publish systemised data. However, some data points give an indication of these efforts. For example, according to information taken from the government's budget plan for 2019<sup>9</sup>, the country reforested and afforested around 575,000 ha between 1994 and 2016 through the Agrorural Programme<sup>10</sup> alone. Additionally, there were numerous projects by local government, municipalities, non-governmental organisations (NGOs) and international cooperation actors. According to a report by the national forest service, local and regional governments implemented or are still implementing 206 projects with an overall budget of EUR 153 million (PEN 576 million), of which they have spent EUR 81 million (PEN 306 million) to date in the ten-year period from 2009 to 2018 (Sanchez 2018).

Despite the money spent thus far, no credible industry based on plantation forestry has been established akin to that of Brazil or Chile, and no processing sector demanding timber from plantations has been initiated.

## 7.3 POTENTIAL FOR REFORESTATION AND AGROFORESTRY

In 2014, at its launch, Peru joined Initiative 20x20 at COP 2014 in Lima and committed to the restoration of 3.2 million ha of land (Bonn Challenge 2019). Of this area, it is foreseen to reforest 2 million ha with sustainable commercial forest plantations under the leadership of SERFOR and 1.2 million ha are to be recovered for agricultural use under the leadership of the Directorate General of Agricultural Environmental Affairs<sup>11</sup> (Initiative20x20 2019).

It is generally argued that Peru has strong economic potential for a forest plantation industry. The general assumption is that the country possesses ample areas suitable for forest cover and that the growth rate of timber species in the Amazon region exceeds the growth in non-Amazon countries such as Chile or countries from the northern hemisphere. The assumed high growth rate is based on rates achieved in Brazil with eucalyptus clones as well as some depicted experiences with native and non-native species in Peru on non-degraded land such as pine (*Pinus* sp.), bolaina (*Guazuma crinita*) and capirona (*Calycophyllum spruceanum*). The assumption regarding available land is based on several top-down studies, but so far has not been verified broadly on the ground. In both cases, reliable research which could be applied more generally is difficult to come by and was a major obstacle to Agrobanco when developing its plantation and agroforestry activities.

The most useful tool to date for identifying areas suitable for commercial forest plantation appear to be the World Resources Institute's Atlas of Forest and Landscape Restoration Opportunities (WRI 2014a). However, this map has also been produced by doing a broad top down analysis using a potential forest coverage map, a current forest cover map and a human pressure map. The result has been classified as wide-scale, mosaic and remote restoration opportunities. For Peru, the result is mostly mosaic restoration. Nonetheless, mosaic restoration means that the population density in these areas is about 10 to 100 people per 100 ha (WRI 2014b). Plots of between 1 and 10 ha in size, however, are very small for forest plantation activities and it is doubtful how suitable these lands are for a reforestation industry based on large scale plantations.

Indeed, Agrobanco was able to confirm the WRI findings when it was working directly in the field. Peru's land ownership structure is very scattered. Most land is somehow in use or inhabited and under constant competition from different land users. The greatest potential is therefore found in agroforestry and small-holder forest plantations.

<sup>8</sup> No reliable data source could be found. Estimate is based on companies' own presentations at various events in Lima where the author was present as well as companies' LinkedIn profiles, websites and research by Held et al. 2015

<sup>9</sup> Draft PP0130 2019 'Competitividad y Aprovechamiento Sostenible de los Recursos Forestales y de la Fauna Silvestre'

<sup>10</sup> Development Programme of the Ministry of Agriculture to finance projects with a focus on agricultural production in least developed rural regions.

<sup>11</sup> DGAAA, Dirección General de Asuntos Ambientales Agrarios

## 8. ADDRESSING BANKABILITY IN AGRICULTURE LENDING

### KEY TAKEAWAYS

- › Risks in agriculture are abundant and many are outside of the farmers control. They can be grouped as production, climate, market, investment, inputs and farmer.
- › Loan monitoring in Peru is complicated and costly due to remote areas with insufficient infrastructure, low population density and small loan amounts. The higher operational costs lead ultimately to higher interest rates.
- › The bankability of its clients was a general issue for Agrobanco and was not only confined to sustainable landscape finance.
- › To manage agriculture risk and address bankability, Agrobanco used a standardised business plan template which it completed together with the client. The so called product sheet defined all steps of production, input costs, expected returns and a cash flow plan.
- › Errors in the product sheet lead to either too much or too little money dispersed to the client. If it was too much, earnings may not have been sufficient to pay back the loan. If it was too little, farms may not have had sufficient financial resources to produce the required quality.
- › The less accurate the available input data for the product sheet, the higher the margin of error the bank had to apply. This inflated the production cost and reduced expected returns. The minimum return requirements may not have been met, and as a result the bank may not have been able to finance the activity.
- › Agrobanco had ca. 800 product sheets to keep up to date in order to manage the risk in agriculture lending.

The bankability of its clients was a general concern for Agrobanco and was not just confined to sustainable landscape financing. Agriculture is inherently risky. Crop production depends on the weather and biological processes which are beyond a farmers control. Farmers have to compete in domestic and international markets with price fluctuations, which is also largely outside of their control. A farmer may have a year of good production, but then so might everyone else. Thus, prices fall, or even worse, a localised period of drought or heavy rainfall may significantly reduce the harvest, whereas competitors depress prices with increased output. In addition, producers exercise little control over the costs of inputs used in the production process, such as fertilizers, seeds and manual labour.

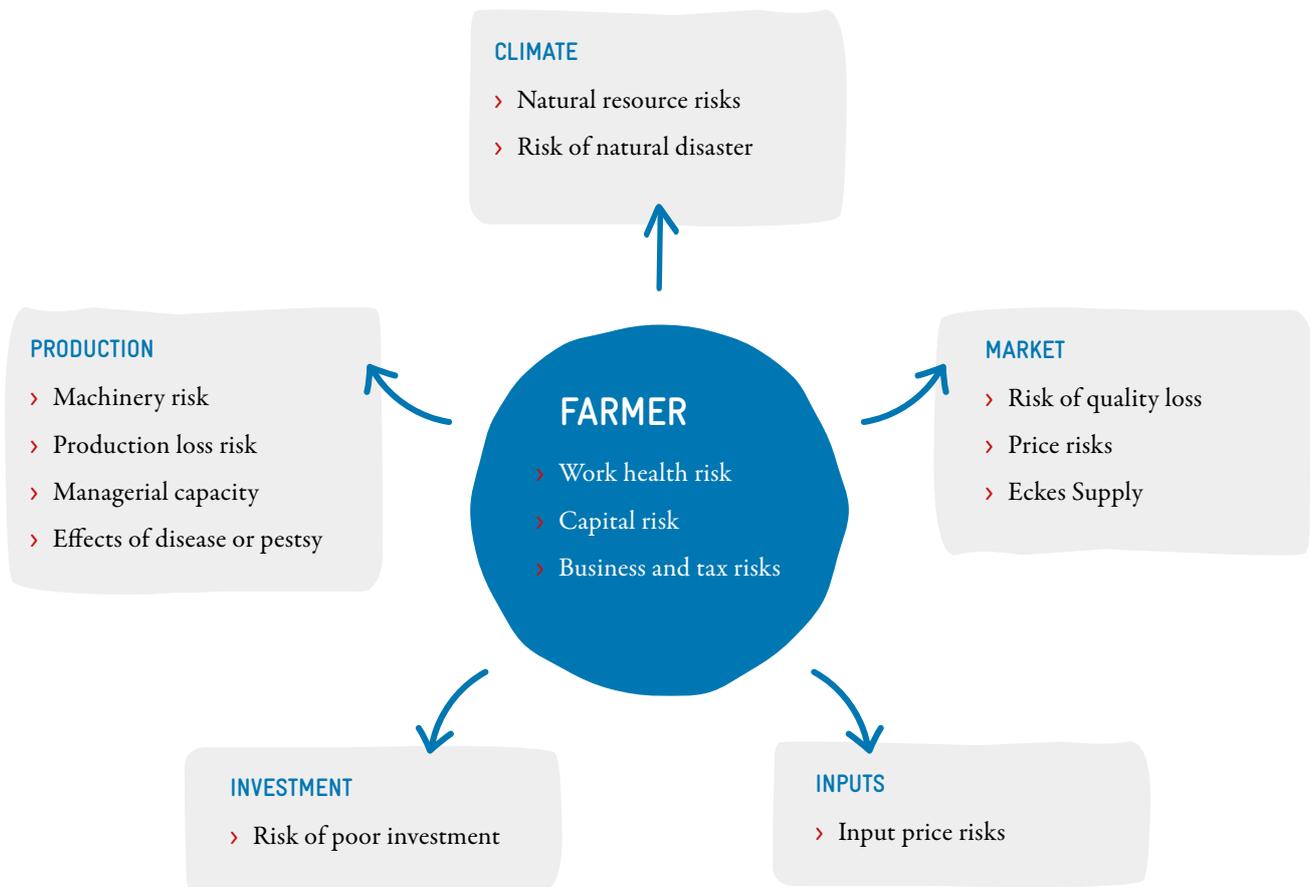


Figure 8: Integrated risk structure: the farmers' perspective

Source: IFC 2015

For a financial institution managing agricultural risks in lending is not an easy task. Vast geographic areas and low population densities, often scattered across hard to reach locations, with bad infrastructure result in higher operational costs. If, in addition the main clients, smallholder producers demand small loans, the higher fixed operational cost in relation to the small loan amount will lead to a higher interest rate. This in itself adds another risk factor to the equation. High financing costs require farmers to achieve a high margin in their production. They also prevent longer-term investments in fixed assets, such as buildings, machinery, vehicles and equipment (or trees), that could increase efficiency and productivity as well as reduce risks. Examples of such long-term investment would be an irrigation system or an adequate storage facility. In the context of climate change, this is especially important, given that such long-term investments are required to increase resilience against future extreme weather events.

To address the bankability issue, Agrobanco used an activity specific business plan template called "product sheet" that it had pre-elaborated. As part of a loan application process, the bank completed these templates together with the client to evaluate whether an activity met the required profitability criteria. In forestry, the bank struggled to obtain accurate information on production systems as well as market information to use in the product sheets. In the case of agroforestry systems, its complexity meant it was difficult to wholly describe them in a rigid standardized business plan template.

## 8.1 THE PRODUCT SHEET

Before looking at the way Agrobanco managed risk, it is important to understand that the bank financed single agricultural activities and the cash flow within this one activity needed to be coherent. If the bank financed potatoes, for example, the potato sales needed to produce sufficient income to cover the cost of producing and financing them and also needed to generate a ROI of at least 15%. Put simply, when analysing a loan application, the carrot could not pay for the potato. Agrobanco's risk management technology was centred on the product sheet, which it developed for every loan product it offered. The product sheet was comprised of two parts and was drafted at the branch office level in collaboration with the risk department at the head office.

The first part included information such as:

- › Number of producers and hectares in the region producing the crop,
- › Number of producers/hectares the bank aimed/limited to finance,
- › Price data, i.e. current market price, last year's price and expected price, as well as a price floor which had to be achieved in order for the loan to work.

The same exercise was done with productivity. That is, the average productivity in the region achieved with the technology package the producer used as well as the minimum productivity the bank expected. The technology package was defined by the use of input factors such as fertilisers, seed quality, irrigation systems and level of mechanisation.

### EXAMPLE

In cocoa production with a low technology package, the bank would expect a production of 1000 kg per ha and a minimum expected production of 800kg/ha. For a medium technology package, the bank would expect 2000 kg/ha. If, for example, the price of cacao was PEN 8.00 per kg and the minimum expected price was PEN 6.00 per kg, the bank would multiply the minimum expected productivity by the minimum expected price, e.g. 800 kg x PEN 6.00 equals PEN 4,800. The result represents the minimum expected income the farmer would produce per hectare. This amount (PEN 4,800/ha) would be the floor on which the loan product was built. Furthermore, the bank required the activity to have a return of at least 15%. This meant that, in this case, the production cost including the finance cost could not be higher than PEN 4,170 (PEN 4,170 x 1.15 = PEN 4,795).

The second part of the product sheet listed all the activities a farmer had to undertake to achieve the expected productivity, e.g. clearing and ploughing the field, planting the seedlings and applying fertiliser in, for example, months one, three and six of the production cycle. Each activity would have an allocated cost, the time required, and the point in time at which it would be executed. The result was a comprehensive activity and cash flow plan. For instance, let us say the farmer required PEN 1000 in the first month, PEN 500 in the third month, etc. If the overall cost was higher than the determined maximum cost to get the minimum return of 15%, then the bank would not finance the activity.

## 8.2 RISKS ASSOCIATED WITH AGRICULTURE FINANCE:

### RISKS AND WEAKNESSES OF THE PRODUCT SHEET

The risks associated with agricultural lending could be primarily classified into four categories: market, nature, farmer, bank.

1. **Market:** The future sales price is lower than anticipated or the farmer does not have access to the market.
2. **Nature:** Disasters such as climate events, pest outbreaks, diseases and fire impede productivity or lead to loss of production.
3. **Farmer:** Management errors and inappropriate use of funds loaned to the farmer.
4. **Bank:** Loan amount incorrectly calculated (too much or too little), evaluation of borrower.

Obviously, when the sales price of a crop is lower than anticipated, or productivity is lower due to a climate event such as drought or heavy rain, the client may not have enough revenue to pay back the loan. But there are other risks as well. For example, the farmer could make a mistake by failing to apply sufficient fertiliser at the correct time or not carrying out adequate pest management. This could be due to inadequate knowledge, a lack of oversight or insufficient financial resources due to not being foreseen in the bank's product sheet. Incorrect collection or calculation of input costs or incorrect measurement of the size of the production area can result in incorrect loan amounts. In the event that the amount is too low, the farmer will lack the necessary resources to implement adequate management. But, if the amount is too high, the farmer might use some of the funds for other activities and subsequently fail to generate sufficient income to pay back the loan.

## FINDING THE BALANCE BETWEEN LENDING STANDARDS, INTEREST RATES AND SALES TARGETS

The risk management process based on the product sheet is completely data driven. It depends on the input data, such as information on the technology package, production costs and market information, plus the evaluation of the farmers capacity to implement the chosen technology package.

The less accurate the available data is, the higher the margin of error the bank has to apply, which in turn may lead to the activity not being financed because the error margin inflates the production cost and reduces sales price of the crop. If the bank is too strict with its lending standards, it will not lend, and thus fails to fulfil its function for its stakeholders (return expectations and/or political objectives), which in turn creates pressure for the bank.

So how can a bank encourage lending in such a situation? It could relax its lending standards and at the same time increase interest rates, provided that the market accepts

higher interest rates. The higher interest rates compensate for a higher default rate due to the reduced lending standards (this explains in part the high interest rates of private banks and municipal savings banks in rural areas and/or banks not lending at all). However, if the bank cannot charge higher interest rates and the pressure to increase lending is high enough, the lending standards will be relaxed either by formal or informal means.

While formal relaxation would involve adjustments to the product sheet methodology, informal relaxation would see the bank clerk who elaborates the product sheet correcting input cost down and output prices up and/or changing the assumptions within a technology package (e.g. it requires only one day instead of two days to apply fertiliser).

But even if everything is done correctly, the farmer is still required to use the funds appropriately. As many farmers do not have access to financial services, neither to credit nor to saving products, it can be tempting to direct parts of the loan towards other uses for which it is not possible to receive finance otherwise. Therefore, funds may be used to invest in farm assets, production of other crops or cattle, or for expenses such as emergencies, medical bills, school fees or, just as likely, discretionary consumer spending.

It follows that there is a diverse range of risks on multiple levels associated with agricultural finance that are complex to manage. Agrobanco was managing an average of 500 or so different approved product sheets simultaneously. Including sheets under revision and not updated, the bank had ca. 800 product sheets to handle. This was due to all the different crops and animals that needed to be financed as well as the variances in production costs and prices depending on region and technology packages. Developing correct product sheets and keeping them updated is extremely complicated and relies heavily on having comprehensive data. Additionally, it needs strong processes to verify the data and product sheets.

# 9. UNDERSTANDING AGROBANCO'S INTEREST RATE

## KEY TAKEAWAYS

- › Agrobanco's interest rate was an aggregate of its funding cost, its operational cost, a risk premium and a profit margin.
- › There were few possibilities to lower the interest rate. Due to the bank's client segment, rural smallholder farmers, operational costs and risks, premiums were higher than average. The funding costs, as a biggest contributor, were dictated by the market and Agrobanco's profit expectations were marginal.
- › Lowering its funding costs through USD or EUR loans from foreign banks or investors was not a viable solution as Swap costs were very high.

As is the case in many developing and emerging economies, borrowing capital in Peru is expensive for rural clients, with two-digit interest rates being the norm. This is due to a variety of reasons, stemming from associated risks, macroeconomic factors and high operational costs. At Agrobanco, the interest rate was an ever ongoing controversy with clients and other stakeholders, such as government institutions and NGOs. It was certainly true that the high cost of interest put massive pressure on clients to achieve high returns with their activities, which is especially complicated for mid- to long-term investments with the goal of climate change adaptation or reforestation. However, there was little room to lower the cost. Agrobanco's interest rate was based on the costs incurred to acquire the funds it required to grant loans (funding costs), the cost of granting a loan (operational costs), an additional mark-up to provide for non-performing loans (risk premium), and a profit margin.

## 9.1 FUNDING COSTS

In the case of Agrobanco, the funding costs were an aggregate of various costs. The most important and visible part was the nominal interest rate charged on the capital, which the bank itself borrowed from other sources. In addition, the lender usually charged a fixed commission payable at the beginning of arranging the lending facility and often a percentage on the difference between the arranged maximum amount and the actual amount used (example: if the lending facility was for USD 100 million and the bank borrowed only USD 70 million, it paid a quarterly percentage on the unused USD 30 million). Other costs were lawyers costs if the lending agreement could not be done in-house, if the loan was issued by an international lender under international law and in a foreign language, or to fulfil a special request by the lending bank, such as to pledge certain assets as collateral. If the bank borrowed through the capital market, a fee was payable to the broker who was structuring the debt instrument (e.g. a bond) and selling it on the market.

## 9.2 AGROBANCO'S FUNDING

Agrobanco funded its lending activities with its equity capital and with the debt borrowed from various other banks. The equity was provided at its foundation by the Peruvian Government and subsequently replenished after several loss-making years. In the period from 2015 to 2017, the main lenders to Agrobanco were the Peruvian development bank COFIDE, Deutsche Bank, City Bank, Bladex, CAF and several national commercial banks. The debt was structured from USD and PEN loans, though the USD loans were gradually reduced in 2016.

If the bank borrowed in a foreign currency (for example USD), it had to pay for the conversion to the local currency. As it had to pay back the loan sometime in the future in USD, it would have

**Table 6:** Example of how an interest rate is calculated

FUNDING COSTS	OPERATIONAL COSTS	RISK PREMIUM	PROFIT MARGIN
9%	5%	7%	2%
23%			

Source: author

to hedge against possible exchange rate fluctuations. Usually the bank bought insurance in what is known as a swap. In table 06, the debt with the Peruvian central bank was one such currency hedge transaction. The cost amounted to around 4.5%. This was an additional charge for the bank on top of the cost of the USD debt. As per the graph below, the swap cost depended on

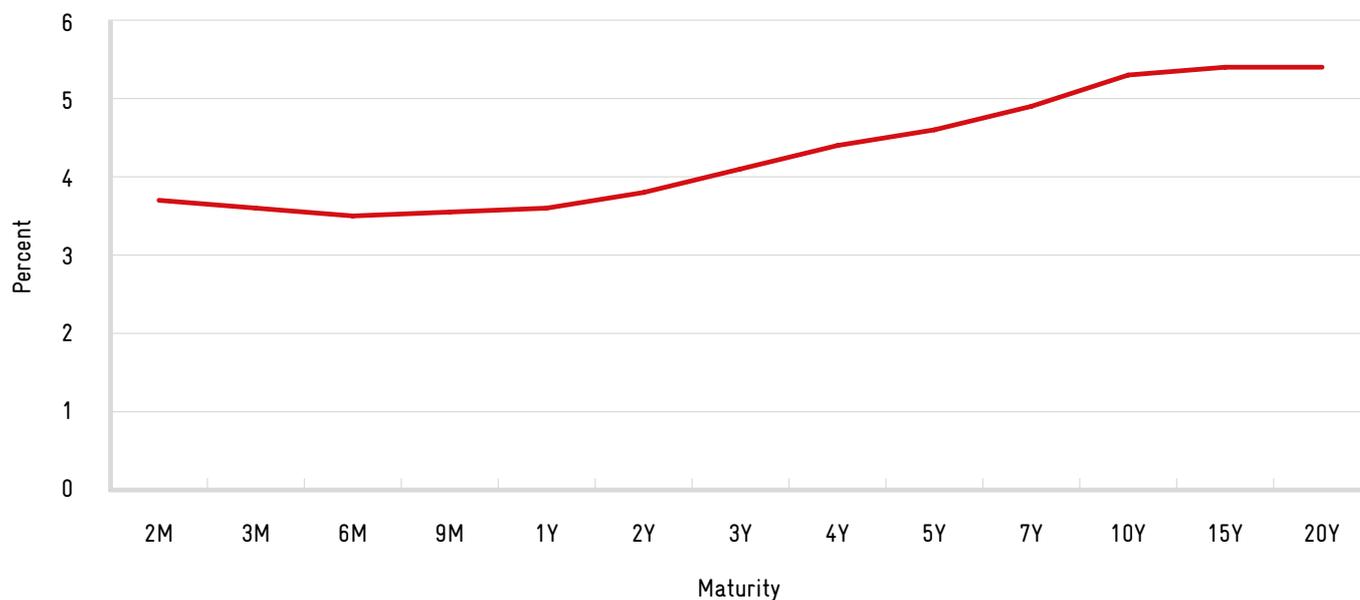
the length of the swap agreement. Usually, it was more expensive to insure a longer-term obligation than a short-term one. In the case of Agrobanco, the cost of the insurance and conversion meant that the much cheaper USD loans cost about the same once converted to PEN. Agrobanco's funding costs averaged about 8% to 9%.

**Table 7: Agrobanco's debt and interest rates 2014-2017**

IN THOUSAND SOLES	CURRENCY	2014	2015	2016	2017
<b>Debt with Peruvian Central Bank</b> Banco Central de Reserva del Perú (a)	PEN	318,000	343,000	-	-
<b>Debt with COFIDE</b> Corporación Financiera de Desarrollo S.A. - COFIDE (b)	PEN, USD	220,839	238,425	342,464	455,760
<b>Debt with national financial institutions (c)</b>					
Banco de la Nación	PEN	12,254	82,450	99,937	93,697
GNB Perú S.A.	PEN	50,000	50,000	50,000	-
Caja Municipal de Ahorro y Crédito Arequipa	PEN	-	40,000	40,000	-
Citibank del Perú	PEN	-	-	40,000	40,000
Banco de Crédito del Perú	PEN	-	-	34,000	-
Banco de Comercio S.A.	PEN	-	39,000	59,000	59,000
ICBC Perú Bank S.A.	USD	-	30,699	30,204	21,877
Banco Internacional del Perú S.A.A. -Interbank	USD	492	370	5,246	4,900
		<b>62,746</b>	<b>242,519</b>	<b>358,387</b>	<b>219,474</b>
<b>Debt with foreign financial institutions (c)</b>					
Deutsche Bank	USD	597,200	682,200	671,200	-
Citibank North America	PEN	125,105	125,105	196,792	129,640
Banco Latinoamericano de Comercio Exterior - BLADDEX	USD	89,580	156,906	53,696	38,892
Corporación Andina de Fomento - CAF	PEN	-	-	90,000	90,000
Agencia Francesa de Desarrollo - AFD	USD	-	-	33,560	32,410
		<b>811,885</b>	<b>964,211</b>	<b>1,045,248</b>	<b>290,942</b>
<b>Capital Market Instruments</b>					
Short term debt note (Series A,B,C) (d)	PEN	-	26,710	69,495	-
		<b>1,413,470</b>	<b>1,814,865</b>	<b>1,815,594</b>	<b>966,176</b>
<b>(a) Currency hedging USD SWAP</b>					
PEN		4.04%- 4.7%	4.04%- 4.73%		
<b>(b) Interest Rate</b>					
PEN		6.86%	6.87%	7.67%	7.63%
USD		9.21%	7.82%	8.56%	9.43%
<b>(c)</b>					
PEN		9.50%	9.50%	11.25%	8.05%
USD		3.75%	3.75%	3.75%	3.75%
<b>(d)</b>					
PEN			6.25%	n.a.	n.a.

Source: Agrobanco 2016e,2017a,2018

**Figure 9: PEN vs USD Swap Curve – Yield to maturity**



Source: Bloomberg terminal accessed 09.05.2018

**Table 8: Agrobanco's operational expense ratio**

IN THOUSAND SOLES	CURRENCY	2014	2015	2016	2017
Operating expenses	PEN	78,354	74,187	80,634	75,072
Net loan portfolio	PEN	1,395,876	1,708,024	1,620,006	1,065,445
Operating expense ratio (net loan port.)	%	5.61%	4.34%	4.98%	7.05%

Source: Agrobanco 2016e,2017a,2018

**Table 9: Adjustments to the loan loss provisions**

IN THOUSAND SOLES	CURRENCY	2014	2015	2016	2017
Adjustments to loan loss provisions	PEN	25,743	21,926	156,532	270,608
Net loan portfolio	PEN	1,395,876	1,708,024	1,620,006	1,065,445
Ratio	%	1.84%	1.28%	9.66%	25.40%

Source: Agrobanco 2016e,2017a,2018

### 9.3 OPERATIONAL COSTS

Apart from its funding costs, Agrobanco also had to cover its operational costs. As per the table below, Agrobanco's operational expenses were around 5% of the net loan portfolio. However, the ratio increased when, due to a crisis, the net loan portfolio decreased and expenses proved to be stable. Agrobanco generally had higher operating costs, given that its function as a state-owned agriculture bank was to serve small farmers in remote regions. For some time, it subsidised the small loans with large loans. Around half of the bank's loan portfolio comprised large loans to a few companies on the coast. These loans had lower operational expenses but contributed through their interest rate the same 5% to cover operational costs.

### 9.4 RISK PREMIUM

A bank has to make provisions for clients who do not pay back their loans. This represents a cost which the bank has to cover with its interest income. The non-performing loan (NPL) ratio shows the share of NPLs with respect to the overall loan portfolio. As the bank will sometimes have to write-off loans that cannot be repaid by its clients, the costs for the risk of such occurrences have to be evenly distributed across all loans.

Agrobanco's delinquency rate used to compare very favourably to other financial institutions in Peru until the 2016 crisis started. The percentage of loans whose repayment was 30 days late stood at between 2% and 3%, similar to major Peruvian commercial banks and well below the municipal saving and loan banks and microfinance companies. Table 08 shows the percentage of the amount by which Agrobanco had to increase its provisions since 2016 for non-performing loans in its annual financial statement. These provisions reduced the bank's profit and were therefore an additional cost, which had to be covered by the interest income.

### 9.5 PROFIT MARGIN

The previously mentioned components, which made up the interest rate, resulted in the bank making no profit, as only the occurring costs were covered. Thus, if the bank intended to be profitable, it had to charge a further mark-up on top. As lenders may have objectives other than profitability, development banks can often adjust the rate accordingly and thus provide loans below market rate. This concessional lending can be a key instrument to opening underdeveloped markets that still pose too great a risk to commercial lenders.

# 10. CASE STUDY I – FINANCING COMPANIES OPERATING HARVEST CONCESSIONS IN THE AMAZON RAINFOREST

## INTRODUCTION

Up until Agrobanco created its specific forest unit, the only forest loans it granted were to companies operating timber concessions in natural forests. However, only a few loans were extended and sales continued to fall. Representatives of the sector voiced concern as there was generally a perceived scarcity of formal finance from commercial banks. They also pointed out that Agrobanco's terms and conditions were not adequate to finance the harvest of timber and that the bank was too focused on the agricultural sector, which had very different financial needs. To that end, Agrobanco conducted an extensive analysis of the sector to identify its financial needs and suitable client groups before launching a new product for the sustainable management of natural forests. This new product was categorised as a green loan, as it required the borrower to comply with the new Peruvian forest law.

## 10.1 TIMBER HARVEST IN THE PERUVIAN

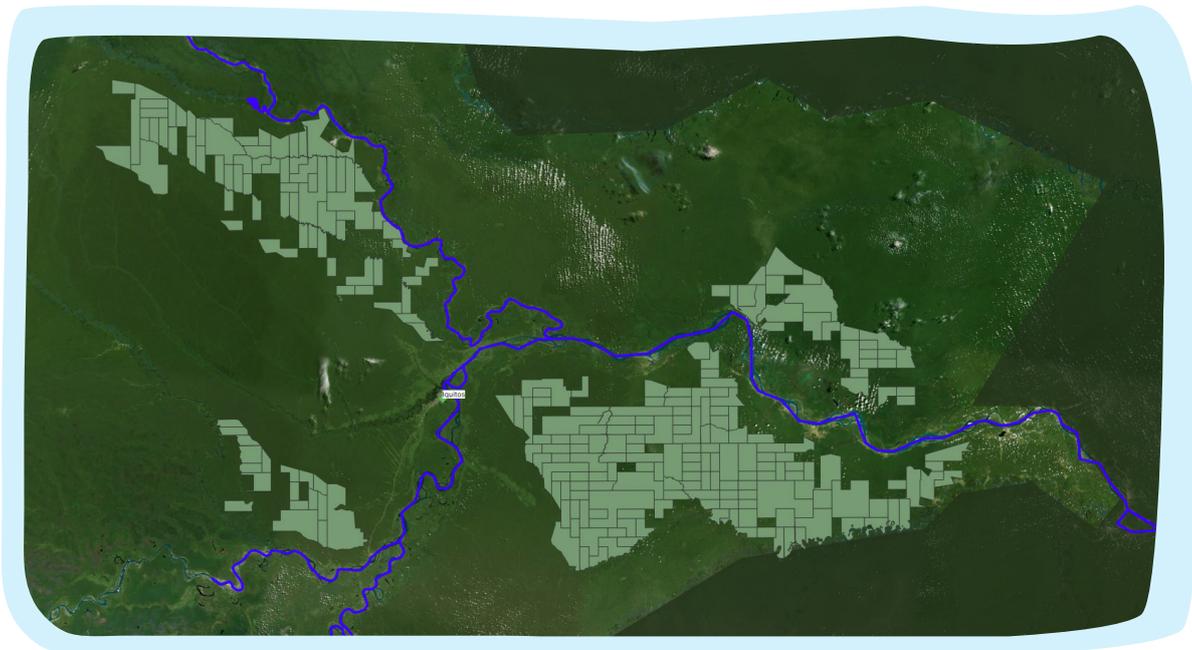
### AMAZON REGION

The Amazon rainforest is a vast area, which is primarily only accessible by river. Large parts of the forest are under water for many months of the year, which makes any extractive activity complicated; especially if it involves heavy timber. According to Peru's land-use planning process, forest concessions are mostly for areas further away from the main river streams. This is due to the fact that most of the settlements are situated on and close to the riverbanks. These communities usually own the forest along the river. The areas available for harvest concessions are therefore the areas beyond the community forests, which are further away from the waterways.

In order to extract timber, the harvest title owner needs to transport all equipment such as harvest machinery, front loaders, trucks, road building machinery, and many gallons of petrol by boat to the harvest area. This journey may take up to a week. If in addition the harvest area is further away from the river bank, it is necessary to build a connecting road. Building roads takes time, is expensive and may require additional authorisation from

the relevant authorities. The forest needs to be cleared, the area levelled, and bridges or water crossings need to be constructed. A distance of 40 km or more is not unusual. The soils in the Amazon are very old and deep. There are usually no rocks or gravel available to reinforce roads, so they are dusty dirt tracks which turn into mud within seconds of rainfall. Even in the dry season, there is an abundance of highly localised rainfall. Rainfall may only last 20 minutes, but trucks using the road have to stop immediately and it takes one to two days for the road to dry and harden enough for the trucks to continue their journey. Once in the harvest area, the company will install a camp where the workers will live for the coming months. The harvest operation will run 24 hours a day, 7 days a week or until the next rainfall, when it will pause for one to two days. The harvested timber needs to be transported by truck to the river, where by now, due to the dry season, the water level is too low to permit transportation by boat. The timber will be gathered and stored until the rainy season starts, the rivers swell and the ships can transport the timber to the saw mill.

**Figure 10:** Map showing timber concessions in Loreto, Peru



Source: author, based on Geobosques

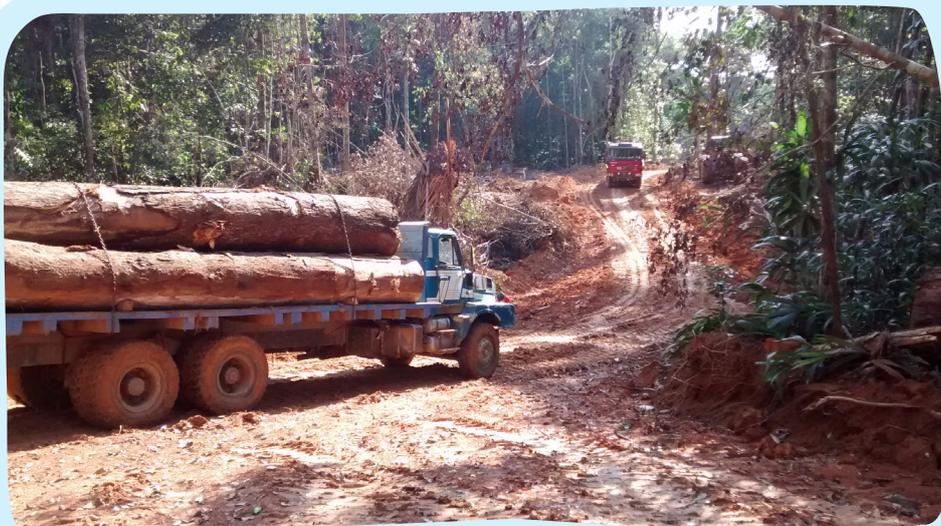
## HOW HIGH FUNDING COSTS PROMOTE ILLEGAL TIMBER SOURCING

A company operating in the highly regulated forestry sector faces a dilemma. There are basically two ways to source raw material. Either one purchases timber on the open market in the ports of Pucallpa or Iquitos or one harvests it oneself. Purchasing it in the port has the advantage that less capital is required as the turnover between sourcing the raw material and selling the end product is much faster, but it bears the risk of illicit origin. Tracing the timber is complicated if not impossible and much timber comes with falsified documents (EIA 2012). If the company wants to be sure where the timber comes from and that all steps are traceable, it has to engage in harvesting itself. However, harvesting requires huge upfront capital which is tied-up for a long time (15-18 months) and carries high operational risk due to weather and operational complexity.

As banks do not provide adequate financial products, the company is required to finance the harvest operation with its

own equity or borrow it from informal investors and lenders. The result is often an underfunded operation, evident in older, poorly maintained machinery and a lack of sufficiently trained staff. This increases the overall risk to the operation as machinery breaks down, causing expensive delays. Additionally, return expectations are high, putting further pressure on the operation. This naturally incentivises illegal practices as it represents a way for companies to reduce business risk and optimise returns. That is, of course, if the illegal activity is not sufficiently controlled and sanctioned.

Insufficient financing options for fixed assets have another negative effect, as they hamper necessary long-term investment in the timber processing facilities, resulting in less efficient raw material utilisation, more expensive production and lesser quality products. This places more pressure on the company, as it requires cheaper sourcing in order to compensate for deficiencies.



**Figure 11:**  
Timber harvest in Loreto, Peru

Source: author



All this requires a high amount of upfront capital and very good planning skills, as a large amount of machinery and great number of people need to be ready and quickly deployed once the weather permits.

In a series of meetings with several companies, Agrobanco tried to gauge their exact financial needs. Additionally, the bank hired an outside consultant with extensive experience in the sector to analyse capital requirements, typical cash flows and sourcing and production cost structures of typical companies operating in the sector. The highest demand was to finance harvest activities, to purchase timber on the open market as well as, to some extent,

to invest in fixed assets. The timber harvest requires working capital with flexible repayment terms, as the weather and operational complexity mean the turnover time could vary from 15 to 18 months until revenues could be generated from the exporting activities. Capital requirements ranged from USD 500,000 to USD 5 million. The following table shows an example of a medium-sized enterprise, which had acquired a small concession it planned to harvest by itself. It had to invest approximately USD 2.3 million in machinery and required an additional USD 1.1 million of working capital to operate the harvest.

**Table 10:** Required finance for logging activities in a small concession

CAPEX		OPEX	
7 Skidder type 525	USD 1,190,00	Fuel/Oil	USD 691,863
1 bulldozer	USD 130,000	Various	USD 15,950
1 grader	USD 115,00	Food (71 persons)	USD 32,612
2 loader type 966	USD 250,00	Salaries	USD 354,000
7 trucks Volvo NL12	USD 630,00	Machinery movement	USD 21,228
2 boats	USD 5,000		
2 outboard motor hp40	USD 8,000		
7 chainsaws Stihl 060	USD 5,600		
<b>Total CAPEX</b>	<b>USD 2,333,600</b>	<b>Total OPEX</b>	<b>USD 1,115,653</b>
<b>Total CAPEX &amp; OPEX: USD 3,449,253</b>			

Source: Gretzinger 2016

### Operational risk

The harvest operation requires a high degree of upfront capital and extraordinary planning skills. This is due to the fact that there is only a short window of time in which weather conditions allow for harvesting and it usually takes place in a remote location with almost no existing infrastructure. This means the company needs a great deal of well-maintained machinery, which will run almost non-stop for an extended period of time under extreme climatic and geographic conditions, and a large group of harvest workers who are willing to work in a remote location with an uncertain start and end date. The whole operation needs to be ready for deployment ahead of time and wait until the weather allows the relocation to the harvest area. It is important to start as soon as possible, as it is impossible to forecast the exact length of the dry weather period. Any day that is lost due to weather, machinery breakdown, or impromptu accidents is expensive and can make or break the operation.

### Legal risk of the client and reputational risk

Harvesting timber in a natural forest is highly regulated and exposes companies operating in this sector to higher than usual legal risks in general. Additionally, there is a high degree of informality and illegality (EIA 2012), which brings about the risk of clients being unable to pay back a loan due to legal proceedings against them, not to mention of course a reputational risk for the bank if it finances illegal activities. The risk could

arise because timber, which guarantees the cash flow to pay back the loan, may be confiscated, or the harvesting operation may be paralysed due to suspicion of illegal activities. So, even if one can identify a company with strong governance operating completely legally, there are overarching sector risks which can affect all involved actors and result in commercial banks shying away from providing finance.

#### THE CASE OF YACU KALLPA

In November 2015, a ship called Yacu Kallpa left the port of Iquitos with supposedly 1,312 m<sup>3</sup> of timber of illegal origin valued at around USD 4 million. Peruvian authorities did not manage to stop it, but informed other countries of its suspicion. The ship embarked on an odyssey from Iquitos downriver through Brazil and the Caribbean to Mexico. Neither country allowed it to unload, as the legal origin of its timber could not be proven. Finally, in Mexico, the shipping company filed for bankruptcy. Subsequently, the authorities confiscated the ship as it was declared abandoned (OjoP-úblico 2019). If a bank's client were to have legal timber aboard that was mixed with illegal timber from other companies, the client could have loan repayment issues.

**Table 11: Numbers of formally registered companies in the forestry sector by size.<sup>12</sup>**  
Highlighted fields were considered as Agrobanco's target group

REGION	MICRO	SMALL	MEDIUM	LARGE	TOTAL
Lima	9,291	429	13	18	9,751
Ucayali	1,439	132	5	10	1,586
Loreto	1,197	75	5	4	1,281
Madre de Dios	771	38	3	2	814
Other regions	10,887	172	1	3	11,063
<b>TOTAL NATIONAL</b>	<b>23,585</b>	<b>846</b>	<b>27</b>	<b>37</b>	<b>24,495</b>

Source: FAO 2018

<sup>12</sup> Defined by Peruvian Law No. 30056 'Ley que modifica diversas leyes para facilitar la inversión, impulsar el desarrollo productivo y el crecimiento empresarial' by amount of sales: (i) micro: up to USD 186,000, (ii) small: up to USD 2,112,000, (iii) medium: up to USD 2,857,000, (vi) large: above USD 2,857,000

### 10.3 THE LENDING OPERATION

Agrobanco's target group was actually quite small. Of the 24,495 formally registered companies operating in the sector (FAO 2018), most had to be excluded as they produced furniture and thus did not fall under the bank's scope. The micro and small companies were based in this sub-sector and most were incorporated in Lima. Primary processing is usually carried out as close to the forest as possible, since at this stage a lot of timber volume is cut away, reducing weight and volume by half or more. This subsequently reduces the transport costs considerably. Agrobanco's potential clients were thus almost exclusively situated in the three main production centres of Ucayali, Loreto and Madre de Dios. This reduced the target group to around 274 companies.

A further breakdown can be carried out by taking into account the market the company serves, i.e. domestic or export. Companies that export are expected to have a higher degree of transparency, as the inland revenue and customs service registers every export activity. These companies are more in the spotlight from international actors, such as timber buyers and NGOs, and are expected to comply with international regulations such as the EU Forest Law Enforcement, Governance and Trade Regulation (FLEGT), the US Lacey Act and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The main exporters are a group comprised of about 10 companies and, using the Peruvian company size classification, are medium to large in size. By their own account, they all have access to formal financing through commercial banks. However, all the companies Agrobanco spoke to stated that, though they would have received commercial loans to finance machinery buildings and trade, they could not finance the actual harvesting activities or the purchasing of roundwood on the open market.

The other group is small to medium-sized enterprises working along the entire value chain and most of them are not as integrated as the exporters. This group is far more diverse and more complicated to describe. What many of them have in common is that they work on the fringe of formality, do not meet basic cost accounting standards and lack guarantees to access the formal finance sector. The most that some of them could finance would be an item of machinery or a vehicle guaranteed by the machinery or vehicle itself.

Based on the target group segmentation, the bank decided to concentrate first on the medium- to large-sized companies, which were primarily focused on the export market, before actively targeting the small to medium-sized enterprises. They were perceived to have less risk, as they had stronger corporate governance on average. Additionally, some of them participated in the ProMadera<sup>13</sup> project to support forest companies. The project assisted companies to improve their internal processes and to implement a timber traceability system in order to prove the legal origin of its product and facilitate a proper cost

**Table 12:** The 10 main timber exporters of Peru in 2018

COMPANIES	FOB USD
Imk Maderas SAC	22,034,603
Madera Bozovich SAC	17,810,867
Grupo Maderero Amaz SAC	16,542,281
E&J Matthei Maderas Del Peru SA	6,019,189
Maderera Rio Acre SAC	4,944,312
Consortio Maderero SAC	4,382,723
Industria Forestal Huayruru SAC	3,993,370
Milenio Servicios Generales SA	3,440,745
Representaciones Diera SAC	2,349,576
Aserradero Estrella Del Oriente SAC	2,177,266
Other	43,061,417
<b>TOTAL</b>	<b>126,756,349</b>

Source: SERFOR 2019b

accounting of its production. It was seen that companies which implemented these measures improved their corporate governance and reduced some of the described sector specific risk for a financial institution. Through conversations with these companies, Agrobanco identified potential for loans of approximately PEN 75 million (around USD 25 million) over a period of three years. Additionally, the bank estimated that capital requirements were in fact much higher based on the age and quality of the machinery and infrastructure used by most companies. It assumed that, with adequate financing, companies would be incentivised to invest more into fixed assets in order to modernise their production facilities and become more cost-efficient and competitive on international markets.

In the end, Agrobanco managed to grow its loan portfolio from 13 loans in 2016 to an average of 30 loans in 2018, which represented about 10% of the target market. Uptake was primarily from the small and medium-sized market segments and not the larger companies that Agrobanco originally wanted to target. The feedback the bank received was that offering an average rate of 15% was too expensive. For the smaller companies, on the other hand, Agrobanco was an interesting option; but, the challenge was that many of those companies were not sufficiently professionally managed to qualify for a loan from Agrobanco.

<sup>13</sup> ProMadera was implemented by GIZ, within the framework of the ProAmbiente programme, and was financed by the Dutch Sustainable Trade Initiative (IDH).

## CONCLUSION

Establishing a new product line with a sole focus on forest management finance proved to be a significant undertaking. The alignment of the bank's previous mode of business with the special characteristics of the forest and timber sector was a very innovative process. During this process, the bank gained some key insights that determined its approach to the forestry sector:

1. Harvest operations are complex to organise and implement. This is due to a short time window in which the climate permits the harvest. It requires a high level of project management skills.
2. Harvest operations are capital extensive with a longer repayment cycle. Many companies lack sufficient collateral to pledge.
3. Loans for harvest require a minimum term of between 15 and 18 months, with a minimum 12-month grace period.
4. All of the larger companies found interest rates of around 15% too expensive and declined to finance their operations through Agrobanco.

At the same time, Agrobanco recognised that many companies lacked key capacities that they required in order to operate in the sector in an effective and efficient manner. This ranged from bureaucratic hurdles and complicated, but necessary, legal compliance requirements, to planning the harvest operations. Given that many companies had previously relied on their own equity or funding from the supply chain, the significance of calculating the cash flow and establishing a thorough business plan was often neglected. Therefore, the bank had to turn away many potential clients on the grounds of not passing the due diligence and loan eligibility criteria.

Interestingly, based on the average age of participants in Agrobanco's information and marketing events, the sector could be on the verge of a generational shift. This may provide a unique opportunity to engage with the sector to increase technical capacities, but will also require special financial products with a focus on business start-ups and the younger generation.

In order for forest a finance product to be accessible to a broader client segment, it is crucial to offer training and information materials to companies on business and project management. Equally, it would be advisable to develop additional capacity at the bank for working with the sector and understanding its specific needs.

Ultimately, mainstreaming the product would be dependent on a favourable cost-benefit analysis in comparison with the conventional financing methods in the forestry sector. Hence, the costs of capital would have to be lowered to make up for additional reporting, production and human resource requirements from the bank. It is, of course, paramount to link the financial product to compliance with legal standards for forest management.

# 11. CASE STUDY II – FIRST EVER COMMERCIAL LOAN TO PERUVIAN INDIGENOUS COMMUNITY FOR TIMBER HARVEST IN THE AMAZON



## INTRODUCTION

In mid-2017, three indigenous communities from the Matsés ethnic group approached Agrobanco's branch office in Iquitos. They requested loans to finance timber harvest on their community land, which was about a seven-day boat trip away at Brazil's border. This was a very new situation for Agrobanco. Never before had it granted a loan to indigenous groups for harvesting timber in community forests.

The Matsés are indigenous Amazonian people living along the Javary river, which forms the border between Peru and Brazil. It is estimated that there are some 2,500 people scattered across various communities and sub-communities along the border (Fasabi 2018, Matsés 2018). Until around 50 years ago, they had chosen to live in isolation and were cautious to open up to the outside world (Fasabi 2018). Due to their remote location, they still live in relative detachment and, at least in Peru, have little access to public services, such as health centres, schools and financial services.

Figure 12: Map of Peru showing the three Matsés communities

Source: Opentopomap.org

Agrobanco worked with three Matsés communities that had requested loans to finance their harvesting activities: Nueva Esperanza (along the Mirin River), Fray Pedro (Angamos and downriver) and Matsés (Angamos, upriver leading to the Matsés National Reserve). Combined, these three communities possess some 888,000 ha of titled land<sup>14</sup>, of which approximately 278,000 ha have been authorised for timber harvesting activities. Additionally, the Matsés have access to the 420,000 ha Matsés National Reserve, which they are allowed to use in a sustainable way following traditional methods (SERNANP 2014, SERNANP 2018). Together, the Matsés own, possess or can use some 1.38 million ha of land in Peru. On the Brazilian side, the Matsés inhabit the Vale do Javari Indigenous Territory, which covers 8,519,800 ha which they share with other indigenous groups (Matsés 2018).

Due to their remote location, the Matsés have few options for selling agricultural products because they would not survive the long journey to urban centres. Even if they did survive, the high cost of transportation would make their products uncompetitive.

One of the few possibilities the Matsés have for economic activity is the extraction of timber. Their forest is home to commercially attractive and sought-after timber species, such as the 'cedrela odorata' cedar, which is very rare and falls under the Convention of International Trade in Endangered Species. These CITES species can only be extracted with special permission and command a high price, making the expensive transportation costs associated with harvesting them economically viable.

14 Titled land includes ownership and the right to use the land



**Figure 13:** Traditional Matsés houses

Source: author

## 11.1 THE FORESTRY ACTIVITY OF THE MATSÉS

Like many indigenous communities in Peru, the Matsés have chosen to work together with a forest company to process and organise the sale of timber. According to community members, they feel overwhelmed by the high levels of bureaucracy, planning and interaction with government agencies required in order to formally harvest timber. Therefore, they appreciate the help from outsiders. In this case, the company owner first helped them with the titling their community's land, which was a long and expensive process. Subsequently, he assisted in the preparation of the forest inventories and management plans. The high costs of preparing these plans resulted in debts that the communities now owed to the company. The communities would pay back these debts with timber, harvest rights and a commitment to sell all of their timber to the company for the next 20 years.

The forest company operates two harvesting teams, each equipped with one skidder. Additionally, and unlike most communities in Peru, community members engage in the harvest operations themselves and are responsible for most of the harvested timber. However, the community members undertake manual labour, such as moving tree trunks, without the aid of machinery apart from chainsaws. The community members work in independent teams of eight to ten workers each. They also have a cook and may be accompanied by workers' family members, including children.

The teams stay in the forest for several months and live in very simple camps. In addition to the food they bring with them, they will fish and hunt game. Each team operates in a predefined area, which contains trees that are marked as being approved for harvesting. Once a tree is felled, the team cuts it into several four-metre-long pieces and manually moves each piece to a water ditch. Moving trees to the ditches without the aid of machinery is extremely hard work. The stems are incredibly heavy and sometimes the diameter is larger than the workers themselves.



**Figure 14:** Workers moving trees to the nearest ditch for further transport downriver

Source: author



**Figure 15:** Waiting for the next rainfall to fill the ditch so transport to the river mouth can continue

Source: author

Once the trees have been collected in the ditch, the workers wait for the rainy season to fill the ditches with water which allows them to transport the floating trunks to the Javary river. As preparation, they must remove fallen trees and any vegetation, which may block the floating trees, from the ditch. The rain is usually a heavy tropical rainfall that fills the ditches very fast. The workers then use a *peque peque*, a small long boat with a motor, to pull the trees down along the stream. This is often done at night in complete darkness, as that is when the rain often comes. Water will drain from the ditches shortly after a storm ends, and often times the river is too far away for the timber to be transported there during a single rainfall. Because of the weather, the journey to the river may take several weeks. Once at the river, the timber is collected for transport at a later point and taken to the forest company's saw mill. This second journey to the saw mill also takes several weeks to a month and requires high water levels. The transport downriver to the saw mill itself is organised by the company, which has several forestry technicians who oversee the company's own harvest operation in addition to receiving the timber from the community.

Before the communities approached Agrobanco for the loans, the forestry company financed all operations of the community members. This entailed expenses for the production of the general management plan and operational plan, the costs of harvesting the timber and the cost of employing community members as workers during the harvest. As previously explained, the harvesting activities in the Amazon rainforest require huge upfront investment. The company funded this out of its own cash flow as well as two loans it had from Agrobanco; but, at some point it could no longer bankroll the community members. When this happened, the community members approached the bank directly to request a loan.

In order to finance the operation, each team had a leader who would be the borrower and would then hire the other team members. The estimated cost for harvesting 300m<sup>3</sup> of timber was around USD 10,000, of which Agrobanco could lend approximately 75%. The remaining 25% of the production cost had to be financed by the borrowers themselves, as Agrobanco's lending policy did not permit financing 100% of an activity.

**Table 13: Production cost of one Matsés harvest team**

PRODUCTION COST FOR 300 M3		
Labour costs	PEN	USD*
9 workers (PEN 800 each)	7,200	2,182
<b>Equipment</b>		
Motor long boat Peque Peque Honda 9 HP	1,700	515
Chainsaw Stihl 660	2,400	727
Chains (16 x S/120)	1,920	582
<b>Supplies</b>		
Petrol	4,000	1,212
Motor oil	1,000	303
Chainsaw oil	540	164
Groceries for 9 people for 6 months	10,000	3,030
Yuca flour	1,200	364
<b>Transport</b>		
General Transport	2,500	758
Transport motor from Iquitos	100	30
Transport chainsaw from Iquitos	100	30
Transport of chains	100	30
<b>TOTAL</b>	<b>32,760</b>	<b>9,927</b>

\* FX Rate 1 USD = 3.3 PEN

Source: author

## 11.2 CHALLENGES OF FINANCING THIS

### TYPE OF ACTIVITY

Apart from the specific risks of lending for timber harvest in native forests, as described in the first case study (operational risk and legal risk), Agrobanco identified several other risks and challenges during this operation:

- › The loan amounts were far higher than the bank would normally permit for first-time borrowers without collateral.
- › The borrowers had no collateral to pledge. The only asset they had was the community's harvest rights. Though the bank's lending policies permit lending the requested amount without collateral, Agrobanco would have preferred a guarantee due to the overall higher risk of the loan.
- › The borrowers lived extremely far away, meaning the financed activity would be spread out over a very large area. This made it very difficult and expensive to monitor loans.
- › Neither the bank nor the state had any infrastructure in the communities that could assist to pay out and collect the loans.
- › All applicants had to travel to Iquitos to apply for the loans. The journey took around seven days and incurred costs for hotel accommodation, food and the boat ride. This was very relevant because the community members had little disposable income.
- › Each borrower had to receive the amount personally in cash from the National Bank (Banco de la Nación) in Iquitos, which handled all of Agrobanco's payments. This meant that all community members had a very high amount of aggregated cash they would have to carry in the streets of Iquitos, which is risky.
- › The applicants could only present a sole company with which they had an exclusive 20-year purchase and sales agreement as a buyer of their timber.
- › Additionally, they had debt with the company for services provided, such as drafting general management and an operational plan, and relied on that company for technical assistance and to deal with the harvest permits, for which they had granted many executive powers to the company owner to represent them before the forest authorities.
- › Agrobanco felt uncomfortable with the close connection between the communities and the company, which was in effect responsible for selling the timber for the borrowers, and which implied that effectively the credit risks would at some point transfer from the borrower to the company. This company, however, had already borrowed from Agrobanco and exhausted all of its guarantees, meaning it was not a strong guarantor for the borrowers.

## 11.3 THE LENDING OPERATION

Ultimately, Agrobanco financed 49 members from two communities with a total amount of USD 360,000 for a 12-month period at 23% interest. Members from the third community were denied a loan because they had an unpaid fine of USD 51,177 from the regulatory body OSINFOR for preventing their officers from entering community land to carry out their supervisory duties.<sup>15</sup>

<sup>15</sup> According to the community, they were not informed of the visit and were protecting their land. According to OSINFOR, the official process was followed and the community chief was informed by letter with two weeks notice.

## 11.4 COVENANTS

In order to address its observations, the bank imposed several conditions before it would approve the loans. For example:

- › It requested an additional buyer and the renegotiation of the sales agreement to allow the sale of at least 25% of the timber to different buyers.
- › Furthermore, the buyer would have to pay the amount of the borrowers' debt directly to the bank upon the timber's transfer of possession.
- › Finally, it was requested that the powers of representation granted to the company by the community be relinquished.

To provide additional oversight, the bank decided to contract an individual who would oversee the harvesting operation and ensure that the timber buyer withheld any payment to the borrowers until their loans with Agrobanco were repaid. To cover the higher transaction costs associated with the whole operation, the bank would charge a mark-up of 4% on the standard interest rate.

## 11.5 DURING THE LENDING PERIOD

As anticipated beforehand, the loans were extremely difficult to monitor. Agrobanco was unable to find a qualified person prepared to move into the community and oversee the operation. It therefore organised the monitoring with existing personnel. Shortly after the loan dispersal, the bank's loan officer visited each clients harvest operation to make sure they would use the fund according to the agreement. After another six months, the bank's forestry expert visited some of the harvests and met with community representatives. A GIZ expert in sustainable forest management and timber traceability accompanied the bank in order to gain an idea of the feasibility of self-led community harvest operations. The experts met very dedicated and motivated clients, but observed several deficiencies in the application of the forest law, giving rise to the risk of expensive fines.

This was due to technical errors in applying a timber traceability system and some observed harvesting of unapproved trees. The harvest teams were inexperienced and had not been properly trained in accordance with the forest law. Because of this, they failed to measure and mark the felled trees correctly. This was problematic in two ways. First, they could not ensure traceability in order to prove that the timber was legally harvested, though it was. Second, they did not know exactly how much timber they would deliver to the company and were thus unable to verify whether the buyer compensated them fairly. Harvesting unapproved trees appeared to be random rather than systematic,

occurring in situations where it was easier to fell an accessible yet unapproved tree than the actual approved tree. Considering the trunks were moved without the help of machinery, this was understandable, but such harvests are strictly prohibited and risked a fine.

Knowing these issues surrounding applying the new forest law may arise, the Peruvian authorities had preempted this outcome by introducing the role of the regente forestal, a legally required and licensed forest engineer. This individual is deployed to support the harvest rights holder in dealing with the regulatory bodies and train them in how to apply the law correctly. However, in this case, the forest engineer failed to comply with this requirement. Though he prepared and signed the general management plan and operational plan, he did not engage further with the communities. The engineer felt that he was not paid enough to travel to the harvesting site on a regular basis and thus could not be adequately informed about the actual practices being undertaken or have any meaningful connection with the communities. In theory, the communities should have paid the engineer, but in reality, they had no financial means to contract this individual and thus relied on the company to do it. This resulted in the engineer feeling accountable to the company rather than the communities.

To manage the identified problems, it was decided to actively involve the supervisory body OSINFOR before it would be forced to fine the communities for issues that were not entirely their fault. Agrobanco convinced OSINFOR to carry out a workshop to develop the community's capacities in regard to forest management and forest law. Though 30 participants attended the three-day workshop, not all of Agrobanco's clients could be present. Members of the Nueva Esperanza community, which had the majority of loans, was unable to take part due the travelling distance.

After one year, the timber buyer repaid all 12 loans of the Fray Pedro community but only 19 of 37 loans for the Nueva Esperanza community. 18 had to be refinanced for an additional six months. The community claimed that the rainy season set in very late that year, leaving them unable to move the timber.

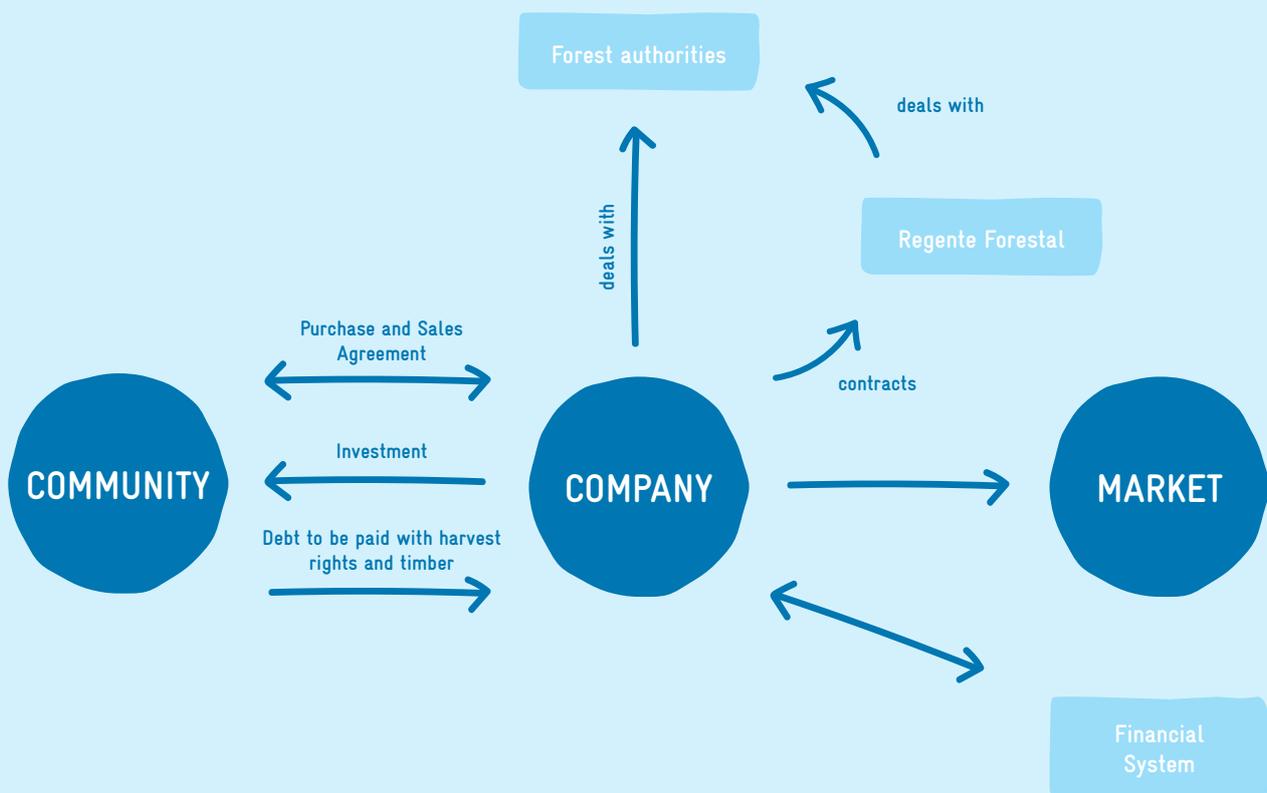
The company that repaid the loans was the same company that had previously worked closely with the communities. Agrobanco had tried to exclude this company when it required the communities to identify a new buyer. The community stated that another potential buyer was no longer interested. Additionally, the company had taken back all the powers that the bank required them to relinquish when it approved a loan for the communities. The communities subsequently requested a second loan, which Agrobanco rejected due to the low creditworthiness of the company working with the communities, the fact that 18 out of the original 49 loans had not yet been repaid, and the fact that the communities had reinstated the powers to the company owners. The bank felt the communities could not be trusted as they did not adhere to the covenants imposed by Agrobanco.

## CONCLUSIONS

Many indigenous communities living in remote Amazon locations have few opportunities to earn a regular income by engaging in economic activity. Their settlements are simply too far away for most agricultural products to arrive at market in a sellable conditions and transport costs are too high to be competitive. However, given that these communities own large areas of the surrounding forests, sustainable timber harvest could offer an alternative income solution as fine hardwood species fetch a high price and could cover transport costs. Communities like the Matsés possess a high amount of natural capital, but live in poverty. They have no financial resources to develop economic activity. Without access to formal funding options, they depend on outside investors (private companies, NGOs, government programmes) and informal money-lenders.

In the case of the Matsés, this led to a power imbalance between the investor and the communities. Though a licensed forest engineer was required by law and should in theory have provided technical support to the forest owners, in practice this did not work due to the lack of financial resources to pay the engineer. The investor acts as a gatekeeper through which the community members access financial and technical resources and interact economically with the outside world (Figure 16).

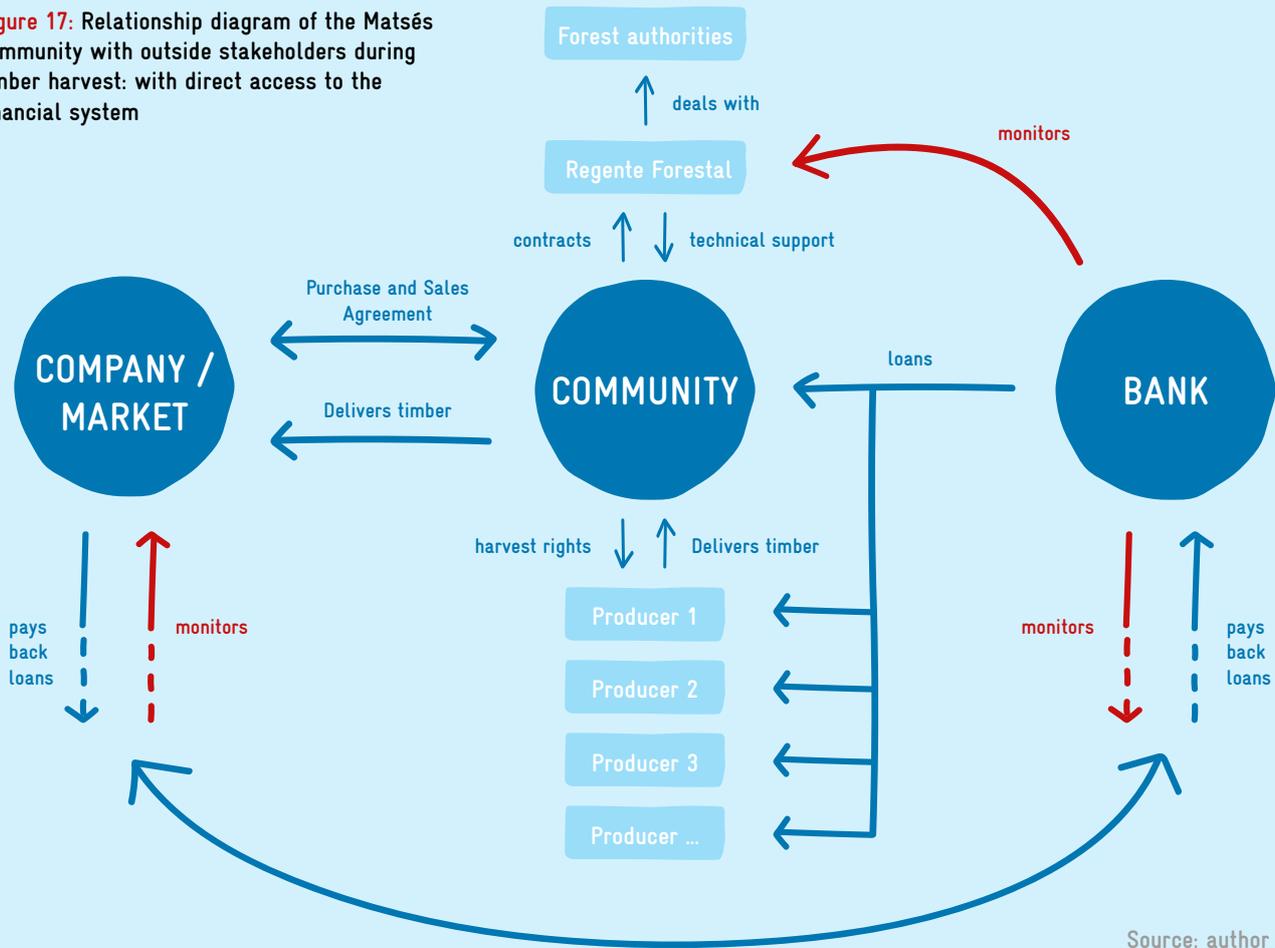
In order to change these dependencies and empower the community members themselves, it is crucial that the communities gain direct access to the financial system. This could strengthen their abilities to deal with business partners such as investors and timber buyers on more equal footing (Figure 17).



**Figure 16:** Relationship diagram of the Matsés community with outside stakeholders during timber harvest: without direct access to the financial system

Source: author

**Figure 17:** Relationship diagram of the Matsés community with outside stakeholders during timber harvest: with direct access to the financial system



Source: author

That being said, it remains very difficult to apply this theoretical framework to the real conditions on the ground. There are three core reasons that hinder successful implementation of the financial product and empowerment of local communities:

1. Due to operational complexity and high technical knowledge requirements, it is unlikely that traditional commercial banks will fill the financial gap without further incentives.
2. Lack of access to education and communication infrastructure prevents many communities from building much needed capacities in financial literacy, management and legal affairs.
3. The initial start-up costs, such as the developing a general management plan, are difficult to finance with a loan, as it is not yet clear at this early stage whether an economically viable operation can be implemented.

A number of measures could address these challenges. As a state-owned entity, Agrobanco could play a key role in developing a supporting programme. However, this would require a clear political mandate to do so. The bank could use

and adapt its already existing financial literacy programme and, by working in close cooperation with the national forest authorities SERFOR and OSINFOR, contribute to economic self-empowerment in the communities. Here, the bank could function as an honest broker and partner. By investing in the communities' economic activities, the bank would have a strong interest in the timber harvest's economic success and could assume an important role in monitoring the communities' technical and business partners, therefore strengthening their position.

Furthermore, the initial development costs, which would prevent a bank from getting involved, could be lowered with public or developmental resources. This could take the form of either a grant programme or a special development loan only repayable if the general management leads to a timber harvest.

The case of the Matsés shows just how motivated these communities are to engage in new economic activities. The Agrobanco clients seemed proud to receive loans, to be economically active and to earn their own income. It is therefore tremendously important to empower these communities, increase their economic participation in Peru and guarantee a sustainable forest use.

# 12. CASE STUDY III – FINANCING COMMUNITY LED PINE PLANTATIONS IN THE MOUNTAINS OF CHACHAPOYAS IN NORTHERN PERU

## INTRODUCTION

In 2016, as part of a company-wide campaign to increase forest loan sales, Agrobanco's branch office in Chachapoyas identified an opportunity to finance the management of pine plantations in seven >comunidades campesinas< (Peruvian non-Amazon indigenous communities<sup>16</sup>) in the Amazonas region<sup>17</sup> of northern Peru.

The land around Chachapoyas is mountainous and sits at an altitude of 2,200 to 3,000 m.a.s.l. The region is potentially interesting for forest projects, as, topographically, it has wide-open spaces, is subject to abundant rainfall and boasts a warm enough climate for trees to grow all year around. WRI identified this region as having the greatest potential for wide-scale restoration in Peru (WRI 2014a). In an initial assessment, Agrobanco identified some 2,785 ha of established two- to ten-year-old pinewood plantations, but it was estimated that, in the region as a whole, communities had set up plantations that spanned over 6,000 to 8,000 ha of land. Apparently, these areas had been reforested primarily through the Fondo Italo Peruano<sup>18</sup>, the Ministry of Agriculture's Agro-Rural programme and the community's own initiative. The reforestation projects had focused on installing the plantations, but did not provide ongoing support for managing the plantations thereafter, failing to account for the fact that a successful plantation requires much more than just planting trees. The communities seemed overwhelmed in managing the relatively huge extension as they had little techni-

cal training and no financial resources. The plantations required urgent maintenance in order to produce timber suitable for products other than firewood. The various stakeholders had different ideas about the use of the plantations and requested loans to finance activities such as more reforestation, plantation management, mushroom harvest and the purchase of saw mills.

Agrobanco recognized the potential and was hoping to finance quickly, as the communities had taken the most important and complicated step of starting a plantation business; the actual planting of trees. The first years of a plantation are the most risky, thus the fact that these plantations were already underway offered an advantage to Agrobanco because it would not have to finance the whole production cycle. It expected to concentrate on short-term loans, which would be repaid with income generated from the sale of some early products, such as firewood from thinning activities. The plantation's vast scale was another identified strength that would decrease the bank's loan granting and managing costs and the plantation owners cost of selling their timber.

Unfortunately, these positive expectations were not met. Other important prerequisites for making this project bankable remained unfulfilled. There were no developed timber markets and the communities lacked the requisite silviculture skills for managing the plantations.

<sup>16</sup> Law No. 24656 'COMUNIDADES CAMPESINAS', Article 2.- The 'Campesino' Communities are organisations of public interest, with the status of a legal person, formed by families that inhabit and control certain territories, united by ancestral, social, economic and cultural links, expressed in the communal ownership of land, communal work, mutual aid, democratic government and the development of multisectoral activities, whose aims are oriented to the full realisation of its members and the country.

<sup>17</sup> Not to be confused with the Amazon Forest. Peru is divided into 24 administrative regions governed by regional governments.

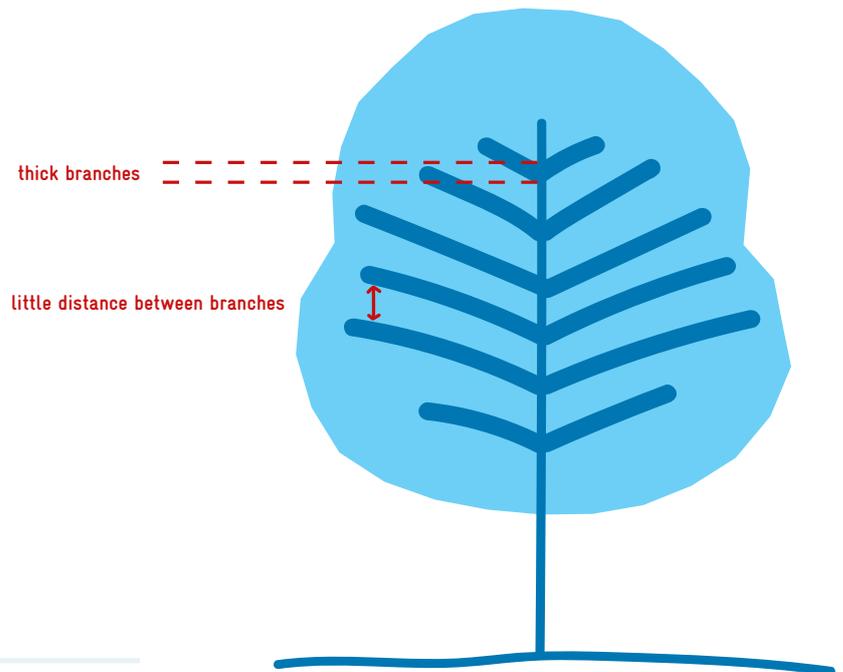
<sup>18</sup> The fund operated between 2001 and 2018 in Peru and was financed through a remission of debt worth EUR 200 million that Peru had with Italy. (GESTIÓN 2018b)



**Figure 18:** Photographs showing the countryside and a plantation close to Chachapoyas

Source: author

**Figure 19:** Sketch explaining the deficiencies of the produced trees due to a lack of silviculture management which will affect the quality of the timber produced.



Source: author

## 12.1 THE LUYA VIEJO COMMUNITY

### FORESTRY ACTIVITIES

Luya Viejo is a small town with around 50 households and was one of the communities in the area of Chachapoyas where a reforestation project was implemented. The community's primary source of income is derived from potato farming, which Agrobanco was financing. The people of this community live in simple houses made out of adobe and usually do not own a car or tractor. They use bulls to plough their fields. Agrobanco identified 579 ha of pine plantations, of which 2 ha were 18 years old, 45 ha 10 years old and 532 ha 7 years old.

## 12.2 STAKEHOLDERS

There were two primary groups that were interested in working with Agrobanco: (i) the president of the community who envisioned setting up a saw mill and a carpentry to produce furniture and (ii) a group of women who were already harvesting and selling mushrooms. Furthermore, a representative from the local tourist board stated an interest in developing recreational infrastructure and activities to attract tourists.

Plantation work was organised and carried out by the community as a whole and each member had to contribute a certain amount of their labour time on the plantation. The president explained that it was hard for him to motivate the community, as the plantation was not generating economic benefits other than a small income from the sale of mushrooms, and not everyone shared his long-term vision. He was therefore very eager to quickly develop some income streams from the plantations and hoped that Agrobanco could finance these.

## 12.3 CAPITAL REQUIREMENT

The president of the community enquired about a loan to finance a small saw mill and carpentry, which had an estimated value of around USD 20,000, and to finance forest management activities so he could motivate the community members to dedicate more time to the plantations. In terms of the capital requirement for the work in the plantation, Agrobanco had no idea how to value this. It depended largely on the time per hectare it would take a community member to carry out pruning and thinning. However, based on its experience in Peru, Agrobanco roughly estimated a cost of USD 100 to USD 200 per ha, reoccurring every three to four years. This would have been another USD 58,000 to USD 116,000.

## 12.4 CHALLENGES OF FINANCING THE LUYA

### VIEJO PLANTATIONS

While analysing the loan requests, Agrobanco identified challenges primarily in two areas:

- › The technical ability to manage its forest plantations
- › The market for the produced timber and other forest products

## 12.5 TECHNICAL ABILITY

In terms of forest management, the community had no individuals with the necessary technical know-how to oversee the work. Furthermore, there was no place where they could receive technical support or to coordinate their forestry activities with other communities. They were basically learning by doing without any clear management oversight or business plan. For example, they had heard it was necessary to prune the trees, but they did not know why and how to do it correctly. Considering the size of the plantation, and the lack of technical knowledge, the community could not keep up with the work, resulting in less qualitative timber. None of the hectares had received any thinning and only

a few hectares had been pruned. The planting spacing ranged from 2 x 3.5 meters to 3.5 x 4 meters. Due to the wide spacing and little pruning, the trees had produced very strong branches. The space between branches was also very short. This meant that there was very little clean, knot-free timber between the big knots from the branches. The more knots a tree has and the thicker they are, the less marketable its timber will be. Finally, due to the lack of thinning, the older stands had too many trees per ha, which had hampered the diameter growth. As a result, the trees were not as big as they could have been.



**Figure 20:** Photographs showing the plantation of Luya Viejo.

Source: author



## 12.6 MARKET

At the time, the community had no buyer for the timber and did not know how to find one. Furthermore, the mushrooms did not provide sufficient income to finance the aforementioned capital requirements. Agrobanco also identified two other problems: first, there were only two ha with diameters large enough to produce sawnwood, and the quality of this wood was expected to be low. Second, the timber thinning would only be usable for fuel wood, but it was not known how much the regional market could absorb and at what price. Considering the high number of pine plantations in the region, Agrobanco feared it could be complicated to sell sufficient firewood to pay back any

loan. In terms of accessing markets, Agrobanco feared that the transportation costs could potentially be too high. On the plus side, the plantation could be accessed by a gravel road, which was generally useable by trucks, subject to weather conditions. However, due to the mountainous nature of the region and its deep canyons, transportation time to the next economic centre was four hours. And, in order to reach its largest potential market to the north, it could take up to 18 hours. Other notable points were that the plantation had access to the electricity grid and had a mushroom drying facility installed (basically a greenhouse with vent to release humid air).

## 12.7 DEVELOPING CONDITIONS

### CONDUCTIVE TO LENDING

A successful loan application required an operational plan, which clearly defined productive activities and calculated their costs. Additionally, it required a business plan which identified buyers, realistic prices and a strategy for accessing the market. Developing an operational and a business plan required producing a forest plantation inventory, which included growth rate and future timber volume estimates. As neither was provided because the communities lacked the capacity to develop them, Agrobanco looked for synergies within regional institutions to support the communities. Although the regional government expressed interest, they did not pursue it any further. The National University Toribio Rodríguez de Mendoza of Chachapoyas (UNTRM), on the other hand, did engage rather enthusiastically. They were just about to introduce forestry as a new career path and had a close cooperation arrangement with the forestry department of the University of Applied Science and Arts in Göttingen, Germany (HAWK). Though the forestry department was in its infancy, the university committed to supporting the communities and Agrobanco. Through their cooperation with the German university, two graduate students soon came to Peru for two months and worked together with first-year local students. By means of their work, the university was providing

the inputs required to develop an operational plan. They drew up an inventory and maps of all the surrounding plantations, developed management plans and training materials for the university and the communities, and conducted time studies of the various silviculture activities to establish a cost for every activity.

What proved to be more complicated was developing a business plan. The university made an enquiry with local carpenters and timber users in Chachapoyas. They stated that they had no experience with pinewood and they preferred species from the Amazon, with which they were well acquainted. This was as much as the university could do at that time and Agrobanco was unable to find a partner with more business acumen to support the communities. The best option would have been to identify one or two buyers with sufficient capacity to buy all the timber through a purchase and sales agreement. This would have been a good guarantee for the bank to secure loans for the community. Agrobanco was skeptical as to whether the communities would have the skills to sell the timber independently, considering the high amount of timber (which could come from the plantations) and the market, which is not yet sufficiently developed to absorb much pinewood.

## CONCLUSION

Plantation forestry offers great potential for combining reforestation goals with economic value creation. Simultaneously, natural forests also benefit, as the pressure from forestry activities can be eased through alternative sourcing of timber.

The case of Chachapoyas had two strengths: (1) the plantations were already installed and had survived the most critical stage of early age and (2) the combined size was large enough to potentially generate synergies in plantation management and the sale of timber in order to reduce overall transaction costs.

However, because the communities had only received technical support in the early stages of the plantation set-up, but not during the middle stage, the quality of the timber could not compete with that of timber from natural forests. The communities lacked key knowledge about silviculture and did not possess the necessary capacities to sell sufficiently large volumes of timber. Demand for the produced timber was thus negligible, which in turn hindered the bankability of the project.

There are two key conclusions to be drawn from this case study:

1. Producing timber involves far more than simply growing trees. Projects focused on reforestation need to concentrate on the whole production cycle, not merely on the successful establishment of plantations, even though this requires a much longer project duration than any typical development project.
2. If there is no established value chain in the region for the timber produced, reforestation projects need to be much broader in design. They should include the development of a market for the timber. This requires the inclusion of, and coordination with, various stakeholders such as government institutions, forest authorities, educational and research institutions, and members from the private sector.

# 13. CASE STUDY IV – DEVELOPING A CREDIT PRODUCT FOR SUSTAINABLE LANDSCAPE FINANCE AND SMALLHOLDER AGROFORESTRY SYSTEMS

## INTRODUCTION

In 2015, Agrobanco set out to develop dedicated credit for Agroforestry systems as part of its first product within the framework of its transition to a green bank. This required the bank to fundamentally change its concept of agricultural credit. The product sheet approach it used did not work for financing smallholder reforestation activities due to the long production cycle, the missing market link and the lack of expertise on the part of all stakeholders. Agrobanco had to start recognizing farms as systems wherein different parts influence one another within the whole.

This process was accompanied by the German Cooperation, implemented by GIZ, through its project Finance Mechanisms for Low-Carbon Development (FinanCC)<sup>19</sup>. Among other things, Agrobanco contracted the World Agroforestry Centre (ICRAF) as part of the project to assist as technical partner in the development of a capacity-building program in order to train Agrobanco's staff and outside stakeholders. The training included how to analyse farms with a systemic approach, the risks of climate change and the implementation of more resilient climate smart practices such as agroforestry systems.

<sup>19</sup> FinanCC is a project within the framework of the Climate Finance Readiness Programme (CF Ready) financed by the German Federal Ministry for Economic Cooperation and Development (BMZ) with co-financing by the United States Agency for International Development (USAID).

### 13.1 AGROFORESTRY SYSTEMS

Agroforestry is a name for land-use systems in which trees grow among crops or pastureland. The trees can have positive effects on agricultural production, such as blocking wind, counteracting soil erosion, regulating temperature, and providing shade and nutrition. In Peru, agroforestry is usually associated with coffee and cacao plantations. Because the forestry part of this land-use system contributes to the production of agricultural crops, it is a production factor equal to inputs like fertiliser and fences. It can thus be financed as part of a standard agricultural loan (please see ‘Addressing bankability in agriculture lending: The product sheet’).

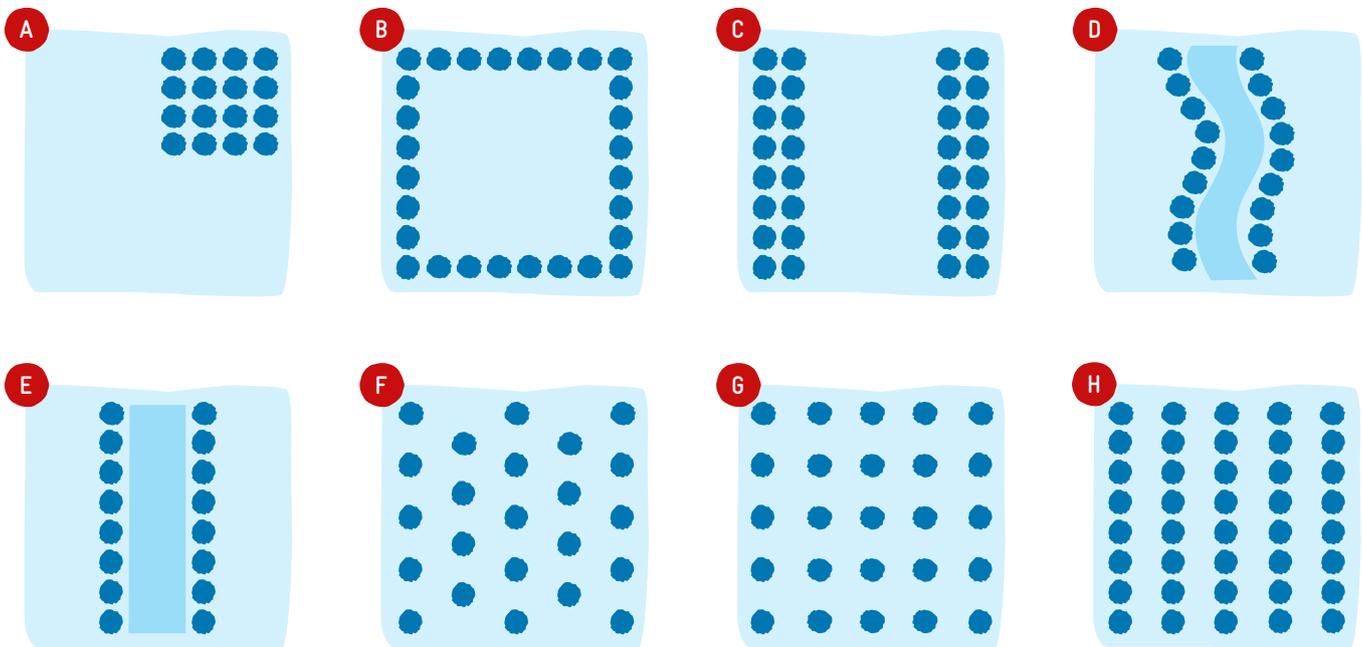
However, the definition of agroforestry goes beyond growing trees with agricultural production in the same space and at the same time (Figure 23: cases F and G). Agroforestry can be defined as any kind of tree management on farms. This includes small forest plantations, living fences, trees in rows, along paths, or in any other way one can think of (Figure 23), even alternating in sequence (Robiglio et al. 2017) as is done in taungya systems.

### 13.2 CHALLENGES OF FINANCING SMALLHOLDER

#### REFORESTATION ACTIVITIES

It is crucial to understand how agricultural loans work in order to address the complex challenge of financing the smallholders’ tree planting projects with a bank loan. In essence, the bank calculates the agricultural production value by multiplying expected produced quantity with the expected price at the end of the production cycle. The result is the maximum repayment capacity of the farmer. As a consequence, the loan amount must be lower than the value of the agricultural production. In its first attempt to develop an agroforestry loan product, the bank merged a production sheet for smallholder forest plantations and one for agriculture production into a single product sheet. However, even after extensively investigating smallholder plantation in Peru, it did not manage to elaborate a satisfactory product sheet for it.

Figure 21: Ways of integrating trees in agroforestry systems



Source: Robiglio et al 2017

In addition to the difficulties involved in the agricultural lending process, as described in section ‘Risks associated with agriculture lending’, Agrobanco identified three obstacles specifically applicable to financing reforestation:

1. There were no developed timber markets.
2. There was little knowledge among farmers of silviculture.
3. There was a very long production cycle.

### 13.3 NO DEVELOPED TIMBER MARKET

There are no central marketplaces for timber similar to local or regional markets for agricultural products which would act to enhance price transparency. Agrobanco conducted a market study that revealed there are only a few experienced buyers when it comes to processing timber from plantations. Buyers demand timber from natural forests, which they consider to have better properties than timber from plantations. Thus, there are few recorded transactions for plantation timber and no current market price can be determined with certainty. The exception is the tree species *bolaina* (*Guazuma crinita*), which has developed a value chain in some regions (CIFOR 2013). However, due to its specific site requirements, it is not universally suitable for farmers.

### 13.4 NO SILVICULTURE (FOREST PLANTATION MANAGEMENT) KNOWLEDGE

Up until now, forestry activity in Peru has been based on finding and harvesting naturally grown trees. There is a general lack of knowledge of silvicultural practices for plantation forestry among the various key stakeholders, such as farmers, technical training providers and government and non-governmental institutions.

The missing expertise encompasses key aspects such as:

- › Site-species matching (selecting the appropriate species considering climate, soil and other conditions)
- › Plantation management techniques for growing the desired timber properties and products
- › Integrated pest management and management of natural disasters

Furthermore, there is little systemised information about the productivity of different species under varying site conditions as well as within different production systems such as agroforestry or forest plantations. It is therefore not possible to project with high enough certainty the quality and quantity of the timber which will be produced.

### 13.5 LONG PRODUCTION CYCLE

The long timber production cycle adds a great deal of complexity and risks to the activity:

- › For one, even though Agrobanco struggled to project a realistic return rate for the forestry plantations, there were strong indications that its interest rate was too high for the activity, considering the compounding effect over a long production cycle.
- › Secondly, it increases the risk that a client may abandon or give up the activity for multiple reasons and walk away from the loan.
- › And thirdly, the bank had to be even more confident in its product sheet calculation for a short-term loan due to the long feedback loop. For a short-term agricultural loan with a six- to twelve-month term, a bank can learn very quickly if it miscalculated and can adapt accordingly. But how does a bank manage a loan portfolio if it cannot establish an accurate price for what guarantees the repayment (the timber), and cannot rely upon the borrower to know how to produce it in the first place? Furthermore, it will take a very long time to find out if the assumption on which the loan was based was correct.

### 13.6 A POSSIBLE SOLUTION: AGROFORESTRY IN ITS

#### WIDER SENSE; FARM FORESTRY

Agrobanco required a loan product which addressed the problems raised in the previous section and which reduced the overall cost of the loan to the farmer. In order to overcome these limitations, the bank did two things:

- › It started to finance trees as an input factor for agricultural production in agroforestry systems.
- › In a second step, the bank began to evaluate agricultural production on farms as agricultural systems rather than singular crop production.

The advantage of being an input for something else was that the tree did not need to be paid for by itself with its own timber. It was sufficient that the cost of planting the tree was associated with the income from another crop. It was thus not necessary to know the value of the timber produced.

Agrobanco quickly reached the limits of the product sheet approach it was using, where every output was directly associated with the input factors used. The product sheet approach to financing is essentially one of standardisation. It assumes production costs are the same for all the farmers in a specific region, i.e. every farmer requires the same amount of fertiliser, labour and pesticides and all pay the same price for these inputs. Discounting for the moment the question of whether this standardisation method is correct in the first place, it is not possible for agroforestry systems. Choosing the species, the quantity and the place to plant the trees depends on a multitude of factors, making standardisation difficult to achieve. Factors influencing these decisions include the level of soil degradation, existing tree cover, level of sun radiation due to altitude and exposure as well as general environmental and climatic conditions affecting the landscape where the farm is located (Robiglio et al. 2017).

Due to the higher complexity, the bank required a process to evaluate loan applications on a case-by-case basis, as opposed to the standardised product sheet approach, and tailor the loan to the needs of the farmer. This in turn required staff with a higher level of analytical skills to evaluate the farm as a system where many direct and indirect factors interact and influence the ultimate success of the farmer. This may be the several crops the farmer produces, where one bad harvest of a crop not financed affects the repayment capacity of another crop financed by the bank, or it may be the trees directly protecting the crop by providing shade or indirectly by protecting a water source or reviving a degraded area.

Evaluating farms as systems combined with the wider definition of agroforestry systems as outlined above opened up many new possibilities. The bank could now finance many types of trees on farms, even small-scale pure forest plantations, with income generated from other non-directly associated agricultural production, as long as it belonged to the farming system as a whole. In order to do that, it had to introduce a new systemic evaluation method to its loan approval process and train stakeholders accordingly.

## EXAMPLE 1

Imagine a coffee farm that currently has two plots, one well suited for coffee production and the second less so because it has recently been deforested and the terrain is so steep that rain will erode the soil very quickly:

**Scenario 1:** The bank finances both. Due to heavy rain, the farmer loses production on plot 2 and now does not have sufficient resources to pay back the two loans.

**Scenario 2:** The bank recognises that plot two is not suitable and only finances plot 1. The farmer, however, continues with two plots and might even use inputs financed by the bank earmarked for plot 1 for both plots, with the result that they will not suffice. Productivity drops on both plots and they both are more prone to disease and pest attack. The farmer loses the capacity to repay the loan.

**Scenario 3:** The bank's analyst is trained to see the farm as a system and identifies the risk of both previous scenarios and does not finance at all.

**Scenario 4:** Similar to scenario 3, but in this case the bank finances plot 1 and reforestation of plot 2 as part of an agroforestry loan.

## 13.7 AGROBANCO'S AGROFORESTRY CAPACITY

### BUILDING PROGRAMME

Given the higher complexity of the agroforestry loan compared with the bank's standard loans, Agrobanco identified the need to supplement its introduction with a capacity training programme to strengthen various stakeholders and improve the enabling environment. The programme was modular in design, with different levels of depth depending on the target group. Its objective was to increase technical knowledge, improve analytical skills and develop capacity to design and implement more resilient farming systems. It was directed at people working to provide technical assistance in the field, at the bank's sales force, at the analyst who visits the farms and evaluates the loan applications, and at middle and higher management.

The first part of the programme covered climate change, agroforestry systems and the sustainable landscape approach. It was complemented with technical modules on coffee and tree species and designed in a way that meant it could be easily extended to include other associated crops such as cocoa. The second part of the programme focused on improving the analytical skills of the bank's staff and providing them with the tools to make recommendations to improve farming systems. The new process was based on the sustainable rural livelihood approach developed by Scoones in 1998. Its objective was to assess the viability of the activity the farmer sought to finance. The bank would therefore evaluate 5 assets the farmer ought to have had in order to provide the capital base required to successfully implement the

activity and ultimately determine the client's repayment capacity. In Agrobanco's case, these assets would have been identified as natural capital, physical capital, human capital, social capital and financial capital.

While the bank's evaluation of the human, physical and financial capital did not differ greatly from the previous evaluation, the new process focused much more strongly on the natural and social capital than before. The loan office would access the farm's productive capacity and identify possible environmental and social risks and strengths and may have made recommendations or imposed covenants (a covenant could be, for example, the requirement to plant trees to counteract soil erosion, etc.). The whole sales process would turn into more of an advisory process, moving away from purely financing what the farmers wanted towards financing what they needed. For the bank, this brought the advantage that it could identify new activities to finance and reduced risks of current standard loans and thus increased sales. Effectively, an identified weakness could be addressed in a second loan for the farmer and make the first loan possible, as the resulting risk could be reduced or mitigated through a better-designed loan. This could be the financing of an agroforestry system, as well as other climate change adaptation measures, such as an irrigation system in the event that the risk of drought negatively affects the natural capital's scoring.

**Figure 22:** Five assets (as identified by ICRAF) Agrobanco's clients ought to have to improve the success of their financed production activities. Based on Scoones' sustainable rural livelihoods



**Natural Capital:** Natural resources of the farm such as the soil, access to water, topographical aspects and others



**Human Capital:** Capacity and knowledge of the farmer such as education and experience



**Social Capital:** Access to networks such as family, producers association, cooperatives



**Financial Capital:** Access to finance as well as own savings



**Physical Capital:** Production infrastructure, machines and tools

Source: Robiglio et al. 2017

## 13.8 PRODUCT DEVELOPMENT: AGROBANCO'S FARM

### FORESTRY FINANCE MODEL

For the new agroforestry loan product, Agrobanco deconstructed the cash flow of the forestry component and attached the different cash flow parts to the agricultural loans as part of a series of short-term agroforestry loans. The advantages of several short term loans to finance a long term activity, i.e. forest plantation, are:

- › The much lower total interest cost for the farmer
- › The substantially reduced risk profile of bank activity
- › The accelerated feedback loop, which improves the activity monitoring and steering

Figure 24 shows a forest plantation's typical possible cash flow. Values and timeframe have been randomly picked, but the interrelations are realistic.

The internal rate of return (IRR) of this activity would be 9.5%. If one finances this activity with a loan, with an interest rate of 9.5%, the interest payments would completely absorb the return as is depicted in Figure 25 (Agrobanco's interest rates were between 15% and 25% p.a.).

The dark blue bars represent the cash flow from the plantation and the light blue bars the value of accumulated interest. The interest is accumulated because there are no positive cash flows that could provide the funds to pay the interest. The red bars indicate the accumulated negative cash flow from the investment period (the loaned amount). The accumulated interest plus

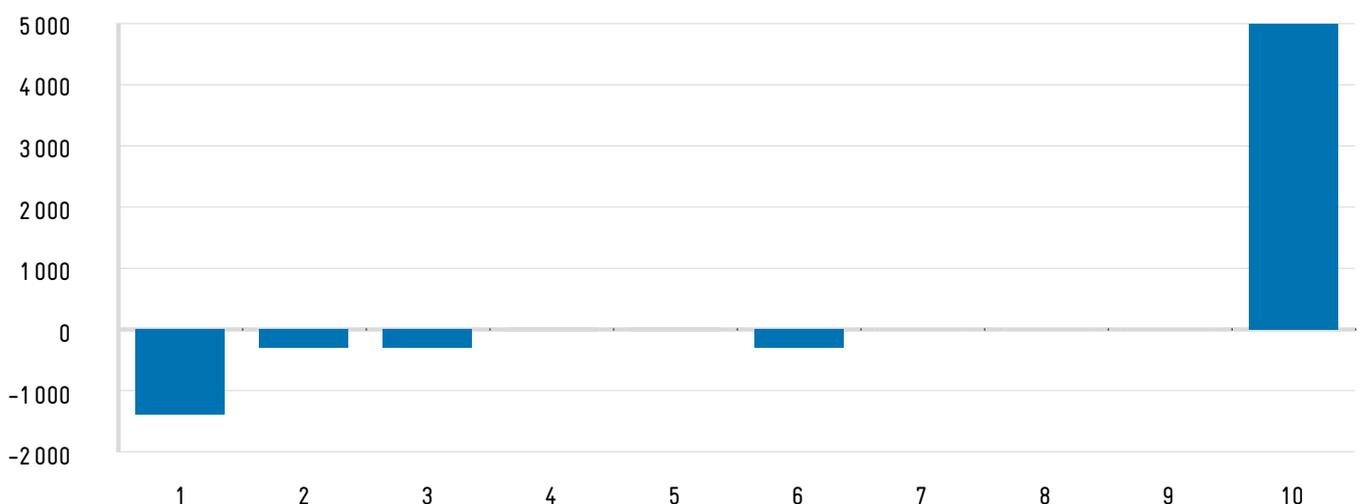
the loaned amount equals the income at the end of the investment period. What is striking in this example is that the cost of finance (2,800) is higher than the nominal cost of the plantation (2,200). This is due to (1) the fact that most expenses are at the beginning with a long investment period, (2) the interest rate being high and (3) the interest on interest, which accumulates exponentially because of just a single amortisation and interest payment at the end of the investment period.

There are three ways to reduce forest plantation cost of finance:

- › Keep the initial expenses as low as possible. This can be achieved through, for example, correct site-species matching and silviculture practices using close to nature forestry principles.
- › Reduce the interest rate well below the IRR. However, in the case of Agrobanco, this was not possible.
- › Pay back the loan as quickly as possible with income generated from other activities, therefore avoiding the accumulation of the compounding interest.

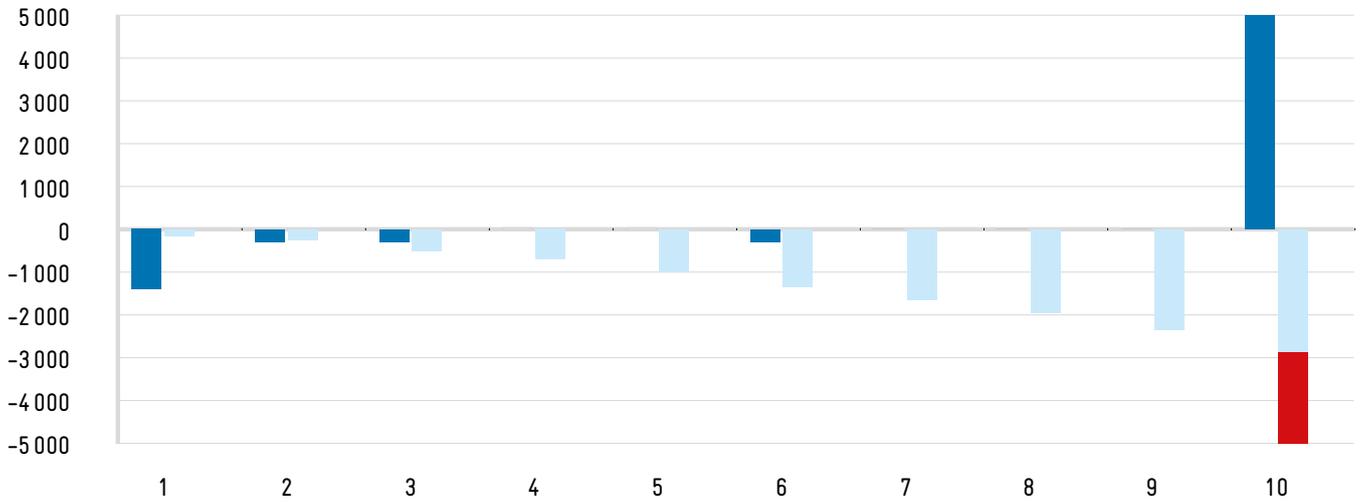
The third option was where Agrobanco's idea of the deconstructed cash flow set in: Whenever there is a negative cash flow from forestry activity, pair it with a short-term agricultural activity to create an agroforestry activity. This makes it possible to pay back the expense near the time when it occurs and prevents the accumulation of debt and interest with the self-enforcing effect of the compounding interest.

Figure 23: Exemplary forest plantation cash flow



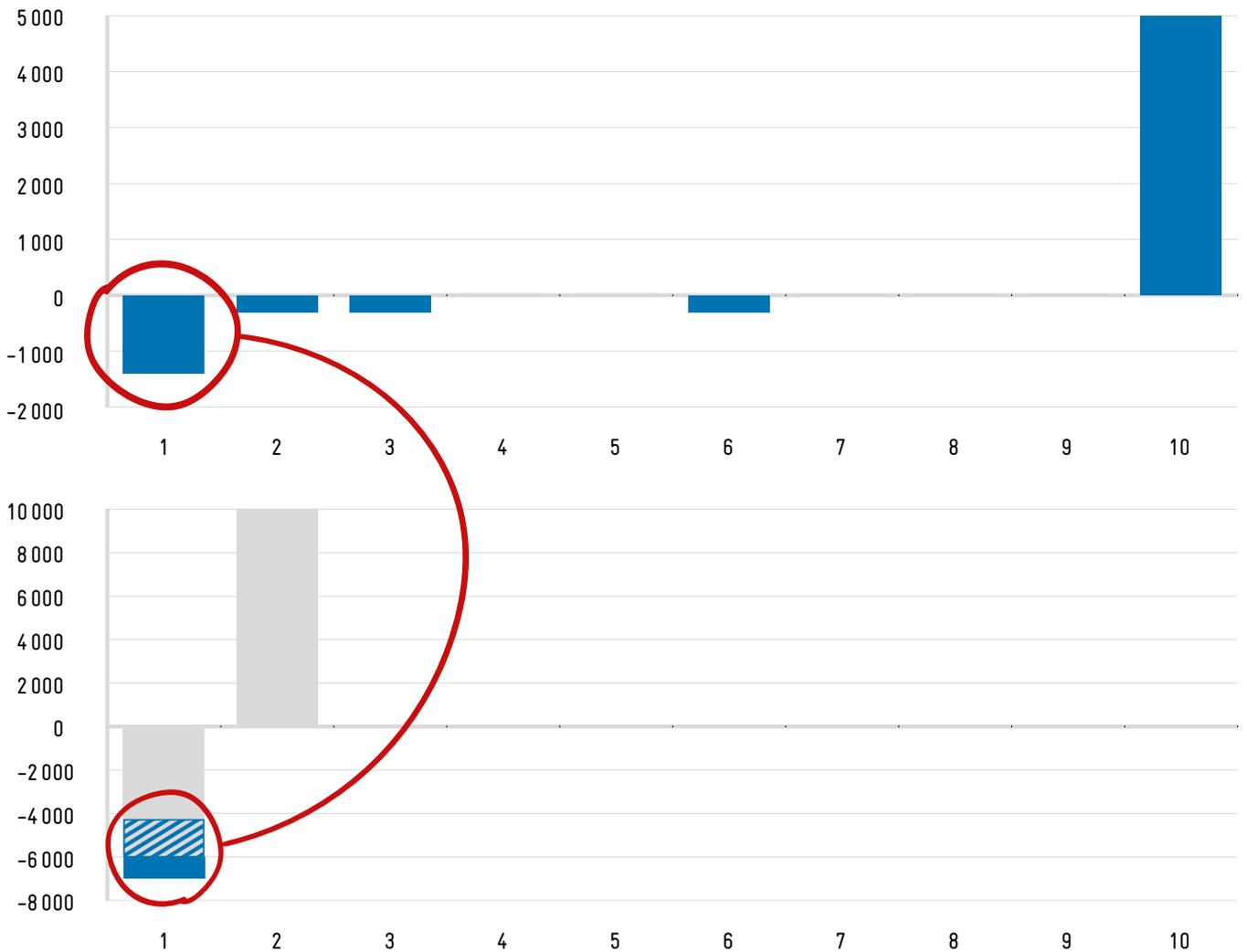
- Cash Flow Plantation
- Accumulated Interest
- Amortization

**Figure 24:** Example: The accumulated interest cancels out the return from the forest plantation



Source: author

**Figure 25:** Example of deconstructed cash flow: Pairing forest plantation expenses with income from agricultural production



Source: author

## EXAMPLE 2

In year one, the bank uses its banana loan product together with an agroforestry add-on option to finance the installation of a forest plantation. The banana loan would finance all activities to prepare the land and plant banana seedlings. The Agroforestry add-on would be minimal as it would only need to cover the cost of the tree seedlings, which will be planted into the banana plantation. All other associated costs are already covered by the banana loan. In year two, the farmer will use the income from the bananas to pay back the banana loan with the agroforestry add-on option. At some point, the trees will outgrow the banana plants and the farmer will be left with a forestry plantation at minimal cost.

In addition to the reduced financing cost for the producers, this solution is very compelling from a risk perspective as it completely removes the dependency on the market link and the farmer's ability to produce a sellable timber product. All Agrobanco has to do is verify that the forest component is part of an agroforestry system and that the agricultural component can sustain the possible higher costs due to the forestry add-on. This way, a farmer can even finance species with very long production cycles, e.g. 40 years or longer.

## 13.9 RESULTS

By July 2018, Agrobanco's agroforestry loan portfolio had grown to 1,270 loans of cacao-bolaina-based agroforestry systems at an average loan amount of USD 1,635 and 90 café agroforestry systems at USD 4,595. This translates to approximately 1,360 ha of agroforestry systems. The gap between the two crops can be explained as follows: Cacao plantations are usually suitable for bolaina trees. Due to the market for bolaina, farmers were incentivised to invest. Café had no clear association with one species. Some farmers tried to grow pine, but market incentives were less clear. Additionally, Agrobanco reduced overall lending to the café sector due to its broader problems. Agrobanco was working to associate trees with other crops, starting with banana, but by the time the product was developed, it had generally stopped to pursue the Green Bank project. However, one problem that emerged was that the generally low productivity of Peruvian smallholder farms made it complicated to finance tree production with the agriculture crop. And, demand from farms to invest came primarily from regions where there was a bolaina value chain. Otherwise, farms were shunning the timber market risk (the same one which prevented Agrobanco investing).

**Figure 26:** Six-year-old banana-bolaina agroforestry system

Source: author



## CONCLUSION

Agroforestry systems (AFS) can be highly beneficial for farmers and the lending bank alike. The plantation and tree ecosystems can be more resilient and protect farms against turbulent weather conditions and soil erosion, as well as provide nutrients for agricultural crops. Furthermore, the trees have the potential to provide an additional income stream. A more resilient farm with diversified income sources reduces the risk for agricultural lending. On a societal level, agroforestry has the potential to bridge the seemingly insurmountable divide between agricultural development and forest preservation/restoration. The provision of a financing option would therefore be highly desirable.

That being said, the development of a financial product focusing on agroforestry proved rather challenging. Though the theoretical concept of agroforestry appears to be easy to grasp, the practical reality in the field is often far more complex. Factors influencing the right combination of forestry and agriculture are numerous, hence farms require their own tailor-made solutions. This in turn contradicted the standardised 'product sheet' approach to loan evaluation used by the bank. Another difficulty proved to be related to the weak link between the added costs of AFS and the visibility of its added value creation.

One can divide the added value of AFS into value added to agricultural production and value added through selling timber from the trees. If the added value is not very evident to farmers, they will not be prepared to invest in such a system, with or without a loan. If the added value is an input factor, then it may not be immediately visible, as its realisation may be in the mid-future or take place slowly over several years. For similar reasons, it proved to be complicated for Agrobanco to incorporate the costs of AFS as input factors into the loan process. This required some effort to increase the staff members' technical knowledge.

When it came to generating income from the sale of trees, the lack of strong market demand for smallholder plantation timber or, if a market existed, the costs of accessing this market, proved to be a barrier for wider investments into AFS. Thus, Agrobanco only experienced increased uptake of its agroforestry loan product in some regions and in cases where farmers could use the tree species *bolaina*, which had an established value chain.

In order for agroforestry systems to be adopted more widely there needs to be greater visibility of the system's economic benefits to justify the investment. This could be achieved in two ways:

1. In the event that implementation of an AFS increases resilience and therefore reduces the risk, banks should consider this when they price in the risk and thus offer a lower interest rate to clients with a lower risk score.
2. Creating demand for timber from smallholder plantations and having accessible markets available would create a strong and visible incentive for farmers to invest more into agroforestry systems.

The experience at Agrobanco showed that, in order to finance agroforestry, it would be beneficial to analyse a farm as a system, rather than as a number of unrelated activities. This may involve redefining the loan assessment procedure and assessing income streams from different crops jointly in one loan application. This of course requires the bank to have the necessary technical capacities to do so. Agrobanco thus decided to supplement the introduction of agroforestry loans with an educational training programme for its staff, which was developed by ICRAF.

Interestingly, by developing its agroforestry product, Agrobanco found a way to finance smallholder forest plantations. The traditionally used single activity 'product-sheet' approach to loan assessment limited the bank in its evaluation and financing.

If, however, the forest plantations were integrated into an agroforestry system and the bank possessed the capacity to evaluate it as such, the long term forestry activity would be paid for by income from a short-term agricultural activity. Indeed, with the reforestation costs and, in particular, the cost for maintenance being relatively low within an AFS, the inclusive income streams evaluation could be a vital part of reforestation activities in Peru, especially considering that most of Peru's reforestation potential lies in farmers' smallholdings.

# 14. CONCLUDING REMARKS

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The case of Agrobanco and agricultural development in Peru in general illustrates how challenging it is to pursue both forest preservation and economic empowerment of rural communities. Nonetheless, the efforts of Agrobanco show that there are solutions available to combine these goals and the crucial role the financial sector can play in this process. Far from merely providing capital, a bank that develops a clear strategy for sustainable finance and recognizes its responsibility to society can exercise significant influence on its clients and the economy as a whole. Agrobanco's green bank strategy did just that and embarked into an unknown field that was just about to develop its full potential, not just in Peru, but on a global scale. As such, Agrobanco could certainly be considered a pioneer in green finance for agriculture and forest management. In this endeavour, the bank profited from its strong nationwide presence, which enabled it to engage with a broad range of projects and activities. As a Peruvian institution, its access to rural producers was unparalleled. In this set-up, the bank could test new products and investment ideas, which in turn drew immediate feedback in the form of uptake from clients and the repayment of loans. The lessons learned from its journey are valuable beyond its own operations and deserve to be shared with other peers.

Agrobanco's experience is particularly interesting because it provides a practical example of trying to scale up landscape investments which allows us to verify some common assumptions in the context of international climate finance. Sustainable landscapes need to attract private investors in order to close the huge gap between current and required investments. However, many sustainable landscape projects are not bankable and often lack the scale required by investors to be considered. A proposed solution are so called aggregators, institutions who bundle small scale bankable projects to larger investments which can then be financed through capital markets. Even before Agrobanco began its transition to a green bank it could be considered as an aggregator. It was a nationwide operating agriculture development bank with a special focus on smallholder farmers in rural and often remote areas. It had an operational structure with a constant presence in the field and was extending loans for agriculture production. As Agrobanco refinanced itself through capital markets and direct loans from national and international commercial banks, such as Deutsche Bank or Citibank, it was essentially "bundling" small loans to be refinanced by larger investors. Building a green bank was the attempt to integrate a sustainable landscape approach into the equation.

And even so, the green bank in the end never really took off. Agrobanco made quite a few advances in building a sustainable landscape finance department. By the end of 2015, it had laid the groundwork to finance activities such as agroforestry, forest plantations and natural forest management, and in the following two years it increased its portfolio to 1,676 loans in 10 different activities and a total value of PEN 55.7 million (USD 16.7 million). Agrobanco's experience confirmed for Peru that the majority of sustainable landscape investment opportunities are small scale and bankability is indeed a problem. However, bankability was not confined to sustainable landscape finance, but was an issue for the bank's whole target group. To address this, the bank used a methodology common in agriculture lending. The so called "product sheet", which is essentially a business plan template that the bank completed together with the client in order to establish the income and costs, including the cash flow and operational activities for the planned project. With this technique, the bank tried to mitigate the risk that many clients did not present a well-structured business case. The main challenge for Agrobanco was to adapt this methodology and produce business plan templates for sustainable landscape projects because of the wide range of types of projects that required many different business models making them difficult to standardize. Ultimately, the biggest challenge was the lack of readily available and reliable information in regards to tree species management in plantations and its productivity as well as timber market information. Another important factor, especially in case of natural forest management, was the lack of operators with the technical capacity to manage harvests and fulfil legal obligations.

Bankability means in essence that the relationship revenue, costs and risks is in balance. What the experiences of Agrobanco showed again and again is that this balance is very difficult to strike in Peru due to structural challenges which could be grouped in infrastructure, market and cost of finance. Starting with the development of a project, the farmer has to invest into research and development. Intellectual infrastructure is of low quality. Information on production systems is of low quality or entirely unavailable and often not systemized and/or hard to obtain. Physical infrastructure is of low quality too, which increases general project costs, for example costs and duration of transport. As a result, higher costs put pressure on project profitability and/or developers fail to invest sufficiently in research and development. Both reduce the business case quality.

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On the other hand, it is difficult to estimate future revenues as there is either:

1. no transparent market for timber, as is the case for smallholder plantations and agroforestry systems, or
2. the markets are difficult to access because of insufficient infrastructure, missing business acumen or the products do not meet the required standards.

Project developers have to invest in market development and infrastructure which adds even more costs to the project. As a result, projects have a problem from both the income and the cost side. The risks increase to the point that that project developers do not invest sufficiently, underestimate costs and overestimate returns and probability of returns in order to make business cases work. From the bank's perspective, both deficiencies, market and infrastructure increase the costs of the loan. On one hand, the increased project risk leads to a higher risk margin and the bank has higher operational costs itself as the loans require more administration, which is more expensive due to insufficient infrastructure. Additionally, Agrobanco's high funding cost was another problem. Even though the bank had the advantage of having an implied government guarantee, its funding costs were still around 8–9%. Cheaper international USD or EUR loans did not provide a solution as currency conversions and hedging costs were very high. Ultimately, the interest rate added yet another risk to projects as it required them to generate a higher return just to cover its financing costs.

Large scale projects may be able to compensate some of the challenges as they can absorb higher costs for research and development and marketing and infrastructure and divide them over a great number of hectares. The impact per cubic meter timber is lower than in the case of smaller projects. Considering that the potential in Peru is mainly for smallholders, this presents a strong barrier for sustainable landscape investments. It would make sense to centralize those costs and share them evenly between many producers. The natural stakeholder who organizes this would be the state whose responsibility is to invest in physical and intellectual infrastructure and provide an enabling environment to foster investment. It would be useful to evaluate the strengths of different regions and develop standardised technology packets for

different types of soil and climate conditions. Economically, it would be recommendable to establish clusters and producer associations in order to coordinate production, harvest, transport and sale. This would enable smaller projects to enjoy the same cost benefits and marketing power as large scale projects. Missing market incentive is currently a big problem. Here, strategic action is required to develop a plantation timber market. One example could be a requirement to source plantation timber in all types of public projects. But, in order to create a broader demand from consumers, it would be necessary to develop and spread technical capacities on how to use plantation timber in building construction and furniture production and how to address some of the disadvantages of fast growing species versus more durable slow growing species currently found almost exclusively in primary forests. An interesting vision would be Peru as a leader in sustainable timber construction with the main resource produced by smallholder farmer in sustainable forest landscapes.

Finally, a better enabling environment including better infrastructure and transparent and accessible timber markets will bring down the cost of loans. However, it would not affect the high funding costs which Agrobanco faced in Peru. Considering climate finance requires international impact investors, the cost of converting the funds back and forth and the hedging of the risk of exchange fluctuations is currently too high. It would be paramount to find a solution to this problem, for example a subsidy through the green climate fund or a similar institution.

Agrobanco's work confirmed experiences that circulate around the globe. The core challenge of landscape finance lies in the high number of small-scale projects and their bankability. Undoubtedly, a lot of investment is required, and it is hard to imagine how this can be achieved without institutions similar to Agrobanco, which are present on the ground and can use their local knowledge to connect rural stakeholders with financial markets, thus channelling investment into the development of sustainable landscapes. However, this institution can only be one piece of the puzzle. The case of Peru shows that there are still many structural challenges which need to be addressed in order to stimulate and foster sustainable investment. That said, the positive business environment in Peru, the great opportunities for the forestry sector, especially through landscape restoration, and, most importantly, the motivated people of Peru are an encouraging prospect for the future.

## ACRONYMS AND ABBREVIATIONS

<b>AFD:</b>	Agence Française de Développement
<b>AFS:</b>	Agroforestry systems
<b>BaU:</b>	Business as usual
<b>Bladex:</b>	Banco Latinoamericano de Comercio Exterior
<b>CAF:</b>	Banco de Desarrollo de América Latina
<b>CIM:</b>	Centre for International Migration
<b>CITES:</b>	Convention on International Trade in Endangered Species
<b>COFIDE:</b>	Corporación Financiera de Desarrollo SA
<b>COP20:</b>	20th Session of the Conference of the Parties of the United Nations Framework of Convention on Climate Change
<b>DEVIDA:</b>	Comisión Nacional para el Desarrollo y Vida sin Drogas
<b>DGAAA:</b>	Directorate General of Agricultural Environmental Affairs
<b>ESMS:</b>	Environmental and Social risk Management System
<b>EU LAIF:</b>	European Union Latin America Investment Facility
<b>FDI:</b>	Foreign Direct Investment
<b>FLEGT:</b>	EU Forest Law Enforcement, Governance and Trade Regulation
<b>GDP:</b>	Gross Domestic Product
<b>GHG:</b>	Greenhouse Gas
<b>GIZ :</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
<b>GPS:</b>	Global Positioning System
<b>HAWK:</b>	Hochschule für Angewandte Wissenschaft und Kunst Göttingen, Germany
<b>ICRAF:</b>	International Centre for Research in Agroforestry/ World Agroforestry
<b>iNDC:</b>	intended National Determined Contributions
<b>IRR:</b>	Internal Rate of Return
<b>LULUCF:</b>	Land use, Land-Use Change and Forestry
<b>NGO:</b>	Non Governmental Organization
<b>OECD:</b>	Organisation for Economic Co-operation and Development
<b>OSINFOR:</b>	Organismo de Supervisión de los Recursos Forestales y de Fauna Silvestre
<b>PEN:</b>	Peruvian Sol, currency of Peru
<b>PGMF:</b>	Plan General de Manejo Forestal

<b>PO:</b>	Plan Operativo
<b>PPP:</b>	Purchasing power parity
<b>SBS:</b>	Superintendencia de Banca y Seguros
<b>SERFOR:</b>	Servicio Nacional Forestal y de Fauna Silvestre
<b>UNFCCC:</b>	United Nation Framework Convention on Climate Change
<b>UNTRM:</b>	National University Toribio Rodríguez de Mendoza of Chachapoyas, Peru
<b>USAID:</b>	United States Agency for International Development
<b>WEF:</b>	World Economic Forum

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Friedrich-Ebert-Allee 40  
53113 Bonn  
T +49 (0)228 - 44 601 542  
F +49 (0)151 - 62 452 782  
E [cf-ready@giz.de](mailto:cf-ready@giz.de)  
I [www.giz.de](http://www.giz.de)

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**Author**  
Torsten Boettcher

**Responsible**  
Holger Treidel

**Content editing**  
Hannes Hotz, Armando Aguirre  
Mayu Velasco, Johannes Schroeten  
Alejandra Muñoz

**Design/Layout** DITHO Design

**Illustration** [freepik.com](http://freepik.com)

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**Division 304: South America, Brazil**

**Division 421: Climate financing**

BMZ Bonn  
Dahlmannstraße 4  
53113 Bonn  
Germany

T +49 228 99 535 - 0  
F +49 228 99 535 - 3500  
E [poststelle@bmz.bund.de](mailto:poststelle@bmz.bund.de)  
I [www.bmz.de](http://www.bmz.de)

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