NUS National University of Singapore
Centre for Governance and Sustainability
NUS Business School

The Path to Sustainable Banking in the Palm Oil Industry:

Advancing the Circular Economy Through Financing and Engagement

LEE Wen En Lawrence LOH

June 2023

About this Report

This report explored the current position and progress that banks have taken towards the palm oil industry. The palm oil industry has been associated with negative environmental issues such as deforestation yet it remains such a crucial industry in Southeast Asia that cannot be overlooked. Aside from putting great focus on the upstream plantation of the palm oil value chain, banks should also look to consider other aspects of the value chain such as the waste products. These waste products such as palm oil mill effluent have great potential in being reused and repurposed into biofuels and bioenergy. This could give rise to new business opportunities of circularity projects in form of a biogas plant or a biodiesel plant. Through interviews and assessment of banks' financing policies, we investigated the relationship between financing, engagement and circularity in the context of the palm oil industry. The three key observations that were discussed: (1) engagement should be prioritised over divestment, (2) sustainable financing is on the rise and (3) to include circularity as part of financing criteria. To advance on the path of sustainable banking, we would like to advocate to rethink financing from a circularity perspective and to maintain consistent engagement with all stakeholders. The system of banking is integrated across many aspects and areas of the society. In order to influence the sustainable development of palm oil, banks could use the power of financing to deploy funds into promising projects and innovative technology to drive and influence the sustainable development of palm oil.

About the Authors

Lawrence Loh is Director, Centre for Governance and Sustainability and Professor in Practice of Strategy and Policy at NUS Business School while Lee Wen En has completed the Master of Science (Environmental Management) programme at the National University of Singapore (NUS).

Contents

List of Tables

List of Figures

1. Introduction

Palm Oil is the vegetable oil most widely used and consumed in the world (Food and Agriculture Organisation of the United Nations (FAO), 2022). It is used in a wide range of products, ranging from foods, cosmetics, industrial applications, and bioenergy. Despite its usefulness, palm oil has been associated with numerous negative environmental impacts such as deforestation, biodiversity loss and emissions of greenhouse gas (GHG) (Fitzherbet, et al., 2008, Guillaume, et al., 2018).

The bulk of the production of palm oil comes from Indonesia and Malaysia with Indonesia accounting for 57% and Malaysia producing 27%. Palm oil has far-reaching economic and social advantages for these countries as it accounted for close to 3.5% and 2.7% of Gross Domestic Product of Indonesia (UNDP, 2019) and Malaysia (Shah, 2021) respectively and it is one of their main agricultural exports globally. The palm oil industry helps to increase income, generate employment, and reduce poverty in these nations (Qaim, Sibhatu, Siregar, & Grass, 2020). It provides job opportunities to the local and rural communities of up to 4 million people in Indonesia and 1 million people in Malaysia (Russell, 2020).

However, the palm oil industry generates significant waste during its processing such as empty fruit bunch, mesocarp fibre, palm kernel shell, palm kernel meal and palm oil mill effluent (POME). The waste produced are in huge quantities but potentially can be reused and repurposed as alternative fuels, biomaterials, and fertilisers (Hambali & Rivai, 2017).

One potential usage that has emerged for POME is in the production of biofuels, a renewable fuel that is made from fats and oils (Haas, McAloon, Yee, & Foglia, 2006).

The biofuels market has expanded in recent times, owing to initiatives such as tax credits, direct subsidies, and an overall focus in decarbonisation in industries.

Another potential area is in the production of biogas through anaerobic digestion of POME. Biogas from POME could be converted into electricity and heat, and be a substitute for fossil fuels for biodiesel production. Based on a study conducted by Harsono et.al, this could result in a reduction of up to 33% of GHG emissions vis-à-vis conventional methods of treatment of POME (Harsono, Grundmann, & Soebronto, 2014). Therefore, utilising POME for biogas production would be an effective waste management practice and an important source of renewable energy.

Therefore, sustainable palm oil production is of utmost importance as we look to minimise its impact on the environment. With finance flows directed towards addressing climate impacts in significant agricultural sectors such as palm oil, we could encourage sustainable development with the concept of circular economy such as to utilise palm oil waste for biodiesel and biogas. The banking sector, in particular, is in the prime position to drive an impact change towards responsible and sustainable financing.

2. Research Aim and Objectives

Agriculture plays a crucial role in achieving global decarbonisation targets as it accounted for about one quarter of all GHG emissions (IPCC, 2014). With Indonesia and Malaysia contributing 84% of the palm oil industry, it is a sector of significant importance within Southeast Asia and many financial institutions in the region should look to support it. Banks can help to influence the development of a more sustainable and inclusive palm oil sector through including Environmental, Social and Governance (ESG) conditions to the financial services that they provide. It is noted that majority of banks that were financing major palm oil players were based in Asia such as Japan, Singapore, Malaysia, and Indonesia (Kusumaningtyas & van Gelder, 2017). Therefore, we would need to promote the implementation of sustainable agricultural practices that is necessary for the industry to successfully reduce GHG emissions, limit deforestation and forest degradation.

This report aimed to investigate whether financial institutions such as banks have started to look at this potential area of growth and assist in financing circularity projects such as POME. Banks could redirect capital to areas and sectors where they would be the most materially impactful.

To achieve this aim, the following objectives were set:

- To determine if the path forward for palm oil should be that of engagement or divestment
- To understand the developments in sustainable financing space
- To analyse if circularity as a concept has been incorporated into bank financing policies

There are many existing ESG policies by financial institutions especially with regards to the upstream palm oil plantation due to numerous concerns over deforestation, exploitation and peat burning (Musaeva, 2021). As there is a lack of studies covering the interaction between bank engagement, sustainable financing, and circularity projects, we intended to focus on this throughout this report, using the palm oil sector as a springboard for further discussion. This would enrich the wealth of research that has been conducted on bank financing in highly sensitive sectors such as palm oil and help determine the best way forward to address these problematic issues and promote sustainable development.

3. Literature Review on Palm Oil

Due to its ubiquitous nature and presence, it is difficult to avoid palm oil and to date, no other vegetable oil has been found to be a suitable replacement. Palm oil is a highly efficient crop and is by far the highest oil yielding crop type. Comparing against its alternatives, it could yield about 2.9 tons of palm oil per hectare as compared to 0.7 tons of sunflower oil or 0.27 tons of coconut oil. Palm oil contributes to 36% of the world's total vegetable oil but only uses 9% of all cropland dedicated to oil production (Ritchie & Roser, 2021).

Therefore, it is essential to move towards a commitment towards improving sustainability and reducing GHG emissions across the palm oil industry. The Roundtable for Sustainable Palm Oil (RSPO) are a set of environment and social criteria which companies must comply in order to produce certified sustainable palm oil (RSPO, 2022). The RSPO revolves around 3 key pillars of people, planet, prosperity and when these principles are practised, it is expected to lessen the negative environmental impact of palm oil cultivation in the producing countries (RSPO, 2019). As part of RSPO's work, they have put forth a compilation of best practices to reduce GHG emissions and POME was identified as a key target area with lots of potential and innovative technology (Walker, McMurray, Rinaldy, Brown, & Karsiwulan, 2018).

The palm oil sector has been associated with numerous negative perceptions. While there has been a great push towards sustainable practices within the palm oil sector, an important area not to be overlooked would be in terms of repurposing the waste products into value-added goods (Hwang, Andiappan, & Ng, 2022). The generated

waste products of palm oil could be used as a feedstock for other industries, which fundamentally makes it a circular economy concept. In order to delve into the financing of POME, we will first need to understand the nature and the potential uses of this waste product.

3.1 A Circular Economy Approach for Palm Oil

A circular economy could be defined as an economic model with an aim to use resources efficiently by minimising waste, retaining long-term value, and reducing the usage of primary resources (Murray, Skene, & Haynes, 2017). Its key objective is to promote sustainable development while limiting the depletion of resources and degradation of the larger environment (Morseletto, 2020).

One key component for a circular economy would be to look at the recirculation of resources such as to recover value from waste (Prieto-Sandoval, Jaca, & Ormazabal, 2018). Referring to Figure 1, we could see that from the mass balance of the palm oil processing chain (a visual illustration of the quantities of raw materials, finished products and waste within the value chain), POME stood out as a significant waste product that was produced. The two uses for POME with the most potential would be in the area of biofuels and bioenergy.

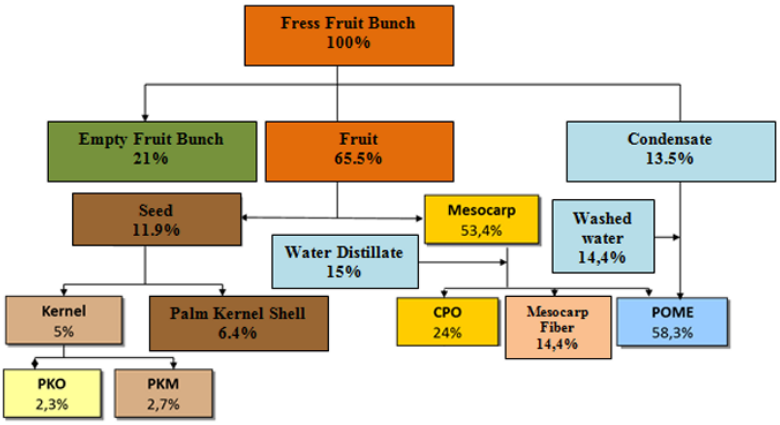

Figure 1: Mass Balance of Palm Oil Processing (Hambali & Rivai, 2017)

Biofuels are mainly consumed by the transportation industry through blending biofuels with petrol and diesel. There are two main types of biofuels – namely ethanol which is made up of grains like corn and biodiesel which is produced from oilseeds such as palm oil (Australian Trade and Investment Commission, 2022). Biofuel mandates have been driving up the demand for biofuels as over 60 countries worldwide have biofuel mandates (Jeswani, Chilvers, & Azapagic, 2020). On an overall basis, global biodiesel use is expected to grow over the next 10 years from 2022 to 2031 (OECD/FAO, 2022).

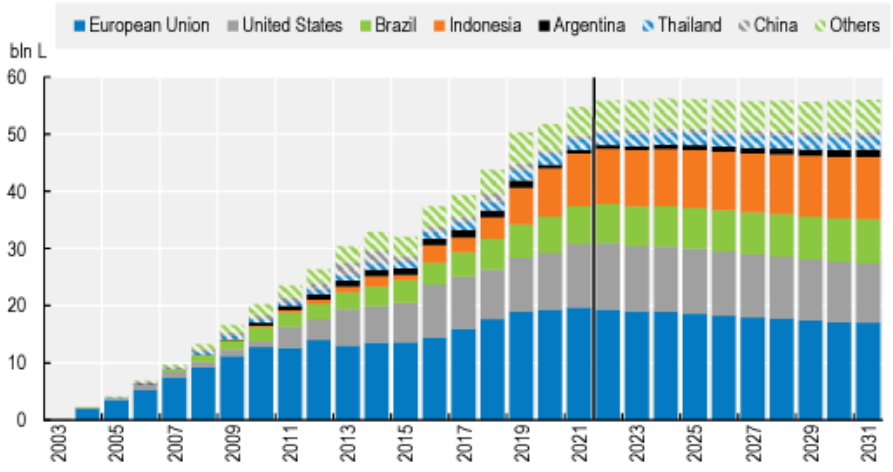

Figure 2: Development of the World Biodiesel Consumption (OECD/FAO, 2022)

Bioenergy will be an important tool for climate change mitigation as it is expected to represent 15 - 30% of primary energy sources by 2050 in forecasted scenarios that limit global warming to 1.5℃ (IEA Bioenergy, 2022). Biogas production on the back of

anaerobic digestion is a proven technology and there is an extensive range of substrates used and available technologies for production and utilisation. However, it is noted that under normal market conditions, biogas is not cost competitive to produce and other incentives may need to come into play (Fritsche & Gress, 2022). Nonetheless, biogas plants have gained popularity among many countries with China leading the pack, followed by Germany as at 2020 (Gustafsson, Ammenberg, & Murphy, 2022).

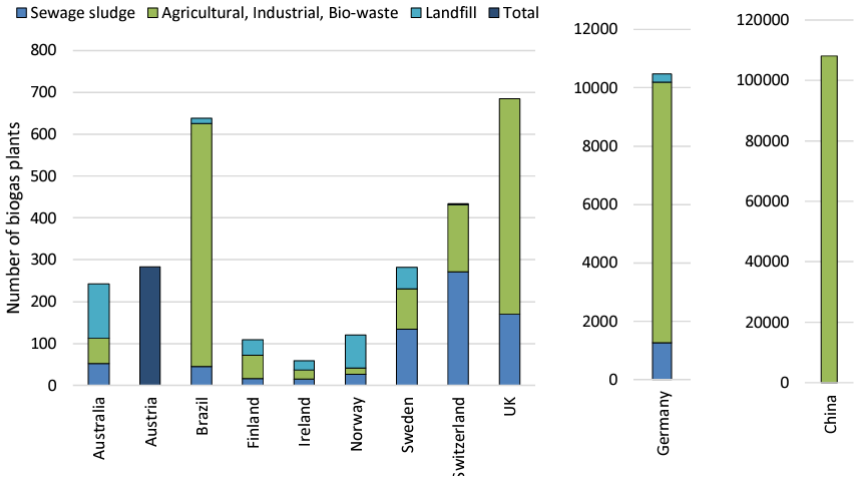

Figure 3: Number of Biogas Plants in Operation for Selected Countries (Gustafsson, Ammenberg, & Murphy, 2022)

A biomass modelling study conducted by Yeo et al. found that by applying a circular economy of “reuse-reduce-repurpose” model in the palm oil sector, one could potentially reduce 39% of imported steam and 13% of imported electricity, while being lower in gross revenue by 0.6% as compared to a linear “make-take-use” model (Yeo, et al., 2020). This showed that a circularity approach was highly feasible and could bring about substantial benefits.

3.2 What is Palm Oil Mill Effluent (POME)?

There were various by-products and waste that were produced as a result of the processing and refining of palm oil such as empty fruit bunches and POME amongst

others (Yusoff, 2006). POME was the most significant waste generated as part of the oil extraction process as for every 1 ton of palm oil fresh fruit brunch (FFB) processed, an estimated 0.5 – 0.7 tons of POME would be discharged (Hassan, Yacob, Shirai, & Hung, 2004). Or in other terms, for every ton of crude palm oil (CPO) extracted, 2.5 tons of POME were produced (Ho, Tan, & Wang, 1984).

The most popular method to extract oil is through the wet palm oil milling process whereby hot water was used to leach out the oil. The dry milling method relied on mechanical pressures on the palm oil mash to squeeze out the CPO (Liew, Kassim, Muda, Loh, & Affam, 2015).

Large amounts of water were used during the palm oil extraction process such as for sterilisation, clarification and washing and cleaning up in the mill. POME is a thick brown liquid that is mainly made up of 95 – 96% water, 0.6 – 0.7% oil and 4 - 5% solid, which are from the palm oil fruit (Hassan, Yacob, Shirai, & Hung, 2004). Due to the differences in the operation and quality control of the palm oil mills, the properties of POME may differ but they largely contain solids of 40,500 mg/L, oil and grease of 4000 mg/L (Ahmad, Ismail, & Bhatia, 2003) and have high chemical oxygen demand (COD) of up to 50,000 mg/L and biological oxygen demand (BOD) concentrations of up 25,000 mg/L (Abdullah, Ujang, & Yahya, 2011).

POME is a nontoxic waste but due to its biological properties, it will cause numerous environmental issues if it is discharged without treatment. The high concentration of BOD will negatively impact aquatic life if the wastewater is discharged into

watercourses and the nutrients present in POME would encourage the growth of algae, resulting in algae bloom (Kamyab, et al., 2018).

The most common treatment of POME is a combination of mechanical techniques such as sieving and sedimentation and subsequently tackling using a biological approach such as aerobic and anaerobic digestion and ponding. This treatment of POME is very practical and is widely adopted by many companies due to its low cost and low energy demand for operation (Igwe & Onyegbado, 2007). Methane gas (CH_4) that is generated as a result of the anaerobic digestion is usually flared off.

3.3 Characteristics of POME

The generation of POME was primarily from three sources of wastewater which would be depicted in Figure 4 below.

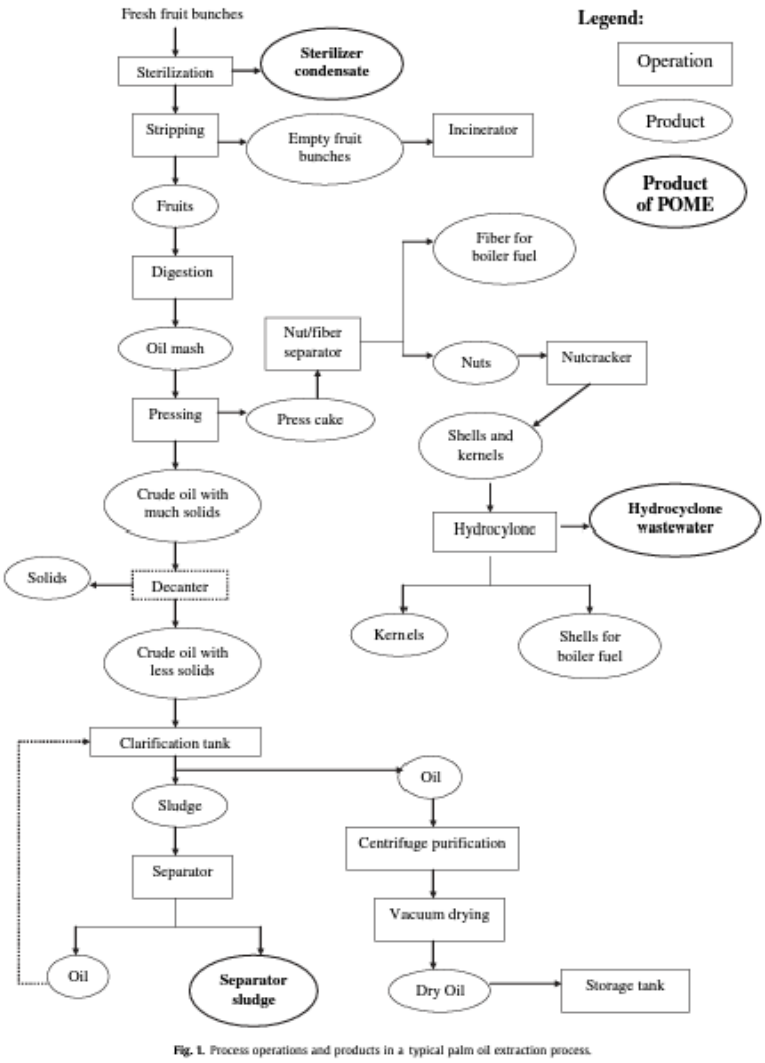

Fig. 1. Process operations and products in a typical palm oil extraction process.

Figure 4: A Typical Palm Oil Extraction Process (Wu, Mohammad, Md. Jahim, & Anuar, 2010)

The first source was from the steriliser waste where steam was channelled into the steriliser to increase temperature of the FFB to an optimum level while removing air. Through the steriliser process, a huge amount of condensate was formed that must be removed. It is noted that steriliser condensate contributed about 36% of total POME (Liew, Kassim, Muda, Loh, & Affam, 2015) and for each ton of CPO, 0.9 tons of steriliser condensate was produced (Wu, Mohammad, Md. Jahim, & Anuar, 2010).

The second source was from the separator sludge, which was wastewater that was discharged from the clarification tank. After the FFB was mashed and pressed to extract CPO, the clarified palm oil would need to be purified before any further processing can be done. The leftover would be an oily sludge waste that would be discharged. The separator sludge made up about 60% of total POME (Liew, Kassim, Muda, Loh, & Affam, 2015) and for each ton of CPO, 1.5 tons of sludge waste was created (Wu, Mohammad, Md. Jahim, & Anuar, 2010).

The third source was from the hydrocyclone wastewater, which was the step of using a liquid solution as a separation medium to separate the palm kernels and the shells. This attributed approximately 4% of POME (Liew, Kassim, Muda, Loh, & Affam, 2015) and for each ton of CPO, 0.1 ton of liquid effluent was churned out (Wu, Mohammad, Md. Jahim, & Anuar, 2010).

3.4 POME as Biodiesel Feedstock

Biodiesel is considered an environmentally friendly alternative to conventional petrol-derived diesel and is produced via a chemical process called transesterification, using renewable and biodegradable sources. It is also considered non-toxic and can be used in existing diesel engines without any modification. However, there are negative concerns over its high feedstock cost and how it may impact food security due to its usage of edible oils as key inputs (Moser, 2011).

Biodiesel production had to be promoted by the government via generous subsidies or tax exemption as the production cost as compared to fossil fuel diesel was substantially higher (Gebremariam & Marchetti, 2018). A study on the production cost

for biodiesel was conducted and it was found that the cost of the oil feedstock made up 88% of the overall production expenses (Haas, McAloon, Yee, & Foglia, 2006).

The main sources for biodiesel were from edible vegetable oils like canola, palm, soybean and sunflower, animal fats such as lard and chicken fats, non-edible oils such as mahua and castor oil and waste vegetable oil. Edible vegetable oils could only contribute up to 3% of petrol-diesel consumption, while non-edible oils had been found to be financially non-viable. Waste cooking oil was investigated but more research would need to be conducted to address the mass transfer limitation problem in order to develop a viable industrial process for biodiesel production (Lam, Lee, & Mohamed, 2010). Therefore, the only remaining source for biodiesel production would be waste oil that can be both economically feasible and sustainable (Aghbashlo & Demirbas, 2016).

POME emerged as a potential biodiesel feedstock but various difficulties such as the low oil concentration of POME and the lack of standardisation of the composition of POME from mill to mill would need to be addressed. While POME was generated in huge quantities, only 0.6 – 1.5% of POME oil, which was the feedstock for biodiesel, was generated for every ton of FFB processed. While there are established supply chains for POME oil, there were various operational and logistical issues that remained unresolved (Sivandran, 2019).

The key issues were as follows:

1. The supply of POME was very fragmented and were across many different waste ponds.

2. Extraction, handling, processing, and transportation was difficult as POME oil must be heated during the entire process.
3. Purification of POME oil must be completed due to the presence of impurities and waste water present.

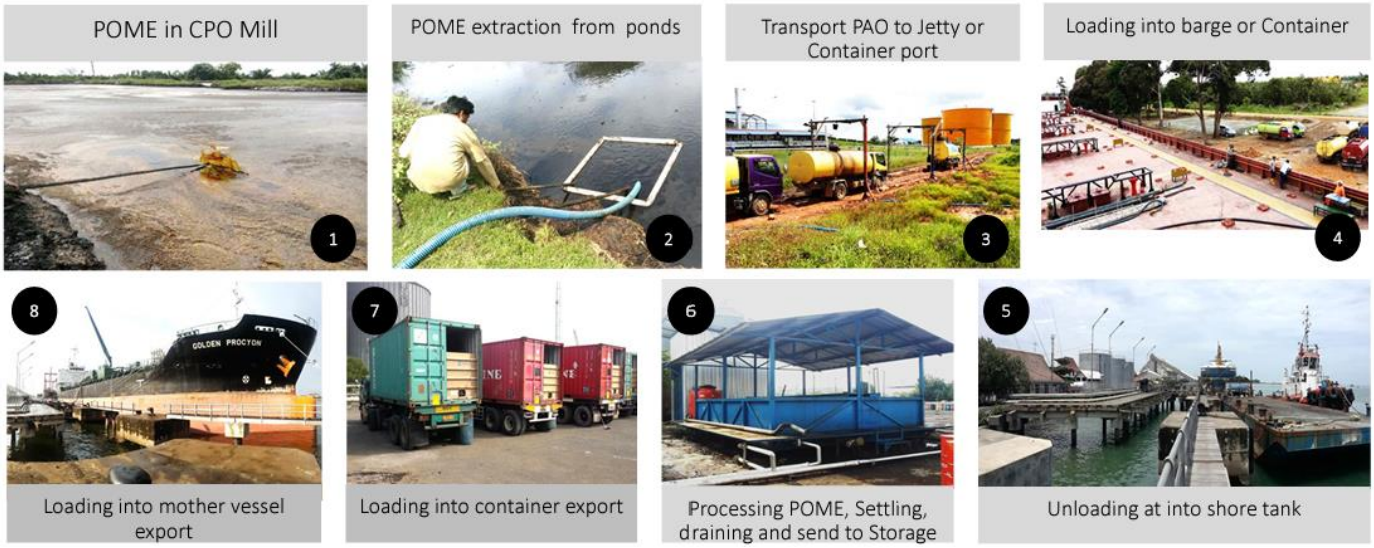

Figure 5: Supply Chain of POME (Sivandran, 2019)

Nonetheless, initial methods have shown promise and there are several operating companies whose main business is in the collection and sale of POME. One potential processing method was utilising the microwave irradiation technique which converted POME to biodiesel and that method has resulted in a positive yield of 89% of biodiesel from POME waste (Davies, Deutz, & Zein, 2022). This is an opportunity to establish a highly efficient technique that could make POME as a viable biodiesel feedstock.

Under the European Union (EU) Renewable Energy Directive II (RED II), POME has been acknowledged as a suitable feedstock under Annex IX for transport and advanced biofuels. POME as a feedstock for advanced biofuels was eligible for double accounting for GHG emission savings against biodiesel percentage targets (European Commission, 2022). This was likely to incentivise the EU nations from using such

waste-based feedstocks like POME, biowaste and algae. As part of Annex IX Part A under RED II, POME had become the most scalable and widely-used feedstock, with majority going to renewable biodiesel producers in China before heading to Europe. It is noted that actual POME usage was difficult to establish as POME had previously been shipped using different codes (Parmar, 2021). POME was only given a proper classification in March 2021 by the International Marine Organisation and would be included in List 1 of the MEPC.2/Circular going forward (Ibsen, 2021).

At present, there are many successful use cases for POME. Neste, the world's leading producer of sustainable available fuel and renewable diesel was looking at POME as a potential renewable raw material input (Neste, 2022). PT Indo Energy Solutions was the largest supplier of POME (over 75% of all exports) for biodiesel in Indonesia, reaching 300,000 tons in 2021. The company worked with many established palm oil producers such as Sime Darby, Bumitama Agri and sold the POME to reputable buyers such as BP p.l.c., Felda Iffco and Musim Mas (PT Indo Energy Solutions, 2022). In 2020, Malaysia and Indonesia produced 1.4 million tons of POME oil. It was estimated that if all POME oil were utilised for biodiesel, it could contribute to 7.5% of the EU's total biodiesel consumption of 17 million tons in 2019 (Hong, 2021).

Since 1 January 2020, Indonesia implemented a B30 program (Biodiesel 30% blend) that aimed to reduce the country's dependency on imported fossil fuels, support the local palm oil prices and to reduce GHG emissions. As part of the B30 mandate, 30% of palm oil-based fuel were being blended into its biodiesel (Kondalamahanty, 2021). It was expected that Indonesia may look to increase its mandate to B35 (Biodiesel 35% blend) in early 2023 according to the Oil Palm Plantation Fund Management Agency

of Indonesia. The biodiesel consumption in Indonesia had increased steadily from 9.29 million kilolitres in 2021 to 10.6 million kilolitres in 2022, and was anticipated to reach 13.15 million kilolitres in 2023 when the B35 mandate comes into effect (Shofa, 2022). With positive momentum on the various biodiesel mandates by the different countries, we expect that POME could become an increasingly important feedstock.

3.5 POME for Biogas Generation

Biogas is produced as a result of anaerobic digestion, which is a process whereby microbes convert organic substances into CH_4 and carbon dioxide (CO_2). This process had been extensively applied on an industrial scale to treat organic waste. In a typical treatment of biowaste through anaerobic digestion, the end products were biogas energy and soil conditioners which wereused as fertilisers (Kougias & Angelidaki, 2018). Therefore, if POME was used as an organic substrate to generate biogas, two main benefits could be reaped – reduction of direct GHG emissions and being a source of renewable energy. It is projected that by fully harnessing POME for biogas, a projected GHG emissions of 18 million tons could be avoided (Loh, et al., 2017). This could go a long way in softening the negative image that the palm oil industry is often associated with.

POME has come to the fore as one of the fastest growing resources for biogas production. There were several pre-treatment methods for POME that can promote the maximum generation of biogas such as high-rate anaerobic reactors (Aziz, et al., 2020). A life cycle analysis was conducted by Aziz and Hanafiah on the production of biogas from the anaerobic digestion of POME. It was concluded from the study that

biogas derived from waste was environmentally sustainable and could emerge as a promising technology to meet renewable energy demands (Aziz & Hanafiah, 2020).

Biogas is a sustainable and renewable energy source with diverse input sources and applications. Potential input sources include waste from dairy, agriculture, wastewater, urban, landfill and other solid wastes. This conversion of waste-to-energy had multiple advantages which were to manage the waste disposal problems and to ensure energy security through establishing a sustainable and renewable source of energy. Of course, some key challenges would be to ensure that the supply of the substrates used for biogas are clean, reliable, and sustainable (Rafiee, Khalilpour, Prest, & Skryabin, 2021).

1 ton of POME generates about 28 cubic metres of biogas. It is projected that Indonesia and Malaysia produced an annual amount of 95 million and 60 million of POME respectively during the processing of palm oil (Hoo, 2019). Large palm oil players like Musim Mas have effectively utilised this technology to achieve zero-waste mills. This meant that the waste products from the palm oil processing such as POME, empty fruit bunches, fibres and shells were reused and converted. For each of its mills, methane capture facilities were fitted and methane that was produced as a result of anaerobic digestion of POME was collected. The methane was harnessed and was used to generate electricity for Musim Mas' mills, estates and housing for workers (Sharma, 2022). In 2021, as a result of the methane capture facilities in place, Musim Mas avoided the release of 575,075 million tons of GHG emissions while having generated a total energy of 545,007 million gigajoules. The company also produced

excess electricity of 33.9 million kilowatt hours that was exported to the national grid (Musim Mas, 2021).

In Indonesia, there were various initiatives in place to promote biogas generation as a renewable source. So far, there were 48,038 biogas plants that have been built. The lack of funds has been cited as the most common reason for not setting up a biogas plant. The public and private sectors could come in to support the commitment to invest in renewable energy through supplying sufficient capital through the usage of subsidies, financial support programs and loans (Situmeang, Mazancová, & Roubík, 2022).

For Malaysia, the government launched projects to encourage biogas production in 2014. Under its Palm Oil National Key Economic Areas programme plans, Entry Point Project 5 aimed to encourage every palm oil mill in Malaysia to build a biogas capture facility to convert biogas into electricity. Any excess electricity could then be sold back to the national grid at a premium rate under a feed-in-tariff scheme. However, as at 2019, only 35% of palm oil mills were equipped with biogas capture facilities (Schlüter, 2019). More would need to be done to provide technical assistance and financial support to the palm oil companies.

4. Current Financing Policies in Banks

4.1 ESG Responsible Financing Policies

The banking sector is directly involved in the fight against global warming. While the banks themselves might not produce much environmental pollution, the financing activities that they extended would be linked to these environmental issues. Therefore, much focus had been placed in banks' ESG financing policies as they looked to incorporate ESG criteria into their lending practices (Ahmed, Ahmed, & Hasan, 2018). Banks were concerned about ESG performance of their borrowers as it might translate into greater credit risk through events like consumer boycott, increased regulations, which would affect the probability of debt repayment by these customers. There were other factors to consider such as the reputation and social capital of the banks. Banks might face considerable negative media coverage, increased regulatory scrutiny if they continued to associate themselves with poor ESG companies (Houston & Shan, 2022). If their banking reputation was affected, it might impact negatively on future growth, especially amongst environmentally or socially conscious customers (Homanen, 2018).

A study conducted by Houston and Shan found that banks could play a significant influencer role in their borrower's ESG performance. Companies that borrow from banks with good ESG profiles were likely to improve their own ESG performance over time. Therefore, this was a good example of how a key stakeholder like a financial institution can collaborate with its customer to promote sustainable and responsible financing (Houston & Shan, 2022).

The Forest & Finance coalition tracked and assessed the financing policies of 200 banks and investors that were active in financing sectors that drove deforestation such as palm oil (Forests & Finance, 2022). As part of their bank assessment, the report scored each bank over its sustainability policy and its implementation in 7 key areas - compliance & governance, forest & peatland protection, habitat conservation, community rights, labour rights, grievance management and supply chain transparency (Musaeva, 2021). It is noted that while the focus was rightly on the main palm oil value chain, there was little consideration towards the waste products that were produced in the industry.

4.2 Sustainable Financing Frameworks

In recent years, an area of finance, termed as sustainable finance, emerged with the aim of creating social and environment impact along with a financial return (Nicholls, 2021). Sustainable financing will take into account ESG considerations when making an investment decision in the financial sector, that will potentially bring about more long-term investments in sustainable economic activities and projects (European Commission, 2023).

Sustainable Finance has taken off in a big way as financial institutions have started to put in frameworks to guide the disbursement of sustainable funds. These frameworks aimed to give additional structure by detailing out the types of projects and investments, and by aligning to widely-accepted market principles and practices.

The market principles most extensively referenced are the International Capital Market Association's (ICMA) green bond principles, social bond principles,

sustainability bond guidelines, sustainability-linked bond principles (ICMA, 2023) and the Loan Market Association's (LMA) green loan, social loan and sustainability-linked loan principles (LMA, 2023). Both ICMA and LMA established these voluntary process guidelines to outline best practices when issuing sustainable bonds or loans. These guidelines look to promote transparency and disclosure, thereby underpinning the integrity of such an instrument. It is noted that the principles are supported by a worldwide movement that has participation from all stakeholders from the private and public sectors.

Today, there are mainly 2 types of sustainable finance instruments (Dembele, Schwarz, & Horrocks, 2021):

1. Use of proceeds – Green, Social and Sustainability

These use-of-proceeds financing instruments are a source of funding for projects that deliver a positive environmental and/or social impact. For green financing, eligible project categories could include renewable energy, clean transportation green buildings, wastewater management amongst others. For social financing, examples of projects may include food security, affordable housing and healthcare and advancements in social economy. Sustainability financings are for cases where the proceeds are applied to a combination of green and social projects.

The defining characteristic that makes it different from conventional financing is that use-of-proceeds financing can only be used for the specific purpose of funding the new or existing sustainable projects that were detailed out in the framework.

2. Sustainability-Linked

Sustainability-linked instruments are balance sheet financing instruments which are not tied to any specific projects. However, there are predefined ESG objectives that the borrower will need to achieve and it has financial characteristics that will be tied to the financing. The ESG targets for the financing have to be ambitious and meaningful and there is a need to demonstrate how these key performance targets will relate to the borrower's overall sustainability strategy. There would be reporting and review requirements to ensure that the performance of the borrower is tracked.

4.3 Bank Financing for Circularity

The concept of a circular economy that is supported through sustainable financing is still fairly new. While financial institutions such as asset management firms and equity firms have started to embrace it, banks are viewed to be lagging behind in terms of this. This is because a circular economy approach would give rise to new business models and it is difficult for the risk management committee of banks to accept the high risk of default from these companies. In addition, the circularity business models are relatively novel and banks find it hard to determine the expected return on a loan and the accompanying potential rate of default. Therefore, banks must undergo a transformation, with the support of the local governments in order to play a part in using sustainable finance for the circular economy (Zhelyazkova, 2020).

There is a consensus view shared by many that most financing and projects are focused mainly on GHG emissions and not on circularity. This is despite research showing that the impact of circularity could alleviate impact of climate change by 45%. While there is the possibility of utilising sustainable financing for waste management

activities, these efforts are usually not financially feasible as compared to the typical raw material production industries (Tohme, 2022). More would need to be done to recognise that sustainability is a prerequisite for any industry to thrive and grow.

Despite these difficulties, there are banks that have actively supported companies shifting towards a circular model. For example, Intesa Sanpaolo, Italy's largest bank by total assets, has undertaken key actions in setting the circular economy as a strategic priority. The bank actively supports the development of the circular economy market and has explored ways to integrate the circular economy into its risk assessment models. Some significant activities that Intesa Sanpaolo initiated include *The Plafond*, a dedicated EUR 6 billion credit facility for companies aligned with the circular economy principles, a EUR 750 million green bond that was focused on the circular economy and an innovation lab that supported the circular transformation of corporates through education programmes (Ellen MacArthur Foundation, 2023).

4.4 Types of Financing Instruments for Palm Oil - POME

There are two types of financing that we will look at. The first type of financing is the trade finance of POME. This would represent the financing that supports international trade flows by mitigating the risks involved in an international trade transaction such as payment risk, country risk and corporate risks. The types of trade finance products are letter of credit or supply chain finance (SCF) (Global Trade Review, 2022).

The second type of financing would be the funding of investment in POME biogas projects. This type of financing is larger in size and is estimated to be about USD 2 –

4 million per million megawatts with a 600 * 1.8 megawatts installation being an average mill size (APEC Energy Working Group, 2017).

According to a study conducted by Asia-Pacific Economic Cooperation, most POME projects were financed through corporate financing or equity. These projects were usually funded using grant funding, concessional capital, and private capital. The extension of private capital would likely reflect current market practices and conditions and would be what we would focus on in this report.

Private capital which is provided by banks can be local, regional, or international in coverage. Other potential providers could be project developers who may come in for project financing, whereby the project itself would be the collateral for the loan (APEC Energy Working Group, 2017).

5. Research Methods

5.1 Scope

We conducted an evaluation of the top banks in Asia that extended financing to key palm oil companies in the region. Research done will be limited to the latest sustainability reports, ESG policies and financing frameworks of the financial institutions.

The financial institutions selected were based on Forest and Finance's financial data on palm oil. The data was collected using Financial Databases Bloomberg, Refinitiv, TradeFinanceAnalytics, company reports (annual, quarterly and interim), analyst and media reports as well as other relevant publications and filings to ascertain the corporate loans and underwriting credit facilities that have been extended to the companies for the period of September 2013 – 2022 (Forest & Finance, 2022).

Based on the data collected, we chose the top 8 financial institutions in the region, with importance given to the main palm oil producing regions of Indonesia and Malaysia, as well as the key financial hub of Singapore in ASEAN. Banks in Indonesia, Malaysia and Singapore provided close to 47% of the total financing extended to palm oil clients based in Southeast Asia between 2016 and April 2020 (Musaeva, 2021). With 2 to 3 banks selected for each region, we would expect to cover majority of the bankers for Southeast Asia palm oil companies. It was also noted that Japanese Banks such as Mitsubishi UFJ, Sumitomo Mitsui and Mizuho were among the top lenders in the palm oil sector (Kusumaningtyas & van Gelder, 2017).

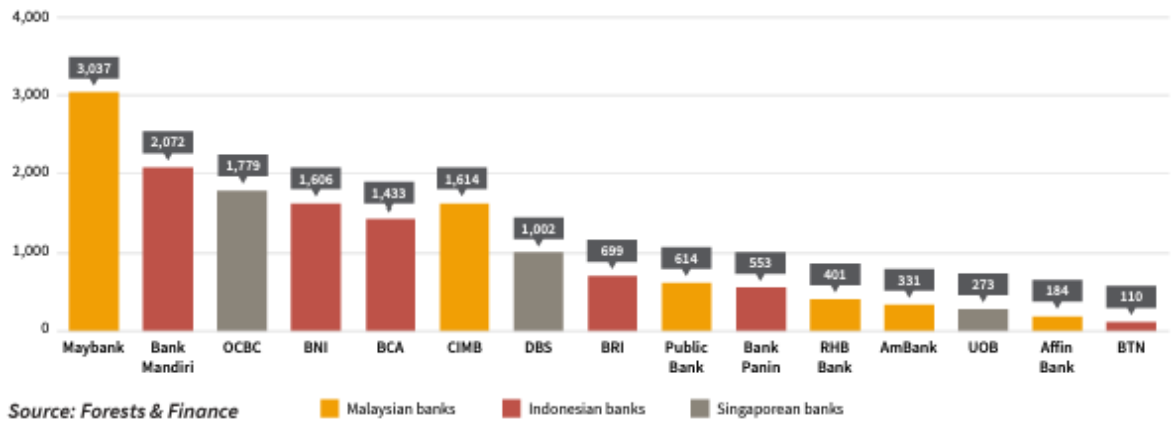

Figure 6: Total Credit Disbursed and Capital Raised for the Palm Oil Sector by Banks in Southeast Asia between 2016 - April 2020 in USD millions (Musaeva, 2021)

5.2 Assessment Model

The Sustainable Banking Assessment (SUSBA) was developed by the WWF-Singapore to track the most pertinent environmental and social issues to Asia and to existing international frameworks and standards such as the Global Reporting Initiative Sustainability Reporting Guidelines, Task Force on Climate-related Financial Disclosures recommendations and Sustainability Account Standards Board. The SUSBA comprised of 6 pillars and 11 indicators that represented what WWF-Singapore considered to be the most relevant ESG integration. As part of the 2021 report, it was observed that banks have made significant progress in incorporating ESG issues into their financial decisions. However, in the palm oil sector, advancements were weak and even the highest ranked banks only achieved 30% of the criteria set out (Nordheim, Sharma, & Goh , 2022).

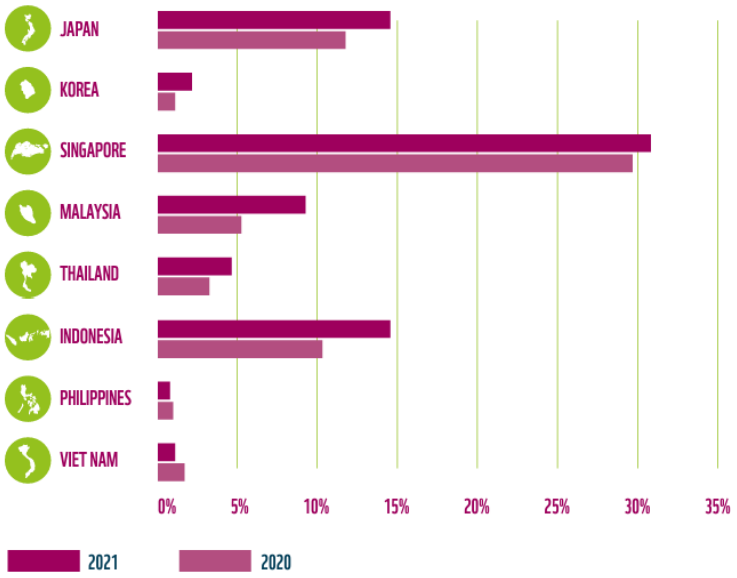

Figure 7: Bank Progress on Palm Oil Indicators 2020 - 2021 by Country (Nordheim, Sharma, & Goh , 2022)

To effectively assess the financing policies and framework of each selected bank, an evaluation model was set out. The components of the evaluation model would look at the ESG policy for agriculture, with specific reference to palm oil and the financing frameworks set up by the respective banks. These would give us perspectives on how financial institutions view palm oil financing in general and to investigate if the banks have incorporated the idea of circular economy and kept abreast of new developments such as POME.

Information for this assessment would be taken from publicly available, English sources such as the latest annual reports, sustainability reports, company policies, statements, and press releases.

The evaluation that would be conducted was based on the following assessment rubric:

Table 1: Assessment Criteria for Banks

S/N	Criteria	Details
1	Sustainability Strategy	1.1 Has the bank established sector policies in Agriculture/Palm Oil? 1.2 If the bank has established sector policies, do they mandate or encourage 1.2.1 No Deforestation, Peat, Exploitation Policies ("NDPE") 1.2.2 Obtain relevant certifications such as RSPO 1.2.3 Observe High Conservation Value ("HCV") and High Carbon Stock ("HCS") approach 1.2.4 Respect human rights with Free Prior Informed Consent ("FPIC")
2	Products & Services	2.1 Does the bank offer specific financial product and services to support the mitigation of any ESG issues? 2.2 Has the bank published frameworks for its sustainable financial products and services and have catered for palm oil and its related waste products? 2.3 Has the bank allocated any capital to support such sustainable financing activities to agriculture/palm oil? 2.4 Does the bank disclose its credit exposure to palm oil?

5.3 Qualitative Research

We set out to obtain qualitative research through the conducting of interviews. A qualitative research method was used to allow us to gleam expert knowledge from the bankers interviewed, in their domain of knowledge (Flick, von Kardorff, & Steinke, 2004). There are many types of interview formats such as structured, unstructured, and semi-structured. For the collection of data, we have elected to adopt a semi-structured interview format. This usually constitutes the sole data source for a qualitative research project and are organised around a set of predetermined and open-ended questions. It is the most widely-used format for interview for qualitative research and it allows us to delve into key ideas and perceptions related to the palm oil industry (DiCicco-Bloom & Crabtree, 2006).

A total of 6 interviews were carried out with selected employees of the banks, which may include the above selected banks and other banks that have offices here in Singapore. Three of the interviews were held with the industry specialists or corporate bankers with coverage of palm oil companies. These employees dealt directly with palm oil companies with added responsibilities of coming up with the risk assessment criteria and influencing the lending practices for palm oil of their respective banks. The remaining interviewees held sustainability roles within the banks and oversaw the sustainability strategy at a broader level.

6. Key Insights into Sustainable Financing for the Palm Oil Industry

6.1 The Three Pronged-Approach – Engagement, Financing and Circularity

It is undeniable that palm oil suffered from much negative press as it has been generally associated with deforestation, threatening of orangutan population, forest fires and labour exploitation (Yan, 2017). As a highly sensitive sector, many banks were evaluating their stance towards financing in this industry. Despite the ESG concerns and the reputation of being one of the controversial crops, palm oil remains to be the undisputed vegetable oil of choice. Given the lack of commercially available alternatives, continued engagement in this industry could help to pave the way for better industry practices, higher accountability and traceability that can set the palm oil sector to move towards the journey of sustainable palm oil.

6.2 Prioritise Engagement over Divestment

A report by International Union for Conservation of Nature stated that boycotting palm oil would likely exacerbate the issues that we are trying to resolve such as biodiversity loss (IUCN, 2018). As mentioned earlier, palm oil is a highly efficient crop and replacing palm oil with another type of oil crop would increase the demand for agriculture land (Ritchie & Roser, 2021). As such, it seems that perhaps more could be achieved if key partners like financial institutions continued to work together with palm oil companies to achieve sustainable palm oil production instead of abandoning the sector totally. An outright ban on palm oil may cause an overall lowering of standards as opposed to improving practices (Jelsma, Woittiez, Ollivier, & Dharmawan, 2019). Despite many parties calling for boycotts and constraints on palm oil

development, we should look to evaluate how we can proceed in order to achieve the greatest benefits and least harm, thereby attaining sustainable development in this industry (Meijaard & Sheil, 2019).

Increasingly, there has been more banks that have adopted negative screening, which is a policy to exclude working with companies with weak sustainability practices. While these were mainly targeted at oil and gas companies, there is a possibility that negative screening would become more widespread and start to target the palm oil industry. Pro-engagement companies noted that stopping the relationship with the companies that they financed may result in these companies going towards banks that are less attentive to ESG issues. Conversely, if they continued the engagement, the financial institution could exert their influence on the companies that they financed to execute key ESG action plans (Mattison & de Longevialle, 2022) .

A research study conducted by Berk & van Binsbergen suggested that to have impact on ESG-unfriendly companies, socially conscious investors should look to invest and use their rights of control to change corporate strategy and policy. The impact of the cost of capital was too small to meaningfully affect any real decisions. Therefore, engagement with the company would be a far better option as with the power of the shareholder vote, one can vote for the right proposals (Berk & van Binsbergen, 2021). Many large banks have come out to echo the same sentiments of advocating for sustainability in palm oil which included ABN AMRO, the third-largest Dutch bank. ABN AMRO stated that the stance of the bank is to stay involved in the palm oil sector and exert influence to improve the palm oil industry. In their opinion, if large banks like ABN AMRO pulled out, other banks would step in to provide the financing and these banks

may not have established sustainability policies to guide such financing transactions (Koopmans & Fabius, 2019).

The respondents from the qualitative interviews held the same opinions. The interviewees shared that the bank would continue to work with clients in the palm oil space. However, there were strict regulations and policies in place to guide their interactions. As part of risk mitigation, these banks would look to assess both the quantitative i.e., repayment capability and qualitative i.e., sustainability practice. Usually due to these criteria, the bank would only finance the larger companies and less of the small medium enterprises (SMEs). Certain banks would have more comprehensive segmentation policy where the palm oil value chain was categorised into upstream plantation, refiners, and agri-commodity traders. The banks would look at the financials, sustainability, and operating matrix of the companies. It was heartening to hear that most of the interviewees had similar pragmatic thoughts that palm oil is an irreplaceable industry and that the banks will continue to engage the palm oil players and push for responsible and sustainable financing instead.

When assessing the 8 financial institutions in the regions, we can find dedicated ESG policies specifically for the agriculture or palm oil sector available on their website. Most financial institutions had the mandatory requirement for NDPE policies but the condition for certifications such as RSPO would vary across different banks. Nonetheless, due to the sensitivity of the sector, we were able to see that there were clear guidelines set out for dealing with clients in the palm oil sector. The strictness of the adherence to these guidelines would be dependent on the sustainability development of the bank itself and the country and region which it operated in.

Table 2: Bank Engagement through their ESG Policies

Country	Financial Institutions	ESG Policy for Agriculture/Palm Oil
Singapore	DBS Bank (DBS)	• Requirement to align to NDPE policies, obtain full RSPO certification within a timeframe, no involvement in HCV and HCS forests, legal rights and community support and no open burning
	Oversea-Chinese Banking Corporation (OCBC)	• Requirement to comply with applicable local and national laws, Associate of Banks Singapore Haze financing guidelines and have an appropriate Environment and Social Management System • Encourage to adopt NDPE policies, achieve RSPO certifications and no HCS forests
	United Overseas Bank (UOB)	• Requirement to comply with applicable local and national laws, either Malaysian Sustainable Palm Oil (MSPO)/Indonesia Sustainable Palm Oil (ISPO)/RSPO certification, local communities • Encourage to adopt NDPE policies, adopt best agricultural practices • No greenfield palm oil plantation or exploitation of labour
Malaysia	CIMB Group Holdings Berhad (CIMB)	• Requirement to have NPDE policies, MSPO/ISPO/RSPO/ International Sustainability and Carbon Certification (ISCC) certifications, and human rights • Encourage better sustainability practices such as traceability, monitor and reporting of GHG emissions and methane capture for mills
	Malayan Banking Berhad (Maybank)	• Requirement to have NPDE policies, subject to a timebound local and international certifications, and human rights • No specific palm oil financing policy is disclosed
Indonesia	Bank Mandiri	• Requirements to have ISPO, NDPE policies, waste treatment lands, procedures for forest fires and human rights, labour policies

	Bank Central Asia (BCA)	• Requirements to have ISPO, NDPE policies, waste treatment lands, procedures for forest fires and human rights, labour policies
Japan	Mitsubishi UFJ (MUFG)	• Requirement for all planation to be RSPO certified or have timebound plans. • Encourage NDPE policies, respect consent in local communities

6.3 Tracking the Rise in Sustainable Financing

Sustainable Finance looks to continue its rapid growth with the global green, social, sustainable and sustainability bond market targeted to reach close to USD 1 trillion in 2023 from USD 850 billion in 2022 (Ly, et al., 2023). In the financial industry, there are currently 312 banks who are signatories to the Principles for Responsible Banking (PRB), which represents close to 50% of the world's bank assets. The PRB is the world's leading sustainable banking framework consisting of 6 principles that aimed to align private money with the UN Sustainable Development Goals (SDGs) (UNEPFI, 2023). The Organisation for Economic Cooperation and Development estimated an annual cost of USD 6.9 trillion to finance the SDGs through 2030 (UNEP, 2022), which meant the private finance sector would have a part to play to meet global sustainability targets. It is noted that out of the 8 banks that we evaluated, only CIMB Bank, is a signatory to the PRB.

In an empirical analysis of 1236 banks across 2015 to 2019, it was concluded that sustainable banking practices would lead to higher profitability. The larger profits from these sustainable banks were mainly driven by intangible competitive advantages like better reputation and customer and brand loyalty (Olmo, Saiz, & Azofra, 2021). Sustainable finance is slowly moving into mainstream, taking root in a wide range of banking and finance products. These products include green loans, sustainable bonds,

ESG deposits and green trade financing and derivatives. These allowed corporates with superior ESG practices to expand their pools of banks and investors who were aligned to the same sustainability strategy and to lower their cost of capital by tapping into sustainable finance (Kan, 2021).

The interviewees expressed that one key objective of their goals was to encourage financing towards sustainability-related projects. The banks were pro-actively pitching to their clients on the benefits of sustainable financing and have committed to expand the scale and reach of sustainable finance. For instance, Standard Chartered Bank, an international banking group, has announced plans to deploy USD 300 billion in green and transition finance by 2030 (Hanna, 2022).

An interviewee also shared that government schemes can go a long way in giving the bank additional comfort to extend sustainable financing towards their clients. One such scheme was the Enterprise Financing Scheme (EFS) Green Scheme by Enterprise Singapore. The government would take 70% risk-share through this scheme, to catalyse such green lending towards SMEs (Enterprise Singapore, 2023). Through their ESG policies, most banks' target market only includes larger corporates, which may leave SMEs unable to tap on this type of financing. Through the EFS-Green scheme, banks can now rely on policy de-risking instruments to gain additional comfort when extending sustainable financing to these smaller companies.

Out of the many conversations, it was observed that only 1 bank is actively financing POME. Under the International Sustainability and Carbon Certification (ISCC) standards, there was a guidance document for the certification of waste products from

palm oil mills which included POME (ISCC, 2021). With the ISCC certification, any financing of POME can now be classified under green financing. Although the banks were actively pushing sustainable financing towards their customers, only the larger integrated players can obtain such funding. For example, Wilmar International, a leading agribusiness group, has secured numerous sustainable financing such as a USD 200 million sustainability-linked trade finance facility with Standard Chartered Bank, an international banking group in 2023 (Standard Chartered, 2023).

An interesting observation was also raised that sustainability KPIs as part of financing were not an event of default, which meant that there was little financial risk at stake if the companies did not fulfil their ESG obligations. If the company was unable to meet the sustainability targets, the normal consequence would be that they would be required to pay the highest margin but there would still be the continuation of the loan. This type of sustainability-linked financing has been criticised for the lack of commitment and follow-through. However, it is also noted that companies may be less likely to explore sustainable financing if it adversely impacted (Hieminga, 2015) their core financing due to ESG events that may not be out of their control or that less ambitious targets would be set in order to achieve them (Allen & Overy, 2021).

While many banks have committed to mobilising funds towards green and transition finance, we noticed that there were limited resources that have been allocated for circularity projects and in the agricultural sector. From our assessments, the deployment of funds was usually in the renewable energy and real estate space. Therefore, therein lies a question if more should be done to track the finance flows towards sustainability objectives.

Table 3: Tracking of Sustainable Debt Raised and Sustainable Financing Extended by the Banks

Country	Financial Institutions	Sustainable Financing data
Singapore	DBS	• Cumulatively as at 2021, extended SGD 39.4 billion in sustainable financing • Target of SGD 50 billion by 2024 • Issued USD 500 million green bonds in 2017
	OCBC	• Cumulatively as at 2021, extended SGD 34 billion in sustainable financing • Initial target of SGD 25 billion by 2025 • Issued a total USD 1 billion green bonds, USD 500m in 2019 and USD 500m in 2021
	UOB	• Cumulatively as at 2021, extended SGD 17 billion in sustainable financing • Initial target of SGD 15 billion by 2023 • Issued USD 1.5 billion in 2021
Malaysia	CIMB	• Cumulatively as at 2021, extended MYR 25.9 billion in sustainable financing • Target of MYR 30 billion by 2024 • Issued a total of USD 1.18 billion, USD 680 million in 2019 and USD 500 million in 2022
	Maybank	• Cumulatively as at 2021, extended MYR 13.6 billion in sustainable financing • Target of MYR 50 billion by 2025 • No sustainable issuance to date
Indonesia	Bank Mandiri	• Cumulatively as at 2021, extended IDR 205.4 trillion in sustainable financing • No public target announced • Issued USD 300 million in 2021
	BCA	• Cumulatively as at 2021, extended IDR 154.4 trillion in sustainable financing • No public target announced • No sustainable issuance to date
Japan	MUFG	• Cumulatively as at 2021, extended JPY 14.5 trillion in sustainable financing • Target of JPY 35 trillion by 2030 • Issued a total of USD 4.9 billion between 2016 - 2020

6.4 Embed Circularity into Financing

The move towards a circular economy is gaining momentum as it is pivotal in our fight against climate change. It was estimated that in a circular economy scenario, GHG emissions could drop as much as 48% by 2030 and 83% by 2050 (Steinbrenner, 2022). Through circular economy innovation in reuse, repair, remanufacturing, we could potentially look to unlock USD 4.5 trillion economic output (Lacy & Rutqvist, 2016). Observing the high prices of commodities and material costs, it seemed that a focus towards a circular economy could help to reduce our dependence on scarce resources while generating new revenue streams (Tylenda, et al., 2022).

One of the aims of the EU Taxonomy is to transition to a circular economy. As part of the extension of the EU Taxonomy, there are more circular activities categories, which makes up 21 out of 56 activities (European Commission, 2023). These may incentivise financial institutions to lend to taxonomy-aligned activities such as for circular economy. However, in reality, there were uncertainties that made it difficult for these circular activities to obtain funding.

The multilateral financial institutions such the European Investment Bank (EIB) has stepped in and has been a major partner for circular economy investments. The EIB provided EUR 2.6 billion in funding for circular projects from 2016 to 2020 with about 20% focused in the agriculture and bioeconomy sector. These projects included the generation of bio-energy using food, crop, or manure as a raw material input (EIB, 2021).

There are several benefits of the circular economy to banks, which included diversification in lending opportunities such as in green project financing, promotion of responsible and sustainable banking practices and new customers in the circular economy sector. However, there were limitations in the regulatory infrastructure of recycling and waste as well as a slow transition towards the circular economy, which might make financial institutions more reluctant to finance the circular economy (Ozili, 2021).

All the interviewees shared that at least for the palm oil sector, their banks did not look at circularity. While there were existing frameworks in place that may cover such technology, in the course of their daily interactions with the clients, it had not come into any conversation. For the ESG policy guidelines for palm oil, the bulk of the criteria were focused on the upstream plantation where most of the criticism was levelled due to concerns over deforestation and forest fires. Consequently, most guidelines centred around NDPE policies, RSPO certifications and human rights. In addition, the palm oil companies would usually take up loans for general corporate purposes or working capital. This gave the companies more flexibility in the use of funds, and there would be no strict restrictions that funds could only be used towards circularity projects.

The interviewees expressed that there had been no requests for construction of biogas or biodiesel projects but they have received applications for the setting up of trade facilities to include POME. The difficulty behind financing circularity projects like a biodiesel or biogas plant was that it would be difficult to ringfence the proceeds gained from the sale of biodiesel or biogas from POME. Furthermore, it was hard to take collateral over POME as POME lacked the same tradability feature as CPO. The

quantity and quality of POME also could not be guaranteed due to the nature of it being a waste product from various palm oil mills.

Despite these complications, it was optimistic that all interviewees believed that their banks would be open and willing to include the concept of circularity as part of their consideration when extending financing to the palm oil sector. One interviewee suggested that if the bank considered the final off-taker of POME, the bank might be able to rely on the enhanced credit of the final customer. For example, in our Section 3.3, BP p.l.c. was a buyer of POME. BP p.l.c. had a credit rating of A- by S&P Global Ratings, which signified strong capacity to meet its financial commitments but might be susceptible to adverse economic conditions (S&P Global Ratings, 2023).

In the assessment of the banks, we noted that most banks have included circularity projects in their financing frameworks. These circularity projects were usually under biomass projects using sustainable feedstock or under waste-to-energy. However, there had been limited financing with regards to these circularity initiatives due to many challenges which would include the changing cash flow of the companies, increased capital expenditure and other legal concerns regarding collateral (Hieminga, 2015).

Table 4: Assessment of the Circularity in Financing Framework of the Banks

Country	Financial Institutions	Circularity in Financing Framework
Singapore	DBS	• Under the assets of agri-commodities that contribute towards climate smart agriculture, an integrative approach to address the interlinked challenges of food and/or under Power Generation Bio-Energy • Total exposure to palm oil of SGD 1.6 billion • Total sustainable financing transactions for Food & Agriculture at SGD 0.96 billion under its framework
	OCBC	• Under the category of green bonds – renewable energy under biomass energy and/or pollution prevention and control under waste-to-energy • No exposure to palm oil sector disclosed • To-date, OCBC has not financed any projects in the agriculture/palm oil sectors via its framework
	UOB	• Under the category of biomass energy projects that exclude feedstock competing with food production and waste from non-RSPO certified palm oil operations, peat and palm oil and exclusion of production and refining of palm oil • <1% exposure to palm oil sector in relation to total non-bank loans, announced extension of green trade finance facilities to Musim Mas Group, a palm oil player. • Has a Green Financing Framework for Circular Economy that aims to promote business activities to reduce, reuse, recycle, reuse and repair • To-date, UOB has not financed any projects in the biomass energy industry via its framework
Malaysia	CIMB	• Under the category of pollution prevention and control, financing of waste management activities for biogas using RSPO certified POME • 2.8% of palm oil portfolio exposure with 94 clients • To-date, CIMB has not financed any projects for POME
	Maybank	• Under the category of energy generation, allows for biomass energy from waste feedstock such as POME from RSPO-certified palm oil operations • Has been identified as the world's single largest financer of the palm oil sector (Tuk Indonesia, Profundo, 2018)

		• 1.96% of palm oil portfolio exposure • To-date, Maybank has not financed any projects for POME
Indonesia	Bank Mandiri	• Under the category of renewable energy that allows for renewable sources for biomass using agricultural residue but specifically excludes any palm oil operations, activities, projects, production or distribution
	BCA	• Its framework does not allow financing for bioenergy-related or agriculture projects • Total exposure to palm oil of SGD7.98 bn with 706 debtors as at 2020
Japan	MUFG	• Under the category of renewable energy that allows for biomass energy from sustainable feedstock and/or wasted sources, will exclude waste from non-RSPO-certified palm oil

6.5 The Way Forward for Sustainable Banking

Sustainability should be at the centre of a bank's strategy in order to achieve the goal of sustainable banking. To achieve this goal, banks would need to strategize and relook at their ESG financing policies to see how they might continue to remain relevant and truly embrace being a sustainable business. In addition, there should be continued engagement with all stakeholders to communicate the bank's ESG strategy and initiatives.

Especially for the palm oil industry in Southeast Asia, banking and financing is a primary financial lifeline for the companies. Banks with strong ESG policies could help to inspect the companies that they bank with and aid their transition to address key ESG risk and issues.

Table 5: Key Observations for Sustainable Financing in the Palm Oil Sector

Qualitative Data Sources	**Engagement**	**Financing**	**Circularity**
Banks	• Most banks continue to engage palm oil companies with clear protocol • Banks that continue to engage will only look to finance the top ranked palm oil companies as a form of risk mitigation	• Banks highly encourage financing for sustainability-related projects • They rely policy de-risking instruments for additional comfort	• Most banks do not consider circularity when evaluating the supply chain for palm oil • Majority of the guidelines are still focused on the upstream plantation sector as this is where the links to deforestation is mostly closely observed
Industry Opinions	• Banks have detailed out sustainability practices for palm oil and agriculture • Concerns are on the reputation of the bank when they choose to continue to finance the palm oil sector	• To date, there is limited financing for circularity projects and in the agricultural sector • There is increasing awareness that we need to track the impact of financing	• Banks have included projects for circularity in their financing frameworks • They could learn from other sectors to finance circular solutions

7. Recommendations

7.1 Relook at Financing from a Circularity Perspective

Financial institutions should look to facilitate the transition towards a circular economy. While there are incentives in place currently for sustainable financing such as lower interest rates, banks need to get familiar with circular business models and its implication towards debt repayment capability. While there may be concerns over cash flow or collateral coverage, financial institutions need to reconsider how credit assessments are done for these customers and place greater emphasis on cash generated or using enhanced credit support from the government or the end customer. They may look to tweak an existing financing product, for example SCF to utilise it for circularity financing. SCF is usually used for open account trade and can help to further mitigate financing risk. In a SCF structure, the buyer can utilise its higher credit rating to obtain better payment terms and allow their sellers, who are usually smaller firms, to tap on the buyer's bank to access affordable financing (ICC Academy, 2023). If the bank can embrace circularity and incorporate aspects into the financial assessment of a company, this creates a new business opportunity for circularity financing.

As it stands, the general consensus is that while banks acknowledge the concept of circularity, there is no push or motivation in embracing circularity financing in a big way. We can see small steps taken with the help of government support such as the EFS-Green scheme. With greater focus on climate change and GHG emissions, we hope that financial institutions will move towards embedding circularity as a condition into their risk assessment criteria.

7.2 Continuous Engagement with all Stakeholders

Engaging with all stakeholders with regards to sustainable financing is of utmost importance. Apart from setting up the financing framework, the tracking of impact that these financing will bring is very crucial. While some banks have reported on the impact of financing, it largely falls under the radar as the news for raising new sustainable debt is more highly publicised.

At the regulatory level, it will be helpful if national level taxonomy like the ASEAN Green Taxonomy can look to include waste products. If there is national level acceptance, financial institutions will have the confidence to explore financing waste products like POME without being accused of greenwashing.

For the financing climate, public opinion plays a very big role in deciding on the industry to finance and to remain in. There should be constant active engagement with relevant NGOs, governments, and other organisations over the importance of palm oil and the benefits of sustainable palm oil.

Until such time where a suitable alternative can be found, the path forward appears to be working on sustainable palm oil cultivation. It will be beneficial to promote on other aspects of sustainable palm oil such as the repurposing of POME that can help to build a positive impression of palm oil. Palm oil has been associated with negative connotations and it is time to step back and look at the bigger picture.

8. Conclusion

In this report, we sought to explore the path towards sustainable banking and how we might look to advance the circular economy through financing and engagement. We focused on the palm oil industry, in particular on the waste product of POME, which has emerged to be a key commodity in circularity projects for biodiesel and biogas. We conducted investigations in financial institutions' sustainability policies as well as their financing framework and interviewed key appointment holders within banks that looked at the financing of palm oil.

It was evident that in order to promote sustainable financing, close engagement with all stakeholders from customers, bankers and regulators would be required. In addition, it seemed that engagement instead of divestment with the palm oil sector could greatly influence the customers to move away from unsustainable practices.

While sustainable financing has risen in popularity, it seemed that only larger corporates were able to tap on such financing. With various government support schemes in place, we have seen examples where SME clients were able to tap on sustainable financing. However, that remained to be on a very selective basis, especially for the palm oil sector.

In terms of circularity, financial institutions would need to embrace the concept by relooking and reassessing their financial assessments of their clients. Without embodying the principles of circularity, while there might be intention to finance such projects, there would be little actual funding that would take place.

In conclusion, it was encouraging that financial institutions in the region continued to stay committed in the palm oil sector. While there were very detailed engagement guidelines with the palm oil industry, more could be done to expand its focus from a linear “make-take-use” model to a circular “reuse-reduce-repurpose” model. Banks could assist with the sustainable development of the palm oil industry through deploying of financing in promising areas and projects. We have seen the baby steps that some banks have taken with regards to POME financing and hope that more would be done in the coming years.

Bibliography

Abdullah, N., Ujang, Z., & Yahya, A. (2011). Aerobic granular sludge formation for high strength agro-based wastewater treatment. *Bioresource Technology*, 6778-6781.

Aghbashlo, M., & Demirbas, A. (2016). Biodiesel: hopes and dreads. *Biofuel Research Journal*, 379.

Ahmad, A., Ismail, S., & Bhatia, S. (2003). Water recycling from palm oil mill effluent (POME) using membrane technology. *Desalination*, 87- 95.

Ahmed, S., Ahmed, S., & Hasan, I. (2018). Why Banks should consider ESG Risk Factors in Bank Lending? *Banks and Bank Systems*, 71 - 80.

Allen & Overy. (21 March, 2021). *Sustainable Finance: Key considerations for loan documents.* Retrieved from Allen & Overy Website: https://www.allenovery.com/en-gb/global/news-and-insights/publications/sustainable-finance-key-considerations-for-loan-documents

APEC Energy Working Group. (2017). *Strategy for Large-Scale Implementation of Biogas Capture from Palm Oil Mill Effluent and Reuse for Renewable Electricity Generation .* Jakarta.

Australian Trade and Investment Commission. (27 September, 2022). *Insight – How biofuels and rising incomes impact grain and oilseed demand.* Retrieved from Insights: https://www.austrade.gov.au/news/insights/insight-how-biofuels-and-rising-incomes-impact-grain-and-oilseed-demand

Aziz, M., Kassim, K., ElSergany, M., Anuar, S., Jorat, M., Yaacob, H., . . . phD, A. (2020). Recent advances on palm oil mill effluent (POME) pretreatment and anaerobic reactor for sustainable biogas production. *Renewable and Sustainable Energy Reviews*, https://doi.org/10.1016/j.rser.2019.109603.

Aziz, N., & Hanafiah, M. (2020). Life cycle analysis of biogas production from anaerobic digestion of palm oil mill effluent. *Renewable Energy*, 847 - 857.

Berk, J., & van Binsbergen, J. (2021). The Impact of Impact Investing. *Stanford University Graduate School of Business Research Paper, Law & Economics Center at George Mason University Scalia Law School Research Paper Series* , No. 22-008.

Davies, E., Deutz, P., & Zein, S. (2022). Single-step extraction–esterification process to produce biodiesel from palm oil mill effluent (POME) using microwave heating: a circular economy approach to making use of a difficult waste product. *Biomass Conversion and Biorefinery*, 2901 - 2911.

Dembele, F., Schwarz, R., & Horrocks, P. (2021). *Scaling up Green, Social, Sustainability and Sustainability-linked Bond Issuances in Developing Countries .* OECD.

DiCicco-Bloom, B., & Crabtree, B. (2006). The qualitative research interview. *Medical Education Volume 40, Issue 4*, 314 - 321.

EIB. (2021). *Circular Economy Overview 2021.*

Ellen MacArthur Foundation. (2023). *Embracing the circular economy at Italy's largest bank: Intesa Sanpaolo.* Retrieved from Ellen MacArthur Foundation

website: https://ellenmacarthurfoundation.org/circular-examples/embracing-the-circular-economy-at-italys-largest-bank-intesa-sanpaolo
Enterprise Singapore. (2023). *Overview EFS Green*. Retrieved from Enterprise Singapore Website: https://www.enterprisesg.gov.sg/EFS-Green
European Commission. (2022). *Revised Renewable Energy Directive (2018/2001/EU).* Retrieved from EUR-Lex - Access to European Union law: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG&toc=OJ:L:2018:328:TOC
European Commission. (2023). *EU taxonomy for sustainable activities*. Retrieved from EU website: https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en
European Commission. (2023). *Overview of sustainable finance.* Retrieved from EU Website: https://finance.ec.europa.eu/sustainable-finance/overview-sustainable-finance_en
Fitzherbet, E., Struebig, M., Morel , A., Danielsen, F., Brühl, C., Donald, P., & Phalan, B. (2008). How will oil palm expansion affect biodiversity? *Trends in Ecology & Evolution*, 538-545.
Flick, U., von Kardorff, E., & Steinke, I. (2004). *A Companion to Qualitative Research.* SAGE Publications.
Food and Agriculture Organisation of the United Nations (FAO). (30 December, 2022). *FAOSTAT*. Retrieved from Crops and livestock products: https://www.fao.org/faostat/en/#data/QCL/visualize
Forest & Finance. (2022). *Methodology*. Retrieved from Forest & Finance: https://forestsandfinance.org/methodology/
Forests & Finance. (19 October, 2022). *2022.* Retrieved from Policy Scores: https://forestsandfinance.org/bank-policies/
Fritsche, U., & Gress, H. (2022). *Renewable gas - deployment, markets and sustainable trade.* IEA Bioenergy.
Gebremariam, S., & Marchetti, J. (2018). Economics of biodiesel production: Review. *Energy Conversion and Management*, 74-84.
Global Trade Review. (2022). *What is Trade Finance?* Retrieved from GTR Global Trade Review: https://www.gtreview.com/what-is-trade-finance/
Guillaume, T., Kotowska, M., Hertel, D., Knohl, A., Krashevska, V., Murtilaksono, K., . . . Kuzyakov, Y. (2018). Carbon costs and benefits of Indonesian rainforest. *Nature Communications*, https://doi.org/10.1038/s41467-018-04755-y.
Gustafsson, M., Ammenberg, J., & Murphy, J. (2022). *IEA Bioenergy Task 37 – A perspective on the state of the biogas industry from selected member countries .* IEA Bioenergy.
Haas, M., McAloon, A., Yee, W., & Foglia, T. (2006). A process model to estimate biodiesel production costs. *Bioresource Technology 97*, 671 - 678.
Hambali, E., & Rivai, M. (2017). The Potential of Palm Oil Waste Biomass in Indoensia in 2020 and 2030. *International Conference on Biomass: Technology, Application, and Sustainable Development*, 65 012050.

Hanna, D. (25 May, 2022). *Innovation in green finance*. Retrieved from Standard Chartered Features: https://www.sc.com/en/feature/innovation-in-green-finance/

Harsono, S., Grundmann, P., & Soebronto, S. (2014). Anaerobic treatment of palm oil mill effluents: potential contribution to net energy yield and reduction of greenhouse gas emissions from biodiesel production. *Journal of Cleaner Production*, 619 - 627.

Hassan, M., Yacob, S., Shirai, Y., & Hung, Y.-T. (2004). Treatment of Palm Oil Wastewaters. In L. Wang, Y.-T. Hung, H. Lo, & C. Yapijakis, *Waste Treatment in the Food Processing Industry* (pp. 101 - 116). Taylor & Francis.

Hieminga, G. (2015). *Rethinking finance in a circular economy.*

Ho, C., Tan, Y., & Wang, C. (1984). The distribution of chemical constituents between the soluble and the particulate fractions of palm oil mill effluent and its significance on its utilisation/treatment. *Agricultural Wastes*, 61-71.

Homanen, M. (27 November, 2018). Depositors Disciplining Banks: The Impact of Scandals. *Chicago Booth Research Paper No. 28*.

Hong, W. (6 August, 2021). *How the palm oil industry is transitioning to net-zero.* Retrieved from World Economic Forum: https://www.weforum.org/agenda/2021/08/how-palm-oil-industry-is-transitioning-to-net-zero/

Hoo, R. (29 October, 2019). Biogas as a sustainable energy solution for Southeast Asia. *The Business Times*.

Houston, J., & Shan, H. (2022). Corporate ESG Profiles and Banking Relationships. *The Review of Financial Studies*, 3373–3417.

Hwang, J., Andiappan, V., & Ng, D. (2022). Promoting circular economy between palm oil sector with multiple industries. *IOP Conf. Series: Materials Science and Engineering*, 1257 012005.

Ibsen, S. (29 March, 2021). *Palm Oil Mill Effluent (POME) Recently Classified By IMO.* Retrieved from Q88: https://corp.q88.com/milbros-software-shipping-industry-software/palm-oil-mill-effluent-pome-recently-classified-by-imo/

ICC Academy. (2023). *Supply Chain Finance: An Introductory Guide*. Retrieved from https://icc.academy/supply-chain-finance-an-introductory-guide/

ICMA. (2023). *Sustainable Finance*. Retrieved from ICMA Website: https://www.icmagroup.org/sustainable-finance/

IEA Bioenergy. (2022). *Bioenergy and Sustainable Development - Climate Change Mitigation and Opportunities for Sustainability Co-Benefits .*

Igwe, J., & Onyegbado, C. (2007). A review of palm oil mill effluent (POME) water treatment. *Global Journal of Environmental Research*, 54-62.

IPCC. (2014). *Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.*

ISCC. (20 April, 2021). *Updates for ISCC System*. Retrieved from https://www.iscc-system.org/update/20-april-2021/

IUCN. (2018). *Palm oil and biodiversity.*

Jelsma, I., Woittiez, L., Ollivier, J., & Dharmawan, A. (2019). Do wealthy farmers implement better agricultural practices? An assessment of implementation of Good Agricultural Practices among different types of independent oil palm

smallholders in Riau, Indonesia. *Agricultural Systems*, Volume 170, Pages 63-76.

Jeswani, H., Chilvers, A., & Azapagic, A. (2020). Environmental sustainability of biofuels: a review. *Proceedings A: The Royal Society Publishing* , https://doi.org/10.1098/rspa.2020.0351.

Kamyab, H., Chelliapan, S., Md Din, M., Rezania, S., Khademi, T., & Kumar, A. (2018). Palm Oil Mill Effluent as an Environmental Pollutant. In V. Waisundara, *Palm oil* (p. DOI: 10.5772/intechopen.75811). IntechOpen.

Kan, F. (29 September, 2021). The urgent business of going green. *The Business Times*.

Kondalamahanty, A. (6 July, 2021). *Indonesia's B30 program to drive global biodiesel production in 2021-2030: report.* Retrieved from S&P Global Commodity Insights: https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/agriculture/070621-indonesias-b30-program-to-drive-global-biodiesel-production-in-2021-2030-report

Koopmans , F., & Fabius, W. (1 January, 2019). Pulling out of palm oil altogether won't solve anything.

Kougias, P., & Angelidaki, I. (2018). Biogas and its opportunities - A review. *Frontiers of Environmental Science & Engineering*, 12 (3): 14.

Kusumaningtyas, R., & van Gelder, J. (August, 2017). Toward responsible and inclusive financing of the palm oil sector. *CIFOR infobriefs*, p. DOI: 10.17528/cifor/006569.

Lacy, P., & Rutqvist, J. (2016). *Waste to Wealth: The Circular Economy Advantage.* Palgrave Macmillan.

Lam, M., Lee, K., & Mohamed, A. (2010). Homogeneous, heterogeneous and enzymatic catalysis for transesterification of high free fatty acid oil (waste cooking oil) to biodiesel: A review. *Biotechnology Advances*, 500-518.

Liew, W., Kassim, M., Muda, K., Loh, S., & Affam, A. (2015). Conventional methods and emerging wastewater polishing technologies for palm oil mill effluent treatment: A review. *Journal of Environmental Management*, 222-235.

LMA. (2023). *Sustainable Finance*. Retrieved from LMA Website: https://www.lma.eu.com/sustainable-lending/documents

Loh, S., Nasrin, A., Mohamad Azri, S., Nurul Adela, B., Muzzammil, N., Daryl Jay, T., & Stasha Eleanor , R. (2017). Biogas Capture - A Means of Reducing Greenhouse Gas Emissions from Palm Oil Mill Effluent. *Oil Palm Bulletin* , 27 - 36.

Ly, L., Hall , L., Bastit, B., Ellis, T., Munday, P., Thomson, B., . . . Laidlaw, J. (16 January, 2023). *Key sustainability trends that will drive decision-making in 2023.* Retrieved from S&P Global Sustainable 1: https://www.spglobal.com/esg/insights/featured/special-editorial/key-sustainability-trends-that-will-drive-decision-making-in-2023

Mattison, R., & de Longevialle, B. (31 January, 2022). *Key trends that will drive the ESG agenda in 2022.* Retrieved from S&P Global ESG Insights: https://www.spglobal.com/esg/insights/featured/special-editorial/key-esg-trends-in-2022

Meijaard, E., & Sheil, D. (2019). The Moral Minefield of Ethical Oil Palm and Sustainable Development. *Frontier oin Forests and Global Change*, Volume 2 - 2019 | https://doi.org/10.3389/ffgc.2019.00022.

Morseletto, P. (2020). Targets for a circular economy. *Resources, Conservation & Recycling*, 104553.

Moser, B. (2011). Chapter 15 Biodiesel Production, Properties and Feedstocks. In B. R. Moser, *Biofuels* (pp. 285 - 347). New York, NY: Springer.

Murray, A., Skene, K., & Haynes, K. (2017). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. *Journal of Business Ethics*, 369–380.

Musaeva, G. (2021). *Banking on Palm Oil in Southeast Asia.* Aiden Environment.

Musim Mas. (2021). *Sustainability Report 2021 - Future Ready.*

Neste. (2022). *Future raw materials*. Retrieved from Neste website: https://www.neste.com/products/all-products/raw-materials/future-raw-materials#941dfe0d

Nicholls, A. (2021). *Sustainable Finance: A Primer and Recent Developments .* Asian Development Outlook 2021: Financing a Green and Inclusive Recovery.

Nordheim, A., Sharma, A., & Goh , E. (2022). *Sustainable Banking Assessment 2021 .* Singapore: WWF-Singapore.

OECD/FAO. (2022). Biofuels. In *OECD-FAO Agricultural Outlook 2022-2031* (pp. https://doi.org/10.1787/c90c6fa0-en). Paris: OECD Publishing.

Olmo, B., Saiz, M., & Azofra, S. (2021). Sustainable Banking, Market Power, and Efficiency: Effects on Banks' Profitability and Risk. *Sustainability*, 13, 1298. https://doi.org/10.3390/su13031298.

Ozili, P. (2021). Circular Economy, Banks, and Other Financial Institutions: What's in It for Them? *Circular Economy and Sustainability*, 1, pages787–798.

Parmar, A. (25 May, 2021). *SE Asian POME sellers seek support from EU legislators.* Retrieved from Argus Media: https://www.argusmedia.com/en/news/2218296-se-asian-pome-sellers-seek-support-from-eu-legislators

Prieto-Sandoval, V., Jaca, C., & Ormazabal, M. (2018). Towards a consensus on the circular economy. *Journal of Cleaner Production*, 605 - 615.

PT Indo Energy Solutions. (2022). *PT Indo Energy Solutions*. Retrieved from https://indoenergysolutions.com/

Qaim, M., Sibhatu, K., Siregar, H., & Grass, I. (2020). Environmental, Economic, and Social Consequences of the Oil Palm Boom. *Annual Review of Resource Economics*, 321 - 344.

Rafiee, A., Khalilpour, K., Prest, J., & Skryabin, I. (2021). Biogas as an energy vector . *Biomass and Bioenergy*, https://doi.org/10.1016/j.biombioe.2020.105935.

Ritchie, H., & Roser, M. (June, 2021). *Palm Oil*. Retrieved from Our World in Data: https://ourworldindata.org/palm-oil

RSPO. (12 October, 2019). What are the RSPO Principles & Criteria?

RSPO. (2022). *RSPO Standards*. Retrieved from RSPO: https://rspo.org/as-an-organisation/our-standards/

Russell, M. (November, 2020). Palm oil: Economic and environmental impacts. *European Parliamentary Research Service*.

S&P Global Ratings. (2023). *Introduction to Credit Ratings*. Retrieved from S&P Global Ratings Website: https://www.spglobal.com/ratings/en/about/intro-to-credit-ratings

Schlüter, M. (August, 2019). *The generation of biogas in Malaysia – chance or risk?* Retrieved from Rodl & Partner: https://www.roedl.com/insights/renewable-energy/2019-08/generation-of-biogas-in-malaysia-chance-or-risk

Shah, S. A. (5 January, 2021). Palm oil export earning to surpass RM70b. *The Malaysian Rserve*.

Sharma, D. (13 July, 2022). *Zero-Waste Mills: Overcoming Sustainability Challenges*. Retrieved from Musim Mas : https://www.musimmas.com/zero-waste-mills-overcoming-sustainability-challenges/

Shofa, J. (22 December, 2022). *B35 Mandate Could Bring CPO Price to $970/Metric Ton Next Year.* Retrieved from Jakarta Globe: https://jakartaglobe.id/business/b35-mandate-could-bring-cpo-price-to-970metric-ton-next-year

Situmeang, R., Mazancová, J., & Roubík, H. (2022). Technological, Economic, Social and Environmental Barriers to Adoption of Small-Scale Biogas Plants: Case of Indonesia. *Energies*, 15(14), 5105; https://doi.org/10.3390/en15145105.

Sivandran, S. (24 October, 2019). *POME -A Valuable Renewable Energy Resource.* Retrieved from ISCC Regional Meeting : https://www.iscc-system.org/wp-content/uploads/2019/11/10_POME-Sustainable-Renewable-Energy-Feedstock.pdf

Standard Chartered. (23 January, 2023). *Standard Chartered supports Wilmar International with USD200 million sustainability-linked trade finance facility.* Retrieved from Standard Chartered Website: https://www.wilmar-international.com/docs/default-source/default-document-library/highlights/sgx-announcements/2023/2023-01-16_wil-annc_scb-supports-wil-with-usd200m-sustainability-linked-trade-finance-facility.pdf?sfvrsn=da46ebfa_0

Steinbrenner, M. (29 September, 2022). Financing circular economy. *Impact Festival*.

Tohme, H. (19 September, 2022). Circular economy, green financing the way forward. *The Business Times*.

Tuk Indonesia, Profundo. (2018). *Maybank - The single largest palm oil financiers.*

Tylenda, E., Meyer, M., Chen, G., Fraser, G., Patel, A., Singer, B., . . . Chetwode, S. (2022). *The evolution towards a Circular Economy.* Goldman Sachs Equity Research.

UNDP. (May 8, 2019). *Indonesia At-A-Glance Country Guide*. Retrieved from UNDP - Food and Agricultural Commodity Systems: https://www.undp.org/facs/publications/indonesia-glance-country-guide

UNEP. (21 April, 2022). *Why financial institutions are banking on sustainability*. Retrieved from UNEP Story: https://www.unep.org/news-and-stories/story/why-financial-institutions-are-banking-sustainability

UNEPFI. (2023). *Principles for Responsible Banking*. Retrieved from About: https://www.unepfi.org/banking/bankingprinciples/

Walker, S., McMurray, A., Rinaldy, F., Brown, K., & Karsiwulan, D. (2018). *Compilation of Best Management Practices to Reduce Total Emissions from Palm Oil Production.* Report to: Roundtable on Sustainable Palm Oil (RSPO) .

Wu, T., Mohammad, A., Md. Jahim, J., & Anuar, N. (2010). Pollution control technologies for the treatment of palm oil mill effluent (POME) through end-of-pipe processes. *Journal of Environmental Management*, 1467- 1490.

Yan, W. (2017). A makeover for the world's most hated crop. *Nature*, 543, pages306–308 (2017).

Yeo, J. Y., How, B. S., Teng, S. Y., Leong, W. D., Ng, W. P., Lim, C. H., . . . Lam, H. L. (2020). Synthesis of Sustainable Circular Economy in Palm Oil Industry Using Graph-Theoretic Method. *Sustainable Supply Chain Management for Process Industry*, 12(19), 8081; https://doi.org/10.3390/su12198081.

Yusoff, S. (2006). Renewable energy from palm oil - innovation on effective utilisation of waste. *Journal of Cleaner Production*, 87 - 93.

Zhelyazkova, V. (2020). The Role of Banks for the Transition to Circular Economy. In T. Zhang, *Circular Economy - Recent Advances, New Perspectives and Applications.* DOI: 10.5772/intechopen.94522.

Appendix A: Interview Transcripts

Please find below the transcripts of the interviews conducted with the employees working at selected financial institutions in Singapore.

Interview 1: Background of Interviewee 1 – Asian Bank

- Has customers in the palm oil space, mainly experience gained from the current bank.
- Liaises directly with palm oil companies, and has a good depth of knowledge with regards to palm oil financing, including POME

Previous financing experiences in the palm oil industry

1. What kind of risk criteria do you have for palm oil financing? E.g., by country, by region, by size, by palm oil certification standards?

A: In terms of risk criteria, the main thing that the bank assesses is the ability to pay. We look at both the quantitative aspects (records, source of repayment) and qualitative aspects (e.g., unique propositions like 100% RSPO certifications). Due to these criteria, the bank usually looks at the larger players in the industry. This would include Top 5 – 10 upstream players and Top 5 downstream players.

2. What type of financing do you usually offer/suggest? E.g., corporate loans (short-term i.e., trade credits, current accounts for working capital or long-term i.e., expansion plans), revolving credit facility, project finance for development of a refinery.

A: The bank covers the full spectrum of financing such as for working capital and capital expenditure. However, due to the size of the companies that we bank with, it is usually loans for general corporate purposes or working capital. This gives the clients more flexibility in what they would like to use the funds for.

3. Any concerns that you have on financing the palm oil industry? What is your ESG policy with regards to palm oil financing?

A: This is a highly sensitive sector and many non-governmental organisations are looking into it. As such, to lend or not to lend to these companies are an important decision. The bank has established a sector-specific policy for palm oil and conditions include RSPO certification, NDPE policies.

Assessing the Palm Oil Supply Chain

4. How does the financier view the current palm oil supply chain?

A: The bank is open to financing the entire palm oil supply chain. However, due to creditworthiness, the policy is to look at larger companies. Unlikely to deal with small-medium enterprises (SMEs).

5. Does the circularity of the supply chain impact how the bank view palm oil as an industry?

A: The bank will be happy to encourage circularity of the supply chain e.g. biogas or setting up sustainability-linked financing with KPIs such as to increase smallholder RSPO % annually, reduce carbon intensity. In general, the observation is that the clients are starting to be more active in the ESG space in the recent 2 – 3 years. The banks are also looking to encourage more sustainable financing and would definitely welcome if the clients are looking to venture into this area.

Looking at investing and financing Palm Oil Mill Effluent (POME)

6. Most ESG risk acceptance criteria centre around NDPE policy and certification standards. Will a company looking to finance POME treatment be something that your banks will look at?

A: Yes, definitely will be open to finance POME, provided that the company's financials are in order. However, the bank would be reluctant if the financing is solely as a result of the goods itself as collateral i.e., commodities financing. It would be difficult to sell POME if the client defaults. There would be no ready market for POME unlike CPO with well established specifications.

7. Are there other key ESG factors that you will assess when extending financing?

A: In general, the bank looks at it at a picture basis. The key points are that the company has to comply with RSPO, has actions plants to address complaints, grievance mechanisms, NDPE and the rest.

8. Is financing centred mainly on working capital or capex?

A: Financing is usually extended in the form of working capital and general corporate purpose loans. In terms of biodiesel or biogas, there has been no such requests.

9. Do you think banks/associations should encourage the financing of these as current criteria promote land use conservation, nutrient management?

A: Agree, banks are also highly concerned with compliance, especially with the increased scrutiny in this area. Therefore, any financing will be looked at carefully.

10. Do you think if your bank would be open to financing these projects?

A: Yes, the bank would want to encourage the financing of such projects.

Others

11. Do you have any other comments to add?

A: The most crucial point is the debt repayment capability of the company. Ultimately, the decision to make is to determine if the client is bankable. If it is, the extension of sustainable loans for POME or a biogas facility will be very welcomed. However, if the company itself is not financially feasible, it would be difficult to even consider any financing.

Another point is that if a smaller company has a unique proposition like being 100% RSPO, it would be a plus point to be accepted as a client. RSPO certification is very difficult to obtain as it is essentially a moving goal post. Most of the current bank clients have been in this industry for a very long time, earlier than the current standards are put in place. As such, when there is a cut-off, there is a matter of compensation for land use if the operations started before the deadline. To obtain the HGU permits or the “right to cultivate” is also a multiple stage process that is taking a very long period of time.

Interview 2: Background of Interviewee 2 – ASEAN Bank

- Has customers in the palm oil space, both mid (SGD 10 – 200m) and large corporates (>SGD 200m)
- Most of the industry experience is in agri-commodities
- Collaborates and works with the bank sustainability team to draft out ESG sector policies and risk assessment criteria for palm oil clients

Previous financing experiences in the palm oil industry

1. What kind of risk criteria do you have for palm oil financing? E.g., by country, by region, by size, by palm oil certification standards?

A: The palm oil industry is characterised by a lot of price volatility. As such, the bank's clients are categorised into 1) Upstream Plantation, 2) Refiners (where margins are very thin) and 3) Agri-commodity Traders. These are the target markets or selection criteria that the bank will want to lend to as part of the palm oil value chain. The operating matrix, financials, ESG, size, sustainability labels will also be factors for consideration.

2. What type of financing do you usually offer/suggest? E.g., corporate loans (short-term i.e., trade credits, current accounts for working capital or long-term i.e., expansion plans), revolving credit facility, project finance for development of a refinery.

A: The bank is open to offer a range of either working capital or corporate loans. However, there is more concern in financing a greenfield project.

3. Any concerns that you have on financing the palm oil industry? What is your ESG policy with regards to palm oil financing?

A: The bank has a framework in place for financing for palm oil clients. For example, the companies need to have NDPE, all RSPO (although this is case-by-case and clients need to commit to a certain timeline). There is also a requirement for data reporting and for example, in the case of POME to have International Sustainability Carbon Certification (ISCC).

Assessing the Palm Oil Supply Chain

4. How does the financier view the current palm oil supply chain?

A: As mentioned earlier, the price volatility of palm oil is very high. As such, the bank views as a highly sensitive and risky industry. For example, CPO is a commodity that prices are pretty much fixed. The palm oil companies are usually price takers

as their customers control the prices. One can estimate the price of CPO by adding the freight rates and the trading margins (usually fixed within a band). This is in contrast to POME, where although there is a market price for it, the bank does not exactly trust in it. POME is a very small market and the quality and quantity differ from day to day and mill to mill. The delivery of products can also be a problem as supply sources are low and one cannot guarantee the supply of POME, versus the expected forecast of FFB in the plantation. POME accumulators come in as trusted technical advisers to collect the POME.

5. Does the circularity of the supply chain impact how the bank view palm oil as an industry?

A: The bank focuses more on traceability at source e.g., using SGTraDex (digitial infrastructure that facilitates trusted and secure sharing o data between supply chain ecosystem partners). The large CPO players are bounded by the code of conduct for CPO suppliers by the large FMCG firms. The palm oil market is too fragmented – it is mainly an oligopoly and many smallholders. Added to that mix, are refineries and traders. It is also noted that there is no premium for sustainable palm oil but it is a requirement by the palm oil end customers (FMCG firms).

Looking at investing and financing Palm Oil Mill Effluent (POME)

6. Most ESG risk acceptance criteria centre around NDPE policy and certification standards. Will a company looking to finance POME treatment be something that your banks will look at?

A: The bank has only recently started to look at POME financing. This was requested by an existing client with a known track record. Even then, the bank only embarked on this after partnering with Enterprise Singapore under the EFS-Green scheme where the statutory board will look to risk share the exposure with the bank. Nonetheless, the bank will first have to assess the company objectively if they will be willing to extend the trade financing of POME to the customer. The client was already trading POME for a few years, building up a track record, before they went to the banks to request for financing.

7. Are there other key ESG factors that you will assess when extending financing?

A: The track record of the client is very important as it falls back to the creditworthiness of the client. For typical CPO transaction, they can structure deals based on market price. As it is a commoditised product, the goods itself can act as collateral as there could be a ready market even if supply and demand may be uncertain.

8. Is financing centred mainly on working capital or capex?

A: There is a combination of both. The bank is trying to encourage sustainable financing by including in sustainability KPIs. This will gear the clients towards more sustainability focused agenda.

9. Do you think banks/associations should encourage the financing of these as current criteria promote land use conservation, nutrient management?

A: Ultimately, it falls back to if the company itself is green and sustainable.

10. Do you think if your bank would be open to financing these projects?

A: The bank will be open but again, it will be a case-by-case basis after evaluation of the target market risk criteria. Other factors like methane capture, blending of biodiesel requirements etc will come into play. While palm oil is accepted as a feedstock under the EU RED II, there is still a stigma and majority of the CPO still goes to FMCG firms (30% of the market).

11. How about in a Supply Chain Financing structure where we rely on the end buyer's credit?

A: There could be a potential consideration to rely on the final buyer's creditworthiness to give comfort over the whole financing, especially if there is an existing contract in place. As reiterated, the bank will have to look at it on an individual client's basis.

Others

12. Do you have any other comments to add?

A: We observe that it seems that our Malaysian clients are more advanced than our Indonesia clients in the aspect of sustainability. The Malaysian companies are looking at GHG emissions and have looked to under decarbonisation measures. For example, they have implemented water recycling, methane capture facilities. These can include large companies like IOI and Sime Darby. These companies have also calculated their baseline GHG scope. It could be due to governmental support as Malaysia has the infrastructure while Indonesia is more fragmented and has other issues such as forest fires.

Interview 3: Background of Interviewee 3 – ASEAN Bank

- Main sector lead for agriculture in the bank
- Draft out ESG sector policies and risk assessment criteria for palm oil clients

Previous financing experiences in the palm oil industry

1. What kind of risk criteria do you have for palm oil financing? E.g., by country, by region, by size, by palm oil certification standards?

A: The bank has an ESG policy in place with risk criteria and ESG checkpoints in place. The policy will be reviewed on an annual basis.

2. What type of financing do you usually offer/suggest? E.g., corporate loans (short-term i.e., trade credits, current accounts for working capital or long-term i.e., expansion plans), revolving credit facility, project finance for development of a refinery.

A: We offer vanilla financing for capital expenditure, working capital and acquisition. However, there will be no financing for greenfield or plantation. For green financing, we offer sustainability-linked and green loans for solar panels for farms.

3. Any concerns that you have on financing the palm oil industry? What is your ESG policy with regards to palm oil financing?

A: The bank practises responsible financing. Our ESG policy pushes for palm oil certification. We recognise RSPO as the best standard as well as the local standards for MSPO and ISPO. We also look at ISCC and others. We see sustainability as a journey. Hence, for example it might be RSPO + 1 - 2 criteria vs ISPO + 4 – 5 criteria.

Although the public perception of palm oil is negative, we are pragmatic as a financial institution. Our core strategy and footprint is in ASEAN and palm oil is an irreplaceable industry due to its high yield for oil content. Hence, we look to promote responsible financing instead. We focus on more integrated players and lesser smaller players.

Assessing the Palm Oil Supply Chain

4. Does the circularity of the supply chain impact how the bank view palm oil as an industry?

A: Circularity as a concept is not new. However, there is now more advancement in what you can do. There is more upside to no slash/burn practices. There is extra effort in publicising and improving on technological advancements.

Looking at investing and financing Palm Oil Mill Effluent (POME)

5. Most ESG risk acceptance criteria centre around NDPE policy and certification standards. Will a company looking to finance POME treatment be something that your banks will look at?

A: We are already financing POME at the trading level, under the ISCC. It qualifies as a green financing. Under our circular financing framework, we are able to finance collection and building of biodiesel plants. POME is essentially stabilised free fatty acids and many companies as as-is. These can be blended with fossil fuels or palm oil.

6. Is financing centred mainly on working capital or capex?

A: As mentioned, the bank has financed POME through a trade facility (working capital). The bank has not financed any capex projects before as it is difficult to ringfence the proceeds. As of right now, it seems that POME financing cannot cover revenue and credit risk. Perhaps if the off-taker of POME has enhanced credit, we can relook at it. It usually takes about 18 months to construct a POME facility and 3 – 5 years to recover the investment.

7. Do you think banks/associations should encourage the financing of these as current criteria promote land use conservation, nutrient management?

A: This will definitely be something that we encourage, although it is not listed as current criteria in our ESG policy. Usually we look to address the entire universe before looking at restricting the scope in terms of financing.

8. Do you think if your bank would be open to financing these projects?

A: The bank will definitely look into capital expenditure next. However, biogas plants are not adopted extensively, estimated only 10% of companies may do it.

Others

9. Do you have any other comments to add?

A: On a personal level, I believe that there should be more done on the industry or national scale. For example, there are cases where POME is sent to a refinery to Thailand before selling to EU for biofuel purposes. It is encouraging to see more of these by-products coming into play.

Firstly, it would be beneficial to include POME and other similar by-products in national level taxonomy such as MAS Green taxonomy. The taxonomy should not take such a harsh stance and appreciate good players in the palm oil industry. There are certain products that should be labelled as green. This will allow the

banks the creditability and confidence to finance these and not be accused of greenwashing.

Secondly, I hope that the greater public and other financiers can understand the nuance of RSPO/ISPO/MSPO.

POME will feature in the expanded ecosystem of the palm oil industry, especially with the requirement of renewable energy by each nation. Although now it is mainly equity financing by the companies, there could be a possible to tap on supplier chain financing if the final customer has a strong credit profile. E.g., some strong MNCs such as BP could lend their credit to their weaker palm oil suppliers to establish such facility for POME. It is also encouraging that Argus now tracks POME prices, showing acceptance in the market and higher trading volumes.

Interview 4: Background of Interviewee 4 – Asian Bank

- Main sustainability lead in the bank
- Most financing deals will go to the banker for clearance

Previous financing experiences in the palm oil industry

1. What kind of risk criteria or ESG policy do you have for palm oil financing? E.g., by country, by region, by size, by palm oil certification standards? Any concerns that you have on financing the palm oil industry?

A: In terms of current financing, public opinion plays a very big role in deciding. For example, some banks are leading the way and are even activists in their own right. This could include fossil fuels all the way to oil palm. We are look at clean to dirty industry and key areas that we would like to focus on is in solar.

Our head office will set the black list – list of industries that we are not able to bank, green list – list of industries as part of our financing framework and everything else is subjective and will have to go past the ESG team. Key items to consider would be risks associated with these deals like reputational risks and international rules.

In terms of our ESG policy, we currently do not have any ESG template but we do distinguish client industry. Usually if it is a financing in a sensitive industry, it goes to a reputational committee before the committee decides if we should proceed. For example, this will include coal-fire companies. To label an ESG transaction, it will go to the ESG specialist.

The bank is in the process of setting up an industry-specific questionnaire. For example, in our head office, a global sustainability officer was appointed in Sep 2022.

The difficulty is the mechanism to enforce whether companies are complying. Also, if you step back and look at the larger picture, biodiesel can be looked as a transition fuel – does it bring relative good or absolute good? For example, burning of wood pallets. Wood pallets are considered carbon neutral and less CO2 is emitted. However, how about carbon sequestration by trees? Is there a carbon absorption mismatch?

Looking at investing and financing Palm Oil Mill Effluent (POME)

2. Do you think if your bank would be open to financing these projects?

A: Yes, the bank will definitely be open to financing such projects. We are encouraging financing in green industries. Of course, SPO providers can come in

to provide an opinion according to market acceptable standards to give us a peace of mind.

Others

3. Do you have any other comments to add?

A: Another thing to consider. Is ESG a fad? While growth in sustainable financing is persisting, has the growth slowed down due to the Ukraine war? There is also an absence of a feedback loop. After financing sustainable transactions, no one is questioning the impacts of it.

Interview 5: Background of Interviewee 5 – Asian Bank

- Looks at loan syndication in the bank
- Has experience with arranging loans for palm oil companies

Previous financing experiences in the palm oil industry

1. What kind of risk criteria or ESG policy do you have for palm oil financing? E.g., by country, by region, by size, by palm oil certification standards? Any concerns that you have on financing the palm oil industry?

A: The bank is currently setting up its ESG team. While the bank does not have many syndicated palm oil deals, they have completed a couple of such transactions. Usually, there is not too much publicity and each syndicated loan is a substantial amount. Typically, it will be the large corporates like Wilmar, Olam and Astra and they are being funded very well domestically. As such, as of now, there is fewer financing requirements on their end.

Assessing the Palm Oil Supply Chain

2. How does the financier view the current palm oil supply chain?

A: We look at the entire palm oil supply chain from the plantation (upstream) to refining (midstream).

3. Does the circularity of the supply chain impact how the bank view palm oil as an industry?

A: Usually, we bank with the integrated palm oil player due to reputational concerns. It would be difficult to bank companies who only cover one part of the supply chain. To be honest, the bank does not look at circularity when looking at palm oil. Perhaps, it is a reply of not yet.

Looking at investing and financing Palm Oil Mill Effluent (POME)

4. Most ESG risk acceptance criteria centre around NDPE policy and certification standards. Will a company looking to finance POME treatment be something that your banks will look at?

A: The main criteria in the ESG policy would be NDPE, RSPO and human rights. It goes down to the basics if the client is bankable. Each relationship manager will have to do the due diligence on the company to determine if we can proceed. We have not come across projects specifically on POME yet.

5. Do you think if your bank would be open to financing these projects?

A: Yes, the bank would be open to financing these projects. We are working with the palm oil companies on some sustainability-linked loans. This will help to direct the strategy of the company as sustainable finance overlay the conventional financing. Some KPIs we look at are net zero commitments and financing emissions.

Others

6. Do you have any other comments to add?

A: Two things that may be food for thought. Most companies take up sustainable financing for 2 reasons – 1) Marketing purposes – to build a stronger and positive reputation and 2) Sustainability KPIs are not an event of default. This means that there is little financial risk at stake if they do not fulfil their ESG obligations. From a business standpoint, there are more accepting to adopt such financing.

Social labels for financing are more ambiguous while green labels are more widely accepted. For an ESG loan, it is difficult to determine which social KPI and which might work for a client.

Interview 6: Background of Interviewee 6 – ASEAN Bank

- Ex-Palm oil company employee and current bank sustainability team
- Has been in the sustainability space for 8 years and has experience in materiality assessment, sustainability reports and ESG impact evaluation such as project cost and natural capital for profit & loss and balance sheet.

Previous financing experiences in the palm oil industry

1. Could you share how was the sustainability culture like in your ex-palm oil company?

A: The palm oil company had the sustainability agenda embedded throughout the entire conversation, including at the top management level. The senior management has the vision to future proof the company and has many initiatives like internationalisation of carbon costs, business continuity planning and an evaluation of all aspects of supply chain.

Coupled with the push for MAS, the company focused on TNFD for the palm oil sector. On the social front, we looked at living wages for smaller holders (which potentially could be higher than minimum wages).

Unfortunately, towards the POME space, I have minimal exposure.