



Smallholder finance in the oil palm sector

Analyzing the gaps between existing credit schemes and smallholder realities

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Occasional Paper 174

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ISBN 978-602-387-060-8
DOI: 10.17528/cifor/006610

Sahara, Haryadi and Kusumowardhani N. 2017. *Smallholder finance in the oil palm sector: Analyzing the gaps between existing credit schemes and smallholder realities*. Occasional Paper 174. Bogor, Indonesia: CIFOR.

Photo by Icaro Cooke Vieira/CIFOR
Oil palm work, West Kalimantan, Indonesia.

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We would like to thank all funding partners who supported this research through their contributions to the CGIAR Fund. For a full list of CGIAR Fund Donors please see: <http://www.cgiar.org/about-us/our-funders/>

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Abbreviations

Babel	Bangka Belitung province
BGPP	Berbak Green Prosperity Partnership
BI	Bank of Indonesia
BKD	<i>Bank Kredit Desa</i> , Village Credit Bank
BKPM	<i>Badan Koordinasi Penanaman Modal</i> , The Investment Coordinating Board
BNI	<i>Bank Negara Indonesia</i> , Indonesian State Bank
BPDPKS	<i>Badan Pengelola Dana Perkebunan Kelapa Sawit</i> , Indonesian Oil Palm Estate Fund Agency
BPN	<i>Badan Pertahanan Nasional</i> , National Land Agency
BPS	<i>Badan Pusat Statistik</i> , Central Statistics Agency
BRI	<i>Bank Rakyat Indonesia</i> , Indonesian People's Bank
CPO	Crude Palm Oil
CU	Credit Union
Ditjenbun	<i>Direktorat Jenderal Perkebunan</i> , Directorate General of Estate Crops
DO	Delivery Order
FA	Financial Access
FFB	Fresh Fruit Bunch
FGD	Focus Group Discussion
GoI	Government of Indonesia
GRDP	Gross Regional Domestic Product
IDR	Indonesian Rupiah
IFC	International Finance Corporation
ISCC	International Sustainability and Carbon Certification
ISPO	Indonesian Sustainable Palm Oil
IUMK	<i>Izin Usaha Mikro Kecil</i> , Microenterprise Business Permit
Kementan	<i>Kementerian Pertanian</i> , Ministry of Agriculture
KI	<i>Kredit Investasi</i> , Investment Credit
KKPA	<i>Kredit Koperasi Primer Anggota</i> , Credit for Members of Primary Cooperatives
KMK	<i>Kredit Modal Kerja</i> , Working Capital Credit
Kotim	East Kotawaringin district
KSM	<i>Kelompok Swadaya Masyarakat</i> , Community Self-help Group
KSP	<i>Koperasi Simpan Pinjam</i> , Credit Union
KUD	<i>Koperasi Unit Desa</i> , Village Cooperative
Kupedes	<i>Kredit Umum Pedesaan</i> , Rural Small Loan program

KUR	<i>Kredit Usaha Rakyat</i> , Micro Credit program
LDKP	<i>Lembaga Dana Kredit Pedesaan</i> , Rural Credit Fund Institution
NPK	Nitrogen (N), Phosphorus (P) and Potassium (K) fertilizer
OKI	Ogan Komering Ilir district
Pelita	<i>Pembangunan Lima Tahun</i> , Five-Year Development
PIR	<i>Perkebunan Inti Rakyat</i> , Nucleus Estate and Smallholder Scheme
PIR-Bun	<i>Perkebunan Inti Rakyat - Perkebunan</i> , Nucleus Estate and Smallholder Scheme for Plantations
PIR-Trans	<i>Perkebunan Inti Rakyat Transmigrasi</i> , Nucleus Estate and Smallholder Scheme for Transmigrants
PT	<i>Perseroan Terbatas</i> , Limited Liability Company
RevitBun	<i>Revitalisasi Perkebunan</i> , Estate Crop Revitalization program
RSPO	Roundtable on Sustainable Palm Oil
RTRW	<i>Rencana Tata Ruang Wilayah</i> , Regional Spatial Plan
SHM	<i>Sertifikat Hak Milik</i> , Land Ownership Certificate
SKT	<i>Surat Keterangan Tanah</i> , Land Clarification Letter
SMI	<i>Sistem Manajemen Investasi</i> , Investment Management System
SNV	<i>Stichting Nederlandse Vrijwilligers</i> , Netherlands Development Organisation
STD-B	<i>Surat Tanda Daftar Usaha Budidaya Tanaman Perkebunan</i> , Cultivation Enterprise Registration Letter
Sumsel	<i>Sumatra Selatan</i> , South Sumatra
ULAMM	<i>Unit Layanan Modal Mikro</i> , Micro Venture Capital Service Unit
UMK	<i>Usaha Mikro Kecil</i> , Microenterprise
UMKM	<i>Usaha Mikro Kecil Menengah</i> , Small and medium enterprises
UNDP	United Nations Development Programme
USD	United States Dollar

Acknowledgments

We would like to thank the companies, banks, government organizations, traders, cooperatives, tied farmers, independent farmers and other key stakeholders who agreed to be interviewed as part of this research. We would also like to thank Pablo Pacheco and Ahmad Dermawan for providing invaluable support and critique for improving the quality of this research. We would also like to thank our project partners for reviewing this report and providing feedback.

This research was funded by the United States Agency for International Development (USAID) through the project entitled “The role of finance in integrating oil palm smallholders into sustainable supply chains.” This work is part of the CGIAR Research Program on Forests, Trees and Agroforestry (CRP-FTA), and is supported by CGIAR Fund Donors. For a full list of donors, please visit: www.cgiar.org/about-us/our-funders/

Executive summary

Oil palm is the most extensively cultivated crop by area in Indonesia, while palm oil is the country's most significant agricultural export product. The contribution of smallholder farmers to this oil palm planting area has increased over time. Currently, approximately 2 million smallholders are cultivating oil palm in Indonesia. Oil palm farmers need credit to finance their investments in establishing and replanting estates, and to cover their operational expenses. However, not all small farmers are eligible or have sufficient capacity to access such credit. Access to credit is essential for improving farm investment, expanding operational activities, advancing post-harvest practices, and enhancing market access.

This study aims to: (1) identify different financing schemes for small farmers operating in the oil palm sector; (2) understand formal and informal farmers' perspectives on the effectiveness of these schemes in meeting their demands for investment in plantation establishment and operational expenses; and (3) ascertain small farmers' borrowing behavior associated with specific cash flows in oil palm production. It then uses information from these three aspects to analyze gaps in oil palm credit markets.

Our analysis focuses on two study locations: Ogan Komering Ilir (OKI) district in South Sumatra province, and Kotawaringin Timur (Kotim) district in the province of Central Kalimantan. Information was collected during focus group discussions (FGDs) and through key informant interviews with credit providers (governments, palm oil companies, banks, microfinance institutions, cooperatives, and local traders); and credit recipients (independent smallholders, tied farmers, village representatives, community leaders, and farmer group leaders).

In both locations we found farmers demanded credit from formal and informal institutions for

establishing, maintaining, and replanting oil palm estates. Formal institutions include banks, oil palm companies, cooperatives, governments, and microfinance institutions. The banking sector applies stricter requirements, particularly legal ones, than other formal lenders. Informal lenders include local traders, who apply less stringent requirements. According to banking staff, there are large numbers of credit applications for oil palm development in both districts; however, few of these meet banks' criteria for approval. Collateral requirements, credit amounts, and crop gestation periods prove challenging for small farmers when they try to access credit. Small farmers' borrowing behavior is an obstacle for lenders too, with most farmers lacking managerial skills and bank savings. Other obstacles affecting the capacity of farmers to access credit include side selling, lack of knowledge on good agricultural practices, and lack of trust in the single management systems applied by companies. These issues result in four kinds of gaps in oil palm credit markets in the two districts: (1) demand–supply gaps; (2) maturity gaps; (3) risk-sharing gaps; and (4) legal gaps.

Demand–supply gaps exist because most approved credit applications can only be used for working capital and are insufficient to meet the costs necessary for replanting, which is a major issue in both study sites. Maturity gaps exist since few schemes consider grace periods in oil palm farming. Risk-sharing gaps exist with loan repayments since fresh fruit bunch (FFB) prices and oil palm production costs are constantly changing. Legal gaps exist since all credit schemes offered by the banking sector require land or other fixed assets as collateral. These four gaps reduce the likelihood of smallholders accessing credit. Consequently, efforts are necessary to overcome these gaps in order to improve oil palm farmers' access to formal credit schemes, particularly from banks. This study also discusses these efforts.

1 Introduction

Access to credit is essential for improving farm investment, expanding operational activities, advancing post-harvest practices, and enhancing market access. Existing literature provides evidence to the fact that improving farmers' access to financial services contributes to increased agricultural productivity (through improved access to certified seed, fertilizers and other farm inputs) and market access, which in turn increases farmers' incomes and reduces rural poverty (Adugna and Heidhues 2000; Sharma 2000; IFC 2012; Baiyegunhi and Fraser 2014). Despite their importance in farming economies, most farmers, particularly smallholders, have limited access to credit services. This situation is prevalent for all agricultural crops produced by smallholders, including oil palm, which is now grown by significant numbers of small farmers in Indonesia.

Oil palm is the most extensively cultivated crop by area in Indonesia, and palm oil is the country's most significant agricultural export product. In 2015, oil palm planting area reached approximately 11.3 million hectares, and production around 31.3 million tonnes (BPS 2017a). This makes Indonesia the world's largest producer of palm oil contributing around 50% of total global supply. In 2015, the value of Indonesia's palm oil exports was around USD 15.4 billion (BPS 2017b), making palm oil the largest agricultural sector contributor to Indonesia's balance of trade followed by rubber and cacao. The contribution of smallholders has continued to increase over time, with some farmers participating in nucleus estate and smallholder schemes, and others operating as independent smallholders (IFC 2012; Daemeter 2016). The latter category forms a heterogeneous group comprising small-scale independent farmers working at subsistence level, and larger-scale independent farmers managing tens to hundreds of hectares (Daemeter 2016).

Oil palm farmers need credit to finance their investments in establishing and replanting estates, and to cover their operational expenses. Establishment costs include expenditure from the outset of planting until the first harvest on things such as land acquisition, land clearing, certified seed, planting, fertilizers and pesticides. Operational costs include expenditure from harvest time until plants finally become unproductive, and cover fertilizers, pesticides, labor, harvesting, and transporting fresh fruit bunches (FFBs) (Daemeter 2016). When palms reach around 25 years old, they need to be replaced by new plantings in order to maintain productivity levels. Replanting costs include expenditure for chopping down old palms, land clearing and land preparation, and certified seed (Daemeter 2016).

In Indonesia, many smallholders neither use certified seed nor apply appropriate volumes of fertilizers to their plots. The lack of appropriate farming practices tends to affect overall yields. The Ministry of Agriculture has reported smallholder yields of approximately 11–14% lower than those obtained by large-scale plantation companies (United Nations Development Programme 2016). Therefore, improving credit access for farmers needs to be addressed in order to increase productivity, efficiency and sustainability. However, not all small farmers are eligible or have sufficient capacity to access credit.

Farmers access credit from different sources. IFC (2012) reported tied farmers have better access to credit for plantation establishment since they have guarantors (i.e. oil palm companies and cooperatives), and can meet the credit requirements applied by the banking sector. This is not the case for independent smallholders as these requirements make it extremely hard for them to access bank loans. For example, in most situations farmers have to have bank accounts and provide formal land certificates as collateral when applying for bank

loans. However, IFC (2013) found more than half (58%) of independent smallholders have no bank accounts. The same study also reported 43% of independent smallholders having no formal land certificates. Obtaining a formal land certificate requires significant outlay, and in many cases the procedures involved are extremely complex. Microfinance institutions can have less stringent requirements in this regard. Requirements may also vary between different regions in Indonesia. For example, certain types of lenders might be present in certain regions, but not in others. Therefore, a region-specific understanding of the challenges facing smallholders when accessing credit could contribute to the current debate on oil palm credit markets.

This study aims to improve our understanding of the financing schemes available for oil palm smallholders, and the barriers they face in accessing resources for improving their production practices. There are three main areas of interest: first, to identify the different financing schemes available for smallholders working in the oil palm sector, and describe the ways they operate; second, to understand formal and informal farmers' perspectives on the effectiveness of different financing schemes in meeting the demands of small farmers for investments in plantation establishment

and operational expenses; and third, to ascertain the borrowing behavior of small farmers associated with specific cash flows in oil palm production. Information from these three aspects is used to analyze gaps in oil palm credit markets. By focusing on these three aspects, the expectation was this study would be able to determine the degrees to which existing financing schemes – both formal and informal – operate, and whether they are appropriate to oil palm smallholders' demands for financing.

This report is organized in seven sections including this introduction. The second section draws from existing literature to describe the different credit schemes available for oil palm farmers in Indonesia. The third section provides the main data and methods used in this study. The fourth section provides overviews of the two study locations: Ogan Komering Ilir (OKI) and Kotawaringin Timur (Kotim) districts with respect to their current economic situations, oil palm production and marketing systems, and financing schemes. The fifth section describes the study's findings in regard to the perspectives of lenders involved in the different credit schemes and the borrowing behaviors of small farmers, and provides a gap analysis. The sixth section presents the study's conclusions, while the final section presents its main recommendations.

2 Financing for oil palm smallholders

This section briefly discusses the various agriculture sector credit schemes in Indonesia with a specific focus on the oil palm sector. It comprises four parts highlighting the credit schemes provided by: (1) governments, (2) microfinance institutions, (3) banks, and (4) informal lenders.

2.1 Oil palm financing schemes under Indonesian Government programs

The government plays an important role in providing financing schemes for the establishment of smallholder estates. Schemes launched by the government include: the Nucleus Estate and Smallholder Scheme for Plantations (*Perkebunan Inti Rakyat - Perkebunan - PIR-Bun*), Nucleus Estate and Smallholder Scheme for Transmigrants (*Perkebunan Inti Rakyat - Transmigrasi - PIR-Trans*), Credit for Members of Primary Cooperatives (*Kredit Koperasi Primer Anggota - KKPA*), and the Estate Crop Revitalization program (*Revitalisasi Perkebunan - RevitBun*).

2.1.1 PIR-Bun and PIR-Trans

PIR-Bun refers to the 1977 nucleus company and smallholder estate program, which followed the issue of Presidential Decree No. 11/1974. The government required large-scale companies to act as 'nucleus' estates and cooperate with local community smallholder estates or 'plasma' through mutual and sustained partnerships (Nurwati 1986). Under this scheme, the government appointed banks to provide loans for smallholders to establish oil palm estates using 'nucleus' companies as guarantors. Nucleus companies were obliged to develop economic units (consisting of a nucleus estate and mill), memberships of tied or 'plasma' farmers, and other facilities such as roads in accordance with guidance from the Ministry of Agriculture. The nucleus companies also provided technical assistance to plasma members

in establishing and managing oil palm estates. Oil palm plantations have developed rapidly in Indonesia since the implementation of the PIR-Bun program (Risza 1994).

In 1986, the Government of Indonesia (GoI) launched the PIR-Trans program, a nucleus estate scheme in conjunction with the transmigration program. Initially, the program was launched through Presidential Instruction No. 1/1986 on Development of PIR Plantations in Association with Transmigration (Ditjenbun 1986). This was followed by Minister of Agriculture Decree No. 333/KPTS/KB.5.510/6/1986 in conjunction with Minister of Agriculture Decree No. 353/KPTS/KB.510/6/2005 on Procedures for PIR-Trans Scheme Plantation Development, which instructed nine ministers, the Governor of the Bank of Indonesia, and the Head of the National Investment Coordination Board (*Badan Koordinasi Penanaman Modal - BKPM*) to cooperate and coordinate in developing PIR schemes in association with the transmigration program (Kementan 2003).

PIR-Trans was implemented by assigning small farmer development assistance responsibilities to nucleus oil palm companies. Under the PIR-Trans scheme, the government was responsible for developing infrastructure such as roads, bridges, and electricity. The government also facilitated the acquisition of property use rights, an obstacle that had limited private investment in the past. Land clearing was handled by oil palm companies, often in exchange for timber use rights. Oil palm companies had access to loans at concessionary rates to finance estate development, new crop planting and mills. The government also provided funding for financing smallholder estates, as well as initial living and housing expenses. Nucleus companies were responsible for providing extension services, collecting harvested FFBs, and processing FFBs into crude palm oil (CPO) (Larson 1990).

PIR-Trans and PIR-Bun program financing provision came from nucleus companies and government facilitated Investment Credit from banks, with 35% of the cost for establishing a nucleus plantation coming from the former, and the remaining 65% sourced from the latter. One hundred percent of funding for smallholder 'plasma' plantations came from the Investment Credit scheme, with 55% sourced from Liquidity Credit from the Bank of Indonesia, and 45% from banks' funds. Tied farmers had to pay all costs for developing 'plasma' plantations: land clearing, fertilizers, and certified seeds. The interest rate for the initial investment was 16% per annum, and this was reviewed annually by the Bank of Indonesia (BI 2004). Tied farmers sold FFBs to their nucleus companies, which would deduct 30% of farmers' sales for monthly loan repayments. This figure of 30% was applied to all PIR-Trans and PIR-Bun schemes in every region in Indonesia. Once smallholders had paid off their loans, they would receive land certificates for their oil palm estates (Kementan 2013).

While tied farmers in PIR-Bun schemes were members of local communities, PIR-Trans schemes involved local and in-migrant communities, predominantly from Java, who arrived through the transmigration program (Kementan 2003). Unfortunately, both programs were stopped due to lack of funds and the political situation in Indonesia from the end of the New Order period in May 1998 (Syahrial 2008).

2.1.2 KKPA

In 1995, the Indonesian Government launched a program named Credit for Members of Primary Cooperatives (*Kredit Koperasi Primer Anggota - KKPA*) (Feintrenie et al. 2010a). This program could be accessed by all members of primary cooperatives including oil palm farmers who were already cooperative members. By 1998, 192,725 ha of smallholder 'plasma' and 78,524 ha of nucleus estates had been developed under KKPA schemes (McCarthy and Cramb 2016).

Funding for KKPA schemes was channeled to cooperative members through executive banks designated by the government. The KKPA program provided loans for establishing 'plasma' plantations on farmers' land for most estate crops including oil palm (Kementan 1998). The maximum loan per member was IDR 50 million, which could be used

for investment or working capital. Interest rates were 14–16% per annum including cooperative fees of 2–3%, while the loan tenor would depend on the commodity being cultivated. For seasonal crops such as sugarcane, the tenor was 1 year, while for oil palm it was a maximum of 15 years including a grace period. Oil palm farmers wishing to access KKPA schemes had to provide land certificates for their plantations (Rianto 2010).

In the case of oil palm, KKPA provided an opportunity for local communities and in-migrants – who had often failed to progress beyond growing rice and subsistence crops – to establish oil palm plantations. By the end of 1998, many independent smallholders had emerged, which led to more spontaneous migration into oil palm growing areas (Budidarsono et al. 2013). The KKPA scheme ended in 1999 due to lack of funds for developing 'plasma' plantations (Hasbi 2001).

2.1.3 RevitBun

Seven years after the KKPA scheme had ended, in 2006 the GoI issued Minister of Agriculture Regulation No. 33/2006 on the Estate Crop Revitalization Program as a plantation development package to replace PIR projects. The Estate Crop Revitalization (RevitBun) program aimed to accelerate smallholder plantation development through estate crop expansion, renovation, and rehabilitation. The program was supported by the banking sector through investment credit. In addition, the government also subsidized interest rates. 'Nucleus' oil palm companies were included in the program to manage plantation development, production and marketing (Kementan 2010).

Three methods of plantation development were recognized under this program: 1) expansion of smallholdings either on newly cleared or already cleared land; 2) replanting; and 3) rehabilitation of estate crops. Oil palm companies were encouraged to establish partnerships with small farmers with each participating farmer securing up to 4 ha of oil palm plantation (Pye and Bhattacharya 2013). State-owned and private oil palm companies were obliged to allocate at least 20% of their concession areas to nucleus–plasma schemes (Rigg 2015).

However, the RevitBun program was stopped in December 2014 with the end of the Susilo Bambang Yudhoyono administration. According

to Ministry of Finance's Investment Management System Director, Ari Wahyuni at a seminar in Jakarta on 9 March 2017 entitled "*Kepastian Akselerasi pembiayaan dan Kepastian Hukum atas Lahan Pekebun Kelapa Sawit dengan Pola Kemitraan,*" the reason for stopping the program was because it overlapped with various other financing programs implemented around that time. Examples of such programs include the Kredit Usaha Rakyat (KUR) micro credit scheme and Credit for Development of Plant-Based Energy and Estate Crop Revitalization (*Kredit Pengembangan Energi Nabati dan Revitalisasi Perkebunan* (KPEN-RP)).

2.2 Oil palm financing schemes provided by microfinance institutions

There are various types of microfinance schemes operating in Indonesia (Tampubolon 2013). These include:

1. Savings-led microfinance – such schemes are membership-based, with examples including: Community Self-help Groups (*Kelompok Swadaya Masyarakat* - KSM), and Credit Unions (*Koperasi Simpan Pinjam* - KSP)
2. Credit-led microfinance – financing comes from micro institutions such as village credit banks (*Bank Kredit Desa* - BKD), and rural credit fund institutions (*Lembaga Dana Kredit Pedesaan* - LDKP)
3. Micro banking – under such schemes banking institutions offer micro credit services.

One example is the savings-led microfinance program in Jambi province through collaboration between the Berbak Green Prosperity Partnership (BGPP), Financial Access (FA), and *Stichting Nederlandse Vrijwilligers* - Netherlands Development Organisation (SNV). The program includes oil palm replanting financing for independent smallholders in Jambi province. According to FA (2016) the scheme includes:

1. A combined cash flow forecasting model and credit scoring tool for assessing farmer data and generating individual credit risk profiles and credit scores for farmers requiring long-term credit
2. A portfolio approach: investment tranches with loans for an initial 2500 farmers organized in 6 village cooperatives (*Koperasi Unit Desa* - KUD) in the eastern part of Jambi
3. A technical assistance program to ensure optimal production and sustainable farming practices

4. Value chain support: off-taker agreements with mills and end buyers for certified palm oil – Indonesian Sustainable Palm Oil (ISPO), Roundtable on Sustainable Palm Oil (RSPO) or International Sustainability and Carbon Certification (ISCC) – to ensure long-term commitment and future income generation for farmers.

This scheme provides funding of around USD 8200 per farmer for replanting 2-hectare plots. The first target group includes 2500 farmers from 6 KUDs. The loan tenor is 7 years (FA 2016).

2.3 Oil palm financing schemes provided by banking institutions

Most banks currently offer credit schemes for oil palm farmers. Such schemes do not focus specifically on oil palm enterprises, but rather agricultural businesses as a whole. Bank Mandiri, for example, offers credit schemes for individuals and groups. For individual applicants, schemes include Micro Credit Bank Mandiri, Micro, Small and Medium Enterprise (*Usaha Mikro, Kecil dan Menengah* - UMKM) credit, and loans for independent farmers with cooperatives as guarantors. For group applicants, Bank Mandiri provides nucleus-plasma credit. Other banks such as BNI and BRI only offer individual credit schemes. Bank BNI offers micro credit, while Bank BRI offers KUR-Micro, Rural Business Credit (*Kredit Usaha Pedesaan* - Kupedes), and refinancing schemes. These credit schemes have different credit limits, interest rates, and repayment periods (see Section 4, Subsection 4.4).

2.4 Oil palm financing schemes provided by the informal sector

Limited funding for agricultural commodities from formal institutions, and smallholders' lack of capacity to meet credit requirements limit farmers' access to credit (Syukur et al. 2003). Informal lenders serve to bridge the gap between credit demand and supply for agricultural commodities. Informal schemes are considered flexible and convenient because they do not require the complex administrative procedures applied by formal financing institutions. Farmers and informal lenders operate on the basis of

trust since they already know each other. Any new borrowers (farmers) require references from other farmers.

Informal financing schemes are operated by agricultural input traders, traders of agricultural products, and traders who hold both functions (Nurmanaf et al. 2006). Their interest rates are

generally acceptable to communities because they view them as payments for loan services (Nurmanaf 2007). Nevertheless, in many cases the interest rates offered are higher than those applied by formal financial institutions, and their loan amounts are very limited. Borrowers consider such loans invaluable for helping them continue their farming activities (Hastuti 2006).

3 Study sites and methodology

3.1 Study sites

The study collected information in specific locations since some of its research topics are context specific. As Sumatra and Kalimantan are the main palm oil producing zones in Indonesia, the study team selected these two islands as research sites. A recent report from the Central Statistics Agency (BPS) showed Sumatra and Kalimantan contributed around 68.3% and 28.6% of Indonesian palm oil respectively in 2015 (BPS 2017c). The study team selected one province from each of these islands: South Sumatra and Central Kalimantan. In 2015, South Sumatra accounted for approximately 14% of palm oil production in Sumatra, while Central Kalimantan contributed around 38% of production in Kalimantan. One district was selected from each of these provinces in order to gain a more in-depth understanding of finance-related dynamics.

The study team visited South Sumatra from 8–12 March 2017 and Central Kalimantan from 14–18 March to interview key informants including members of oil palm company associations and agriculture office staff: three managing oil palm in South Sumatra, and two in Central Kalimantan. Information from oil palm companies was collected through focus group discussions (FGDs) organized by oil palm company associations and the study team in each province. The FGD in South Sumatra involved 17 participants representing an oil palm company and banks providing loans to the oil palm industry, as well as the head of the oil palm company association. The FGD in Central Kalimantan involved 16 similar participants.

Key informant interviews conducted at the provincial level during these initial field trips revealed the districts of Ogan Komering Ilir (OKI) and Kotawaringin Timur (Kotim) to be major

palm oil production areas in South Sumatra and Central Kalimantan. In addition to the production criteria, these two districts met other criteria required by the study including the presence of tied farmers and independent smallholders, and formal and informal financial schemes dedicated to oil palm farmers. Moreover, two oil palm companies in the districts, one in OKI and one in Kotim were available and willing to participate in in-depth interviews conducted during subsequent field trips from 28 March to 1 April in South Sumatra, and 4–8 April in Central Kalimantan. These companies are among the largest oil palm plantation businesses in Indonesia with numerous tied farmers actively involved in their plantations. During these second field trips, two FGDs were conducted in each province: the first ones with respondents representing the supply side of the oil palm credit market (credit providers), and the second with representatives of the demand side (credit recipients).

3.2 Respondents

After selecting the districts, the study team gathered information on potential respondents to invite to FGDs, which were conducted after the initial field trips. During these field trips, the study team visited each district to collect information on financing schemes available from banks, palm oil companies, governments, cooperatives, microfinance institutions, and traders. Representatives of each financial institution were then invited to participate in FGDs during subsequent field trips to represent the supply side of oil palm credit markets. These participants were selected based on their experience of providing credit for oil palm farmers in the districts. Institutions with no experience of lending money to oil farm farmers were not considered as participants, and were not invited to attend the FGDs.

The study team also invited tied farmers and independent farmers to subsequent FGDs as representatives of the demand side of the credit market. The main criteria for farmer selection were: (1) experience in accessing credit for oil palm activities; (2) involvement in oil palm farming and marketing; and (3) having productive oil palms. The study team also invited other oil palm industry stakeholders to FGDs, including farmer group leaders, community leaders, village representatives, and National Land Agency (*Badan Pertanahan Nasional* - BPN) office staff. Two FGDs were held in each district: one for participants from the supply side, and the other for those from the demand side. A summary of FGD respondents is presented in Table 1.

3.3 Research approach

In each location, information was collected during FGDs and through key informant interviews with selected oil palm companies, farmers and cooperatives. This information included:

- characteristics of existing financing schemes and conditions under which they operate (terms and conditions, transaction costs), with quantitative analyses of financial costs
- lenders' perceptions of factors constituting barriers to improving credit accessibility and affordability for smallholder oil palm growers, and ways to overcome them
- analyses of smallholder oil palm growers' demand for credit for investment and operational expenses, with quantitative estimates of cash flows and credit demands throughout the production cycle
- interactions with different financing schemes, and what they entail for smallholder oil palm growers in terms of capital expenditure, risk management, transaction costs, etc.

As this was a scoping study, robust sample selection methods were not adopted. Nevertheless, it was necessary to be as close as possible to reaching saturation point where no additional information was available. While it would not be possible to provide wholly accurate economic analyses, it would still be possible to offer estimates of the financial and economic costs associated with oil palm production in the study sites. Economic estimates were obtained by interviewing oil palm farmers after the demand-side FGDs had been conducted. Information gathered included expenditure for oil palm farming activities, and this was used to estimate average costs for oil palm farmers during any grace period.

Key informant interviews with financial organizations and financiers (supply-side participants) were aimed at understanding how different finance schemes operate, and ascertaining lenders' perceptions. Emphasis was placed mainly on the following: (1) the structure and scope of financing schemes available in study sites, both those issued individually or as parts of larger credit programs; (2) special credit treatment for oil palm smallholders, if any; (3) tools used for monitoring loans, and preventing and managing nonperforming loans; and (4) lenders' perspectives of financing for oil palm smallholders in terms of the characteristics of oil palm, the risk of nonperforming loans, risk management strategies, borrower behavior, and reputational risk associated with nonperforming loans.

Key informant interviews with individuals and organizations were conducted to gain an understanding of oil palm smallholder borrowing behavior. Respondents included oil palm smallholders, village representatives, community leaders, and farmer group leaders. These interviews were conducted during FGDs, and followed

Table 1. Respondents/participants in FGDs.

Supply side	Demand side
1. Governments	1. Independent smallholders
2. Palm oil companies	2. Tied farmers
3. Banks	3. Village representatives, community leaders
4. Formal non-banking schemes: microfinance institutions and cooperatives	4. Farmer group leaders
5. Informal financing schemes: local traders	5. BPN staff

by in-depth interviews with staff from one oil palm company in each province. As mentioned above, these oil palm companies were available to participate in in-depth interviews. The interviews were conducted around the following topics: (1) the loan basis (flexible vs. one-size-fits-all) and amounts involved; (2) identification of activities that demand credit, and their costs; (3) the types of farmers requiring loans, and the different conditions under which they are requested; (4) the ease of obtaining credit, administration costs, and land repayment strategies; (5) collateral requirements, penalties for nonperforming loans, and risk management; (6) monitoring by lenders; and (7) the effectiveness of repayment collection by credit officers.

FGDs with tied and independent smallholders were conducted in order to gain an understanding of credit demand from a smallholder's perspective. These interviews were undertaken during the demand-side FGDs. Topics discussed during the FGDs were: (1) oil palm business activities requiring credit: long-term (replanting) and short-term (operational expenses for fertilizers, pesticides, herbicides); (2) oil palm business cash flow: revenues (how many times a year small farmers harvest oil palm, harvest times, quantities and prices), and costs (operational costs); (3) formal and informal financing services available for

smallholders; (4) experiences of smallholders in accessing credit from formal and/or informal sources: requirements, payment systems, and risks; and (5) barriers or challenges faced by smallholders wishing to access credit.

The information collected from these processes was used for gap analyses, which juxtaposed the characteristics of different financing schemes against the borrowing behavior of oil palm smallholders. Issues looked at in the gap analyses included: (1) demand–supply gaps: whether current credit schemes have considered smallholder requirements for expenses in the long run (replanting) and short run (operational expenses for fertilizers, pesticides, etc.); (2) maturity gaps: whether payment terms link to oil palm business cash flow. Most credit schemes prefer cash flow appropriate to monthly repayments, whereas oil palm plantation harvest cycles differ each month – where replanting is concerned, there is a gestation period between planting and the first harvest; (3) risk-sharing gaps: for example, whether loan repayment schemes involve payments in the form of products or cash. In the case of cash payments, smallholders bear all the price risk, but if payments constitute percentages of oil palm harvests, smallholders and lenders share the price risk; and (4) legal gaps, particularly for formal credit.

4 Overview of the study sites

4.1 The districts of Ogan Komering Ilir and Kotawaringin Timur

4.1.1 Ogan Komering Ilir (OKI) district

OKI is one of 17 districts and municipalities in South Sumatra province. The district covers a total area of 19,023.47 km² (Figure 1). It takes approximately 3 hours by road to reach the district capital, Kayu Agung from Palembang (the capital city of South Sumatra). In 2015, the total population in OKI's 18 subdistricts was 787,513 (402,619 men and 384,894 women) (BPS OKI 2016). From 2010 to 2014, around 15% of OKI's population was living below the 2014 poverty line of IDR 263,395 (USD 20) per capita per month.

As with many other districts in South Sumatra, most people in OKI district rely on the agriculture sector, as shown in Table 2 (BPS OKI 2016). People grow agriculture products independently or in cooperation with plantation companies under partnership schemes, particularly for rubber and oil palm. The large number of rubber and oil palm plantation companies in OKI contributes to the district's high level of agricultural output. In the period 2013–2015, the agriculture sector contributed over 60% of total Gross Regional Domestic Product (GRDP) in OKI district. The remaining GRDP was shared between 16 other sectors. OKI's GRDP increased from IDR 15.1 trillion (USD 1.16 million) in 2013 to IDR 16.6 trillion (USD 1.3 million) in 2015. Although GRDP growth remained positive, it slowed from 5.07% in 2013–2014 to 4.81% in 2014–2015. Considering the agriculture sector's importance to OKI, all efforts to increase its development are necessary.

The agriculture sector in OKI consists of food crops, estate crops, forestry, livestock, and fisheries. Oil palm provides a significant contribution to the estate crop sector, and in 2016, had the second largest planting area after rubber. Road infrastructure

plays an important role in the distribution of agricultural products in OKI. Better access to asphalt roads indicates farmers in OKI may have better opportunities to access output and input markets. In the case of oil palm, for example, farmers living further away from asphalt roads face difficulties connecting with buyers as they have to spend more time and money to sell their fresh fruit bunches (FFBs), and longer transport times affect FFB quality. In addition, access to input markets for buying fertilizers, pesticides, etc. will take more time than for those closer to asphalt roads. The current road infrastructure situation in OKI district is presented in Table 3.

Road infrastructure in Indonesia, including OKI district, is generally provided by three levels of government: (1) central/national, (2) provincial, and (3) district. 'National roads' comprise arterial and collector roads in the primary road network system connecting provincial capitals, national strategic roads, and toll roads. 'Provincial roads' are collector roads within the primary road network system that connect provincial capitals to district/municipal capitals, and provincial strategic roads. 'District roads' include local roads in the primary road network system other than national and provincial roads. District roads link district capitals to local activity centers, and include public roads in secondary road network systems within districts, and strategic district/municipality roads. Farmers in OKI district commonly use district roads, unsurprisingly as there are more kilometers of district than national or provincial roads in OKI. Unfortunately, a high proportion of district roads are damaged. As shown in Table 3, in 2014 around 467.20 km of district roads were damaged, and 149.12 km were severely damaged.

In addition to road infrastructure, formal financial institutions, particularly banks, play an important role in economic development in the region. Banks collect funds from customers and issue loans to



Figure 1. Map of Sumatra and OKI district.

Source: BPS (2011)

Table 2. OKI district GRDP in 2012–2015 (at fixed 2010 prices).

No.	Sector	GRDP (IDR x billion)			Contribution (%)		
		2013	2014	2015	2013	2014	2015
1	Agriculture, forestry and fisheries	10,166.16	10,508.90	10,878.28	67.17	66.08	65.26
2	Manufacturing	691.24	739.45	794.26	4.57	4.65	4.77
3	Construction	1424.81	1515.29	1574.34	9.41	9.53	9.45
4	Wholesale and retail trade, motor vehicle and motorcycle repairs	1146.06	1283.76	1391.51	7.57	8.07	8.35
5	Public administration, defense, compulsory social security	668.13	716.56	792.24	4.41	4.51	4.75
6	Others	1039.44	1138.82	1237.84	6.87	7.16	7.43
	Total	15,135.84	15,902.78	16,668.47	100.00	100.00	100.00
	Growth		5.07	4.81			

Source: BPS OKI (2016)

Table 3. Road condition and status in OKI district 2014.

No.	Road condition	National roads (km)		Provincial roads (km)		District roads (km)	
		2013	2014	2013	2014	2013	2014
1	Good	83.13	83.13	72.82	78.82	483.03	506.83
2	Reasonable	35.22	35.22	5.15	5.15	514.17	622.51
3	Damaged	4.15	4.15	1.13	1.13	449.90	467.20
4	Severely damaged					160.68	149.12

Source: BPS OKI (2016)

Table 4. Numbers of government and private banks in OKI district in 2013–2015.

No.	Type	2013	2014	2015
1	Government banks	14	20	21
2	Private banks	14	12	14
	Total	28	32	35

Source: BPS OKI (2016)

individuals or groups such as cooperatives, and companies. The number of banks operating in OKI increased in 2013–2015, with more government than private banks active in the district (Table 4).

4.1.2 Kotawaringin Timur district

Kotawaringin Timur (Kotim) district is one of 14 districts/municipalities in Central Kalimantan province (Figure 2). The district covers a total area of 16,796 km² and consists of 17 subdistricts. The district capital, Sampit, is accessible by road from Palangkaraya (the provincial capital of Central Kalimantan). In 2015, the population in Kotim was 426,176 people (225,087 men and 201,089 women) (BPS Kotim 2016). From 2010 to 2014 around 6–8% of Kotim's population was living below the 2014 poverty line of IDR 312,363 (USD 24) per capita per month.

The agriculture sector is dominant in Kotim district contributing around 22% of district GRDP from 2013 to 2015. Kotim district's GRDP in 2015 was IDR 13.8 trillion (USD 1.06 million). The agriculture sector's contribution to total GRDP has fallen gradually, and in 2015 was overtaken by the manufacturing sector (Table 5). Nevertheless, the agriculture sector continues to employ over 42% of Kotim district's labor force.

The agriculture sector in Kotim district comprises food crops, livestock and fisheries, as well as estate crops and forestry. As with OKI district, oil palm has the second largest planting area after rubber. The main oil palm producing subdistricts in Kotim are Cempaga, Cempaga Hulu, Parenggean, Tualan Hulu and Mentaya Hulu.

The condition of road infrastructure in Kotim district is presented in Table 6. Unfortunately, data were only available for district roads. As with OKI district, a high proportion of district roads in Kotim are damaged. As shown in Table 6, in 2015 around 601.03 km of district roads were damaged and 507.39 km were severely damaged. These figures are higher than those in OKI district.

Similar to other data, it was also difficult to find data on financial institutions, particularly the number of banks operating in Kotim district. The only information the study team could find was that 31 banks were operating in Kotim district in 2014.

4.2 Types of farmers planting oil palm

Farmers planting oil palm in OKI and Kotim districts can be classified into three categories: (1) tied farmers, (2) independent smallholders, and (3) combined independent and tied farmers. Types 1 and 2 are present in both districts, while the majority of type 3 farmers are in OKI with only small numbers present in Kotim district.

Tied farmers exist because the central government obliges companies to collaborate with communities around company plantations through nucleus and smallholder estate, or 'nucleus-plasma' programs (Kementan 2013). Tied farmers became involved in nucleus-plasma programs through

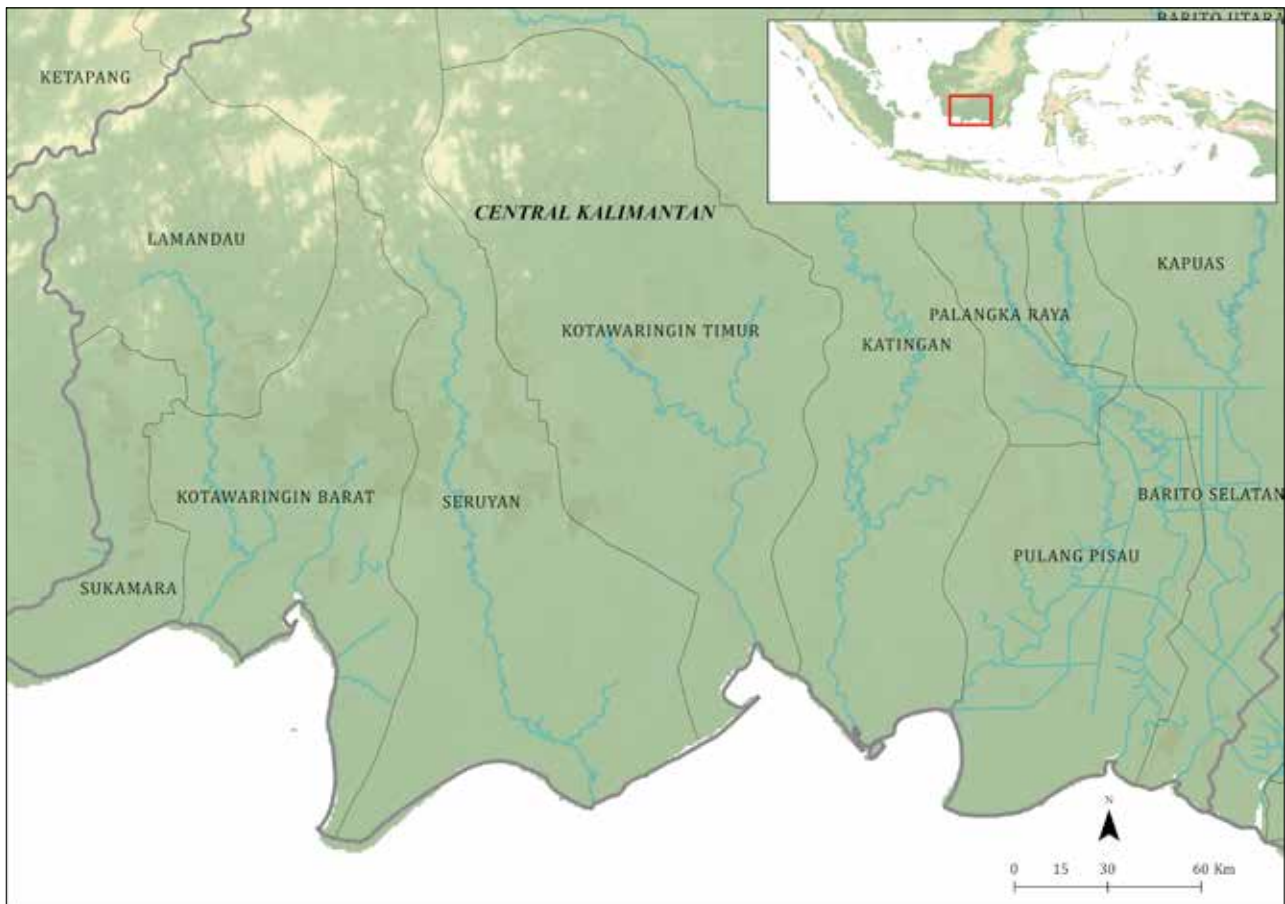


Figure 2. Map of Kalimantan and Kotim district.

Source: BPS (2011)

Table 5. Kotim district GRDP in 2012–2015 (at fixed 2010 prices).

No.	Sector	GRDP (IDR x billion)			Contribution (%)		
		2013	2014	2015	2013	2014	2015
1	Agriculture, forestry and fishing	2680.30	2870.32	3065.04	22.39	22.34	22.16
2	Manufacturing	2525.00	2850.70	3112.02	21.10	22.18	22.50
3	Construction	1126.79	1278.07	1376.44	9.41	9.95	9.95
4	Wholesale and retail trade, repair of motor vehicle and motorcycles	1927.80	2125.33	2343.37	16.11	16.54	16.94
5	Transportation and storage	1161.26	1182.15	1286.10	9.70	9.20	9.30
6	Others	2547.21	2543.48	2646.46	21.28	19.79	19.14
	Total	11,968.35	12,850.05	13,829.43	100.00	100.00	100.00
	Growth		7.37	7.62			

Source: BPS OKI (2016)

Table 6. Road condition and status in Kotim district in 2015.

No.	Road condition	National road (km)	Provincial road (km)	District road (km)
1	Good	-	-	487.25
2	Reasonable	-	-	428.38
3	Damaged	-	-	601.03
4	Severely damaged	-	-	507.39

Note: - No data available

Source: BPS Kotim (2016)

Table 7. Comparison of independent and plasma smallholding management.

Condition	Independent farmers		Plasma/tied farmers	
	Small-scale	Larger-scale	PIR plasma	KKPA plasma
Land status	Not certificated	Some certificated, some uncertificated	Certificated	Certificated
Land tenure (physical)	Farmer	Farmer	Farmer	Company
Area of land (ha)	≤ 2	> 2	≤ 2	≤ 2
Capital	<ul style="list-style-type: none"> • Self-funding, • credit (bank and trader), • partnerships 	<ul style="list-style-type: none"> • Self-funding, • credit (bank), • partnerships 	<ul style="list-style-type: none"> • Banks, • cooperatives, • companies 	<ul style="list-style-type: none"> • Banks, • cooperatives, • companies
Field operations	Farmers	Farmers	<ul style="list-style-type: none"> • Immature palms by companies • mature palms by farmers/cooperatives 	Immature and mature palms by companies
FFB buyers	<ul style="list-style-type: none"> • Traders, • farmer groups, • and in a few cases cooperatives 	Trader	Companies through cooperatives	Companies through cooperatives

Source: Authors' elaboration

PIR and KKPA schemes (Table 7). In OKI, 48 of the 50 oil palm companies operating in the district had developed nucleus–plasma programs by 2016. Two other companies are currently inactive. In order to participate in nucleus–plasma programs, smallholders must become members of cooperatives, each of which comprises several farmer groups. Farmer groups typically comprise 19–20 smallholders, who each manage 1–2 ha of oil palm. For example, ‘PT X’¹ in OKI district

manages 38 cooperatives under nucleus–plasma programs. The number of cooperative members operating under PT X is 750 smallholders. Memberships have remained unchanged since the cooperatives were established, because cooperative membership is based on the plots of land distributed to farmers. One member holds one land certificate for an average plot size of 2 ha.

Meanwhile, 20 oil palm companies operating in Kotim district have established partnerships with tied farmers. Three of these companies established partnerships through the RevitBun scheme, and the rest through nucleus–plasma partnership schemes. The 20 oil palm companies are fostering

1 For reasons of confidentiality we do not mention company names in this report. Consequently, the company in OKI district is referred to as ‘PT X’, and the company in Kotim district as ‘PT Y’.

58 cooperatives by providing training to their members. ‘PT Y’, the oil palm company chosen as a research sample, for example, is fostering nine cooperatives. Four of these cooperatives comprise 1905 farmers, while exact numbers of members in the other five cooperatives could not be accessed. Numbers of cooperative members can change over time leading to potential problems, particularly in regard to nucleus–plasma revenue sharing. Additional members will reduce the share of revenues received by each member of the cooperative (Box 1).

Independent smallholders in the context of this study are oil palm farmers growing and managing oil palm by themselves. A few independent farmers collaborate under farmer groups or cooperatives in OKI, and around 10% of the district’s total oil palm planted area is managed by independent smallholders. No such data are available in Kotim district. However, based on discussions with oil palm stakeholders in Kotim, less than 10%

Box 1. Revenue sharing between smallholders in Kotim

Based on interviews with farmers in one cooperative in Kotim district, in 2004–2005 the cooperative had only 875 members. However, this number had increased significantly to 2500 farmers by 2017, whereas the area of land included in the agreement between the cooperative and the oil palm company remained unchanged at 5144 ha. Cooperative members have a joint claim over the land, and any new family members are allowed equal rights. Over time, this has resulted in the number of cooperative members increasing. Under the single management principle applied by the company, each cooperative member’s share of nucleus–plasma profits will fall considering the land size remains unchanged. The cooperative receives a 20% share of net profits from harvests, which is then divided between its members. Another potential problem in Kotim district is the legality aspects associated with farmers’ land. Most farmers in Kotim have no land certificates since their land lies inside the forest estate.

Source: Authors’ interviews during field work

of the district’s total oil palm planted area was under independent smallholder management. Independent farmers can be classified into two categories based on land size: (1) those managing up to 2 ha; and (2) larger-scale independent farmers managing areas over 2 ha. Independent smallholders in Kotim district work individually, while some in OKI work within cooperatives.

In some cases, smallholders operating in plasma schemes also have other oil palm plots they manage independently. As outlined earlier, most of these farmers are in OKI district. Farmers in this category sell FFBs from nucleus–plasma scheme plots through cooperatives to mills belonging to oil palm companies. FFBs from plots outside nucleus–plasma schemes are sold to mills via sellers/traders. Only buyers holding delivery orders (DOs) can sell FFBs to oil palm mills, so independent farmers can only sell their FFBs to mills through intermediaries.

Details of independent and tied farmers in the two districts are presented in Table 7. The majority of tied farmers hold formal land certificates, in contrast to small-scale independent smallholders, the majority of whom manage uncertificated land. Independent farmers can access credit from banks by providing other forms of collateral, such as house or car certificates.

As outlined earlier, the majority of tied farmers are involved in nucleus–plasma schemes through the PIR and KKPA programs. These schemes are managed in similar ways, the main differences relating to physical land tenure and field operations. PIR scheme farmers hold land certificates and control their land, while KKPA farmers possess land certificates but have no physical control over their land. With KKPA schemes, companies manage and control land for both mature and immature palms.

4.3 Production and marketing

4.3.1 Production

According to OKI District Estate Crops and Livestock Office data, the oil palm planted area in OKI district in 2016 was approximately 197,758 ha, comprising private company, plasma and independent smallholder plantations. These plantations were managed by 50 companies

operating in OKI district. Area and production figures for each plantation type are presented in Table 8. In 2016, plasma farmer land in OKI amounted to approximately 60,323 ha, while independent smallholders contributed around 10% of FFB production from around 20,509 ha of land.

It is difficult to calculate productivity for each plantation type since land area also includes unproductive palms (i.e. oil palms under 3 or 4 years old). Some private companies in OKI have recently finished replanting oil palms, so it is not surprising their production appears lower compared with plasma plantations. Meanwhile, the majority of palms in plasma and independent smallholder estates are over 20 years old. Consequently, replanting is the major issue facing plasma and independent farmers in OKI district.

It was difficult to obtain data on oil palm planted area by ownership (large companies, plasma and

independent farmers) in Kotim district. Central Statistics Agency data only report community-managed oil palm planted area by crop condition in the field: young crops, productive crops and damaged crops (Table 9). The study team also encountered problems gathering reliable oil palm production data for Kotim district.

In both districts, tied farmers have better access than independent farmers to crop inputs. Tied farmers can either source crop inputs from cooperatives or provide them themselves (Figure 3). Cooperatives provide crop inputs to members using credit schemes, and provide their members with extension services; particularly on oil palm production methods. Companies also provide extension services, to tied farmers. Independent farmers procure crop inputs by themselves, while local agriculture offices only provide them with small amounts of certified seed, and local traders with loans for buying fertilizers.

Table 8. Oil palm planted area and production figures in OKI for 2016.

No.	Description	Company	Plasma	Independent	Total
1	Planted area (ha)	116,926	60,323	20,509	197,758
2	Production (tonnes)	839,821	830,418	174,021	1,844,259

Source: OKI District Estate Crops and Livestock Office

Table 9. Total community oil palm planted area in Kotim in 2015.

Crop type	Immature/unharvested crops (ha)	Productive/harvested crops (ha)	Damaged crops (ha)
Rubber	13,509.00	29,403.00	4247.00
Oil palm	10,990.44	7511.48	3901.04

Source: BPS Kotim (2016)

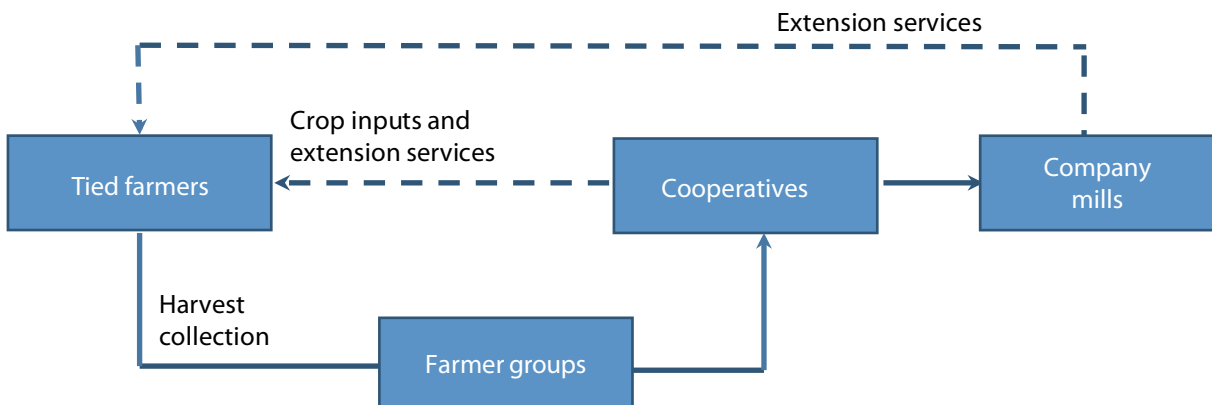


Figure 3. Tied farmers’ crop inputs, extension services and marketing channels.

Basically, there are three phases involved in oil palm farming: (1) estate establishment; (2) maintenance/harvesting; and (3) replanting. Costs vary for each of these phases. Establishment and replanting require higher outlays than harvesting since they include both fixed costs (land acquisition and preparation, and chopping down old palms) and variable costs (fertilizers, pesticides, etc). During the maintenance/harvesting phase, farmers only require variable costs (Figure 4). Fixed costs refer to costs that do not vary with changes in output level. Meanwhile, variable costs are those that will vary along with output.

Based on interviews with independent smallholders in OKI district, costs for oil palm estate

establishment until palms reach 3 years old are approximately IDR 55.1 million (USD 4242) per ha (Table 10). In Kotim district, meanwhile, establishment costs are around IDR 39.96 million (USD 3074) per ha. Establishment costs are higher in OKI because farmers there include land certification costs, and they also tend to use higher volumes of crop inputs (fertilizers and pesticides).

4.3.2 Marketing

FFB marketing channels vary depending on farmer type. All tied farmers from KKPA and PIR schemes have similar marketing channels (Figure 3) where they sell FFBs through their cooperatives to mills owned by their nucleus companies. In OKI

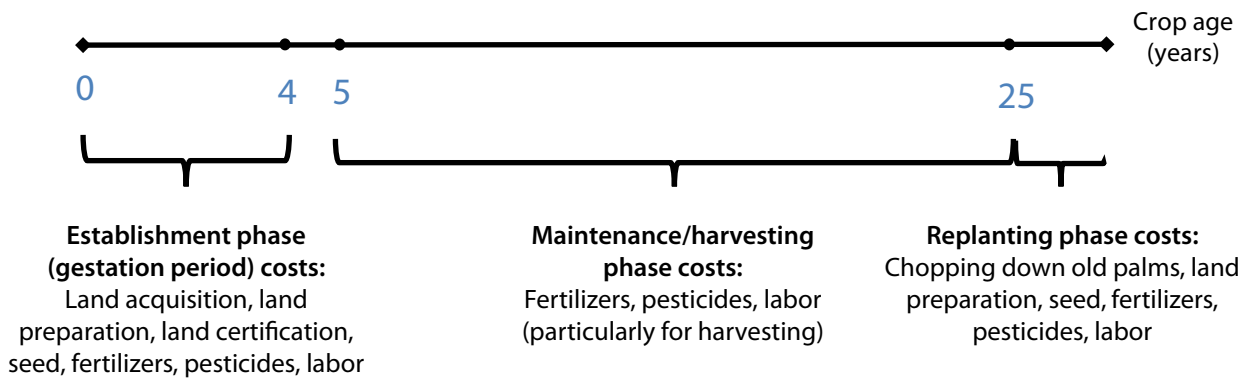


Figure 4. Oil palm production phases and associated costs.

Table 10. Establishment costs per ha for independent smallholders in OKI and Kotim districts.

No.	Description	OKI district		Kotim district	
		Cost (USD)	Cost (IDR)	Cost (USD)	Cost (IDR)
1	Land acquisition	1923	25,000,000	1538	20,000,000
2	Land certification	404	5,250,000		
3	Seed	462	6,000,000	404	5,250,000
4	Land clearing	692	9,000,000	462	6,000,000
5	Fertilizers	124	1,614,600	122	1,587,000
6	Pesticides and herbicides	215	2,800,000	160	2,077,000
7	Labor				
	a. Fertilizer application	185	2,400,000	163	2,122,500
	b. Weeding and spraying	185	2,400,000	160	2,075,500
	c. Planting	52	675,000	65	850,000
	Total cost	4242	55,139,600	3074	39,962,000

Note: USD 1 = IDR 13,000

Source: Authors' elaboration

district, harvest times are rotated between farmer groups, with cooperatives responsible for managing harvest schedules for each farmer group. Farmer groups harvest twice a month on average. Since farmer group members' plots are located in close proximity, it is easier for cooperatives to manage them and transport FFBs to mills more efficiently. Also, using a rotation system reduces the incentive for farmers to practice side selling.

Side selling occurs when tied farmers sell their FFBs to traders instead of cooperatives to avoid their credit repayments. Practicing side selling, farmers receive around IDR 200 per kg less than if they sell through cooperatives. However, by side selling, farmers will receive immediate cash payments as traders pay directly. When they sell through cooperatives, farmers have to accept delayed payments. Cooperatives in OKI district pay farmers on a fortnightly basis, while in Kotim district farmers are paid monthly. Side selling is common practice for oil palm farmers, despite being prohibited by companies and cooperatives. From a company viewpoint, side selling reduces the opportunity for company-owned mills to obtain FFBs of consistent quality and quantity from tied farmers. Cooperatives feel tied farmers have debts to pay for their crop input purchases, and side selling impacts upon their cash flows if farmers avoid paying off their loans.

Mills provide payments for FFBs through cooperatives. Payment amounts depend on FFB market prices. In OKI district, cooperatives receive payments from the mill on a fortnightly basis. Meanwhile, cooperatives in Kotim district only

receive payments from the mill once a month. After receiving payments from mills, the cooperatives distribute payments to cooperative members after deducting members' fees and other obligations. These fees include management fees, transportation costs, road maintenance, social fees, and members' savings. Savings can take the form of replanting savings. The example in Box 2 illustrates replanting savings of around IDR 100 per kg, which is insufficient to finance replanting costs. Based on interviews with farmers and companies, replanting costs are approximately IDR 45 million (USD 3461) per ha. Members' obligations include credit repayments for fertilizers, pesticides or cash loans.

Box 2. Example of deductions made by a cooperative in OKI district

Details of fees and obligations cooperative members should meet include the following:

1. Management fee (per kg)	IDR	12
2. Transportation costs (per kg)	IDR	58
3. Road maintenance (per kg)	IDR	30
4. Savings for replanting (per kg)	IDR	100
5. Donations/social fees (per plot)	IDR	3000
6. Credit repayments for fertilizers/pesticides/cash loans depend on amounts borrowed by individual farmers		

Source: Authors' interviews during field work

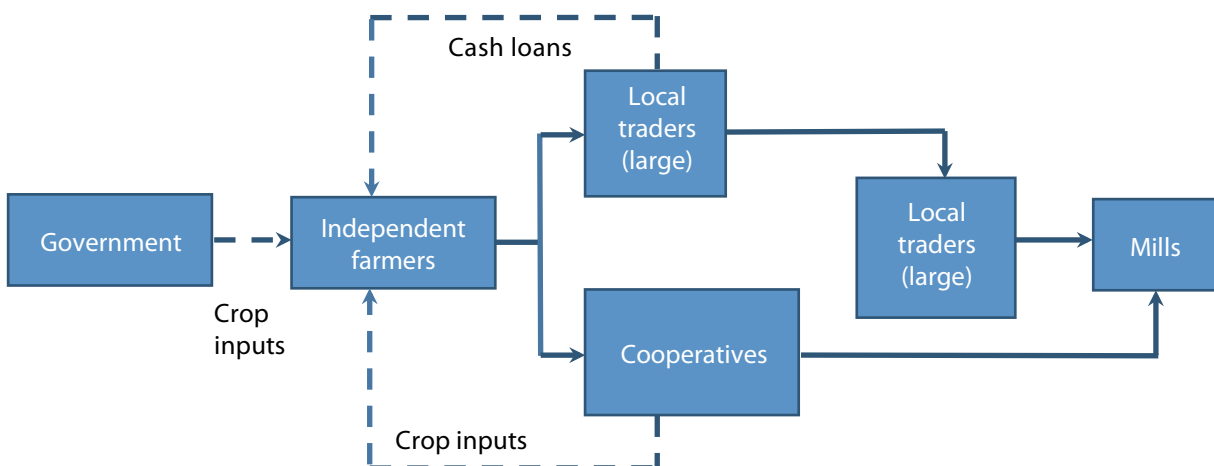


Figure 5. Marketing channels and input sources for independent smallholders.

Marketing channels for independent farmers are longer than those for tied farmers. Unsurprisingly independent farmers receive lower prices than tied farmers for their FFBs. Independent farmers in both districts sell FFBs through local traders (Figure 5). Commonly, 2–5 small traders operate in farmers' villages. They sell FFBs to large traders, who resell them to mills. There are fewer large than small traders. Small traders cannot sell FFBs directly to mills as they do not hold delivery orders (DOs), which are a necessary precondition for doing so. In most cases, small traders provide cash payments to farmers. This is preferred practice for independent smallholders even though they receive lower prices.

Some independent smallholders in OKI district have formed cooperatives for selling their FFBs. These cooperatives, which differ from those under nucleus–plasma schemes, were established by independent farmers to help them conduct oil palm growing practices and market their FFBs. Independent farmers involved in such schemes are paid soon after the cooperatives receive payments from large traders. On average, it takes 1–3 days for the smallholders to receive payments after cooperatives have deducted members' fees and other obligations.

4.4 Existing oil palm financing schemes

Oil palm farmers require credit for oil palm farming and household needs. Household needs include expenses for activities outside oil palm farming, such as children's education, wedding celebrations, loans for buying houses, vehicles, etc. Small farmers' access to financing for establishment and operational costs varies depending on farmer type. Small farmers with limited access to formal credit use their own funds to finance plantation establishment costs. Small-scale independent farmers with land certificates can access credit to finance establishment costs from banks, using their land certificates as collateral. Small-scale independent farmers might obtain certified seed from the local government agriculture office. In both study areas, local agriculture offices sometimes provide free certified seed for independent smallholders registered as members of farmer groups. Free seedling programs depend on budget availability, and are not implemented every year.

Larger-scale independent farmers obtain credit for establishment and operational costs from the banking sector using land certificates as collateral. Small farmers participating in nucleus–plasma schemes obtained establishment costs from PIR-Trans, PIR-Bun, or KKPA depending on which partnership scheme they and their oil palm company were involved in.

There are various emerging credit schemes that oil palm farmers can access. Some are directly dedicated to financing oil palm growing activities, while others also cover agricultural commodities other than oil palm. Credit schemes emerging in the two districts provided by formal institutions (banks, governments, cooperatives, oil palm companies, and microfinance institutions) and informal sources (traders) are listed in Appendix 1.

4.4.1 Banks

Three banks actively provide credit for oil palm farmers in OKI and Kotim districts: (1) Bank Rakyat Indonesia (BRI); (2) Bank Negara Indonesia (BNI); and (3) Bank Mandiri. In OKI district, the regional bank, Bank Sumsel-Babel, also provides credit facilities for oil palm growing households. These banks offer credit for investment (oil palm establishment) and operational costs for oil palm farming through schemes such as the KUR micro credit, Working Capital Credit (*Kredit Modal Kerja - KMK*), and Investment Credit (*Kredit Investasi - KI*) programs. KUR was launched on 5 November 2007 by President Susilo Bambang Yudhoyono and includes a credit scheme with a government loan guarantee facility. There are two KUR schemes: (1) KUR-Micro for loans under IDR 50 million (USD 3846), which can be used for operational costs; and (2) KUR-UMKM for loans of IDR 50–500 million (USD 3846–38,461), which can be used for investment and operational costs. Investment Credit is for loans up to IDR 5 billion (USD 384,615), and can be used for purchasing land, developing land, replanting, and equipment purchases. Meanwhile, KMK can be used for purchasing seed, fertilizers and pesticides, as well as paying labor costs.

These credit schemes can be accessed by both independent and tied farmers. However, banks prefer to provide loans to tied farmers on legal and risk considerations. Few independent farmers hold land certificates, while the majority of tied farmers have legal land certification, particularly

in OKI district. Risk considerations include: (1) independent farmers receive lower prices than tied farmers for their FFBs, which impacts upon their ability to pay off loans; (2) independent farmers borrow credit individually without any involvement from guarantors, which can lead to nonperforming loans; (3) lack of road access to farmers' plots lengthens transport times thus reducing the quality of FFBs produced by independent farmers. All of these reduce independent farmers' income and affect their ability to pay off loans.

Most independent smallholders access loans below IDR 50 million (USD 3846) under the KUR-Micro scheme, with an interest rate of 9% per annum and loan tenors of 1–5 years. Tied farmers also access credit under the KUR-Micro scheme. Larger-scale independent farmers can access larger loans under KUR-UMKM and KI schemes. KMK and KI schemes have higher interest rates than the KUR schemes, since the government subsidizes the difference between commercial and KUT interest rates. The KI scheme has a longer loan tenor than KUR at 5–13 years. Consequently, the KI scheme can be used to finance replanting activities or for establishing new plantations.

Credit distribution and credit repayment flows for tied farmers are illustrated in Figure 6. Tied farmers submit credit applications through guarantors. Guarantors in both districts are cooperatives of which the tied farmers are members. Tied farmers submit credit proposals to banks using land certificates as collateral. Although other fixed asset certificates, such as house certificates or proof of car ownership can also be used as collateral, banks tend to prefer land certificates.

To ensure loan processes run smoothly, banks also conduct feasibility studies to analyze prospective borrowers by using the 5Cs principle: (1) Capital (capital owned by borrowers can be assessed through their bank accounts); (2) Character (borrowers' loan repayment reputation or track records); (3) Capacity (borrowers' ability to repay their loans); (4) Collateral (property or similar that a borrower deposits to guarantee loan repayment); and (5) Condition (the conditions of the loan, such as its interest rate and principal amount). Borrowers applying for larger loans should be supported by Land Ownership Certificates (*Sertifikat Hak Milik* - SHM) or village government-issued Land Clarification Letters (*Surat Keterangan Tanah* - SKT). Banks will prioritize credit applications accompanied by SHMs.

When a bank accepts a credit application, it will distribute the loan to the farmer, who will repay their loan via their cooperative, which will deduct repayments from the farmer's FFB sales. As explained above, tied farmers sell their FFBs to mills through cooperatives, which also channel payments from mills. Consequently, cooperatives play an essential role as collateral agents for accessing credit from the banking sector because proceeds from FFB sales are distributed to tied farmers via cooperatives. As guarantor, the cooperative receives a fee of around 1% of the farmer's repayment to the bank.

Independent farmers submit credit proposals directly to banks without guarantors (Figure 7). Similar to tied farmers, independent farmers use land or fixed asset certificates as collateral. When a credit application is accepted, the bank will

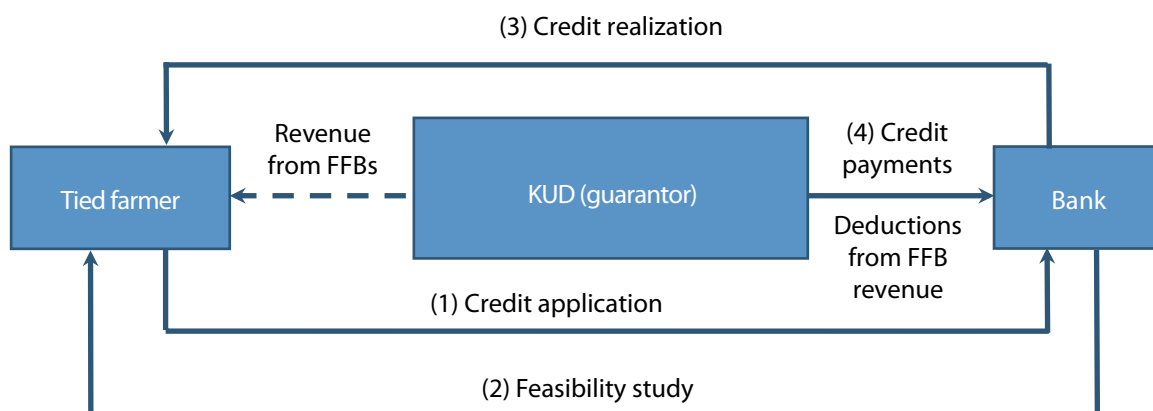


Figure 6. Credit distribution and credit payment flows for tied farmers.

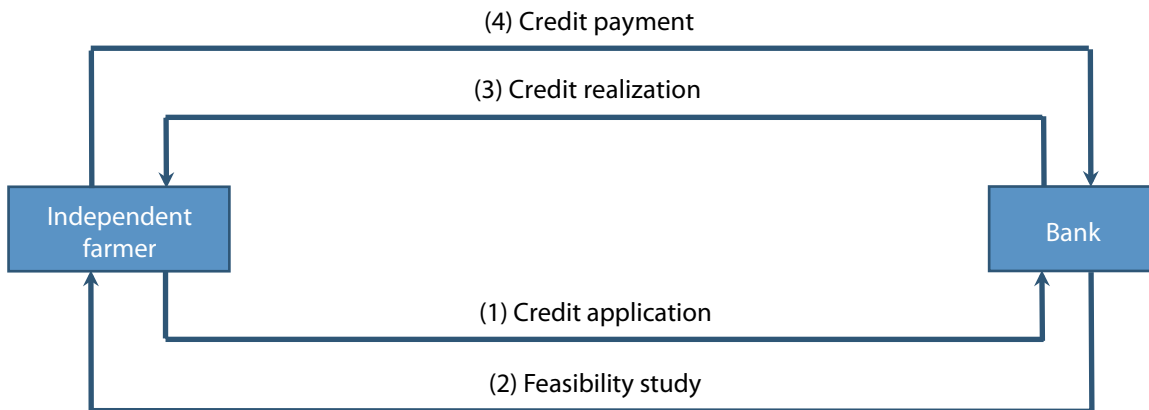


Figure 7. Credit distribution and credit payment flows for independent farmers.

distribute the loan to, and collect repayments directly from the farmer.

The costs for accessing credit vary depending on the policies of individual banks. These costs include provision and administration costs. There are no provision or administration costs for KUR schemes in any of the banks, whereas provision and administration costs for KI and KMK schemes vary from IDR 250,000 to 500,000 (USD 19.23 to 38.46). These costs must be paid in advance prior to credit distribution. For larger loans, banks also require farmers to provide insurance for their collateral, such as fire insurance (for house certificates) and life insurance.

4.4.2 Government

The government currently provides limited grants to independent smallholders through local agriculture offices in the form of fertilizer and certified seed. Seed assistance is provided to increase productivity and reduce the use of uncertified seeds by small-scale independent farmers (Figure 5). Productivity is lower with uncertified than certified seed, but uncertified seed is cheaper. Consequently, many independent smallholders, particularly those with limited capital, still use uncertified seed. In OKI district the price for certified seed is approximately IDR 40,000 (USD 3.08) per plant, as opposed to around IDR 20,000 (USD 1.54) per plant for uncertified seed. In addition to seed assistance, the government provides fertilizer assistance, particularly for NPK fertilizers.

Oil palm farmers prioritized for seed and fertilizer assistance are those already registered as members

of farmer groups and hold land certificates (SKT, SHM) and/or Cultivation Enterprise Registration Letters (*Surat Tanda Daftar Usaha Budidaya Tanaman Perkebunan - STD-B*). Possession of such certificates proves farmers have met applicable legal criteria and are not growing oil palm in the forest estate.

In the past, the government launched a number of programs associated with oil palm, such as PIR and KKPA partnership schemes and the RevitBun estate crop revitalization program (see Subsection 2.1). These programs, with the exception of RevitBun, were dedicated to the establishment of oil palm estates. The PIR and KKPA schemes were launched in OKI district in the early 1990s, and in the mid 1990s in Kotim district. Most participants in PIR schemes were in-migrants from Java, whereas participants in KKPA schemes were indigenous locals. Through these programs the government obliged large plantation companies to establish nucleus and smallholder 'plasma' estates in collaboration with small farmers. Companies would provide 30% of the funding necessary for establishing oil palm estates, while 70% was provided by government-appointed banks in the form of loans. Companies would manage all funding to establish 'plasma' estates. Tied farmers would repay their loans, and when their debts were settled they would receive a certificate for 2 ha of land.

Land tenure arrangements differ significantly between the two schemes. PIR program smallholders hold land certificates, control their land once they have paid off their loans, and manage oil palm production processes including harvesting. With the KKPA program, companies

manage and control smallholders' land under 'single management schemes.' This means farmers own land certificates but in practice have no control over their land. They only receive a share of nucleus–plasma FFB sales, and have little knowledge of oil palm production processes.

4.4.3 Cooperatives

Cooperatives play the role of guarantors when farmers access credit from banks. In some cases cooperatives also provide credit to their members in the form of savings-loan programs and crop inputs (fertilizers and pesticides). Maximum cash loans are IDR 50 million (USD 3846) with loan tenors of 1–5 years. The loan tenor for crop inputs is 1 to 2 years. In both districts the interest rate for cash loans is 1.5% per month, and around 14% a year for crop inputs.

4.4.4 Oil palm companies

Similar to cooperatives, oil palm companies play a major role as guarantors when tied farmers access credit from banks. Since some banks cannot provide 100% of the funding needed for establishing an oil palm plantation, some oil palm companies provide refinancing schemes

for tied farmers where the minimum amount for refinancing is 30% of the credit limit. Interest rates under such schemes range from 13% to 15%. The most common form of credit provided by oil palm companies is seed and fertilizer assistance at interest rates similar to those for refinancing. Loan tenors for refinancing schemes are longer than for crop input credit, at 1–5 years and 1–2 years respectively. When tied farmers use these facilities, oil palm companies deduct sums from farmers' FFB sales. The higher the FFB market price, the faster farmers can pay off their loans. As we know, FFB prices are prone to fluctuation (Figures 8 and 9).

4.4.5 Traders

Local traders also provide credit, but with amounts limited to around IDR 1–2 million (USD 76.9–153.8) per farmer. Such loans are used for everyday needs and in some cases for purchasing fertilizers and pesticides. Local traders only provide credit to farmers who sell them their FFBs. Traders do not charge interest on farmers' loans, and no specific requirements are applied as arrangements are based on verbal agreements between the traders and farmers. When farmers need credit, they approach traders who then provide it in small amounts. The

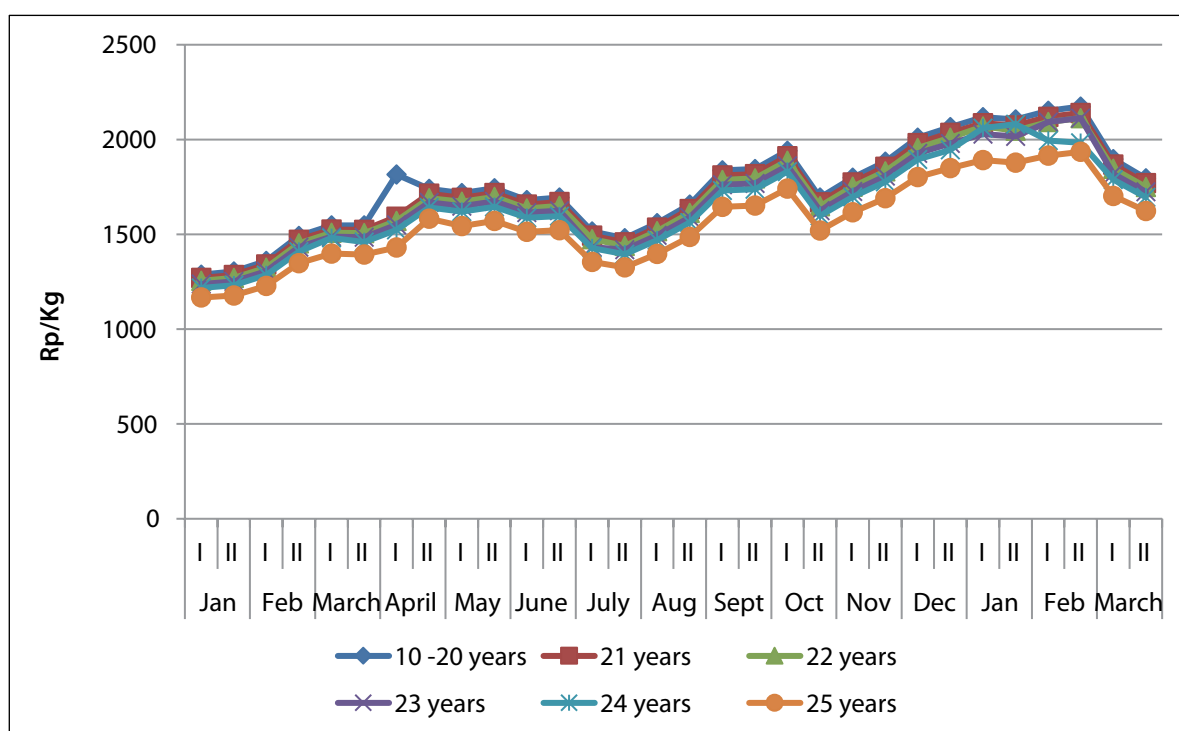


Figure 8. FFB prices in South Sumatra province in 2016–2017.

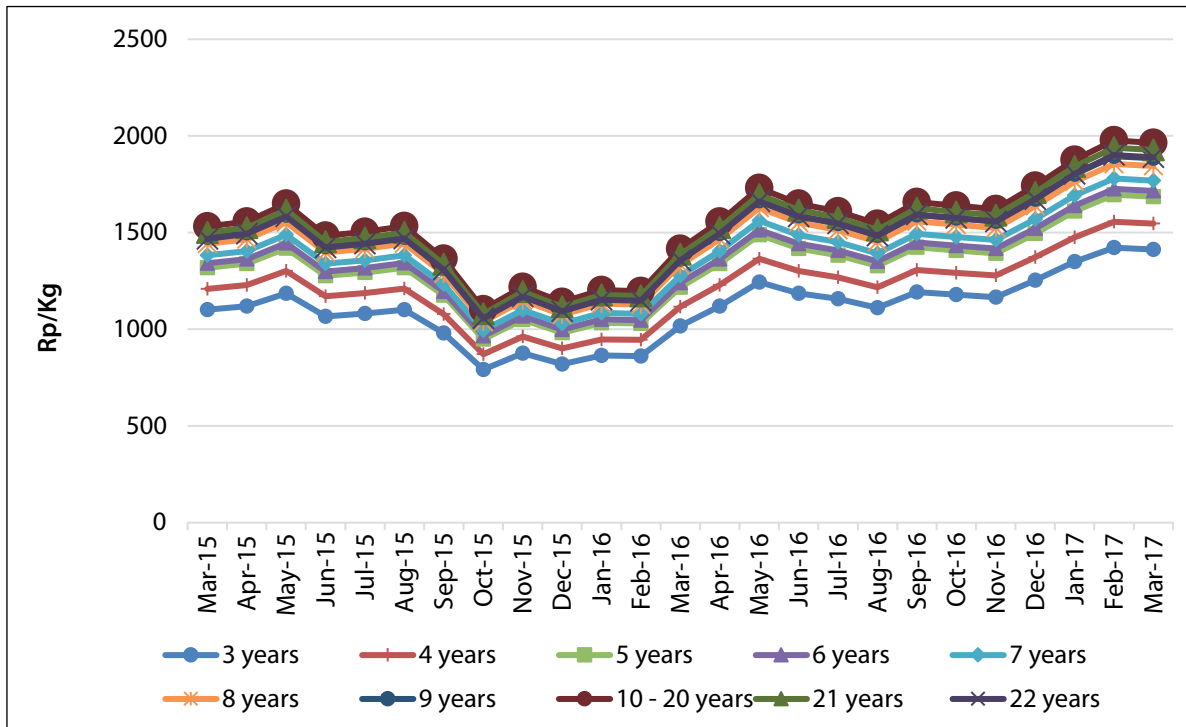


Figure 9. FFB prices in Central Kalimantan province 2015–2017.

repayment system is similar to other schemes whereby traders deduct sums from farmers’ FFB sales. Loan tenors are based on verbal agreements between farmers and traders, and are usually up to 1 year.

4.4.6 Microfinance institutions

In Kotim district, microfinance institutions also offer credit to oil palm farmers. During one field trip, the study team visited a microfinance institution in Kotim district called *Unit Layanan Modal Mikro (ULAMM)*. ULAMM provides credit not only for oil palm farming, but also for other activities such as trading and service provision. The requirements for credit applications are simpler than those applied by banks, and farmers can provide collateral in the form of car certificates and other fixed assets. ULAMM provides loans up to a maximum of IDR 200 million (USD 15,384) at a flat interest rate of 14% a year with a maximum loan tenor of 4 years.

Box 3. ULAMM in Kotim district

ULAMM is a microenterprise loan service provided by PT Permodalan Nasional Madani (PNM), a state-owned company to develop and empower microenterprise players. In Kotim district, people have started borrowing money from ULAMM as an alternative source of credit when they cannot access bank loans. Credit services for customers are supported by training, coaching, and mentoring, to help microenterprise players run and improve their businesses. Advantages of securing loans from ULAMM include 0% provisional fees, easy financing requirements, fast disbursement processes, flexible repayment installments based on customers’ capacity to pay and business profits, and services offered by ULAMM staff. Unfortunately, due to a lack of information, many people are unaware of the credit scheme provided by ULAMM.

Source: Authors’ interviews during field work

5 Lenders' perspectives, borrowing behavior and gap analyses

5.1 Lenders' perspectives

According to lenders from the banking sector, in both districts, demand for credit for oil palm development is higher than realization. This is because farmers, particularly independent smallholders, cannot meet the requirements applied by banks when they apply for credit. Collateral is the main stumbling block for independent smallholders in accessing credit. While the banking sector favors SHM land certificates as collateral, independent smallholders feel the costs involved in obtaining land certificates, particularly SHMs, are beyond their reach. Consequently, tied farmers have better access to credit than do independent farmers. The majority of tied farmers in the research location in OKI district possessed land certificates. Conversely, independent smallholders in the research location in Kotim district had no land certificates because they cultivate oil palm in the forest estate.

Another obstacle to effective oil palm sector financing relates to KUR schemes. As KUR constitutes a government program, farmers are not required to provide collateral when applying for credit through a KUR scheme. However, to reduce the risk of nonperforming loans, banks force farmers to do so. Consequently, only those farmers able to provide collateral can access KUR. Further, government subsidies for KUR interest can sometimes be another obstacle for banks in providing credit for oil palm farmers. In some cases, banks have trouble securing the subsidies pledged by the government. Moreover, the current credit schemes provided by banks are unable to meet farmers' needs to cover the costs of replanting. Credit limits offered to individuals through KUR schemes are insufficient for replanting, and are only enough to cover working capital.

Loan guarantors play a significant role when farmers submit credit applications to banks. By

using guarantors, banks can collect payments from farmers regularly and smoothly. Tied farmers can use their cooperatives or companies as guarantors. This is not the case for independent smallholders who have no associated institutions to guarantee their credit applications.

Government, cooperative, trader and company lenders all state the credit they provide is insufficient to meet demand from oil palm farmers. As explained earlier, the government only provides limited amounts of credit in the form of fertilizers and certified seed. No other government schemes are currently available due to budget constraints and other factors. For example, the revitalization program launched in 2008 was stopped in 2014 because it was not targeted appropriately.

Funds collected from oil palm companies and managed by the Oil Palm Estate Fund Agency (*Badan Pengelola Dana Perkebunan Kelapa Sawit - BPDPKS*) may still take time to come to fruition.² Initially, the scheme will allocate around IDR 25 million (USD 1923) per ha to farmers to finance replanting activities. In both districts, replanting is a major consideration, bearing in mind many palms are now over 20 years old.

Similarly, credit for tied farmers from companies is limited only to crop inputs and refinancing schemes. Companies only provide refinancing facilities if farmers can self-finance 20% of the proposed credit amount. Such schemes only benefit farmers who can provide their own capital. Few cooperatives can provide credit to their members in the form of cash loans. Cooperatives play important roles as guarantors when their

² Director General of Estate Crops Regulation No. 29/KPTS/KB.120/3/2017 on Guidelines for Replanting, Human Resource Development and Infrastructure Assistance in a Framework of Financing by the Oil Palm Estate Fund Agency was issued in March 2017.

members apply for credit. Credit from local traders is insufficient to meet independent smallholders' demand for credit for growing oil palm.

The gestation period for oil palms poses another challenge in both districts, as FFBs can only be harvested once oil palms have reached 3–4 years old. This means smallholders have no means to repay their loans for 3–4 years. This has forced banks to apply a policy for KI schemes, whereby farmers do not have to repay their loans during the gestation period. Interest and principal payments will accumulate and be paid once the gestation period is over.

Although there is no strict monitoring by most formal and informal lenders, most state that cash loans appear to be used for things beyond their target usage, with a majority of farmers allocating their loans for things such as education expenses, vehicle purchases, and wedding celebrations. Lenders gather such information from informal conversations with farmers. Only small portions of their credit are allocated to financing their oil palm plantations. Nevertheless, this is not a major issue for lenders as long as farmers can repay their loans. Increasing smallholders' access to credit could increase oil palm productivity, but as long as farmers continue to dedicate only small amounts of credit to oil palm farming, increased productivity from smallholders remains unlikely.

5.2 Smallholder borrowing behavior

Small farmers need credit to finance their oil palm enterprises. However, several elements of their behavior can pose challenges for them when they want to access credit. For example, most farmers do not record cash flows (earnings and expenditure) of their oil palm businesses. Consequently, it is extremely difficult for banks to assess the profitability of their oil palm enterprises. The ability of farmers to produce written records relating to their farming activities is an indication of their managerial skills. Written records on FFB prices, quantities sold, and pesticide and fertilizer application volumes and dates are all important details for banks in assessing farmers' plantation management cash flows.

Small farmers have a low marginal propensity to save. The majority of small farmers, particularly independent smallholders, have no saving accounts in banks, whereas having a bank account is a

prerequisite for applying for credit from the banking sector. Farmers prefer to hold cash or fixed assets (car, motorcycles, houses, and land).

In some cases tied farmers practice side selling in order to get cash by selling their FFBs to traders rather than their cooperatives. As explained earlier, tied farmers access credit through their cooperatives. Practicing side selling affects farmers' revenues and reduces their ability to repay their loans.

The cultivation habits of local and in-migrant oil palm farmers differ significantly in both districts. In-migrant communities involved in oil palm farming through the PIR-Trans program seem more progressive and serious about managing their estates. They routinely apply fertilizers, spray their palms, and weed their plots. Consequently, they produce and earn more than local communities. As a result, lenders prefer to provide credit to in-migrant farmers.

Misunderstandings about management systems sometimes arise when new farmers join nucleus–plasma schemes under single management systems. They assume that when their oil palms are harvested, they will receive payments of similar size to those who joined the scheme years earlier. In contrast to those long-term farmers who have already paid off their credit obligations, more recent participants have yet to do so. This can lead to farmers feeling suspicious of companies, and claiming they are not distributing the proceeds of FFB sales fairly. Friction can be exacerbated when other parties interfere by provoking farmers to demand greater shares of company revenues.

5.3 Gap analyses

This subsection discusses the various gaps in oil palm financing limiting progress toward sustainable oil palm plantations.

5.3.1 Demand–supply gaps

While the number of oil palm farmers submitting applications for bank loans is high in both districts, credit realization remains low due to the legal requirements applied by the banking sector. It seems current credit schemes can only be accessed by larger independent farmers and tied farmers, as only they can meet banks' requirements for SHM

land certificates as collateral. However, in Kotim district tied farmers only hold SKTs issued by village governments.

Tied farmers have guarantors as collateral agents when they access credit. As explained earlier, banks prefer to provide credit when collateral agents are involved. Independent smallholders face difficulties accessing credit from banks, particularly in meeting legal requirements and providing collateral agents.

Few credit schemes offered by the banking sector consider farmers' needs for long-term expenses for replanting, or grace periods for oil palm farmers. For longer-term loans, small farmers can access the KI scheme, while for operating expenses they can access credit under KUR and KMK schemes.

Government, company, cooperative, microfinance and local trader credit sources cannot meet small farmers' demand for credit as their loan amounts are very limited. In addition, they only provide short-term loan tenors, whereas oil palm farming requires longer-term arrangements, particularly for replanting. As a result, farmers use these credit sources for activities beyond oil palm growing.

Other credit schemes, particularly consumer credit schemes, seem easier for oil palm farmers to access. Requirements under such schemes are easier for farmers to complete, so many use them in part to finance their oil palm plantations. Although microfinance institutions such as ULAMM in Kotim district exist as alternative credit sources, oil palm farmers are generally unfamiliar with them.

5.3.2 Maturity gaps

Maturity gaps exist when farmers establish new oil palm plantations or carry out replanting. New oil palms provide no revenue for 3 or 4 years, so farmers cannot repay their loans during this gestation period. A few schemes have considered this situation.

For example, nucleus–plasma credit launched by Bank Mandiri has a loan tenor of 10 years, so its loans can be used for establishing or replanting oil palm estates. Interest and principal payments will accumulate, start being paid after the gestation period and distributed along the loan tenor.

5.3.3 Risk-sharing gaps

When farmers submit credit proposals through collateral agents (guarantors), the guarantor

will deduct 30% of the FFB harvest. When independent smallholders submit credit applications themselves, lenders ask them to make cash payments. In both instances there are price and production risks.

FFB prices in Indonesia are set jointly by provincial governments through estate crops offices and oil palm companies operating in their provinces. Prices are based on crude palm oil (CPO) and palm kernel oil (PKO) prices, and actual conversion rates are reduced by an index based on the various costs for individual mills, including transport, processing, marketing, depreciation and administration costs (IFC 2012). This index is known as the K-index and is determined on the basis of information provided by mills in the province. Once prices are determined, they are used as references for buyers when they purchase FFBs from farmers in the province. Accordingly, FFB prices in both districts follow prices published by their provincial government estate crops offices.

In South Sumatra province, price data are published fortnightly at the beginning and the middle of each month. In Central Kalimantan, FFB prices are published only once a month. Consequently, price risk is more noticeable in Kotim district as FFB price adjustments are not as rapid as in OKI district. In cases where payments constitute deductions from oil palm harvests, when FFB prices fall, farmers and lenders both bear risks as loan repayments will be lower than expected. However, when FFB prices increase, farmers can pay off their credit more quickly than anticipated. As an example, in OKI district, when FFB prices increased significantly in 1997–1998, many tied farmers enjoyed high prices and paid off their loans when their oil palms were only 8–9 years old. In cases involving cash payments, farmers bear the price risk alone since banks still require them to pay cash installments.

Price risks for tied farmers are less visible than those for independent smallholders. In both districts, tied farmers receive higher FFB prices than independent smallholders. This is because oil palm companies and tied farmers have formal contracts stating that prices follow those set by provincial government pricing committees. Nevertheless, it is important to note that price risks also exist with contract farming, particularly when contracts lack transparency and detail. Cahyadi and Waibel (2016) found that price determination

processes are not specified in contracts, and are difficult for farmers to understand. Moreover, contracts do not detail quality grading, which determines the prices tied farmers receive.

Production risk is affected by cultivation habits and environmental situations (for example forest fires). When farmers grow oil palm using good management practices, they will enjoy higher productivity, which in turn will increase their capacity to repay loans. Forest fires are the main problem, particularly in OKI district. When they occur, they reduce farmers' yields. The use of uncertified seed and low quality fertilizers will also affect production risk (Cahyadi and Waibel 2016). In both districts, the majority of small farmers, particularly independent smallholders have insufficient capital to buy high quality inputs. Companies provide technical assistance on production methods to tied farmers, and supervise them to ensure they use high quality inputs (particularly certified seed).

5.3.4 Legal gaps

All credit schemes offered by banks require land or other fixed assets as collateral. Most tied farmers in OKI district have paid off their loans and been given land certificates, many of them since the late 1990s. Consequently, most tied farmers in the district can meet the credit requirements applied by the banking sector.

Legal requirements constitute the main obstacle facing independent smallholders. In OKI district independent farmers need around IDR 4–5 million to arrange an SHM land ownership certificate. Consequently, many independent smallholders cannot afford land certificates, and even if they can, they must first prove their oil palm land is not situated inside the forest estate. In addition, independent smallholders have no legal certificates for fixed assets (houses). As a result, many small-scale independent farmers are unable to access credit from formal financial institutions.

Land certificates are also the main stumbling block to farmers applying for credit in Kotim district. Many oil palm planted areas, particularly those belonging to independent farmers, are located inside the forest estate. This results in regional spatial plans (*Rencana Tata Ruang Wilayah* - RTRW) not being approved and land conflicts with the forestry sector. Some banks in

Kotim district will accept SKTs as collateral with recommendations from BPN stating the land is legal and will be certified. However, BPN is reluctant to provide SKTs for farmers where the RTRW remains unclear. Regional government agriculture offices are also promoting STD-Bs to prevent further encroachment on the forest estate. Some banks will accept STD-Bs as collateral.

5.4 Bridging supply-demand gaps

The previous subsection highlights gaps between credit demand and supply, and the formal financing scheme requirements small farmers are unable to meet. Small farmers under plasma schemes have an advantage over independent smallholders as they generally have clearer land ownership documentation and growing practices supervised by nucleus companies.

This subsection discusses the implications of these gaps on the CPO Fund's replanting program in collaboration with the Ministry of Agriculture. We also discuss the implications of these gaps in terms of moving toward compliance with Indonesian Sustainable Palm Oil (ISPO) standards. With approximately 2 million small farmers cultivating oil palm in Indonesia, there are market opportunities for financial service providers to serve the market segment for oil palm smallholders. At the same time, understanding these gaps could help financial service providers design financing schemes that are more appropriate to the characteristics of smallholders, provide them with incentives to change their behavior, and create no financial risks.

With regard to government financing, at the time of writing, the BPDPKS' Replanting Program is potentially the largest source of funding available, as the RevitBun program was terminated in 2014, and other subnational government programs are generally sporadic and usually limited to the provision of seedlings.

The replanting program follows Director General of Estate Crops Decree No. 29/KPTS/KB. 120/3/2017, which lists the following steps: 1) pre-replanting; 2) administrative preparation; 3) field/technical preparation; and 4) institutional and facilitation preparation. In order to apply for replanting facilities, small farmers through cooperatives or farmers groups submit proposals

for replanting. These proposals should have a number of accompanying documents, including land legality and STD-B.

Accordingly, BPDPKS needs to understand the borrowing behavior of small farmers. Such an understanding will be useful for evaluating the feasibility of more flexible lending arrangements. For example, while BPDPKS is probably generous in that it provides subsidies of IDR 25 million for small farmers' replanting activities, it is unknown whether small farmers have the capacity to bear the associated loans, or to provide cash as matching funds for CPO Fund subsidies. Small farmers would have to rely on banks loans to complement these subsidies, and they are not always willing or able to do so. Our survey could not assess whether small farmers are interested in planting palms in per hectare units, or dependent on available budgets. Understanding farmer behavior may have implications for subsidy scheme design under BPDPKS.

One notable implication of the Director General's decree on replanting is that it can be used as leverage for encouraging small farmers to comply with the requirements for ISPO certification. These requirements are comprehensive land ownership documentation, membership of an established farmer group, and properly recorded cultivation practices as the basis for continuous improvement. These can be met, in part, through the pre-replanting processes stipulated under the Director General's decree.

Reducing supply-demand gaps would require a convergence between supply and the credit demand of small farmers cultivating oil palm. This may require small farmers changing their behavior to be able to access formal credit; or financial service providers adjusting their risk profiles to make credit schemes for small farmers

more attractive. Whether small farmers are willing to change their behavior partly depends on the costs and benefits of being in the formal sector as opposed to continuing to operate in an informal manner. Small farmers who see the potential benefits of having legal land certificates and proper documentation for future income might choose to legalize their land and start recording and improving their cultivation practices. Similarly, whether financial service providers are willing to change their risk profiles and go beyond existing micro or small credit schemes will depend on the potential nonperforming loans that affect the banks' reputational risk.

Another notable point is the important but under-researched role of non-banking institutions, such as ULAMM in filling financing gaps. Such financing schemes may not be able to compete with BPDPKS or the banking sector in terms of loan amounts, but they may be flexible in dealing with small farmers' behavior. For example, financing schemes can be designed to apply group lending where small farmers jointly share risks without having to provide collateral as individuals. There are examples of this in other sectors, such as the Ministry of Environment and Forestry's public service unit (BLU) loan scheme for the smallholder timber sector, and some small and localized projects in other sectors.

Finally, the example in OKI of setting aside savings from the current harvest for replanting is also interesting in terms of achieving replanting financing self-sufficiency. Setting aside IDR 100 per kg of FFB means small farmers can set aside IDR 1.3 million per ha per year (IDR 100 per kg x 1000 kg x 13 tonnes/ha/year). With 20 years of harvests and constant yields, this translates to IDR 26 million per rotation, enough to cover a portion of replanting costs.

6 Conclusions

Oil palm farmers require significant resources to improve productivity and fresh fruit bunch quality to meet standards demanded by their buyers. Consequently, they need loans in order to establish, maintain, and replant their plantations. In the two study locations, these loans might come from formal or informal lenders/institutions. Credit from formal institutions is sourced mainly from banks, followed by oil palm companies, cooperatives, governments, and microfinance institutions. The banking sector applies more stringent requirements than other formal lenders, as banks prefer borrowers to use land as collateral and require guarantors to act as collateral agents when they lend money to farmers. These requirements prevent the majority of independent smallholders accessing loans from formal financial institutions. Credit from oil palm companies and cooperatives is only available for tied farmers. Even though credit from governments is dedicated to independent smallholders, their loan amounts are very limited. Informal lenders are local traders who provide credit to farmers who sell them their FFBs. These traders have no specific requirements when they lend money to farmers as their aim is to tie them to providing a continuous supply of FFBs.

In addition to the collateral issue, other challenges facing oil palm credit markets are the amounts of credit required and need for a grace period. The amounts of credit on offer are insufficient for establishing or replanting oil palm estates. In both districts, replanting is a major consideration bearing in mind many palms are now over 20 years old. The gestation period between oil palms being planted and becoming productive means farmers are unable to repay credit within current loan tenors.

The borrowing behavior of small farmers is another obstacle for lenders. Most farmers lack managerial skills, and only a few keep written records of the prices they receive for FFBs, the quantities they sell, and the volumes of fertilizers and pesticides they apply. Such records are essential for banks to assess the profitability of farmers' oil palm businesses. Other factors preventing farmers from accessing credit include having no bank accounts, side selling practices, lack of knowledge on good agricultural practices, and their lack of trust in the single management systems applied by companies.

7 Recommendations

Four types of gaps exist in oil palm credit markets: demand–supply gaps, maturity gaps, risk-sharing gaps, and legal gaps. These gaps need to be addressed in order to improve oil palm farmers' access to formal credit schemes, particularly from banks.

Considering credit schemes require land certificates as collateral, it is important for regional governments to facilitate farmers, particularly independent smallholders, in securing land certification. As a first step, regional governments could issue STD-Bs to farmers who already have oil palm plantations. These letters could be used as the basis for BPN to issue SKTs. Some banks have stated they will accept STD-Bs and SKTs as collateral as long as they are accompanied by a letter from BPN declaring the land has met necessary legal criteria (clean and clear). After securing STD-Bs or SKTs, farmers can then register their land in order to obtain SHM land certificates, the preferred collateral requirement for formal lenders. Such measures could reduce legal gaps, and in turn reduce demand–supply gaps as well. This would reduce encroachment and land clearing in the forest estate because illegal plantations cannot be certified.

In order to reduce maturity gaps, the banking sector and other financing schemes should consider a grace period for oil palm commodities as well as a cost-of-living stipend during the allotted grace period. This is important in both districts where palms are old and replanting is necessary. Few banks have considered this issue, and considering oil palms are long-living plants with a lifespan of around 25 years, loan tenors should be extended, particularly for replanting schemes. In addition,

it is also important to promote replanting savings schemes for both tied and independent farmers. In the case of tied farmers, cooperatives could collect replanting savings by deducting amounts from FFB sales. Regional government agriculture offices could encourage independent smallholders to save part of their revenue from FFB sales for replanting. Promoting replanting savings would reduce farmers' dependence on government subsidies for replanting their estates.

Risk-sharing gaps should be reduced by using price setting and product instruments. In South Sumatra province the FFB price is evaluated fortnightly, while FFB prices in Central Kalimantan province are set once a month. This makes price risk more prevalent in Kotim than in OKI district. Therefore, it is important for the Central Kalimantan Provincial Agriculture Office to review prices fortnightly instead of on a monthly basis as it does now. When FFB prices fall and are only reviewed a month later, farmers receive lower revenues for the whole month.

Product risks could be reduced if financial institutions provided technical assistance through guarantors. If farmers used appropriate volumes of inputs, the probability of higher harvest yields would increase. Financial capacity assistance by helping oil palm farmers keep written records of their earnings and expenditure should also be considered. This would help lenders, particularly banks, to evaluate the current condition of oil palm businesses managed by farmers. Lenders should prohibit side selling by tied farmers to buyers outside their cooperatives as it reduces their ability to pay off their loans.

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Appendix

Appendix 1. Financing available in OKI and Kotim districts

Lender	Credit scheme	Credit limit (IDR)	Interest rate	Credit period (years)	Requirements	Credit allocation	Other costs
Banking sector							
• Bank Mandiri	Individuals:						
	KUR-Micro	20 million	Flat 9% a year	3	Photocopies of husband's and wife's identity cards, family card, marriage certificate, land and fixed asset (house, car) certificates	Working capital credit	No administration and provision costs
	Micro Credit Bank Mandiri	< 200 million	1.1% a month	3–5	Photocopies of husband's and wife's identity cards, family card, marriage certificate, land and fixed asset (house, car) certificates	Investment credit and working capital credit	No administration and provision costs
	UMKM Credit	Up to 2 billion	13% a year	3–5	Photocopies of husband's and wife's identity cards, family card, marriage certificate, land and fixed asset (house, car) certificates	Investment credit and working capital credit	Provision cost 1% of total credit and administration costs of around IDR 250,000 plus insurance
	Groups:						
	Credit for independent farmers with cooperative as guarantor	<200 million	Flat 1.1% a month	3	Photocopies of husband's and wife's identity cards, family card, marriage certificate, land and fixed asset (house, car) certificates	Working capital credit	Provision cost 1% of total credit and administration costs of around IDR 250,000 plus insurance
	Nucleus–plasma credit	50–60 million per farmer	13% a year	10	Photocopies of husband's and wife's identity cards, family card, marriage certificate, and land (or SKT) and fixed asset (house, car) certificates	Investment credit and working capital credit	Provision cost 1% of total credit and administration costs of around IDR 250,000 plus insurance
• Bank BNI 46	Individual: Micro Credit	25 million	13% a year	3	Photocopies of husband's and wife's identity cards, family card, marriage certificate, and land (or SKT) and fixed asset (house, car) certificates	Working capital credit	No administration and provision costs

continue to next page

Appendix 1. Continued

Lender	Credit scheme	Credit limit (IDR)	Interest rate	Credit period (years)	Requirements	Credit allocation	Other costs
• Bank BRI	Individuals:						
	KUR-Micro	25 million	Flat 9% a year	3	Photocopies of husband's and wife's identity cards, family card, marriage certificate, and land (or SKT) and fixed asset (house, car) certificates	Working capital credit	No administration and provision costs
	BRI Micro (<i>Kupedes</i>)	<100 million	Flat 1.2% a month	3-5	Photocopies of husband's and wife's identity cards, family card, marriage certificate, and land (or SKT) and fixed asset (house, car) certificates	Investment credit and working capital credit	For credit over IDR 50 million, provision cost 1% of total credit and administration costs of around IDR 250,000 plus insurance
		100–200 million	Flat 1.0% a month				
Refinancing	<500 million	9% a year	5	Photocopies of husband's and wife's identity cards, family card, IUMK (<i>Izin Usaha Mikro Kecil</i>) permit, and additional guarantees such as land (or SKT) and fixed asset (house, car) certificates	Investment credit and working capital credit	Provision cost 1% of total credit and administration costs of around IDR 250,000 plus insurance	
• Bank Sumsel Babel	Micro credit	25 million	13% a year	3	Photocopies of husband's and wife's identity cards, family card, IUMK (<i>Izin Usaha Mikro Kecil</i>) permit, and additional guarantees such as land (or SKT) and fixed asset (house, car) certificates	Working capital credit	No administration and provision costs
Government	Limited grant for certified seed, and fertilizer	-	-	-	Small-scale farmers	For working capital	No administration and provision costs
Cooperatives	Saving and loan scheme	Max 50 million	1.5% a month	1–5	Cooperative members	For working capital	No administration and provision costs
	Fertilizer and certified seed		14% a year	1–2	Cooperative members	For working capital	No administration and provision costs
Oil palm plantation companies	Refinancing	30% of credit limit	13–15%	1–5	Tied farmers	For working capital and investment	No administration and provision costs
	Seed and fertilizer assistance		13–15%	1–2	Tied farmers	For working capital	No administration and provision costs
Traders	Informal credit	1–2 million	-	< 1	Farmers sell FFBs through traders	Consumptive purposes	No costs

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There are about 2 million smallholders cultivating 40% of Indonesia's oil palm area. They require significant financing to establish, maintain and replant their oil palm plantations, in order to both increase productivity and improve the quality of the fresh fruit bunches. Their capacity to self-finance their plantation is limited. However, most of them are credit-constrained.

Since the late 1970s, the Government of Indonesia has introduced a number of credit schemes for oil palm smallholders. Banks and other formal institutions have also been offering various credit schemes in terms of the amount, grace period and requirements for smallholders, both individually or in groups.

Through interviews and focus group discussions in two districts, each in South Sumatra and Central Kalimantan, we found four gaps: (1) demand–supply gaps; (2) maturity gaps; (3) risk-sharing gaps; and (4) legal gaps. Demand–supply gaps exist where credit applications by oil palm smallholders were not approved because of issues related to collateral requirements, credit amounts, and crop gestation periods. Maturity gaps exist when only few financing schemes consider a grace period for smallholders to wait for the first harvest. Risk-sharing gaps refer to the volatility in production costs and palm oil prices that smallholders have to bear. Many smallholders do not hold proper documentation, which leads to the legal gaps that prevent them from using their land as collateral to access credit from banks. These gaps reduce the possibility of smallholders accessing credit from formal institutions, which drives an informal local lending market with limited credit amounts and higher interest rates. The government and financial institutions must address these gaps in order to improve formal credit access for smallholder oil palm farmers.



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