



How economic identities facilitate lending to smallholder farmers: the case of Rural Loan in Papua New Guinea



GSMA AgriTech Programme

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Executive summary



In September 2021, an agribusiness, an agritech company and a microfinance institution joined forces to pilot a first-of-its-kind loan product for smallholder farmers in Papua New Guinea.

“Rural Loan” is an earnings-based loan product that farmers can apply for on their doorstep, without putting up any collateral. Instead, it uses farmer data generated by a digital agriculture procurement app to create economic identities for farmers and a credit scorecard for financial service providers (FSPs) to assess risk. Farmers can then use the funds to hire labour, diversify their income, buy new tools or cover non-farm expenses, such as school fees.

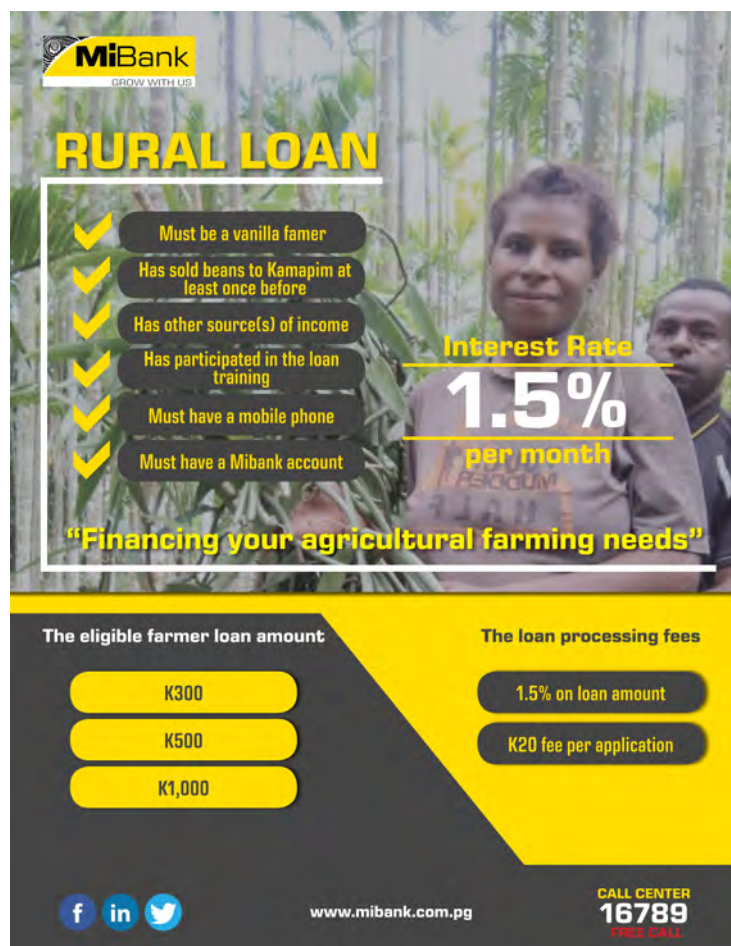
The three companies behind Rural Loan are vanilla procurement company and exporter Kamapim, Papua New Guinean microfinance institution MiBank and agritech company Field Buzz. Kamapim, which has been working with smallholder vanilla farmers in Madang Province since 2018, sends field agents into rural areas of Papua New Guinea to collect farmer and farm data (age, gender, village, number of vanilla vines, sales history to Kamapim, etc.) using a mobile-enabled Kamapim-Field Buzz app and register farmers on the platform. Once registered, Kamapim field agents can offer farmers extension support and digital and financial literacy training, generate a government-approved identification card, procure vanilla, sell them a mobile phone, open a bank account and, as of September 2021, extend a loan.

Rural Loan removes some of the main barriers farmers have traditionally faced to accessing credit, including travelling long distances to financial institutions and providing collateral. Until now, a lack of information on smallholder farmers has also contributed to a high perceived risk of default, a major concern for FSPs. However, collecting and analysing farm and farmer data through the Kamapim-Field Buzz app allows FSPs to gain insight into farmers’ production and financial lives. The cost of serving smallholder farmers has also been an issue for FSPs, but leveraging the assets of Kamapim, particularly the field agent network and the mobile app, can help reduce the cost of processing and providing loans to smallholder farmers.

Through a proof-of-concept (PoC) pilot, the three companies are hoping to demonstrate that farm and farmer data can help FSPs and their agribusiness partners accurately assess farmers’ risk of default, and that agri digital financial services (DFS) can lower the cost of servicing loans and make it viable to offer credit products to smallholder farmers over the long term.

Figure 1

Promotional material from MiBank, 2021



MiBank
GROW WITH US

RURAL LOAN

- ✓ Must be a vanilla farmer
- ✓ Has sold beans to Kamapim at least once before
- ✓ Has other source(s) of income
- ✓ Has participated in the loan training
- ✓ Must have a mobile phone
- ✓ Must have a Mibank account

Interest Rate
1.5%
per month

"Financing your agricultural farming needs"

The eligible farmer loan amount

- K300
- K500
- K1,000

The loan processing fees

- 1.5% on loan amount
- K20 fee per application

www.mibank.com.pg

CALL CENTER 16789
FREE CALL

Source: MiBank



PRODUCT

Rural Loan

PARTNERS

Kamapim, MiBank, Field Buzz

YEAR LAUNCHED

2021

TARGET MARKET

Kamapim vanilla farmers in Madang Province with a minimum of 100 vines and a history of selling vanilla to Kamapim

BUSINESS MODEL

Revenue share between agribusiness and FSP

LOAN TERMS

- 1.5 per cent interest rate to be paid monthly (MiBank)
- 1.5 per cent processing fee to be paid upfront (MiBank)
- PGK 20 (\$5.55) application fee to be paid upfront (Kamapim)
- Balloon payment equivalent to principal plus last month's interest due at the end of the loan period (MiBank)

LOAN PURPOSE

Cover farm and non-farm expenses, such as labour, new tools, shade trees, crop diversification, school fees and medical expenses.

LOAN AMOUNT

Three loan amounts: PGK 300 (\$83), PGK 500 (\$139) and PGK 1,000 (\$277)

DISBURSEMENT CHANNELS

MiBank deposits the funds in the farmer's MiBank account.

Key lessons

Although the Rural Loan pilot was still underway at the time of publication, and only a small number of loans have been issued to date, consortium members have already gleaned several key lessons.



Initial feedback from smallholder farmers has been positive.

In general, farmers have been supportive of the pilot. They have appreciated the opportunity to access financial services conveniently from their doorstep, and recognise that Rural Loan removes many of the barriers to accessing credit from formal financial institutions. In contrast to other loan products on the market, farmers have found Rural Loan to be relatively simple to understand and easier to access.



Partnerships and data sharing are essential.

Neither Kamapim nor MiBank would have been able to offer the Rural Loan product on their own, as no single organisation has the data, expertise and assets required to offer a viable earnings-based loan product to smallholder farmers.



The loan term should be more aligned with the growing season.

Initial adoption of Rural Loan has been low, due in large part to a misalignment between the loan terms and the agricultural cycle. Making loans available when farmers need them, and extending the length of the loan term to six to 12 months, would give vanilla farmers a better chance to repay their loan and will be critical for the product to scale.



Most of the consortium's time and financial resources have gone into establishing the building blocks needed to issue the loan.

To be eligible for a loan, farmers must have their data on the Kamapim-Field Buzz digital procurement platform, have a MiBank account and own a mobile phone. Migrating farmer data from paper to digital, cleaning and validating that data, setting up new bank accounts, providing financial literacy training, setting up mobile phones for farmers and training them how to use them and run the loan app, have all taken a significant amount of time and resources.



For the pilot to generate a credit scorecard that reliably predicts loan outcomes, loans must be issued to a wide variety of farmers, including farmers that will likely default.

Consortium members must be comfortable with a relatively high rate of default during the pilot to ensure that the credit algorithm has been sufficiently stress tested to accurately assess the probability of default of different farmer profiles.



More targeted efforts must be made to engage underserved communities, especially women farmers.

Despite efforts by Kamapim and MiBank to engage female farmers, and to waive fees for women opening a bank account, only one woman has received a Rural Loan to date. More targeted efforts will be needed to ensure more women can access credit products in Papua New Guinea.



1

Introduction



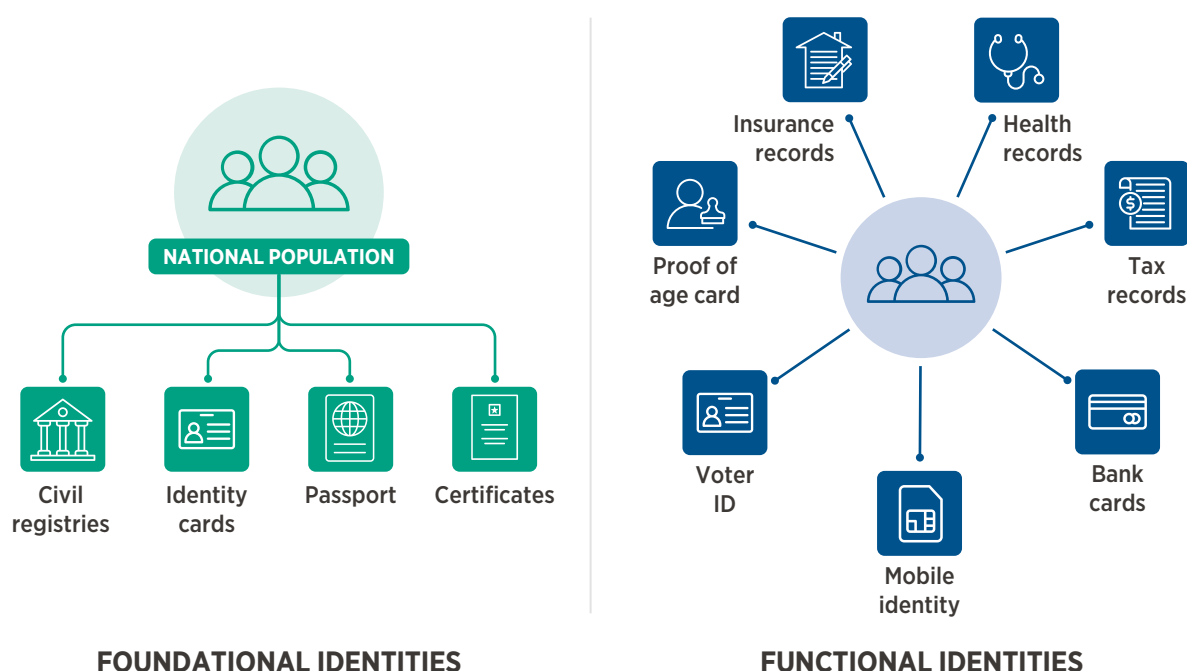
In Papua New Guinea, as in most low- and middle-income countries (LMICs), smallholder farmers lack economic identities¹ that can provide a path to financial inclusion.

In contrast to “foundational identities” – government-issued documents like identity cards, passports or birth certificates – economic identities are “functional identities” forged from digital footprints generated by

farm and farmer data. This type of identity enables access to certain services, such as credit, insurance and saving accounts (see Figure 1).²

Figure 1

Foundational and functional identities



Source: GSMA

In the absence of an economic identity, farmers must typically present a guarantee or collateral to be eligible for a loan from a formal financial institution. The inability of smallholder farmers to meet this requirement forces them to turn to informal funding sources to cover on-farm and off-farm expenses. The International Finance Corporation estimates that approximately 70 per cent of Papua New Guineans take out loans, but less than five percent of these loans are with formal financial institutions.³ The vast majority

are with relatives, *wantoks*⁴ or moneylenders who charge interest rates as high as 20 to 50 per cent every two weeks, reinforcing the cycle of poverty. Because many Papua New Guinean farmers lack the economic identity required to access a loan, and typically seek small loans (just PGK 405 or \$112, on average),⁵ most FSPs find loans to smallholder farmers too costly to service. This limits the supply of loan products available and suitable for smallholder farmers.⁶

1 An economic identity is a dynamic citizen profile that captures an individual's life events, assets and transaction history. For farmers, digitising the procurement of crops helps to establish an economic identity through transactional data from the sale of agricultural produce. In combination with other farm and farmer data, this data opens up full financial inclusion to farmers, including access to credit, savings and insurance products.

2 GSMA. (2019). *AgTech Innovation Unlocks Economic Identities for Smallholder Farmers in Indonesia*.

3 International Finance Corporation (IFC). (2018). *Papua New Guinea Financial Consumer Protection Diagnostic*, p. 7.

4 The term “wantok,” meaning “one talk” in Tok Pisin, is related to a powerful cultural social bond that links people of the same ethnic group who speak the same language. The wantok system is a traditional social welfare system that emphasises the responsibilities group members have to care for each other and to help each other with food, shelter, clothing, money, work, bereavement, etc. The definition is derived from: International Finance Corporation (IFC). (2018). *Papua New Guinea Financial Consumer Protection Diagnostic*, p. 7.

5 Joint publication of the Pacific Financial Inclusion Programme (PFIP) and IFC. (2017). *Building a Mobile Money Distribution Network in Papua New Guinea*.

6 GSMA. (2021). *Agri DFS: Emerging business models to support the financial inclusion of smallholder farmers*.

A potential solution to this challenge is to use the farm and farmer data already being collected by digital procurement tools throughout Papua New Guinea to develop earnings-based loan products that are not only affordable for farmers, but are also commercially viable and scalable for FSPs. Digital procurement solutions enable a range of digital systems and processes to transition from paper to digital, which helps agribusinesses make their transactions with smallholders more transparent and their operations more efficient, traceable and profitable.⁷ Farmers, in turn, benefit from more transparent transactions, improved market access and the ability to generate a digital footprint that they can use to access financial services, such as credit, insurance and savings.

In a 2019 landscape assessment of Papua New Guinea's digital agriculture opportunity, the GSMA AgriTech programme identified several nascent initiatives aimed at digitising farmer records.⁸ Agribusinesses and farmer groups like Olam, SP Brewery, Kamapim and Papua New Guinea Agriculture Company (PNGAC) are leveraging digital procurement solutions, such as OFIS, AgUnity, Farmforce and Field Buzz, to:

- Keep better track of farmers' production and crop quality;
- Gain better visibility into the supply chain and future production;
- Ensure traceability and certification compliance; and
- Create more targeted farmer extension.

Digital procurement solutions are an effective way to collect data about farmers themselves, as well as their families, farms and economic activities. Data collected through these platforms is not only helping agribusinesses and farmer groups become more efficient and meet sustainability and traceability objectives, it can also help smallholder farmers gain access to credit by establishing economic identities and a transaction history that can be used in lieu of collateral.⁹ FSPs can use the data collected over time to identify farmer characteristics and behaviours associated with repayment or default, which helps them better assess the risk of lending to smallholder farmers over the long term.

To test the viability of using farmer data to develop economic identities and bring financial services to underserved populations, the GSMA AgriTech Programme, with the support of Australia's Department of Foreign Affairs and Trade (DFAT), issued a Joint Call to Action (JCTA) in September 2020 inviting agribusinesses, FSPs and agritech companies to submit bids to participate in a proof of concept (PoC) pilot project under the technical guidance and support of the GSMA.

In January 2021, the GSMA announced the selection of the winning consortium: vanilla procurement and export company Kamapim Ltd., microfinance institution MiBank and agritech company Field Buzz (see Section 3 for more details on the consortium members). The consortium was tasked with designing, developing and pilot testing a credit product, branded as "Rural Loan", that met the requirements and needs of vanilla farmers in Madang Province, Papua New Guinea.

Rural Loan is a first-of-its-kind credit product in Papua New Guinea to allow earnings-based credit scoring. It relies on farmer data gathered by Kamapim field agents through the Kamapim-Field Buzz app to create an economic identity for smallholder farmers. Data captured through the app is used to generate a credit score that MiBank can use to issue credit to smallholder farmers without the need for collateral. By lowering barriers to entry, consortium members hope that vanilla farmers in Papua New Guinea's rural areas will be able to access capital to invest in new tools, hire labour, expand their vanilla crops, invest in alternative crops to guarantee off-season income and cover off-farm expenses like school fees or medical bills. This, in turn, can help lift smallholders in rural areas out of poverty, benefitting the farmers, the agribusinesses they work with and their communities at large.

This case study shares some of the key lessons from the Rural Loan PoC pilot, which will be of interest to other agritech ecosystem players interested in launching digital financial services for smallholder farmers. Specifically, the case study is aimed at agribusinesses and FSPs in Papua New Guinea and other LMICs interested in viable ways to extend credit to rural populations.¹⁰

7 GSMA. (2020). [Digital Agriculture Maps: 2020 State of the Sector in Low and Middle-Income Countries](#).

8 GSMA. (2019). [Landscaping New Opportunities for Digital Agriculture in Papua New Guinea](#).

9 GSMA. (2020). [The GSMA AgriTech Toolkit for the Digitisation of Agricultural Value Chains](#).

10 GSMA. (2021). [Agri DFS: Emerging business models to support the financial inclusion of smallholder farmers](#).

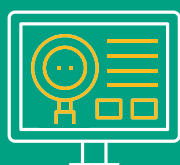
The case study begins with the market context, which looks at the state of agriculture, infrastructure and financial inclusion in Papua New Guinea. Section 3 features the consortium members and their motivations for participating in the PoC pilot. Section 4 examines the details of the Rural Loan product and section 5 outlines the business model employed during the pilot. Section 6 reveals some of the early results of the pilot, as well as the key lessons to date. The case

study concludes with the outlook for the Rural Loan product in Papua New Guinea and abroad.

To prepare this case study, the GSMA AgriTech programme relied on a combination of desk-based research and primary research interviews with in-country stakeholders and target farmers for the Rural Loan product in Madang Province (see Figure 2).

Figure 2

Case study methodology



DESK RESEARCH

Conducted a thorough review of secondary sources, including datasets (World Bank, ILO, Findex, Bank of PNG, CEFI), relevant reports (PFIP, World Bank, GSMA) and relevant press releases, among others.



STAKEHOLDER INTERVIEWS

Conducted in-depth interviews with the key stakeholders involved in the project, including Kamapim, MiBank, Field Buzz and MDF during January 2022. Reviewed numerous internal documents developed during the project, including a UX study, a monitoring, evaluation and learning (MEL) report, and business intelligence (BI) data, among others.



FARMER SURVEYS

Drew on insights gained through several surveys conducted with target farmers for the Rural Loan product, as well as with loan holders in Madang Province. UX interviews took place in mid-2021. MDF conducted a baseline survey in December 2021 and an impact assessment in March 2022.

Source: GSMA AgriTech



2

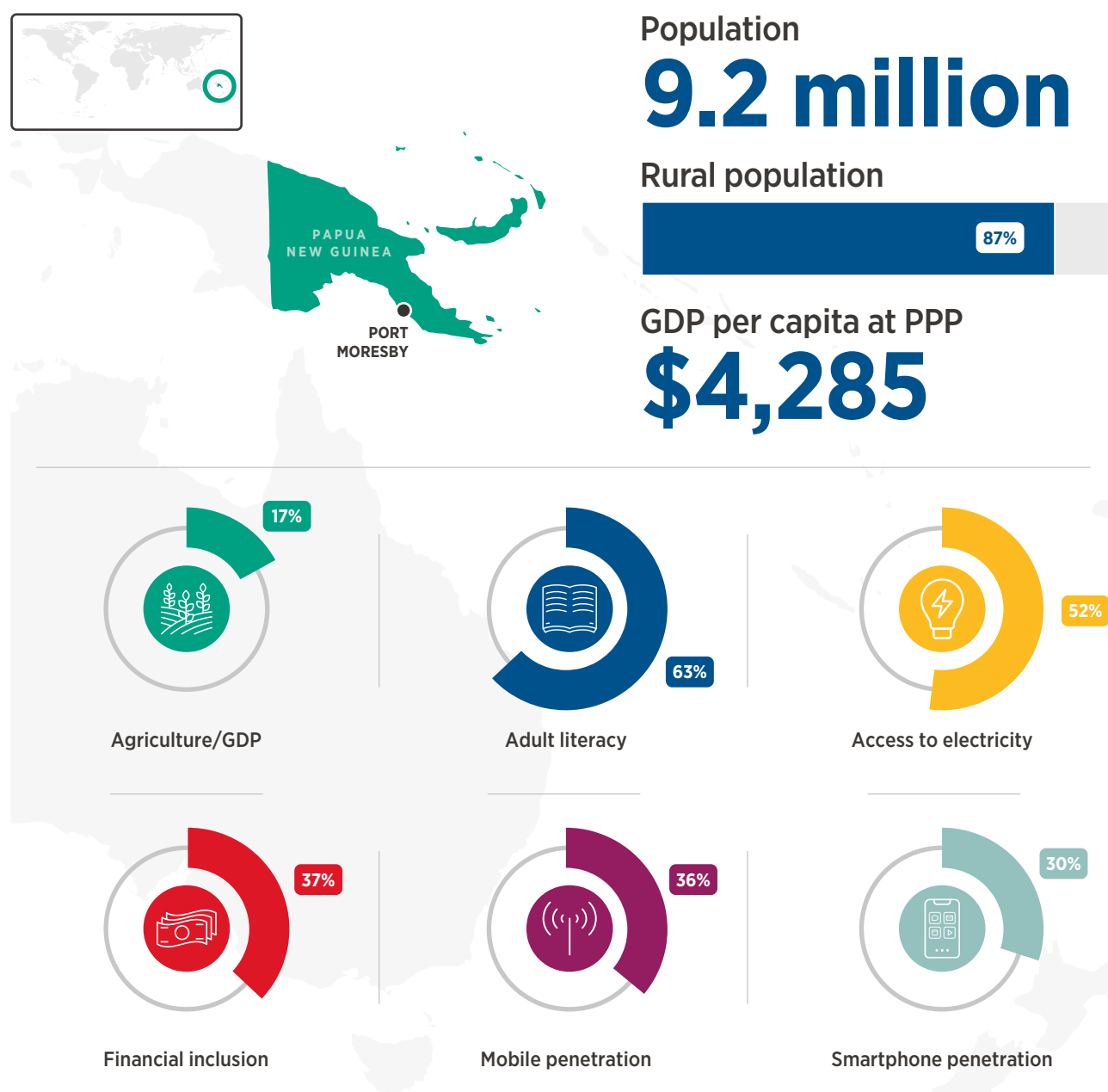
Market context



The operating environment for agribusinesses and FSPs in Papua New Guinea is challenging given low education levels, low digital and financial literacy, low penetration of banking services at formal financial institutions, poor infrastructure and transportation and high rates of insecurity and crime (see Figure 3). Mobile-enabled digital solutions can play a critical role in helping agribusinesses and FSPs overcome many of the challenges related to financial inclusion.

Figure 3

Papua New Guinea at a glance



Source: World Bank, GSMA Intelligence, CEFI, Bank of Papua New Guinea, PFIP.

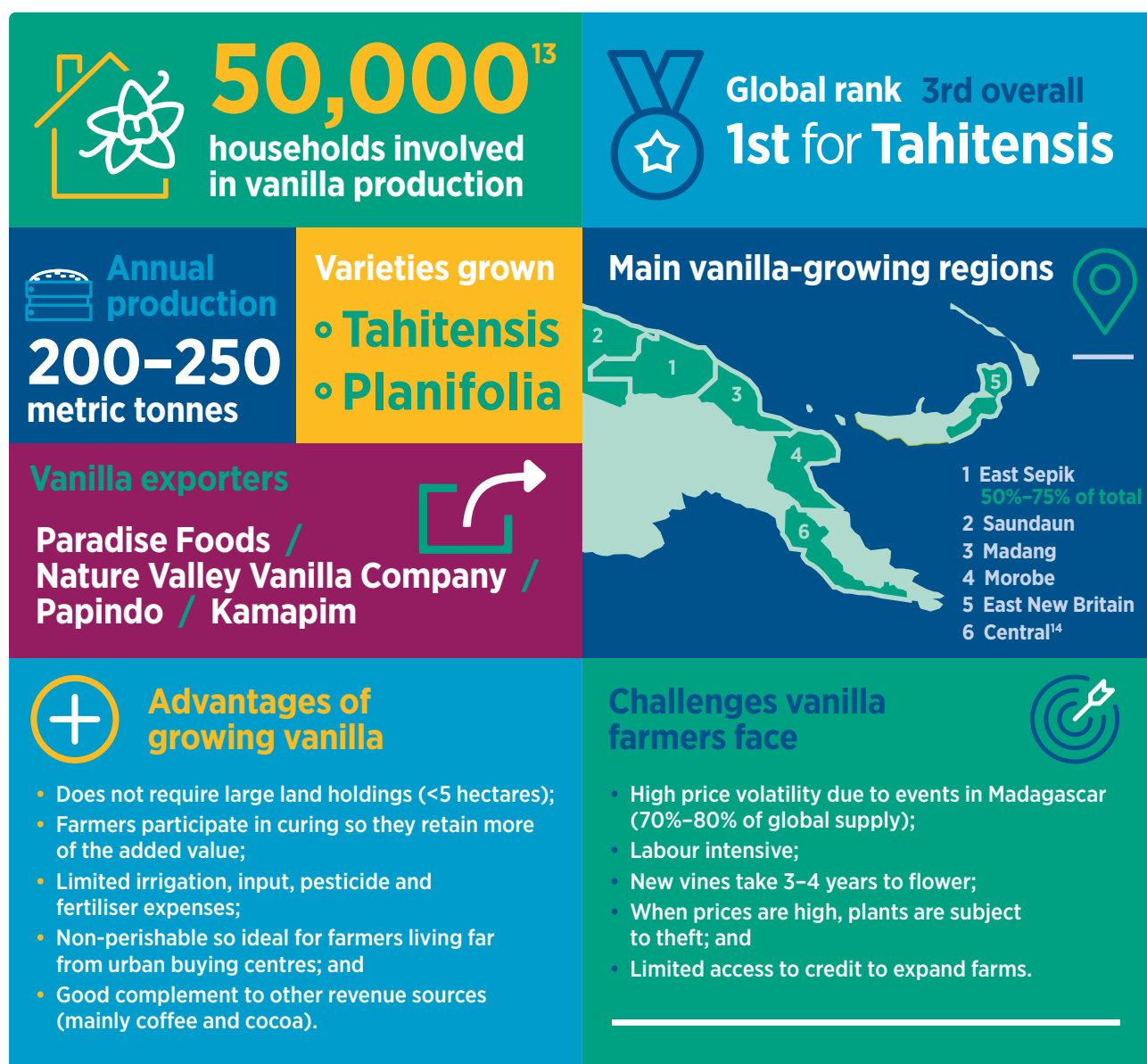
2.1 Agriculture in Papua New Guinea

Agriculture is central to Papua New Guinean society, with 82 per cent of the population depending on agriculture for their livelihoods.¹¹ Many farmers are considered subsistence farmers and grow crops such as sweet potato, yam, taro, banana and sago. Palm oil is the most important export crop in the country, accounting for 35 per cent of total agricultural exports in 2020, followed by coffee (11 per cent) and cocoa

(seven per cent).¹² Vanilla, a crop that fell out of favour with smallholder farmers after the international price plummeted between 2005 and 2008, is now seeing a resurgence (Box 1). Most vanilla farmers currently working with Kamapim are only in their first or second harvest cycle, and are therefore in need of credit to invest in new plants, tools and labour.

Box 1

Spotlight on vanilla



Source: Bank of Papua New Guinea, PNG Spice Industry Board, OEC, GSMA

11 Department of Agriculture and Livestock (DAL) Papua New Guinea. (2022). "Sector Brief: Papua New Guinea Agriculture Sector Overview and Future Plans".
 12 Bank of Papua New Guinea (2021), "QEB Statistical Tables".
 13 PNG Spice Industry Board: agriculture.gov.pg/commodity-boards-a/spice-board/
 14 Tok Pisin English Dictionary. (2015). "Vanilla in Papua New Guinea".

Although agriculture remains a key employment sector in Papua New Guinea, it is becoming less relevant to the national economy. In 2019, agriculture accounted for roughly 17 per cent of GDP, half of 1999–2000 levels.¹⁵ Roughly 40 per cent of the rural population, mainly smallholder farmers, live below the poverty line. In part, this is the result of poor practices and structural inefficiencies throughout the agricultural cycle that keep farmers' productivity and incomes low. To boost agricultural sector performance and minimise

the economy's reliance on oil and minerals, Papua New Guinea's government established an e-agriculture strategy in 2018.¹⁶ This strategy seeks to incorporate digital solutions at different stages of the agricultural cycle to boost productivity and generate new employment opportunities in rural areas. Although still relatively nascent, several solutions have emerged in recent years, particularly in the areas of digital advisory (market prices or best practices) and digital procurement.¹⁷

2.2 Transport and communications

For most agribusinesses and farmers, Papua New Guinea's poor infrastructure ranks first or second on the list of challenges to higher productivity and incomes. An estimated 75 per cent of roads are impassable at some point during the year due to adverse weather that can cause roads to collapse or trigger extreme flooding. It can take farmers hours by bus or truck (or days on foot) to reach the main towns to sell their crops, buy a mobile phone, open a bank account, withdraw money from an ATM or secure credit from a financial institution. The time, cost and threat of violence or theft associated with travelling to town are some of the main obstacles to greater financial inclusion in rural Papua New Guinea.

The Rural Loan product aims to overcome some of the challenges associated with poor road and banking infrastructure by leveraging mobile network infrastructure to bring financial services to farmers. Roughly three-quarters of Papua New Guinea's population live within the coverage area of a 3G network while just over half live within the coverage area of a 4G network.¹⁸ Despite significant gains in mobile service coverage, mobile penetration has remained relatively flat, rising a mere three percentage points to 36 per cent of the population over the past four years. Smartphone penetration stood at 30 per cent at year-end 2021 while mobile internet penetration was a more modest 19 per cent.¹⁹

¹⁵ World Bank. (2019). "Agriculture, forestry, and fishing, value added (% of GDP) – Papua New Guinea".

¹⁶ DAL, NICTA, Department of Communications and Information Technology. (2018). "Papua New Guinea e-Agriculture Strategy".

¹⁷ GSMA. (2019). [Landscaping New Opportunities for Digital Agriculture in Papua New Guinea](#).

¹⁸ GSMA Intelligence.

¹⁹ GSMA Intelligence.

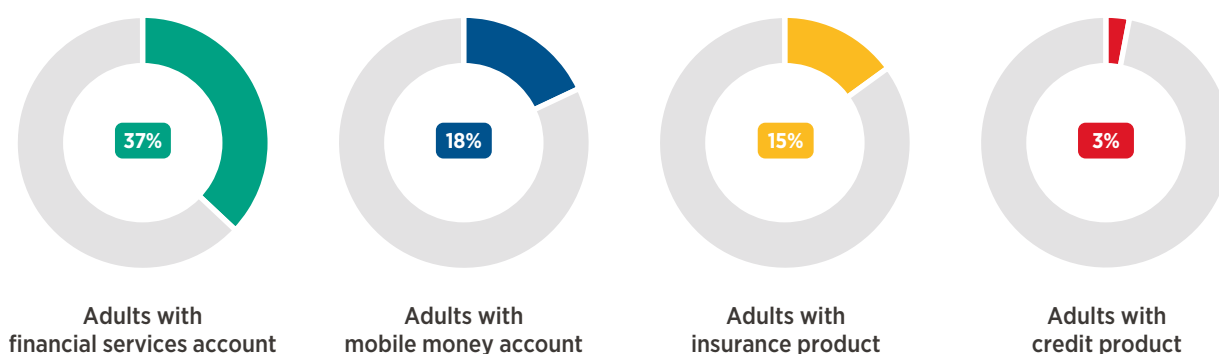
2.3 Financial inclusion

Papua New Guinea has one of the highest unbanked rates in the world, the consequence of a geographically dispersed population that speaks more than 800 different languages, low literacy levels and limited infrastructure (transport, communications, banking), particularly in rural areas. The Pacific Financial Inclusion Programme (PFIP) estimates that

37 per cent of adults in Papua New Guinea have an account at a formal institution (see Figure 4).²⁰ In some rural areas, the ratio can be as low as 10 per cent. Despite several government initiatives to encourage the adoption of financial services by women, including waiving sign-up fees, women make up only a third of account holders.²¹

Figure 4

Penetration of financial services among adults in Papua New Guinea, 2021



Source: PFIP, CEFI, GSMA

Papua New Guinea lags many Pacific Island countries in terms of physical banking infrastructure (see Figure 5). The number of bank branches and ATMs per 100,000 people at the end of 2020 stood at 2.4 and 5.0, respectively.²² Mobile money agent density is also low, at five per 100,000 population at the end

of 2021, compared with more than 250 per 100,000 population globally.²³ Most of Papua New Guinea's banking infrastructure, including its mobile money infrastructure, is concentrated in urban centres. Of the 20 Cellmoni mobile money agents in Madang Province, for example, all but two are in Madang town.²⁴

²⁰ PFIP. (2018). [Papua New Guinea Financial Inclusion Country Profile](#).

²¹ CEFI. (2021). [Financial Inclusion Data Q1, Q2 and Q3](#).

²² CEFI for Papua New Guinea: [thecEFI.org/financial-inclusion-data-q1-q2-and-q3-2021/](#) and World Bank for remaining countries: [data.worldbank.org](#).

²³ GSMA Intelligence.

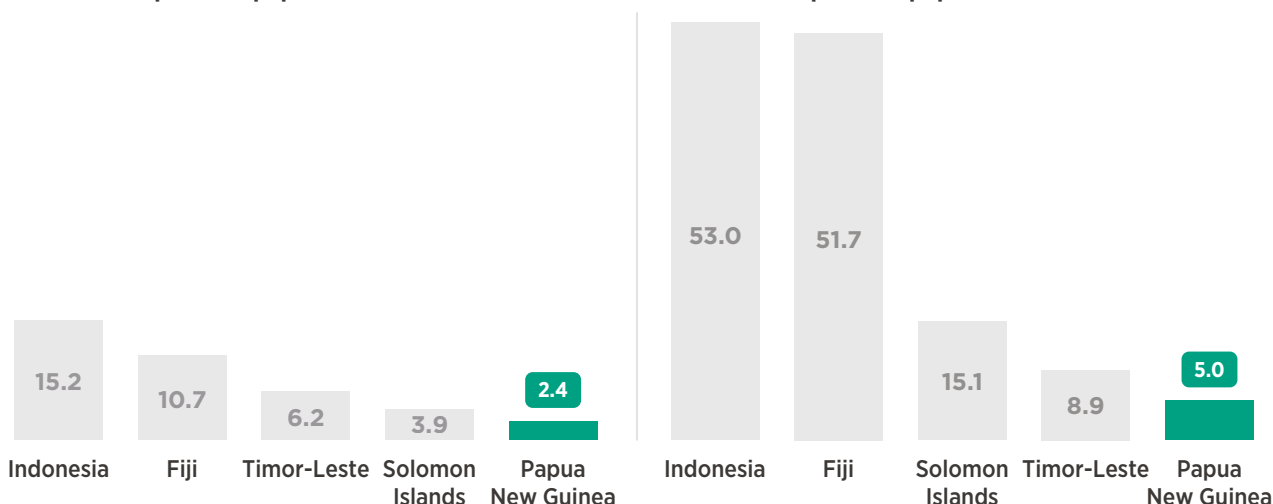
²⁴ Cellmoni.

Figure 5

Bank branch and ATM density in selected Pacific Island nations

Bank branches per 100k population

ATM branches per 100k population



Source: World Bank, CEFI

To date, the number of credit products available to smallholder farmers has been limited as Papua New Guinea's larger banks have shied away from targeting this segment. Microfinance institutions (MFIs) like MiBank and Women's Micro Bank are among the only financial institutions to have introduced credit products aimed at rural agricultural communities (see Figure 6). MiBank has partnered with PNGAC, the National Fisheries Authority of Papua New Guinea

and Coconut Research Limited to offer loan products for smallholders in various value chains. Although not specific to agriculture, MiBank also has a Speed Loan product that leverages Digicel's USSD network and MiBank's MiCash mobile money service. Women's Micro Bank has an agricultural loan product aimed at women farmers in rural areas. Most of these products, however, are traditional loan products that require smallholders to provide collateral upfront.

Figure 6

Credit products available to smallholder farmers in Papua New Guinea

PRODUCT	PARTNERS	VALUE CHAIN	TYPE OF LOAN	REGION	LAUNCHED	MONTHLY INTEREST
Agriculture Value Chain Loan (AVCL) ²⁵	MiBank, PNGAC, Cocoa Board, ADB, Pacific Private Sector Development Initiative (PPSDI)	Cocoa	Moveable asset: future contracted sales as collateral	East New Britain	2019	2%
Fisheries Loan ²⁶	MiBank, NDB, National Fisheries Authority of Papua New Guinea	Fish	Collateral equivalent to 30% of equity	Madang, Morobe	2019	1.5%
Speed Loan ²⁷	MiBank, Digicel	Various	Collateral in savings or deposit account	Nationwide	2019	2%–3%
Agricultural Loan	Women's Micro Bank, Kiva	Various	NA	Nationwide	NA	NA

Source: MiBank, PNGAC, ADB

25 Pacific Private Sector Development Initiative (PPSDI). (2019). "New movable asset loan product for cocoa financing launches in Kokopo, PNG".

26 MiBank. (2022). "Fisheries Loan".

27 MiBank. (2022). "Speed Loan".



3

Partnership model



The GSMA AgriTech programme, under the Improving Access to Credit for Farmers in Papua New Guinea initiative funded by Australia's DFAT, has been working with consortium partners to design and implement the Rural Loan product (see Figures 7 and 8).²⁸

Figure 7

Consortium member profiles and motivations for participation in the PoC pilot

PROFILE

Kamapim

Developing sustainable agriculture

Kamapim, meaning “to develop, to grow and to improve” in the Tok Pisin language, began procuring and exporting vanilla from Papua New Guinea in 2018. Kamapim is a fully-owned subsidiary of Envirum Life Sciences, a Belgian holding company that maintains investments in several agribusinesses in the Pacific Islands and Africa. Kamapim is based in Madang Province on the eastern coast of Papua New Guinea, and sources vanilla from smallholder farmers in eight provinces. The company has experienced significant growth in the last couple of years, expanding their database of registered farmers from just 3,000 in 2020 to more than 22,000 in early 2022. Just over 10,000 of them are profiled on the Field Buzz digital procurement app.²⁹

MOTIVATIONS FOR PARTICIPATION

- **Improve rural livelihoods by enabling financial inclusion** for smallholder farmers.
- **Strengthen farmer loyalty** by giving farmers access to financial services that might not otherwise be available.
- **Increase farmer productivity and improve vanilla quality** by enabling farmers to access credit and invest in plants and crop diversification.
- **Reduce the risk of theft and injury** by eliminating the need for staff to travel with large sums of cash.



MiBank is a licensed MFI operating in Papua New Guinea. MiBank was founded in 2004 as Wau Microbank (WMB), a joint initiative between the Asian Development Bank (ADB) and the Government of Papua New Guinea aimed at alleviating poverty through microfinance. In 2007, WMB became a limited liability company (LLC) and, in 2013, rebranded as MiBank. MiBank operates out of 16 branches throughout Papua New Guinea, including one in Madang Province.

- **Improve rural livelihoods by enabling financial inclusion** for smallholder farmers.
- **Expand to new areas** with the use of Kamapim field agents.
- **Reduce the cost** of serving rural populations.
- **Better assess the risk of default and make smarter lending decisions** by gaining access to Kamapim's extensive farmer data.
- **Test and refine a new credit-scoring algorithm** that takes into account the irregular cash flow of farmers at minimal risk to its financial position.
- **Upsell additional financial services**, such as savings accounts and insurance.
- Identify ways to **reduce the interest rate** on loans, making credit products more palatable to potential customers.

fieldbuzz

Field Buzz is an agritech company founded in Germany in 2015. It focuses on software platforms that enable agribusinesses to reach and manage smallholder farmers, as well as consumer goods companies, to deliver their products to retail outlets. Field Buzz works in several countries in Africa, as well as in Papua New Guinea. Clients include Unilever, NKG Bloom, Danone and Kamapim, among others.

- **Improve rural livelihoods by supporting financial inclusion** for smallholder farmers.
- **Expand their geographical presence** beyond Africa into the Asia-Pacific region.
- **Develop expertise and insights** on using data from digital profiling to assess the creditworthiness of farmers, and deliver similar products in other emerging markets.
- **Gain experience integrating various platforms** (FSP and agribusiness).

Source: Kamapim, MiBank, Field Buzz

²⁸ Bulos, S.R. (15 January 2021). “Improving farmers’ access to credit: A new GSMA partnership in Papua New Guinea”. Mobile for Development Blog. GSMA.
²⁹ Kamapim interview (January 2022)

Figure 8

Implementation partner profiles and motivations for participation in the PoC pilot

PROFILE



MDF helps promote sustainable economic development in five countries in the Asia-Pacific region: Fiji, Timor-Leste, Sri Lanka, Pakistan and Papua New Guinea. Across all five markets, it has invested \$8.3m and benefitted more than 439,000 people, mainly farmers living in rural areas. MDF is backed by the Australian Government through Australian Aid. Implementation partners include Palladium and Swisscontact.

MOTIVATIONS FOR PARTICIPATION

- **Improve rural livelihoods by enabling financial inclusion** for smallholder farmers.
- **Test and refine a credit-scoring algorithm** that, if successful, could be implemented in other countries where MDF has a presence.
- Identify ways to **reduce the interest rate** on loans to make credit products more affordable for smallholder farmers.



The GSMA AgriTech programme works towards equitable and sustainable food supply chains that empower farmers and strengthen local economies. The programme, which receives funding and support from DFAT, launched and managed the Improving Access to Credit for Farmers in Papua New Guinea initiative, lending technical and consultancy support to the consortium.

- **Improve rural livelihoods by enabling financial inclusion** for smallholder farmers.
- **Catalyse partnerships** between ecosystem players active in the digital agriculture space to drive innovation.
- **Identify sustainable solutions for long-term impact.**
- **Test and refine a credit-scoring algorithm** that, if successful, could be implemented across LMICs.

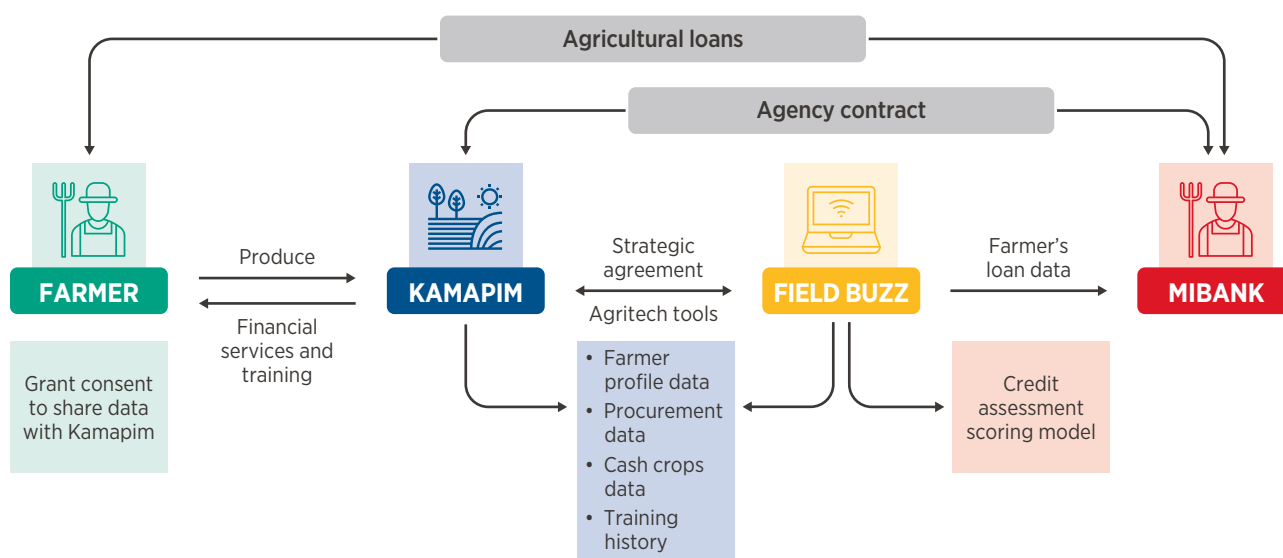
Source: MDF, GSMA

Kamapim assumed the role of consortium lead in the early phases of the pilot, working with MiBank, the GSMA, a credit-scoring consultant and a product design consultancy to establish criteria for loan eligibility (see Figure 9). Kamapim is also the main point of contact for farmers and provides access to farmer data. Field Buzz has been responsible for designing and customising a mobile app that allows Kamapim to profile farmers, digitise procurement, track farmer training and generate loan applications

via their agents. It is also responsible for sharing data between consortium member partners and integrating their platform with MiBank. MiBank is primarily responsible for setting up new bank accounts for loan applicants and issuing bank cards, disbursing and servicing the loans, creating and distributing marketing materials, sending out payment reminders, following up on late payments and making their platform available to Field Buzz.

Figure 9

Rural Loan consortium partner roles







Source: GSMA

When designing the Rural Loan product, the consortium was keen to ensure that it met several of the criteria outlined in Figure 10.

Figure 10

Criteria for the Rural Loan product

			
Affordable	Accessible	Viable	Useful
<p>Sign-up fees, interest rates and collateral requirements put most loans out of reach for smallholder farmers with irregular income streams. The consortium sought to design a loan product that was deemed affordable for the average Kamapim farmer.</p>	<p>Most loan products require farmers to have a formal ID card, a bank account and a mobile phone. To obtain these, farmers must travel long distances and incur high transportation costs. The consortium sought to design a loan product that farmers could more easily procure, without having to invest significant amounts of time and resources.</p>	<p>Lack of data on farmers makes it difficult to assess the risk of extending credit to them. The cost of travelling to villages to conduct financial literacy training, to promote the loan and to subsequently service the loan can be onerous. The consortium sought to lower the cost to the FSP to make it economically viable for it to service smallholder farmer groups in the future.</p>	<p>The ultimate aim of the consortium members is that the loans are useful to the recipients. Even if the loans are affordable, accessible and economically viable, they will not have met the objective of the project unless farmers are able to use the loans for activities that can help improve their incomes and lift them out of poverty.</p>

Source: GSMA, Kamapim, Field Buzz, MiBank and Field Buzz



4

Product overview



4.1 Origins of the project

In January 2021, the GSMA AgriTech programme selected the Kamapim-Field Buzz-MiBank consortium to create a path to financial inclusion for farmers in Papua New Guinea. Kamapim, through a partnership with Field Buzz, had been working for more than a year on digitising farmer records, opening bank accounts for farmers and selling them mobile phones, establishing the building blocks needed to create economic identities for farmers. MiBank, for their part, had experience working in rural areas and had been

testing different loan products aimed at smallholder farmers (see Figure 6). Kamapim and MiBank also enjoyed a working relationship that preceded the JCTA, with Kamapim serving as a MiBank agent in Madang Province.

The GSMA AgriTech programme, meanwhile, offered the consortium targeted consultancy based on the programme team's business, technical and agricultural expertise (see Figure 11).

Figure 11

GSMA support package

SUPPORT MODULE	DESCRIPTION
User experience (UX) research	The GSMA hired an external consultant to conduct on-the-ground UX research with executives from all the project stakeholders, as well as with 54 farmers in eight villages in Madang Province. Findings from the UX research ultimately informed product design.
Technical support	The GSMA offered technical assistance to Kamapim and Field Buzz with product design and the development of the loan application module for the Kamapim-Field Buzz digital procurement app.
MEL support	Four months into the pilot, the GSMA conducted monitoring, evaluation and learning (MEL) to assess the impact of the pilot to date. An external consultant was hired to conduct interviews with executives from all the project stakeholders.
Partnership brokering	The GSMA coordinated the activities of the various consortium members and managed any differences that emerged. The GSMA also brought the MDF on board to provide financial support for the technical development of the app, as well as for the loan guarantee.

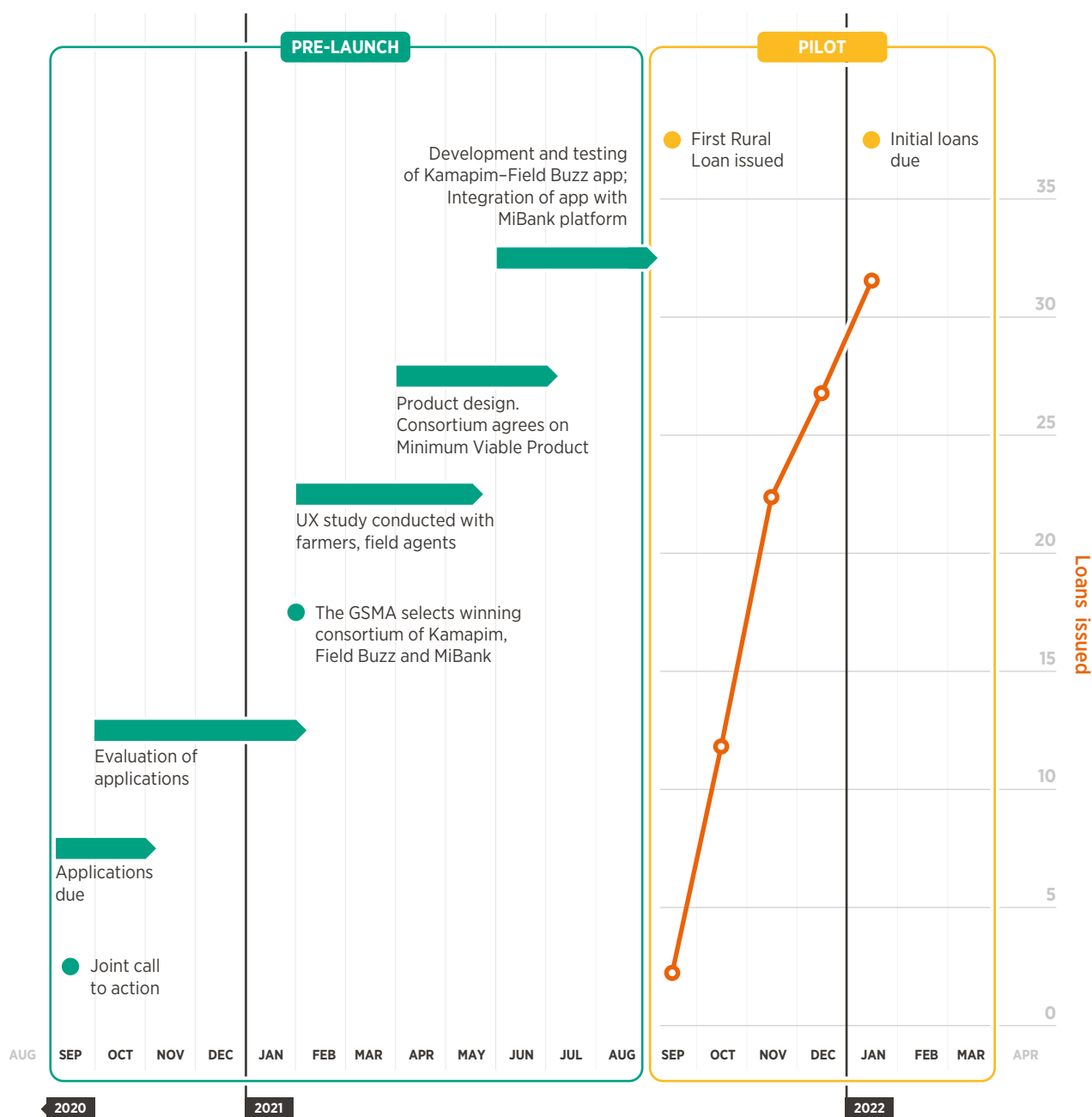
Source: GSMA

The consortium started the project with a UX field survey to gather insights for product design. The Rural Loan product was launched in September 2021, with

slight delays due to the COVID-19 pandemic and the need to coordinate the activities of three resource-constrained organisations (see Figure 12).

Figure 12

Rural Loan project timeline



Source: GSMA

During the UX phase of the study, a third-party contractor hired by the GSMA conducted surveys with six Kamapim field agents and 54 farmers in eight villages in Madang Province. The objective of the UX study was to understand the credit needs and behaviours of vanilla farmers in Madang Province to inform the subsequent design of the product. Key findings from the UX study included:



Farmers do not have any major objection to sharing their data with Kamapim.

All 54 farmers interviewed said they would be happy to share their data with Kamapim.



Farmers do not earn enough from vanilla cultivation alone.

All 54 vanilla farmers interviewed said they rely on other sources of income, such as cocoa.



Adoption of mobile phones and bank accounts is low.

Among the farmers interviewed, only 48 per cent had a mobile phone (two per cent had a smartphone) and 59 per cent had a bank account (15 per cent had an account with MiBank).



Farmers are unfamiliar with loan products.

Only seven per cent of farmers interviewed had taken out a loan from a formal institution. Most of the farmers interviewed were unfamiliar with the concept of formal loan borrowing, interest rates, collateral, loan terms, etc.



Farmers have diverse needs for credit.

Fifty-five per cent said they needed the loan for multiple reasons (crop diversification, non-farm expenses) while 45 per cent said they would use the loan only for their vanilla crop.



Farmers require loans to expand their vanilla crop.

Although 76 per cent of farmers interviewed said they have no trouble meeting their current vanilla-related expenses, 87 per cent said they would need a loan to expand their vanilla crop. The loan would be used primarily to purchase new tools to improve drying/curing or to hire additional labour.



Farmers require longer loan terms.

The consortium initially hypothesised that farmers would prefer shorter (two- to three-month) loan terms. However, in interviews with field agents and farmers, both groups expressed a preference for loan terms of six months or more to allow enough time to raise the funds needed to pay back the loan.

4.2 Product design

The findings from the UX study helped guide the design of a minimum viable product (MVP) that was agreed upon by all consortium members before the launch of the pilot (see Figure 13). For example, because none of the farmers working with Kamapim earn enough from vanilla cultivation alone, the loan purpose was expanded beyond improving vanilla cultivation to include crop diversification and other

commercial endeavours, such as the sale of fresh produce. This also led to the inclusion of alternative sources of income (beyond vanilla) as a criterion for loan eligibility. Additionally, because farmers were unfamiliar with the concept of credit, attendance at a financial literacy training session was also made mandatory to qualify for a loan (see Figure 14).

Figure 13

Minimum viable product

LOAN PURPOSE	The main purpose of the loan is to expand and improve vanilla cultivation. Given that all Kamapim vanilla farmers depend on other sources of income, the loan purpose was expanded to include other commercial activities, such as crop diversification and the sale of garden crops.
LOAN AMOUNT	The consortium established three loan tiers pegged to vanilla vine counts: <ul style="list-style-type: none"> • PGK 300 (\$83) for farmers with 100–250 vines • PGK 500 (\$139) for farmers with 251–500 vines • PGK 1,000 (\$277) for farmers with more than 500 vines
LOAN TERM	Although the original goal based on the UX study was to set variable loan term limits (three to nine months), the GSMA required pilot stage loans to reach maturity by 31 December 2021. Given the delays in product launch, this meant that the initial loans had a loan term of two to four months. Loan terms were later increased (up to 11 months) in response to low adoption levels.
LENDING CRITERIA	The consortium partners, a credit-scoring consultant and the product design partner developed the loan criteria based on data collected through the Kamapim-Field Buzz app. The initial 10 lending criteria were narrowed down to seven as agreed by the consortium members (see Figure 14).
APPLICATION METHOD	Farmers can apply for a loan through Kamapim field agents during scheduled visits to the villages. The application takes place through the Kamapim-Field Buzz app. A farmer is automatically approved if they meet all seven lending criteria established by the consortium.
DISBURSEMENT CHANNEL	Once a farmer is approved, the loan amount is disbursed digitally to the farmer's MiBank account. The farmer must visit the nearest MiBank agent or branch to access the funds.
REPAYMENT MODEL	Farmers make monthly interest payments equivalent to 1.5 per cent of the principal amount to MiBank. At the end of the loan term, a balloon payment is due equivalent to principal plus the last month's interest. Farmers can repay at a MiBank branch, through a Kamapim field agent or using mobile money.

Source: Kamapim, MiBank, Field Buzz, MDF, GSMA

Figure 14

Lending criteria for the Rural Loan product**Farm located in eligible village****1**

Farms must be located in villages where Kamapim has existing relationships and a history of procuring vanilla.

Minimum of 100 vanilla vines**2**

Farmers must have a minimum of 100 vanilla vines. The loan amount is ultimately based on the total number of vanilla vines on the farm. Ninety per cent of registered Kamapim farmers meet this criteria.

Prior relationship with Kamapim**3**

Farmers must have a record of selling vanilla to Kamapim and be registered on the Kamapim-Field Buzz digital procurement app.

Alternative source of income**4**

Farmers must have a reliable income source other than vanilla (such as cocoa). Field agents collect this information through a survey module on the Kamapim-Field Buzz app.

Received training**5**

Farmers must have participated in the loan training offered by Kamapim and the training must be captured on the Field Buzz app.

Mobile phone ownership**6**

Farmers must have a mobile phone. If they do not have one, Kamapim agents can provide one for PGK 50 (\$14) plus an additional PG 15 (\$4.16) to cover the cost of the SIM card.

MiBank account**7**

Farmers must have an account with MiBank. To qualify for the loan, farmers must provide Kamapim agents with their account number. If they do not have a MiBank account, Kamapim agents can open one for PGK 30 (\$8.32). This fee is waived for women. Farmers must also deposit a minimum balance of PGK 20 (\$5.55) into their accounts.

Source: Kamapim, MiBank, Field Buzz, MDF, GSMA

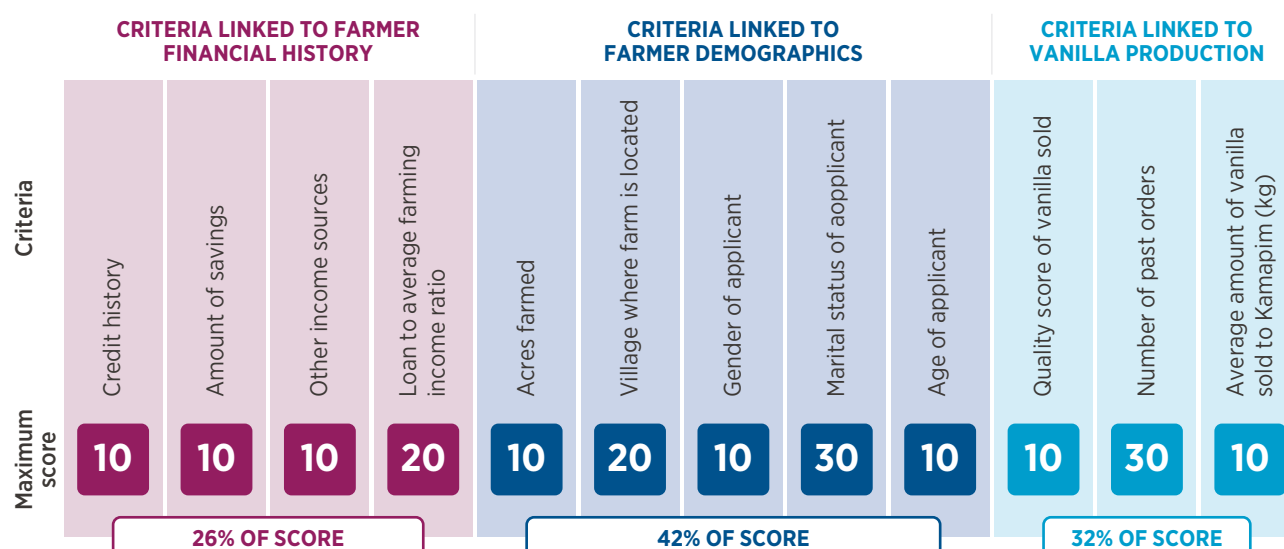
The consortium worked with a credit consultant to develop a credit scorecard using farmer data collected through the Kamapim-Field Buzz digital procurement app (see Figure 15). The goal of the scorecard is to develop an algorithm to accurately predict loan outcomes, giving FSPs like MiBank more confidence in an earnings-based loan product for smallholder farmers. Because the scorecard needs to be stress tested and refined over time based on real-life outcomes, the first round of loans is approved entirely on the basis of meeting the seven loan criteria described in Figure 14. For the credit scorecard to be accurate, consortium members will need to have data from 500 to 700 farmers that have taken out a loan and either repaid it in full or defaulted. In fact, for the scorecard to have a statistically better chance

of predicting loan outcomes, the credit consultant suggests aiming for various outcomes (early payment, on-time payment, late payment and default).

A default rate of 20 to 30 per cent among the initial group of 500 to 700 loan recipients would be optimal, according to the credit consultant, as this would allow the credit-scoring algorithm to identify characteristics and behaviours associated not only with repayment, but also with default. Given MiBank's low appetite for default rates at this level, MDF was brought on board to provide a loan guarantee for loans issued under the Rural Loan banner. Over time, the scorecard should replace the seven loan criteria as the primary tool for credit risk assessment.

Figure 15

Credit scorecard developed for the Rural Loan pilot



Impact of score on loan approval:



Source: Dean Caire (Credit Consultant), Kamapim, MiBank, Field Buzz, MDF, GSMA

Ultimately, the Rural Loan product seeks to increase the financial inclusion of smallholder farmers in Papua New Guinea by overcoming some of the main

barriers that have prevented them from accessing loan products in the past (see Figure 16).

Figure 16

How Rural Loan addresses barriers to credit for farmers

BARRIER	PROPOSED SOLUTION
Lack of a government-issued ID	When farmers agree to have their data captured in the Kamapim-Field Buzz app, they receive an ID card with a QR code that can be used for other purposes. Kamapim has reached an agreement with the government allowing Kamapim ID cards to be used in lieu of national ID cards to apply for a bank account and obtain a mobile phone.
Low literacy levels and inability to manage paperwork and loan terms	Rather than filling out numerous forms and reading through dozens of pages outlining the terms of the loan (most often in English), farmers can answer a few basic questions from a Kamapim field agent who completes the loan application process on the Kamapim-Field Buzz mobile application. Kamapim also provides financial literacy training to farmers to acquaint them with basic loan concepts, such as interest, loan terms and collateral.
Lack of a mobile phone and/or bank account	Kamapim field agents act as bank agents. They can open bank accounts, provide cell phones, activate SIM cards and sell solar-powered batteries while visiting farmers through their normal extension and procurement activities.
Lack the required collateral to apply for a loan	Unlike traditional savings-led credit products that require farmers to keep a large sum of money in their bank account as collateral, the Rural Loan product relies on farm and farmer data collected by Kamapim to generate economic identities that can be used to generate a credit score.

Source: GSMA

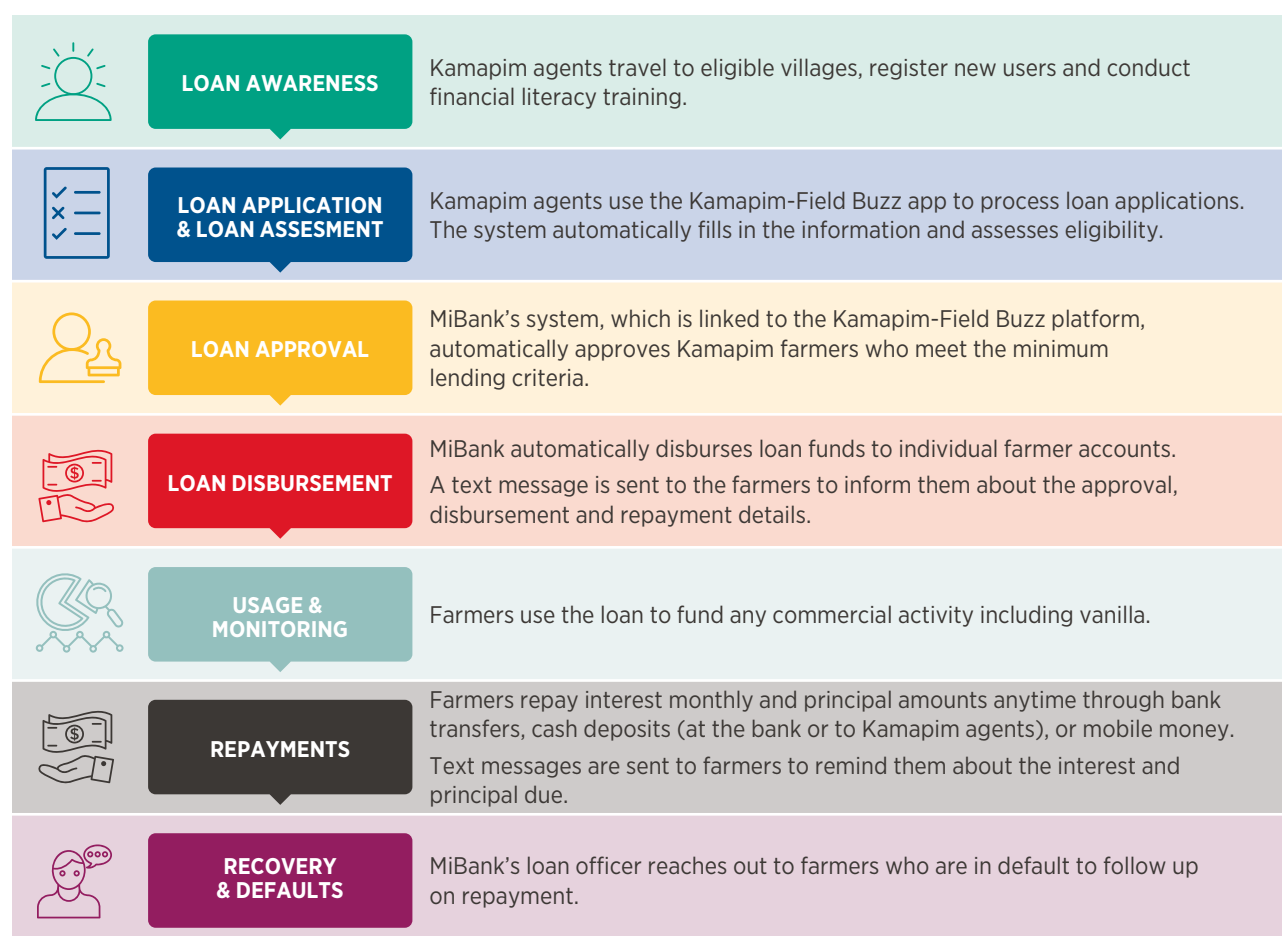
4.3 Rural Loan user journey and loan purpose

The user journey for farmers seeking to secure a Rural Loan product begins when Kamapim agents travel to villages to conduct training or procurement activities and register a farmer on the Kamapim-Field Buzz app.

Once registered, a farmer can open a bank account, buy a mobile phone, receive additional training and apply for a Rural Loan (see Figure 17).

Figure 17

Rural Loan user journey



Source: Kamapim, MiBank, Field Buzz, GSMA

As anticipated by the UX research, farmers who have taken out a Rural Loan have used the funds for different purposes. Among those who used the loan for agricultural purposes, some purchased tools to improve their vanilla farming practices while others purchased shade trees to grow high-quality vanilla. Those with larger farms used the loan to hire labour and others used the loan to diversify their income, either through the cultivation of new crops or the sale of goods in their village. According to Kamapim, one

village chief encouraged five other members of his village to apply for a loan. The six farmers pooled their resources to purchase goods in Madang town that they then sold at a profit in the villages. Each farmer was able to convert his initial PGK 300 (\$83) loan into PGK 900 (\$250) in just a matter of weeks. Another farmer purchased groceries in Madang town to resell in the village for a profit. Less than half of loan recipients used the loans for on-farm activities.³⁰

30 Kamapim interview (January 2022).



5

Business model



Because the PoC pilot introduced the first-of-its-kind, earnings-based credit product to the Papua New Guinea market, the objectives were not quantitative metrics aimed at proving scalability. Rather, the consortium was tasked with developing a mechanism for sharing farmer data; establishing a system for credit scoring; and designing, developing and testing a credit product. All three of these objectives were met during the pilot phase.

Informally, the consortium established a few quantitative metrics to assess their performance. These included digitally profiling 3,000 farmers on the

Kamapim-Field Buzz app to generate credit scores and issuing a minimum of 500 loans to stress test and fine-tune the credit-scoring algorithm. As of early 2022, the consortium had succeeded in the first, registering more than 10,000 farmers on the Kamapim-Field Buzz app. Given the initial delays to the project, it has yet to meet its second objective. The consortium has now set an internal target of meeting the 500-loan mark by the end of June 2022. This timeframe is better aligned with the vanilla cultivation schedule as farmers will be largely finished with pollination and will not be able to harvest their crop until the latter part of the year.

5.1 Revenue model

Before launching the Rural Loan, the consortium members agreed to a revenue-sharing model for the duration of the project. For every successful loan application processed, Kamapim charges PGK 20 (\$5.55). MiBank charges a processing fee equivalent to 1.5 per cent of the entire loan amount plus interest of 1.5 per cent per month. Field Buzz charges a one-time fee for app development, registration and training. Kamapim and MiBank fees are paid by the farmers directly while

Field Buzz fees are covered primarily by MDF with support from the GSMA. Although MiBank offers lower fees for the Rural Loan than similar loan products on the market, the sum of the two upfront fees is likely one of the reasons why adoption levels of the Rural Loan have remained low. For a PGK 300 (\$83) loan, for example, the upfront fees (Kamapim fee and MiBank fee of 1.5 per cent of the entire loan amount) account for approximately eight per cent of the total value of the loan.

5.2 Project cost structure

Each of the consortium partners contributed both financial and in-kind resources to the development of the Rural Loan product. An overview of some of the main cost items, as well as who is responsible for covering them, are outlined in Figure 18.

Figure 18

Main cost items associated with the Rural Loan product

COST ITEM	RESPONSIBLE
Enhancement of Kamapim-Field Buzz app to run credit applications and link up with the MiBank platform	MDF, GSMA
Loan guarantee	MDF
Field agent staff time dedicated to financial literacy training, opening of bank accounts, issuing bank cards, selling phones and running loan applications	Kamapim, MiBank
Staff time to field farmer inquiries about the Rural Loan product. MiBank and Kamapim have both set aside staff time to conduct customer service tasks, including fielding questions about the status of bank cards, loan terms and repayment schedules, among other inquiries	Kamapim, MiBank
Marketing materials for loan product	MiBank
UX study to understand the priorities and requirements of vanilla farmers living in Madang	GSMA
MEL to assess the impact of the pilot	GSMA, MDF

Source: GSMA



6

Results and key lessons



6.1 Results

Initial feedback from smallholder farmers has been positive. In general, farmers have been supportive of the pilot and the work of consortium members and partners, as they have appreciated the opportunity to access loan products from their doorstep. Farmers have recognised that Rural Loan removes many of the barriers they have faced to accessing credit from formal financial institutions. In contrast to other loan products on the market, farmers have found Rural Loan to be relatively simple to understand and easier to access. They also appreciated that the loan value amount was tied to something tangible like vine count, rather than more intangible criteria like social status or the strength of their personal networks.

The loans have helped me a lot and made it easy for me. Applying for a loan has made it easy for me to pay the labour and the groups that help me. The other banks had a lot of criteria I could [not] reach but with Kamapim and MiBank [it] is much easier and simpler. From my experience with other banks there were a lot of questions and requirements that were too hard for me to meet.

K.S – Kamapim farmer

Loans have helped us. When the Rural Loan was introduced we paid a very low interest rate compared to other banks. For example, for a 300 kina loan, I will pay an interest of 18 kina. And when we have good sales, you can make a profit of 180 kina to 200 kina. This money can now help us do other stuff as well.

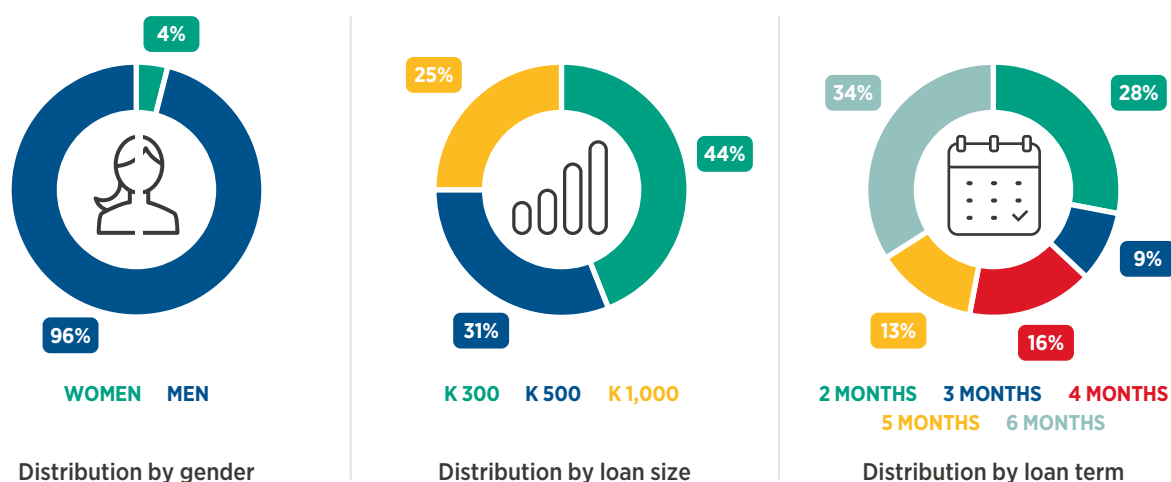
B.L – Kamapim farmer

Much of the foundational work to establish economic identities, which can then be used for credit scoring, has gone well. Kamapim, for example, has registered more than 10,000 farmers on the Kamapim-Field Buzz digital procurement app as of the end of January 2022, more than triple the original goal. Although many of the records still need to be validated and sanitised, this is excellent progress. Kamapim has also opened more than 1,000 MiBank savings accounts.

Despite these efforts, initial adoption of the Rural Loan product has been low. As of mid-February 2022, 26 farmers from Madang have secured a Rural Loan and six farmers have taken out a second loan, totalling 32 loans issued during the pilot. The distribution of these loans by gender, loan size and loan term is shown in Figure 19.

Figure 19

Distribution of loans by category, September 2021–January 2022



Source: Kamapim, MiBank, GSMA

Because of the delays in getting the Rural Loan product off the ground, the consortium members were not able to focus as much of their efforts on attracting female loan applicants as they might have otherwise. As a result, there was only one female participant in the pilot. It is worth noting, however, that this farmer took out a second loan worth PGK 500 (\$139) in December 2021 after paying back her initial PGK 300 (\$83) loan.

When assessed against the initial criteria for success (see Figure 10), the pilot has had some success in making the product affordable and accessible. However, it is too early to assess the long-term viability of the product (see Figure 20).

Figure 20

Progress of the pilot against initial success criteria

CRITERIA	RATING	DETAIL
Affordable		By eliminating the collateral requirement, the Rural Loan is much more affordable than similar products available to smallholders in Papua New Guinea. Nevertheless, the fees remain a barrier for many farmers.
Accessible		By bringing Rural Loan to farmers' doorsteps, consortium members have eliminated a key barrier to entry. Nevertheless, disbursement and repayment may require a trip to town, a major cost and time investment for farmers.
Viable	Too early to assess	The product has yet to demonstrate that it can be financially viable for either MiBank or Kamapim. More stress testing of the credit-scoring algorithm will be needed to make this determination.
Useful		In the early months of the pilot, Rural Loan proved less useful to farmers because of the short (two- to three-month) loan terms. This limited what farmers could do with the loan. Extending the loan terms has given farmers more flexibility.

Source: GSMA

6.2 Key lessons

The roll-out of a brand-new credit product for smallholder farmers in a short period in a market like Papua New Guinea has not been without challenges. It is important to note that the Rural Loan pilot was conducted during the COVID-19 pandemic, which impacted the movement of people and goods, as well as demand for cash crops, the main income source for farmers targeted for the Rural Loan product.

Although the pilot was still underway at the time of publication, and just 32 loans have been issued to date, the consortium members have gleaned several important lessons that are informing improvements to product design and implementation. The lessons from this pilot will not only benefit the consortium members as they seek to scale the Rural Loan product, but will also provide guidance to agritech ecosystem players seeking to launch similar products in Papua New Guinea and other LMICs.

LESSON 1

Partnerships and data sharing are essential to create economic identities that smallholders can use to access financial products and services

Neither Kamapim nor MiBank would be able to offer the Rural Loan product on their own, as no single organisation has the data, expertise and assets required to offer a viable earnings-based loan product to smallholder farmers. For FSPs in particular, partnerships with agribusinesses and agritechs allow them to access large amounts of farm and farmer data that can be used to create economic identities. These economic identities, in turn, can be used to offer a variety of financial products and services, including savings, credit and

insurance. Agribusiness field agent networks also give FSPs the ability to reach rural customers who would otherwise be too expensive to service.

Kamapim and MiBank appear open to not only continuing to work together on the Rural Loan product, but also to forging new partnerships with other FSPs and agribusinesses to increase the addressable market. Those using digital procurement tools in the cocoa, coffee, palm oil and coconut markets may be potential partners.

LESSON 2

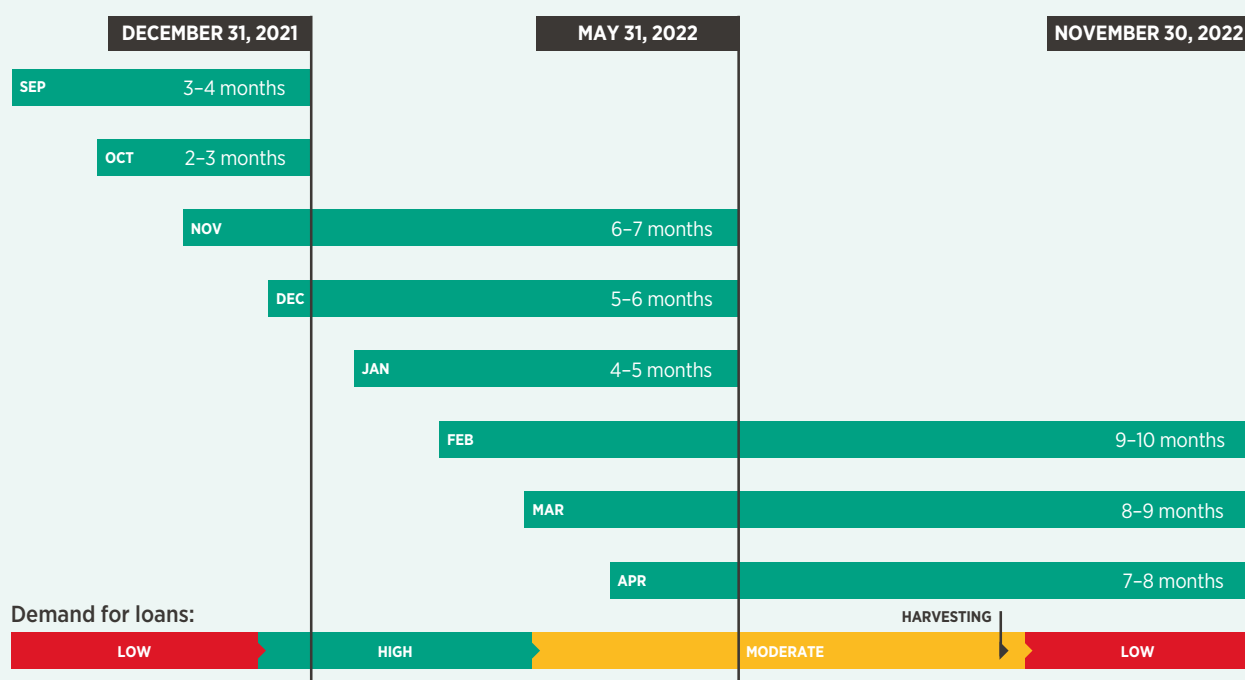
The loan term should align with the agricultural cycle

One of the main reasons for the low adoption of Rural Loan was that the loan term was not aligned with vanilla growing season in Madang Province and was too short for farmers to repay the loan. Although the original intent of the consortium was to provide six-month loans based on the recommendations of the UX research, delays to the start of the pilot and a previously designated end date for the pilot (31 December 2021) necessitated the move to two- and three-month loan terms.

Beginning in November 2021, the consortium members agreed to extend the terms of the loans to make them more compatible with farmers' needs. Loans issued in November 2021, December 2021 and January 2022 are due for repayment at the end of May 2022. New loans being offered in February and March 2022 are due for repayment in November 2022, toward the end of the vanilla harvest season (see Figure 21). It is expected that this adjustment will have a positive impact on demand for the Rural Loan product.

Figure 21

Repayment schedule for loans issued to date



Source: Kamapim, MiBank, GSMA

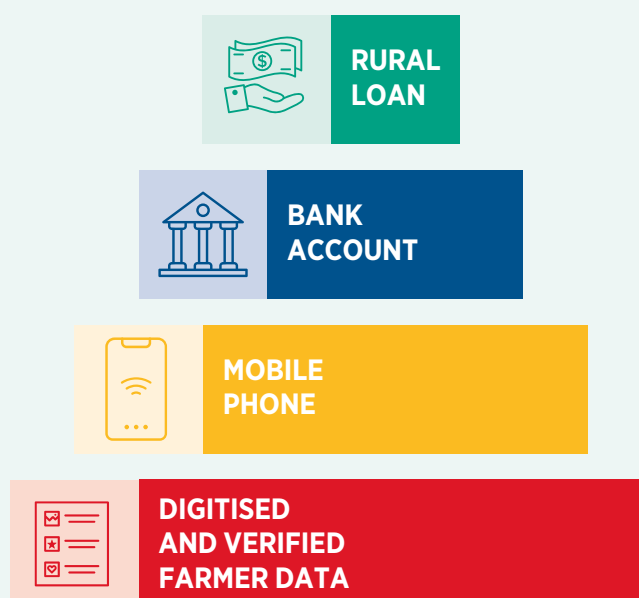
LESSON 3**Establishing the building blocks to issue the loan is the most resource-intensive part of the process**

The Rural Loan product relies on many different components, all of which are critical to implementing it at scale. A major effort has gone into inputting farmer data in the Kamapim-Field Buzz digital procurement app. Data on thousands of farmers needs to be inputted, validated, sanitised and then standardised. In working through the data, Kamapim and Field Buzz have found significant duplication (e.g. the same farmer was assigned to two different villages due to a misspelling of the village name; the same individual was entered once as a female and once as a male; or the same individual was entered with different mobile phone or bank account numbers). Kamapim and Field Buzz have also found significant omissions, potentially due to a field agent not inputting the data in a timely manner.

The ability of a credit scorecard to replace collateral, as well as the current eligibility criteria for loan approval, both depend on the accuracy of the data in the Kamapim-Field Buzz digital procurement app.

Recognising this, Kamapim hired additional staff to accelerate the cleaning and validation of the data. Kamapim has also improved field agent training to ensure they capture data accurately and in a timely manner when visiting farmers.

Another building block of the Rural Loan product is bank account and mobile phone ownership. Loans are disbursed into a MiBank account and a loan recipient must have a mobile phone so that the bank can contact them if payments are delayed (see Figure 22). However, the consortium has encountered challenges in securing the bank cards that farmers need to apply for a loan. Kamapim has also had to invest hundreds of hours in training farmers how to use their phones, to budget for their vanilla crop and to open and use a bank account and bank card. Seemingly simple tasks, such as remembering PIN numbers, can become huge barriers to the use of mobile phones and banking products.

Figure 22**Building blocks of the Rural Loan product**

Note: Farmer data is initially digitised on a handheld mobile device owned by Kamapim and managed by the field agent. A Kamapim farmer does not need to own a mobile phone to be registered with Kamapim.
Source: GSMA AgriTech

LESSON 4

For a credit scorecard to be accurate, it must be stress tested

For the pilot to generate a credit scorecard that can reliably predict loan outcomes, loans must be issued to a wide variety of farmers. Efforts are needed to reach farmers of different ages, genders, income brackets, villages, farm sizes and social position in their villages. The broader the representation and the deeper the data profile, the better the scorecard will be able to link farmer characteristics and behaviours to positive and negative loan outcomes.

The consortium must also learn to accept a relatively high rate of default. Loan default is not only critical for the Rural Loan credit-scoring algorithm to function as intended, but also for the long-term viability of the product. Without a tested and proven credit-scoring algorithm, MiBank has made it clear that they will revert to their standard scoring criteria once the credit guarantee runs out.

LESSON 5

During the COVID-19 pandemic, consortium members have had to rely on remote support for many key activities

For a decade, the GSMA AgriTech programme has worked with local grantees to develop life-enhancing digital solutions for rural agricultural communities in LMICs. During this time, processes and activities have been developed and fine-tuned to ensure that solutions meet the needs of users. UX design, research and MEL all depend on providing in-country support and a considerable in-country presence. However, due to the COVID-19 pandemic, neither the GSMA nor our global product design partner

Innovation Quotient (IQ) could travel to Papua New Guinea. This resulted in a hybrid approach to UX research whereby local partners travelled to remote rural areas with remote support from the GSMA and IQ.³¹ While this approach enabled the project to move forward, it had some limitations. The main challenge was the inability of IQ to train local staff in person and respond in real time to issues that arose during initial engagement with farmers.

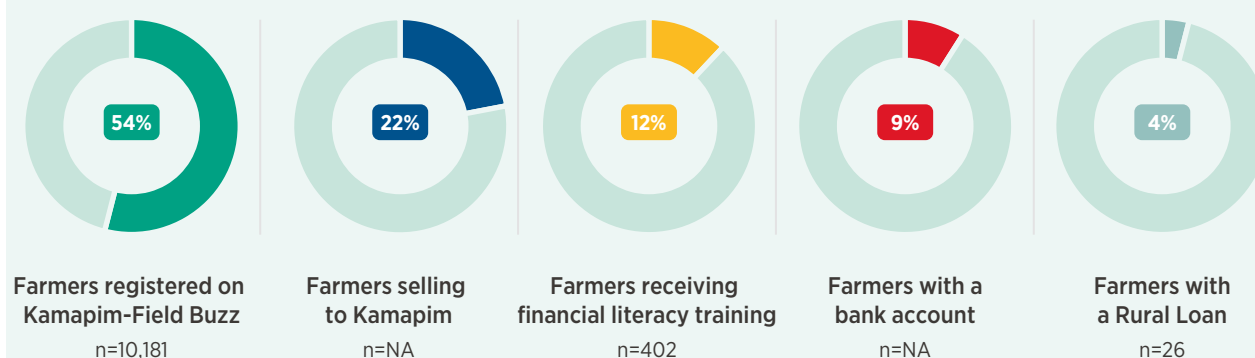
31 Javed, A. (9 July 2021). "AgriTech UX in an Era of Remote Work". Mobile for Development Blog. GSMA.

LESSON 6

More targeted efforts are needed to engage underserved communities, especially women

Although women actively participate in the production of cash crops, they generally do not generate much income from their efforts due to firmly established gender roles, security concerns associated with travelling to town, low literacy levels, lack of land ownership, limited access to mobile phones and lack of access to financial services to

receive payment. Although Kamapim has made great strides in improving women's access to agricultural extension, they continue to struggle to get women to participate in higher value activities (see Figure 23). Women accounted for only four per cent of all loan recipients during the pilot.

Figure 23**Women's participation in value-added agricultural activities**

Source: Kamapim, World Bank, GSMA

Given the low uptake of the Rural Loan product among farmers, the consortium has focused more heavily on increasing overall adoption than addressing the needs of particular segments. More work is needed to put the building blocks for the product in place and remove the gender barriers that women face. Some attempts to do this, such as

waiving bank account opening fees for women, have backfired as men have simply had their wives open an account and then used it for their own purposes. More work is needed to tailor the product to women farmers and increase adoption, including interviews with female farmers, data analysis and UX research.³²

32 GSMA. (2022). "Reaching and Empowering Women with Digital Solutions in the Agricultural Last Mile," forthcoming publication.



7

Future outlook



The viability of the Rural Loan product will ultimately depend on issuing more loans during the pilot phase. This has less to do with breaking even than with generating enough data on farmer characteristics and behaviours to accurately predict loan outcomes.

Consortium members have all committed additional resources to the pilot in recent months to boost loan numbers, but there are also other steps they can take, and are already taking, to increase the addressable market for Rural Loan in Papua New Guinea.

Expand beyond Madang Province and eliminate the “eligible town” requirement from the loan criteria

To increase the target audience for the loan product, the consortium needs to look beyond Madang. They have already started issuing loans in neighbouring Morobe Province. East New Britain, one of the largest vanilla growing regions in Papua New Guinea, is an obvious choice for expansion, and Kamapim recently signed an agreement to access 30,000 farmers in East New Britain Province and 22,000 farmers in Northern Province.

The consortium should also eliminate the eligible town requirement from the loan criteria. Restricting loans to farmers from desirable towns not only limits the addressable market, it also weakens the statistical validity of the data used for credit scoring. MiBank has already removed mention of the eligible town requirement from their loan marketing materials.

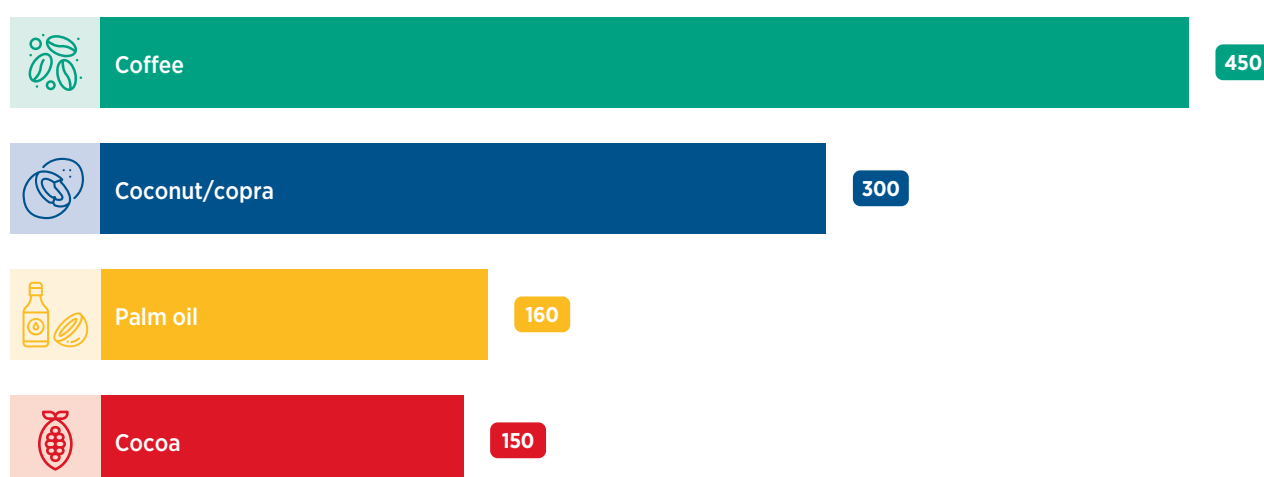
Expand into value chains beyond vanilla

The resurgence of the vanilla market in Papua New Guinea has only occurred in the past few years. Most of Kamapim’s vanilla farmers have been growing vanilla for only one or two crop cycles, and the total number of households involved in vanilla cultivation is still

relatively small. Cocoa, coffee, palm oil and coconut are much more established, organised and structured value chains in Papua New Guinea supporting a larger base of farmers (see Figure 24).

Figure 24

Households engaged in different cash crops in Papua New Guinea (thousands)



Source: DAL, Industry Boards

Several agribusinesses working in these value chains have adopted digital agriculture solutions that collect farmer data and transaction histories, including PNGAC, Hargy Oil Palms and Olam.

Because the objective of the Rural Loan pilot is to test the credit-scoring algorithm, the more data gathered from different types of farmers the more robust the algorithm will be.

Expand banking infrastructure in rural areas

One of the most significant barriers to adoption of the Rural Loan product is the time it takes farmers to travel to town to access their loan and repay the funds, but this has not been adequately addressed in the product design. One way to address this barrier would be to enable disbursement and repayment through the agent network. One Rural Loan recipient did just that, repaying their loan through a Kamapim agent in their village. Kamapim has been exploring ways to enhance the agent network in rural areas through the enrolment

of village chiefs or village traders/stores as MiBank agents. However, expanding the agent network in Papua New Guinea has long been a challenging proposition given the liquidity requirements of agents, the security concerns associated with holding cash and the low fees traditionally paid to agents relative to their perceived risks. Adjusting incentives to make it more attractive for village chiefs and traders/stores to act as agents could be explored.

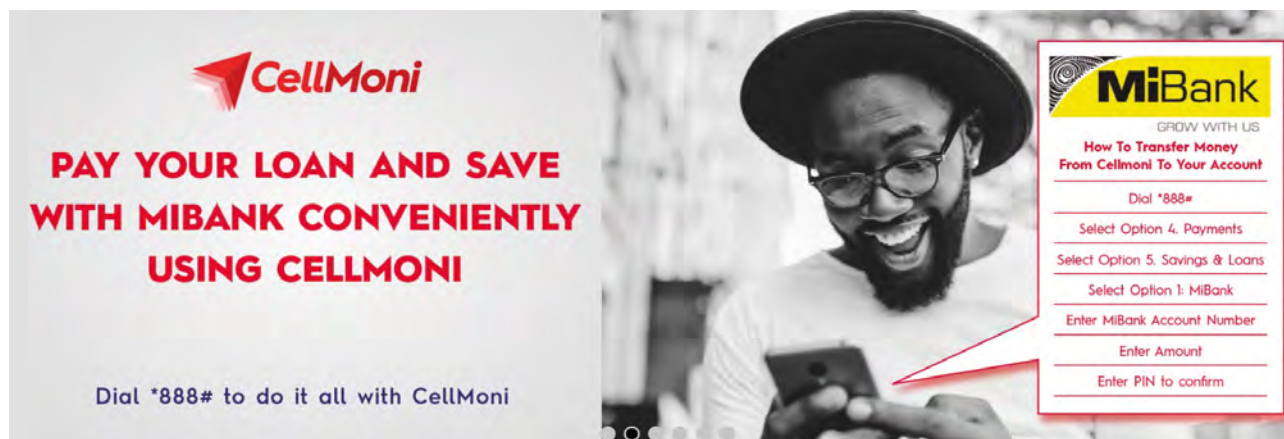
Further leverage mobile money

Although coverage may be limited in some of the more remote rural regions of Papua New Guinea, mobile money is gaining traction throughout the country, particularly since it does not require a bank account to set up and lengthy travel times can be eliminated. One Rural Loan recipient has used his mobile money

account to pay back his loan. MiBank has an existing agreement with Digicel's Cellmoni that allows users to pay back their loans with their Cellmoni mobile money account (see Figure 25). This agreement could be extended to the Rural Loan product.

Figure 25

MiBank and Cellmoni marketing collateral encouraging users to repay their loans with mobile money



Source: MiBank

Despite some early setbacks, both Kamapim and MiBank remain committed to the pilot and the potential of the Rural Loan product in the Papua New Guinea market. Kamapim is investing heavily in cleaning and validating farmer data and has recently signed agreements to expand into new regions of the country, which will give them access to a wider pool of farmers. MiBank is investing in additional staff to field farmer inquiries on the various financial

services offered to smallholders, and have also recently acquired a portable bank card-generating machine that can be taken to villages to issue bank cards on the spot. The GSMA and MDF have also agreed to continue their financial and in-kind support through the end of 2022 to enable enough farmers to sign up for the loan to generate the data needed to effectively stress-test the credit-scoring algorithm.

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