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As one of the largest players in the palm oil industry, we believe that the best strategy to ensure our continued success is to be the leading sustainable and responsible company.



VISION

A fully integrated palm oil corporation renowned for quality people and products.



MISSION

Driven by a passion for excellence and commitment to continuous improvement, we strive to be the leader in the palm oil industry, producing all our palm products in an economically viable, socially responsible and environmentally appropriate manner, in full compliance of all relevant legal requirements.

About this report

This is the second sustainability report from Musim Mas Group ('Musim Mas' or the 'Group') that provides updates and insights into the Group's sustainability performance. The purpose of this report is to reiterate the commitments we made in our 2014 Sustainability Policy and provide more detail around our Policy Implementation Plan released in 2018. The first four sections of the report detail what we have achieved for our own operations while the remaining section focuses on our supply chain engagement approaches.

While it was previously stated that our sustainability reports would be published biennially, we believe that more frequent accountability is needed in light of the rapid evolution of the issues under discussion and we will release sustainability reports or impact updates annually.

SCOPE AND BOUNDARIES

While this report covers performance data for the calendar year 2018, historical figures are provided where available as well as information about any significant milestones in 2019. More specifically, the report covers the following:

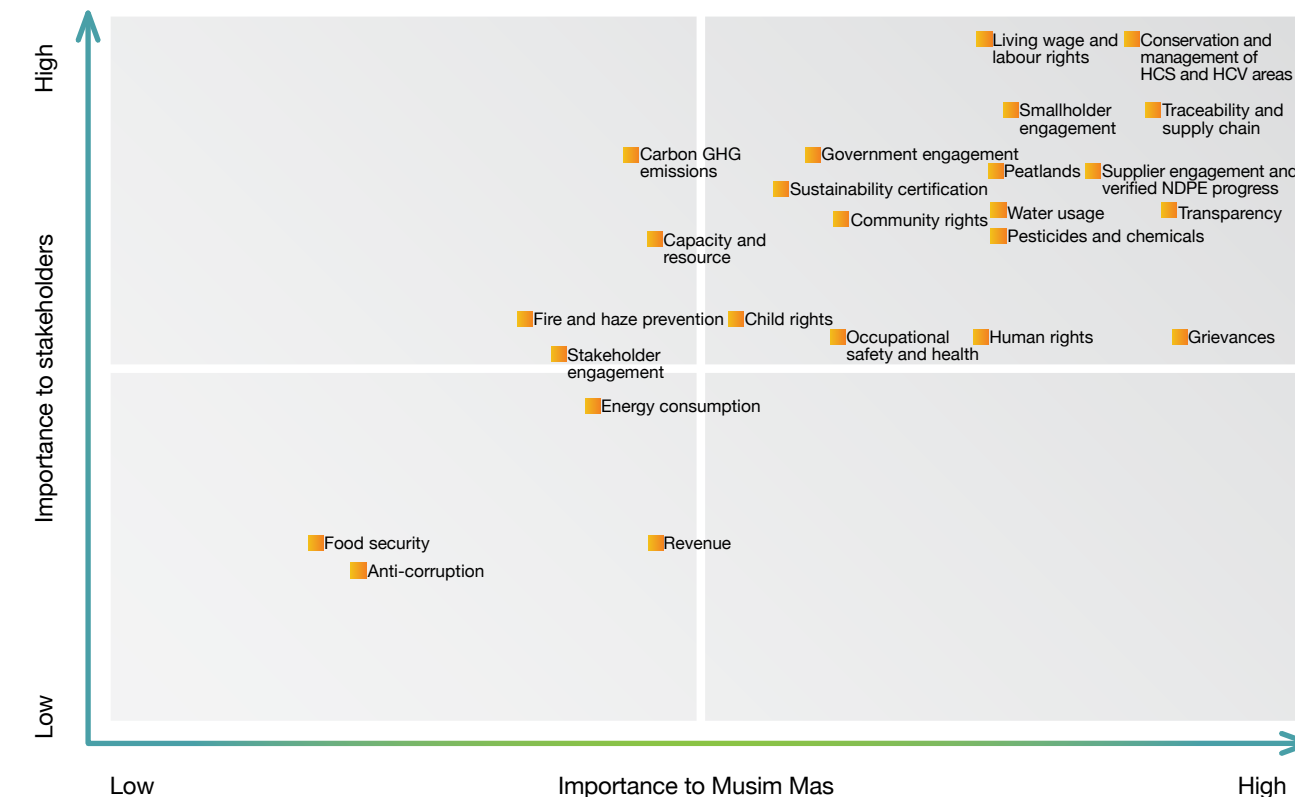
Musim Mas-owned operations: The first four sections of this report showcase impacts within our organisational

boundaries. Unless otherwise stated, operational data presented covers all upstream operations controlled by Musim Mas as at 31 December 2018, and some 2019 updates have been provided where significant. This includes data from our plantations and mills in Sumatra and Kalimantan, but does not include data from our downstream business or joint ventures. While Musim Mas holds land in Papua, there has been no work in these areas, and there are no plans to develop them. Therefore, our Papua holdings have not been included in the scope of this report.

Musim Mas supply base: Given the heightened focus on responsible supply bases in the palm oil industry, we have dedicated an entire section of the report to supply chain engagement detailing material aspects relating to our third-party suppliers, including smallholders. This last section of the report content covers data for the calendar year 2018. However, due to the timing of this report, we provide details on progress made from January to September 2019 against our commitments, as well as planned activities towards 2020. We also furnish stakeholders with targets from our recently published No Deforestation, No Peat, No Exploitation (NDPE) Roadmap towards a responsible supply base, outlining our targets beyond 2020.



Materiality matrix



MATERIALITY, STAKEHOLDER INCLUSIVENESS AND SUSTAINABILITY CONTEXT

We have reviewed the major topics discussed in this report through various forums and engagements. In this report, we have included feedback from interviews and e-mail correspondence with stakeholders from the social non-governmental organisation (NGO) sector, partner technical consultancies, and our customer base. We have also carried out local engagement at site level through our operational teams, and international and sector-wide engagement through organisations such as the Roundtable on Sustainable Palm Oil (RSPO), the Palm Oil Innovation Group (POIG), the High Carbon Stock Approach (HCSA) Steering Group and other multi-stakeholder platforms. We have looked to leading standards and benchmarks, including the Zoological Society of London's (ZSL) Sustainability Policy Transparency Toolkit (SPOTT) initiative and the Forest Heroes Green Tigers Index, to ensure that we are responsive to the themes and aspects that are of critical importance to stakeholders. The extent to which these themes are directly relevant to our business has guided us in balancing report content and the depth of data provided. Throughout the report, we have sought to provide an appropriate context for

our performance, particularly in relation to the unique social and environmental landscapes in Sumatra and Kalimantan.

For this report, several issues have been evaluated as significantly important both for Musim Mas and for our external stakeholders. Especially noteworthy are the conservation and management of high conservation value areas and high carbon stock forests, supplier engagement and verified NDPE progress, smallholder engagement and traceability. Since our last report, some themes – such as certification (in light of POIG verification), community rights, traceability to plantation, transparency, government engagement and occupational safety and health – have increased in importance, while other topics have attracted less public attention. New specific topics such as human rights, grievances, and capacity and resource have been added to the list of material factors. Some indicators have also been updated or merged since the last report.

ASSURANCE

We have not engaged third-party assurance for this report as we believe our multiple certification audits provide adequate assurance on our performance to our stakeholders. We welcome feedback from all stakeholders.

Chairman welcome

DEAR STAKEHOLDERS,

I am pleased to introduce the 2018 Musim Mas Sustainability Report. It is our second such annual document and I hope readers will find it a comprehensive, detailed and transparent overview of our business and our on-going sustainability efforts.

2019 was another ground-breaking year for Musim Mas. Just as we were pioneers when we became the first company with major operations in Indonesia to achieve Roundtable on Sustainable Palm Oil (RSPO) certification, we have achieved a new milestone in 2019 as the first palm oil major to be verified against the Palm Oil Innovation Group (POIG) Charter, which sets the highest standards for responsible palm oil, and is initiated and overseen by some of the most rigorous civil society organisations in the palm oil landscape.

POIG verification is a stringent process that has required us to improve on a number of our standard procedures. It also allowed us to identify opportunities, and implement plans that actualise NDPE impact on the ground. As one of three POIG-verified palm oil producers, we are now in a prime position to meet the ever-increasing demands of markets that require adherence to strict sustainability standards.

Musim Mas continues to be a staunch supporter of the RSPO. We have been working to complete 100% RSPO certification of all our wholly-owned plantations and mills, and I am pleased to report that we are on track to achieve this by 2020. Our remaining mill with plantation is scheduled for certification by the end of that year. We successfully completed the first five-year cycle of RSPO Principles and Criteria (P&C) certification for eight mills in 2017. In 2018, another two mills received their RSPO P&C certification. In October 2019, one of our mills was successfully audited against the latest RSPO P&C that was adopted in November 2018 - the first mill in the world to do so.

Although we are an international company and seek to meet the standards of the global market, it remains our priority to be a positive contributor at home. As an Indonesian-based company, it is critical that we lead the way in environmental protection and meet the highest national standards. I am proud to announce that 11 of our subsidiaries were honoured with Green PROPER (Program for Pollution Control, Evaluation, and Rating) Awards in 2018. Presented by Indonesia's Ministry of Environment, these accolades recognise excellence in adhering to the country's environmental protection standards, and attest to our efforts to meet and exceed the regulations in place.

In the social development context, we are also supporting Indonesia's national agenda. Given the complex nature of the industry, we are forging partnerships with others to align with national aspirations. We expect the political landscape in Indonesia to become more conducive to smallholder initiatives, as Indonesia's President Jokowi has been serious about making smallholder empowerment and productivity one of the defining elements of his presidential legacy. We are supporting government initiatives that facilitate the issuance of land titles to smallholders, and assist second-generation smallholders with their replanting efforts. To maximise our impact, we have also launched collaborative landscape initiatives that help improve the lives of smallholders. One such effort was the expansion of our Extension Services Programme (ESP) to Aceh and Riau in 2018.

The year also saw the emergence of the National Action Plan (NAP) on Sustainable Palm Oil championed by *Forum Kelapa Sawit Berkelanjutan Indonesia* (FoKSBI) – a multi-stakeholder partnership led by the Ministry of Agriculture – and aiming, among other things, to improve smallholders' capabilities and Indonesian Sustainable Palm Oil (ISPO) certification uptake. We will use these developments and the resulting political momentum to promote sustainable practices and to boost the capacity of our smallholders.

Although I believe we have been bold and forward-looking, I recognise that 2020 will be a critical year as many of our markets and customers have set this deadline to convert to 100% sustainable palm oil. The entire industry and individual companies will be under intense scrutiny, thus exposing the best and the worst practices. To strengthen our position as an industry leader – and to cement our commitment to environmental stewardship – we have invested considerable human and financial capital in increasing our capacity to monitor and support our third-party supply chain. We have also published a new Roadmap to Responsible Palm Oil beyond 2020 with our key aspirations and targets for 2025, with a special focus on group supplier engagement and independent smallholders.

This renewed Roadmap will lay a strong foundation for Musim Mas for the decade ahead, as we continue to embrace sustainability and strive to be an inspiration to our peers in the industry.

Bachtiar Karim

BACHTIAR KARIM
Executive Chairman

Highlights and targets

KEY HIGHLIGHTS

Year	Highlights
Before 2018	<ul style="list-style-type: none"> Published the Musim Mas Sustainability Policy Achieved 100% traceability¹ to mill Committed to High Carbon Stock Approach (HCSA) as the leading methodology for land development Participated in the Earthworm Foundation (previously TFT) Aceh <i>Areal Prioritas Transformasi</i> (APT) programme for Leuser Ecosystem
2018	<ul style="list-style-type: none"> Published inaugural Sustainability Report Released Sustainability Policy Implementation Plan, with commitment to a group-level supplier engagement approach instead of an individual mill approach Received 11 Green PROPER (Program for Pollution Control, Evaluation, and Rating) awards Certified all crushing plants as GMP+ Feed Safety Assurance (FSA) compliant Achieved compliance with Italian National Sustainability Certification System (IT SNC) for all existing mills Completed phase-out of two pesticides (brodifacoum and permethrin) in all our plantation operations Launched the Musim Mas Self-Assessment Tool (SAT) for suppliers to self-declare their sustainability measures and progress Published all suppliers' GPS coordinates on corporate website
2019	<ul style="list-style-type: none"> Became first Southeast Asian company to achieve Palm Oil Innovation Group (POIG) verification First palm oil mill successfully audited against the 2018 RSPO Principles and Criteria (P&C) Completed group-level supplier profiles for all supplier groups Ensured that all primary supplier groups are covered by roadmaps leading to the implementation of milestones towards No Deforestation, No Peat, No Exploitation (NDPE) commitments Engaged 40% of all supplier groups on NDPE through workshops Received commitment from 54% of supplier groups to abide by NDPE principles Received completed SATs from 45% of supplier groups Ensured that 100% of supply base is monitored via satellite imagery for deforestation and peatland development Achieved 85% traceability to the Group's supply base of independent smallholders Achieved 54% traceability to supplier groups' plantations Engaged and trained 22,748 independent smallholders under the Indonesian Palm Oil Development for Smallholders programme Engaged two supplier groups in an Extension Services Programme (ESP) Joined landscape programme in Siak with a coalition of companies and the Siak district government

OUR TARGETS

MUSIM MAS OPERATIONS

Year	Target	Progress
2019	Obtain POIG verification	Became POIG verified in February 2019. ■
	Equip all mills with methane capture facilities	As at December 2018, 14 out of a total of 16 mills were equipped with methane capture facilities contributing to the reduction of 395,733 MT CO ₂ e in overall emissions. In September 2019, a 15th methane capture facility was completed. ■
2020	Obtain RSPO certification for all operations	Two new mills achieved RSPO certification in 2018, bringing the total to 12 out of 13 mills certified. ² The remaining certifiable mill is expected to receive certification in 2020. ■
2021	Phase out 10 pesticides prohibited by POIG	Two pesticides successfully phased out by December 2018. Plans in place to phase out two by December 2019, two by December 2020, and three by December 2021. One pesticide is only used in cases of emergency with pre-approval sought from the POIG Organising Committee. ■
2025	Reduce greenhouse gas (GHG) emissions by 55% compared to 2006 baseline	As at December 2018, we recorded GHG intensity of 3.49 MT CO ₂ e/MT CPO, 41% lower than the 2006 baseline. ³ ■

■ On track ■ Target achieved

1 Unless otherwise stated, traceability refers to the volume of crude palm oil (CPO) traceable to plantation.
 2 While Musim Mas owns and operates 16 mills in total, only 13 mills have plantations and are eligible to obtain RSPO P&C certification.
 3 While data is calculated and reported for our 2018 RSPO audit cycle, data covers 2017 figures.

Highlights and targets

MUSIM MAS SUPPLY BASE

Year	Target	Progress
2019	Cover 100% of primary supplier groups with an implementation roadmap towards NDPE commitments	As at September 2019, roadmaps have been developed for 100% of primary supplier groups. ■
	Ensure 90% of supplier groups complete the SAT	As at September 2019, 45% of supplier groups have completed the SAT. (Achieved December 2019 target of 45%) ■
	Achieve 100% traceability to the Group's supply base of independent smallholders ⁴	As at September 2019, 85% traceability to the Group's supply base of independent smallholders has been achieved. (Achieved December 2019 target of 80% traceability) ■
2020	Engage 25,000 independent smallholders under the Indonesian Palm Oil Development for Smallholders programme	As at September 2019, 22,748 independent smallholders have been trained under the programme. (Achieved December 2019 target of 20,000) ■
	Support a minimum of 2,000 independent smallholders in achieving sustainable palm oil certification under the Indonesian Palm Oil Development for Smallholders programme	As at September 2019, 705 independent smallholders have undergone RSPO audits. ■
	Engage a total of five supplier groups in an Extension Services Programme (ESP) at their mills ⁵	As at September 2019, two supplier groups have been engaged in an ESP at their mills. (Achieved December 2019 target of engaging two supplier groups) ■
	Ensure that four priority landscapes are recognised by multi-stakeholder platforms	Multi-stakeholder platforms now recognise the following sustainable priority landscapes: Aceh Tamiang, Aceh; Musi Banyuasin, South Sumatra; Siak and Pelalawan, Riau; Sambas, West Kalimantan. ■
	Engage 90% of supplier groups on NDPE	As at September 2019, 40% of all supplying mills have been engaged on NDPE. ■
2025	Receive commitment from 90% of supplier groups to abide by NDPE principles	As at September 2019, 54% of the supplying mills have made commitments to abide by NDPE principles. ■
	Achieve 100% traceability to supplier groups' plantations	As at September 2019, 54% of total supply base volumes for third-party mills is traceable to plantation. ■

■ On track ■ Target achieved

⁴ Unless otherwise stated, all traceability targets refer to the volume of crude palm oil (CPO) traceable to plantation.
⁵ Target revised from previous sustainability report to be supplier-focused instead of targeting the number of smallholders engaged.

About Musim Mas

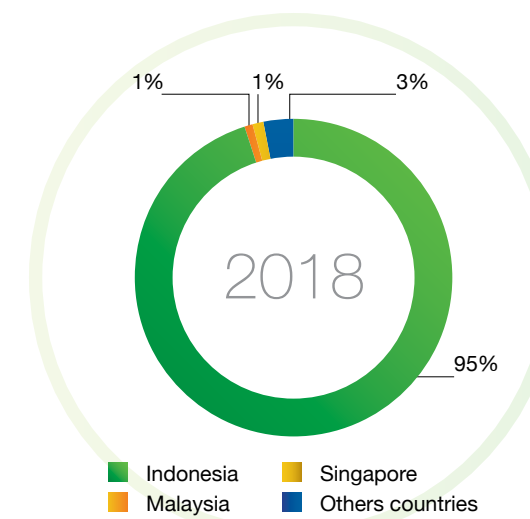
Headquartered in Singapore, Musim Mas Group is a private limited company with presence in 13 countries. We operate across every link in the palm oil supply chain, managing 198,837 hectares of plantations in Indonesia – including 7,320 hectares of infrastructure – as well as milling, refining and manufacturing sites across Asia-Pacific and Europe. An extensive fleet of storage tanks, vessels and tugboats supports our operations, enhancing both our reach and our logistical capabilities.

The Group's global marketing activities are undertaken by a separate entity, Inter-Continental Oils and Fats (ICOF), which is managed by Musim Mas Group. Also based in Singapore, ICOF oversees the marketing and distribution of palm oils, lauric oils and derivative products globally.

Musim Mas was the first company to open a palm oil refinery in Indonesia in 1970, its first plantations in 1988, and its first palm oil mill in 1991. Today, we operate a total of 16 palm oil mills, three of which are independent of plantations. With a multinational workforce of more than 37,000 people, Musim Mas is one of the largest players in the global palm oil sector.



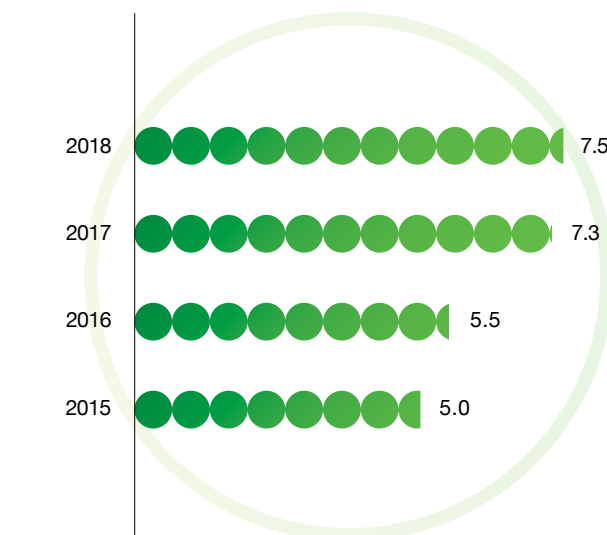
Group employees by country (%)



FINANCIAL HIGHLIGHTS

In 2018, our revenue was USD 7.5 billion, a slight increase compared to the previous year. This figure reflects depressed crude palm oil (CPO) prices, which hit their lowest point since 2015 towards the end of 2018.

Revenue (billion USD)

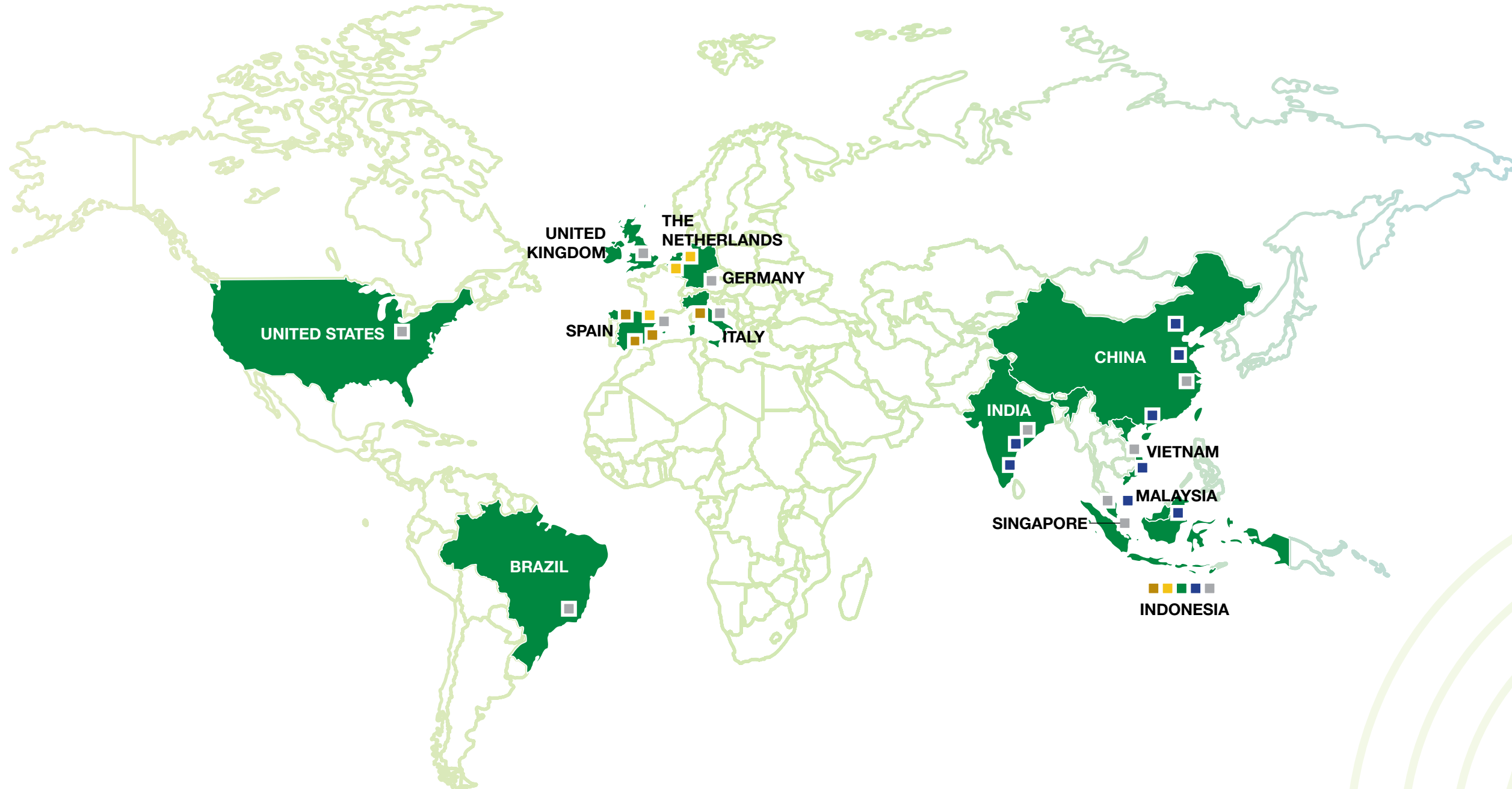


About Musim Mas

OUR PRESENCE

GLOBAL PRESENCE

While our main operational base is in Indonesia and Malaysia, we maintain a presence in strategic locations worldwide to serve the needs of our customers.



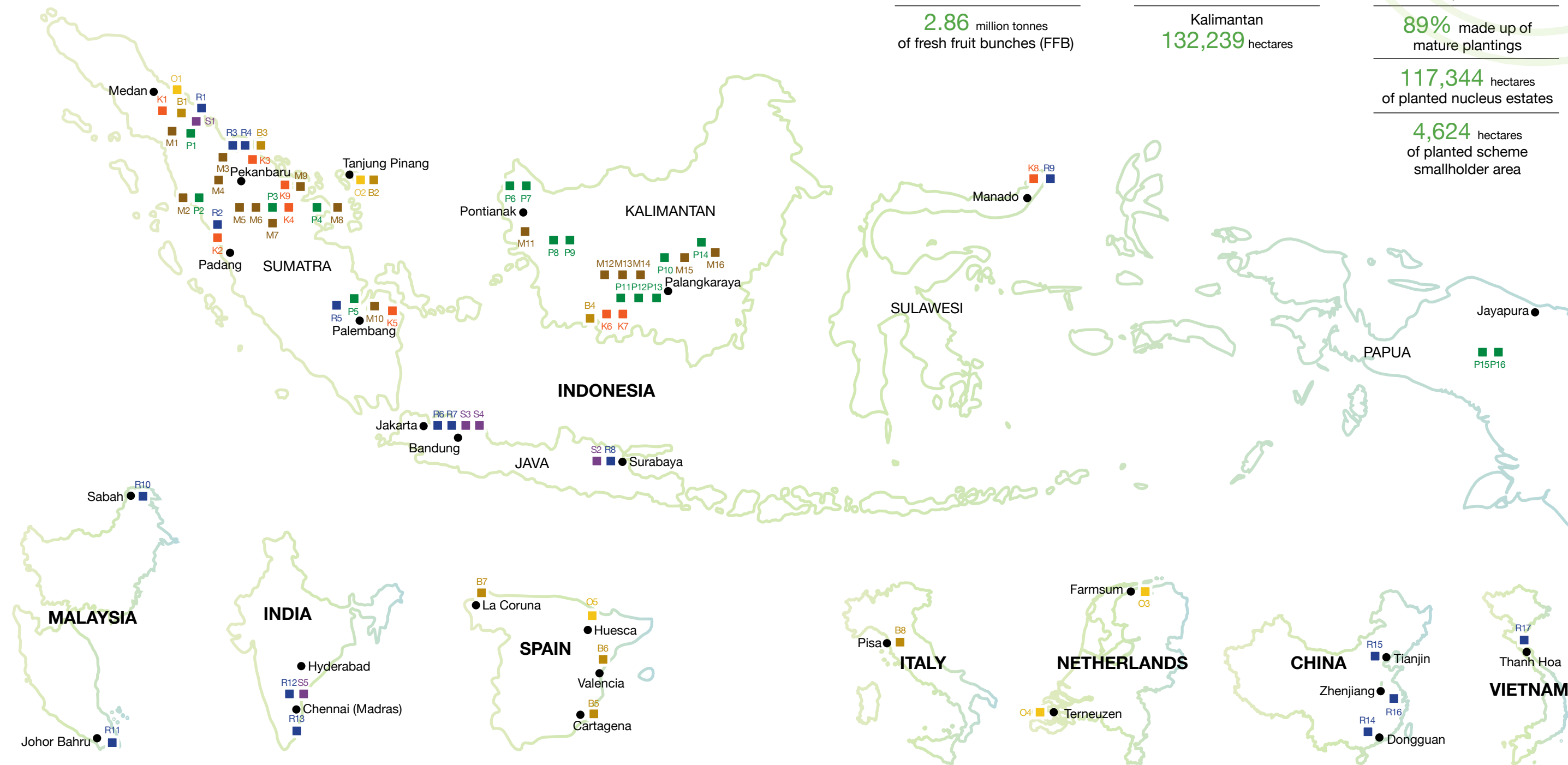
LEGEND

- Biodiesel Plant
- Oleochemicals Plant
- Plantation
- Refinery
- Marketing Office

About Musim Mas

OPERATIONAL PRESENCE

Our operations cover our plantations, mills and refinery businesses. A listing of our operations can be found at our website, www.musimmas.com/about-us/operational-presence.



LEGEND

- Biodiesel Plant
- Kernel Crushing Plant
- Mill
- Oleochemicals Plant
- Specialty Fats Plant
- Plantation
- Refinery (global)

AS AT DECEMBER 2018, MUSIM MAS MANAGED

Total concessions
198,837 hectares

2.86 million tonnes
of fresh fruit bunches (FFB)

CONCESSIONS

Sumatra
66,598 hectares

Kalimantan
132,239 hectares

PLANTED AREAS

121,968 hectares
of total planted area

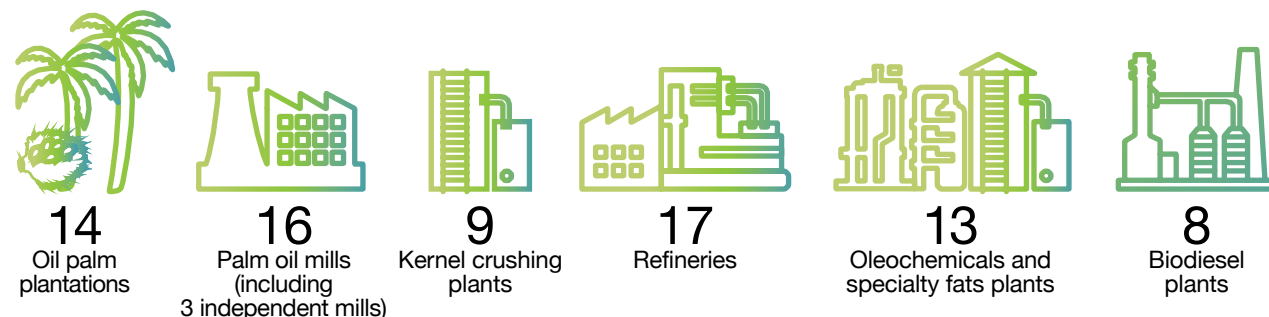
89% made up of
mature plantings

117,344 hectares
of planted nucleus estates

4,624 hectares
of planted scheme
smallholder area

About Musim Mas

Operational overview

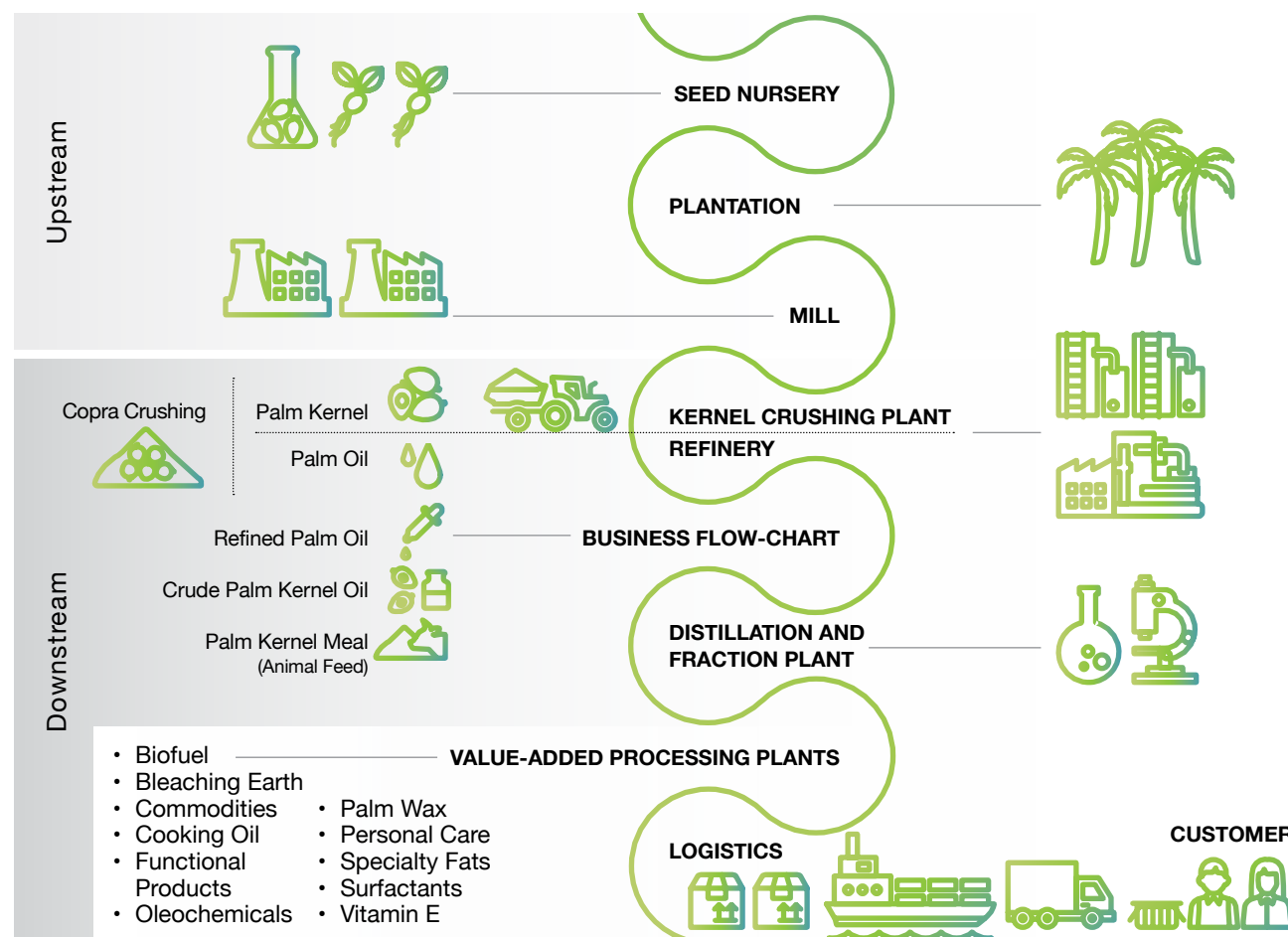


DRIVING CHANGE THROUGH FULL VERTICAL INTEGRATION

Our vertically integrated business model supports our work as we produce all our products in an economically viable, socially responsible and environmentally sustainable manner, in full compliance with all legal requirements. As a vertically integrated company, we have a role at each point in the palm oil supply chain: from upstream oil palm plantations

and downstream refining, manufacturing operations and the production of value-added palm products, all the way to the marketing and shipping of our products to global destinations. Our business model enables us to manage a segregated supply chain of sustainable palm oil that is certified under the Roundtable on Sustainable Palm Oil (RSPO) standard, and to enhance accountability and traceability at every step.

Learn more about our approach to traceability on page 58.



CORPORATE AND SUSTAINABILITY GOVERNANCE

The Musim Mas Board of Directors ('Board') is led by our Executive Chairman and Chief Executive Officer, and comprises five members, including one woman. The primary functions of the Board are the pursuit of continual growth of shareholder value, and the management of the Group in a manner that serves the best interests of shareholders and stakeholders.

The Board is committed to sustainability, and considers our commitments to environmental stewardship, human rights and community partnerships as the core of our corporate integrity. When developing business strategies and operations, the Board ensures that material environmental, social and governance factors identified for the Group are taken into serious consideration. The Head Office in Medan is certified in line with the ISO 9000 standards,

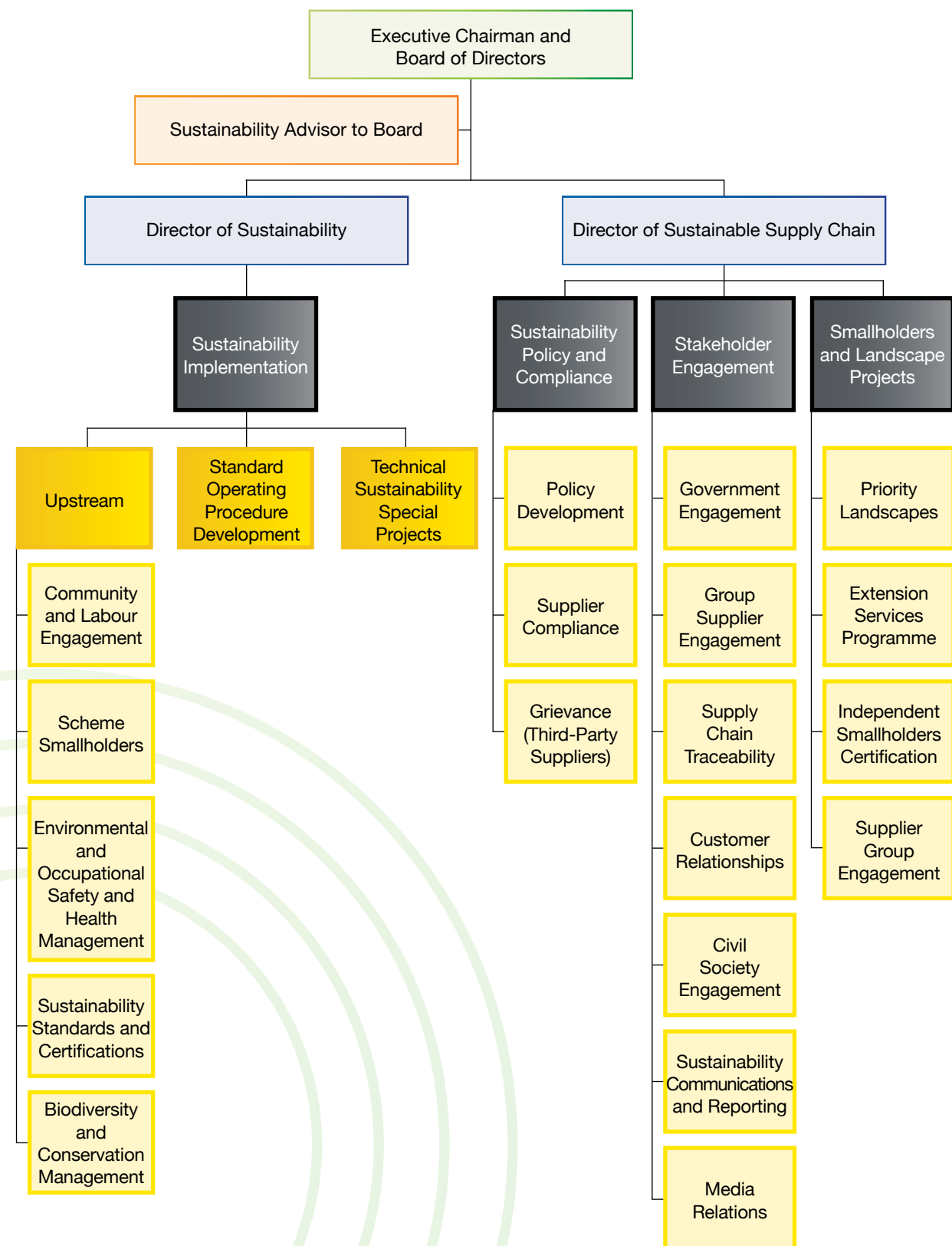
underscoring our systematic, focused and structured operations.

Sustainability management is integrated into the Group's functioning and management structure and is overseen by the Board. Senior management meetings led by our Executive Chairman discuss ongoing sustainability matters: policy standards and compliance, sustainability management, labour, health and safety, traceability, and stakeholder engagement. We also provide monthly reports on these critical components directly to the Board. Our Director of Sustainability oversees the execution and implementation of the Group's Sustainability certification. In early 2019 we brought on board a senior strategic advisor on sustainability. In July, we welcomed a new Director of Sustainable Supply Chain, who leads the implementation of our sustainability policy for third-party suppliers – including independent smallholders – and also reviews the Group's Sustainability Policy and strategy.



About Musim Mas

Sustainability governance structure



Conducting business ethically

Our Sustainability Policy and our membership of the Palm Oil Innovation Group (POIG) and the High Carbon Stock Approach (HCSA) Steering Group commit us to conduct business in a fair and ethical manner and prohibit all forms of corruption and bribery. These commitments apply and are shared with governance body members, all employees and those working on behalf of Musim Mas. Specific commitments and requirements are set out in our Code of Business Conduct and our internal Anti-corruption Policy, which are shared with all Musim Mas employees in Bahasa Indonesia together with other company policies. We also have in place a Supplier Code of Business Conduct that all external parties who supply to Musim Mas must abide by, which includes adhering to the commitments in our Sustainability Policy. Among other requirements, these parties must, at a minimum, adhere to legal regulations on ethical business practices.

OUR OPERATIONS

PALM OIL PLANTATIONS AND MILLS

Musim Mas owns and manages 14 plantations across Sumatra and Kalimantan making up 66,598 hectares and 132,239 hectares respectively.⁶ While we also own two concessions in Papua, we do not plan to develop the land within these areas. A list of our plantations can be found on our website, www.musimmas.com/about-us/operational-presence.

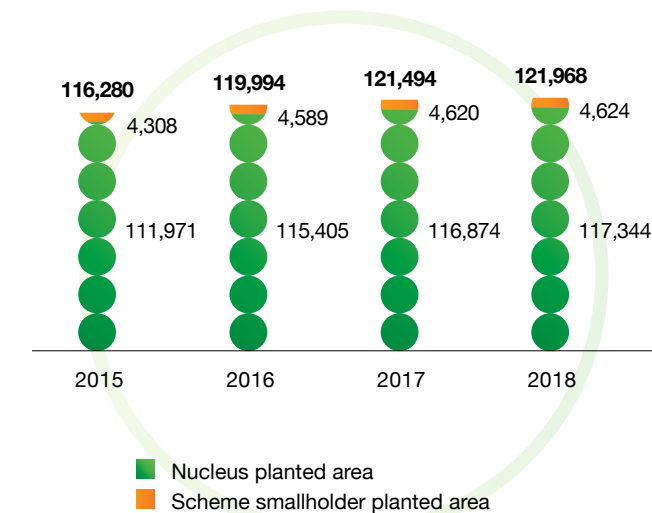
In 2018, there were six new plantings in Kalimantan of about 300 hectares.⁷ All of our new plantings have adhered to the RSPO New Planting Procedure (NPP), which includes High Conservation Value (HCV) assessments and Free, Prior and Informed Consent (FPIC) process. We have also undertaken HCSA assessments to identify plantable areas and areas for conservation.

Our plantation operations comprise a total of 121,968 hectares of planted area, 117,344 hectares belonging to nucleus estates and 4,624 hectares belonging to scheme smallholders. About 89% of this total planted area is made up of mature plantings. Together, these operations produced a total of 2.86 million tonnes of fresh fruit bunches (FFB) in 2018.

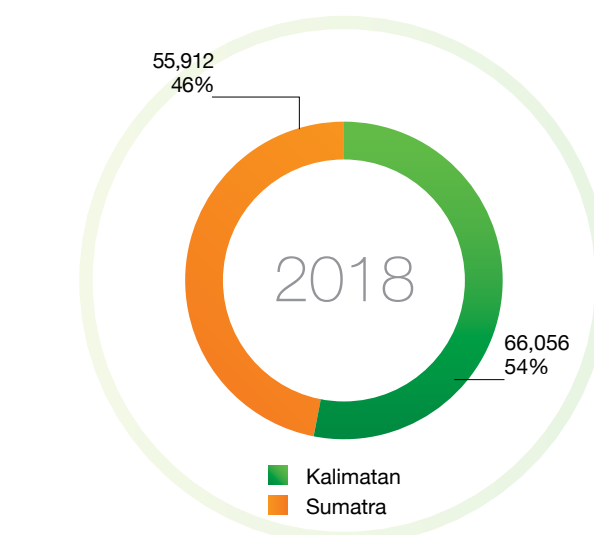
⁶ Total land area including planted and unplanted areas.

⁷ These new plantings occur within the balance of unplanted areas of our existing concessions.

Total planted area (ha)



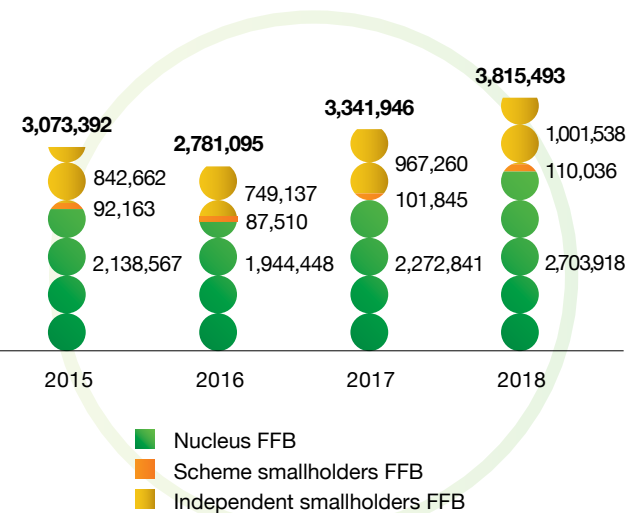
Total planted area by region (ha, %)



Since 2015, our own FFB production has been at an all-time high, with an 18.7% increase in 2018 compared to the previous year. Of our total FFB volumes produced in 2018, 3.8% was sourced from scheme smallholders. All FFB is processed into crude palm oil (CPO) and palm kernel (PK) at our mills. Of our 16 mills, three are independent of plantations and process FFB from independent smallholders. In 2018, just over one million tonnes of FFB sourced from independent smallholders was processed at our mills, contributing to 26% of our production base.

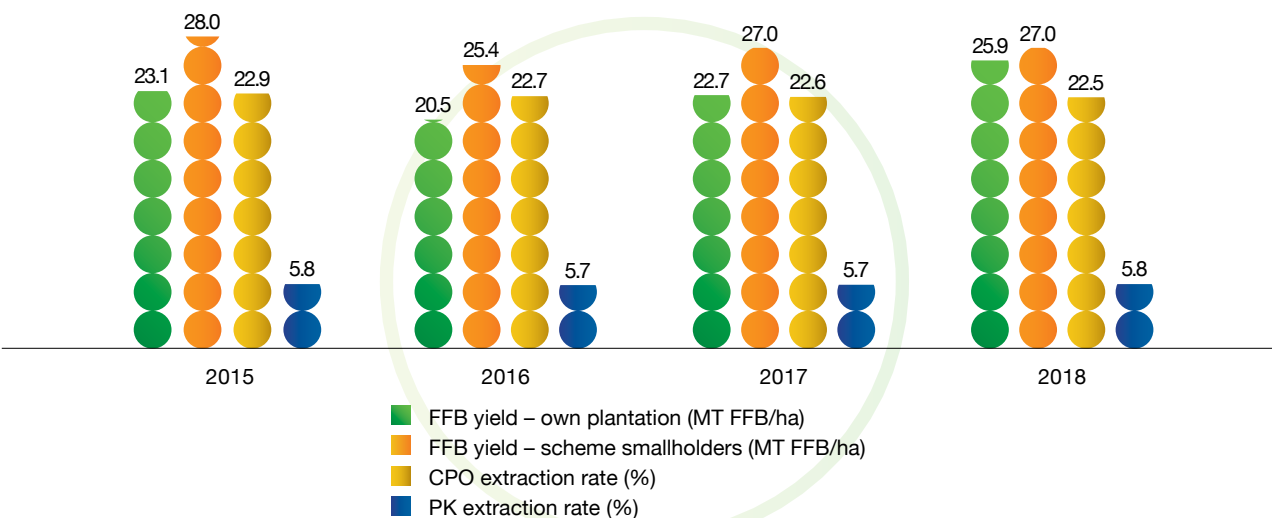
About Musim Mas

FFB processed (MT)



Our yield includes our mature FFB and third year immature plantings ready for harvest. We are also pleased to report a recovery in our yearly FFB yield after it plummeted in 2016 due to the effects of El Niño. In 2018, the yield from our plantations increased by 13% compared to 2017, while the yield of our scheme smallholders remained at an impressive 27%.

FFB yields and extraction rates



PALM OIL REFINERIES AND PLANTS

Musim Mas is one of the largest palm oil refining and oleochemicals companies in the world. The scale of our operations ensures a reliable supply of raw materials, control over quality, as well as an optimised logistical capability to deliver on all supply chain needs. These refineries have a combined annual capacity of 10 million tonnes, while our kernel crushing plants – which process palm kernels into palm kernel oil (PKO) and palm kernel meal – have a combined annual crushing capacity of 2.5 million tonnes. We also operate a copra (coconut) crushing factory that processes dried copra into crude coconut oil and copra meal expeller, as well as biodiesel, oleochemicals and specialty fats plants. A list of our refineries and plants can be found on our website at www.musimmas.com/about-us/operational-presence.

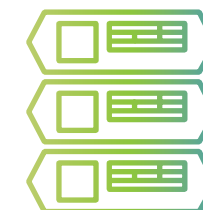
MARKETPLACE

Our production facilities manufacture a wide range of industrial food and non-food products for everyday needs, from biofuels to personal care items.

PRODUCTS



Biofuels



Bleaching Earth



Commodities



Cooking Oil



dr. MCT®



Functional Products



Oleochemicals



Palm Wax



Personal Care



Specialty Fats



Surfactants



Vitamin E

For a full list of our products, see our website: www.musimmas.com/products/product-listing.

Making an impact by actively engaging with industry stakeholders

Our approach to sustainability

Our [Sustainability Policy](#) ('Policy'), which sets out our commitments to environmental stewardship, human rights and partnerships with communities, is at the heart of our sustainability efforts. Published in December 2014, this Policy sets out a framework for the specific commitments we have made to No Deforestation, No Peat, No Exploitation (NDPE). The Policy covers the global operations of Musim Mas and our suppliers.

To demonstrate how we intend to meet our 2020 goals, we published our [Policy Implementation Plan](#) in June 2018, which articulates our strategy to meet these goals and reflects the latest developments in best practices.

We will support concrete achievements by 2020 to deliver the following impacts:

- 
1. Policy compliance in our internal operations, covering all Musim Mas mills and plantations.
- 
2. Supplier engagement with tailored solutions and direct technical assistance for key suppliers to drive momentum, build capacity and provide support for change.
- 
3. Intervention with independent smallholders in the wider palm oil sector through landscape-level and industry initiatives.

Policy Implementation Approach

OWN SUPPLY

- RSPO certified
- POIG verified
- 100% verified compliance with Sustainability Policy commitments
- Traceability to plantation

SMALLHOLDERS Independent smallholder suppliers (direct and indirect)

- Enable them to comply with our NDPE commitments
- Support smallholders' sustainability and livelihoods
- Track smallholders' progress over time

LANDSCAPE APPROACH

- Collaborate with stakeholders within physical landscapes to support change on the ground
- Implement Extension Services Programme (ESP) as a key component
- Map initiatives, analyse risk and mobilise suppliers and customers in our priority landscapes

GROUP SUPPLIERS

- Engage actively and directly with all suppliers
- Monitor and review key issues through supplier self-assessments
- Develop and implement roadmap based on gap analysis
- Monitor performance against commitments

INDUSTRY APPROACH

- Collaborate with stakeholders to support sector-wide change on thematic issues, including human rights and labour challenges



A video overview of our current Policy Implementation Plan has been made available for our stakeholders and be found [here](#).

Our approach to sustainability

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Social responsibility

Engaging suppliers to drive change

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Glossary



The following section covers the way we implement sustainability within our own operations through certification, verification and the adoption of innovative methods to improve yield sustainably. The section also highlights our industry collaborations and our responsibility to keep stakeholders informed. The subsequent sections address our commitments and measures taken within our operations in matters of environmental protection, human rights and labour rights.

To read about how we are effecting change through engaging our suppliers and our interventions in the wider palm oil industry, see the section on [Engaging suppliers to drive change](#).

SUSTAINABILITY CERTIFICATION AND VERIFICATION

Compliance with the leading certification schemes and benchmarks in our industry is a top priority and we strive to align our Policy practices and sustainability efforts with the most progressive principles and standards. Our Policy Implementation Plan outlines our strategy towards compliance with the Roundtable on Sustainable Palm Oil standards and the Palm Oil Innovation Group Charter for our directly-owned and -managed operations.

RSPO

Policy Implementation Approach
We will adhere to the principles of the Roundtable on Sustainable Palm Oil (RSPO) by:

- Maintaining 100% RSPO certification of our mills and plantations.
- Striving to achieve RSPO certification within three years, for newly acquired operations.
- Adhering to the RSPO New Planting Procedure (NPP) for any new development.
- Supporting the process and outcome of the RSPO Complaints System.

As an active member of the Roundtable on Sustainable Palm Oil (RSPO) since 2004, we remain fully committed to the organisation and support the RSPO Principles and Criteria (P&C) as essential to transforming the palm oil sector. In 2012, Musim Mas became the first major group in Indonesia to achieve 100% certification for all plantations and palm oil mills. We fully support the latest P&C that were ratified and adopted in November 2018 and our first mill has been audited successfully against these standards in October 2019.

As at December 2018, 135,824 hectares of Musim Mas plantations are RSPO-certified. Two new mills received RSPO certification in 2018, one in Riau and one in Kalimantan, bringing the total number of certified mills to 12 of the 13 mills with plantations we operate⁸. The remaining mill in Kalimantan, was commissioned in 2016 and will be certified in 2020, pending the approval of its operations permit (*Hak Guna Usaha* (HGU)). Two mills have undergone their third RSPO audit cycle in 2018.

Scheme smallholder operations affiliated with Musim Mas have been RSPO certified under our smallholder cooperative programme, *Kredit Koperasi Primer Anggota* (KKPA). The KKPA was the first smallholder scheme in Indonesia to comply with RSPO certification requirements, in 2010. These smallholders strictly adhere to RSPO standards, undertaking a main audit every five years and four annual surveillance assessments. As at December 2018, 76% of the scheme smallholders and the Village Development Programme (VDP) under KKPA are RSPO certified, making up 3,494 hectares of our total RSPO-certified area.

Our plantations, scheme smallholders and the areas under VDP total 139,318 hectares of certified RSPO area, making up 70% of our total area. Combined, these operations have an annual certified sustainable palm oil (CSPO) production capacity of 671,883 tonnes and 169,334 tonnes of certified sustainable palm kernel oil (PKO). This represents about 5% of all RSPO-certified palm oil in the market.

We are working with our independent smallholders through partnerships and programmes to assist them in becoming RSPO certified. This includes building the capacity of independent smallholders enrolled in our Indonesian Palm

Oil Development for Smallholders programme to achieve RSPO certification by 2020.

Read more on scheme and independent smallholders under the section, [Working with smallholders](#).

A total of 38 sites (which include refineries and downstream facilities) have been certified against the RSPO Supply Chain Certification Standard (SCCS). Combined, these sites handled, traded and processed approximately one million tonnes of RSPO-certified palm oil and oil palm products in 2018. By adhering to this scheme, Musim Mas is able to supply palm oil products under the segregated, mass balance and book and claim supply chain models. Our facilities in China and India are currently undergoing the certification process and are expected to be SCCS certified by 2021.

ISPO

Musim Mas was one of the first companies to undergo the Indonesian Sustainable Palm Oil (ISPO) certification process, an Indonesian regulatory initiative. As at December 2018, a total of four Musim Mas mills have obtained ISPO certification, two of which were the first mills in Indonesia to meet the standard.

In 2018, one additional mill was audited against ISPO standards, which means that 12 Musim Mas mills with plantations have undergone audits for ISPO certification. While all plantations under the Musim Mas Group have undergone *Penilaian Kelas Kebun*, a pre-requisite assessment for ISPO certification audits, the remaining mill with a plantation will be audited in 2020. The Group's independent mills have also undergone ISPO audits.

RSPO CERTIFICATION TIMEBOUND PLANS

Company name	Location	Facility	P&C certification	SCCS certification	Certification target date
North Continental Oils and Fats	Thanh Hoa, Vietnam	Refinery	Achieved	Achieved	2019
Sarana Esa Cita	West Kalimantan, Indonesia	Mill	On track	On track	2020
South India Krishna Oils and Fats	Andhra Pradesh, India	Refinery	On track	On track	2021
Tvarur Oils and Fats	Tamil Nadu, India	Refinery		On track	2021
Musim Mas (Dongguan) Oils and Fats	Guangdong, China	Refinery		On track	2021
Musim Mas (Tianjin) Oils and Fats	Tianjin, China	Refinery		On track	2021
Musim Mas (Zhenjiang) Oils and Fats	Jiangsu, China	Refinery		On track	2021

⁸ Musim Mas operates a total of 16 mills, however three of these mills are independent of plantations and are not eligible for RSPO P&C certification.

Our approach to sustainability

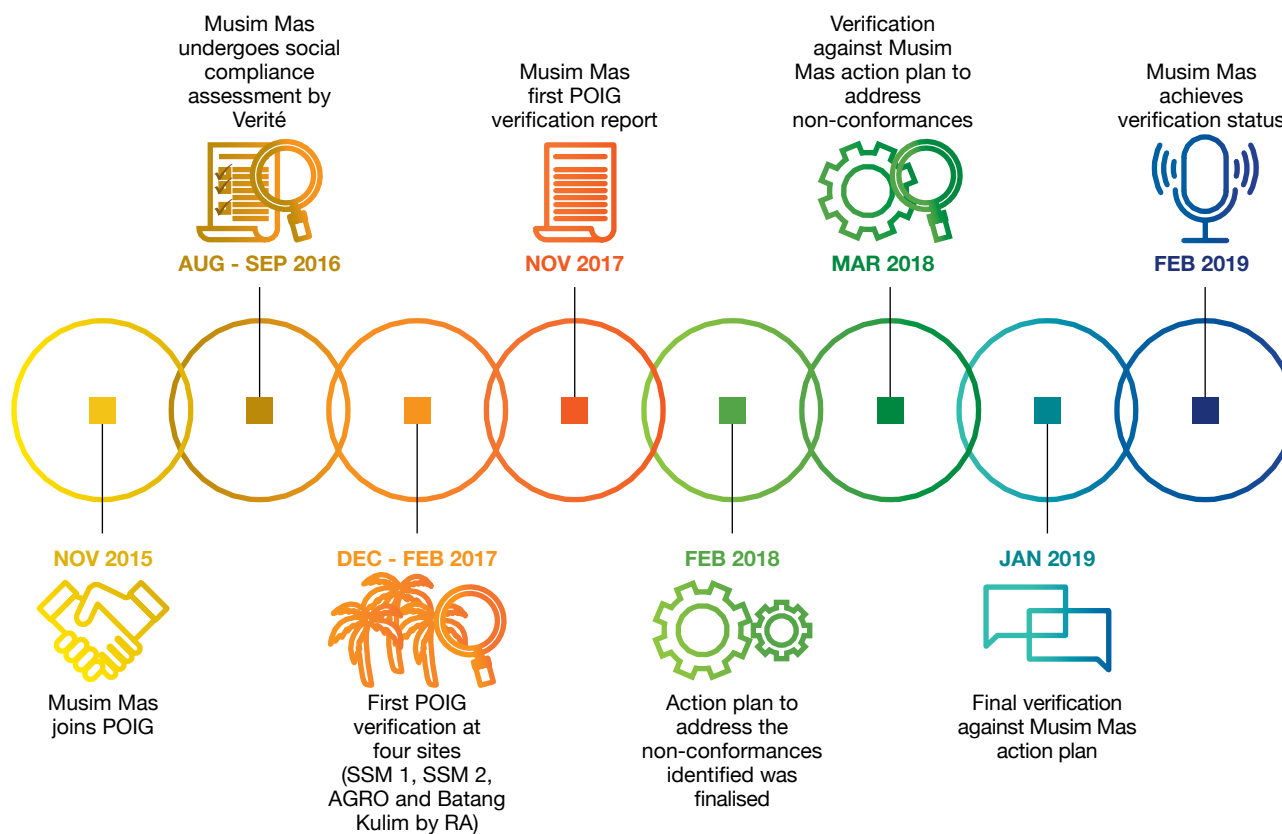
ISCC

Musim Mas is committed to the International Sustainability and Carbon Certification (ISCC), an international certification programme for sustainable biomass and bioenergy production applicable to European markets. The certification requirements include criteria on greenhouse gas (GHG) emissions savings, sustainable land use, protection of natural biospheres and social sustainability. As at January 2018, all mills have achieved ISCC certification. In particular, all have been certified against the ISCC waste and residue programme, while 12 have achieved full ISCC European Union certification, which includes all types of agricultural and forestry raw materials, waste and residues, biogas and algae.

POIG

Musim Mas joined the Palm Oil Innovation Group (POIG) in 2015, formalising our commitment to the POIG Charter. Since August 2016, Musim Mas has worked diligently with POIG and relevant third parties to become verified. We successfully achieved verification status in February 2019, becoming the first Southeast Asian company to do so. Today, Musim Mas is able to supply POIG-verified oil from our plantations, alongside other POIG grower members.

Journey towards POIG verification for Musim Mas



Policy Implementation Approach We will adhere to The Palm Oil Innovation Group Charter (POIG) by:

- Achieving 100% verification against POIG indicators for our own mills and plantations.
- Striving to comply with the POIG charter for traders and processors.

From February to April 2018, Rainforest Alliance carried out a verification audit at four mills as a sample for the ten under the scope of the audit. This is part of the annual verification audit, which also checks compliance with the action plan developed by Musim Mas in response to the non-conformities identified in an earlier report. It concluded that Musim Mas made significant improvements in the implementation of best management practices associated with the POIG Charter, specifically addressing the issues on water consumption and the development of required policies.

Highlight: What it means to be POIG-verified

Musim Mas expects to be able to supply around 700,000 metric tonnes of POIG-verified and RSPO segregated palm oil to the market in 2020, in the form of crude palm oil, palm oil kernel, as well as a range of palm oil fractions and derivatives. A full product list is available at <http://poig.org/further-resources/poig-product-list/>.

For buyers, POIG-verified palm oil assures that products are third-party verified against more stringent standards and best-in-class NDPE policies. While the 2018 RSPO P&C brought in a wide range of improvements, POIG remains the only standard which requires:

- Identification of critical peatland ecosystems by independent third parties and through engagement with local governments.
- Phasing out the use of paraquat and pesticides prohibited by the World Health Organization Class 1A or 1B schedules, the Stockholm and Rotterdam Conventions, the Forest Stewardship Council's 'Highly Hazardous' list, and the

Sustainable Agricultural Network (SAN) prohibited pesticide list. Musim Mas has implemented a staggered phase-out plan from 2018-2021. Carbosulfan will only be used in emergencies, with prior POIG approval.

- Identifying water consumption using the Water Footprint Network methodology and implementing water stewardship with surrounding communities.
- A robust policy, procedure and implementation to ensure the rights of workers are protected. This also includes identifying the risk of child labour and forced labour in the mills' FFB supply chain and taking steps to address these risks.
- Engaging with independent smallholders to encourage them to adopt RSPO certification, as well as supporting them towards RSPO certification and POIG compliance if interested.
- Committing to 100% RSPO certification of all our mills, where applicable, and working towards purchasing 100% RSPO-certified FFB, except from independent smallholders.

A few remaining issues were identified around High Carbon Stock Approach (HCSA) assessments, participatory mapping and participatory land-use planning, critical peatland ecosystem identification and restoration, the use of prohibited pesticides, surface water analysis, the involvement of stakeholders in water stewardship assessment, and the publication of information related to POIG requirements. These issues have since been dealt with and were verified in the January 2019 audit.

Now that Musim Mas is POIG-verified, we will work with our third-party supply base to move forward and to realise a credible palm oil supply chain that is guided by POIG's [Traders and Processors Charter](#).

As a POIG member, Musim Mas also commits to testing new innovations and advocating for these improvements to become the norm in palm oil production. Our innovations have largely been demonstrated through our solutions that address labour rights issues. Read more on page 41.

PROPER

Musim Mas is enrolled in PROPER (Program for Pollution Control, Evaluation, and Rating), a mandatory environmental information disclosure initiative overseen by the Indonesian Ministry of Environment and Forestry aiming to improve the environmental performance of businesses in Indonesia. In December 2018, 11 of our mills in Indonesia received Green PROPER Awards. These accolades are given for excellence in environmental management, energy efficiency, emissions and GHG reduction, water efficiency, reduction in hazardous waste

output, recycling of solid waste, biodiversity protection, and community development.

IT SNC

Musim Mas also adheres to the Italian National Certification System for Biofuels and Bioliquids (IT SNC). The main aspects of the verification process include traceability and mass balance systems and GHG emissions components. All of our mills have achieved compliance with IT SNC as at April 2018.

GMP+ FEED SAFETY ASSURANCE

Good Manufacturing Practices Plus (GMP+) standards harmonise requirements for feed in order to ensure quality and safety throughout the entire feed chain. The largest module within the GMP+ certification scheme is GMP+ Feed Safety Assurance (FSA) certification and integrates ISO 9001, Hazard Analysis and Critical Control Point (HACCP), feed safety limits, traceability, monitoring, prerequisite programmes, and early warning system components. As at January 2018, all of our crushing plants comply with GMP+ FSA certification.

IMPROVING PRODUCTIVITY AND ENHANCING YIELD

We constantly invest in enhancing FFB quality, increasing yield per hectare and improving oil extraction rates for long-term economic viability to address growing global demand. One of our first steps was ensuring the implementation of good agricultural practices on our plantations. We also use our expertise to offer technical support and training for our

Our approach to sustainability

scheme and independent smallholders. Our strong focus on compliance with leading sustainability certifications further supports these efforts.

Key activities:

- **Through research and development:** Developing recommendations for scientifically based agricultural best practices related to fertiliser use optimisation, soil and water conservation, soil fertility and soil organic matter preservation, ground cover management and integrated pest and disease management with an emphasis on biological control.
- **At estates:** Ensuring the timely and efficient application of all inputs, minimising losses in the fields and implementing efficient crop recovery methods.
- **At mills:** Minimising losses during processing activities and investing in new technology and advanced equipment.

Our CPO production per hectare has remained higher than the industry average. Due to recent intensive improvement programmes, we have seen higher yearly averages compared to global figures. In 2016, our CPO production per hectare was 57% higher than the global average. In 2018, it increased to 77%.

As part of our improvement plans, we are also working to further intensify our land use by increasing our oil yield per hectare. Our plant breeding station – also known as the Genetic Research Centre – will provide the most advanced and elite planting materials, individually tailored to be suitable in different environments, thus ensuring we can generate optimal yields across all our Group plantations. We are currently testing materials and conducting trials across more than 500 hectares of our plantation area. By growing our elite planting materials, we foresee Musim Mas’ oil yield per hectare to improve further in the decade

ahead, making our oil palm estates and plantations more efficient and productive, and putting us at the forefront of sustainable land utilisation.

INDUSTRY COLLABORATION

We work with a wide range of stakeholders in the palm oil industry to support industry-wide change on thematic issues. This includes supporting existing sustainability initiatives such as the RSPO, POIG, the HCSA and the New York Declaration on Forests. In December 2018, the Group also joined the China Sustainable Palm Oil Alliance, a platform promoting sustainable palm oil within the second largest importing country of palm oil.

To step up our efforts on the environmental front, Musim Mas is also involved in wider partnerships on supporting no deforestation approaches and biodiversity protection such as the HCSA Steering Group and Tropical Forest Alliance 2020. This includes working with other forestry and agricultural actors, such as the pulp and paper industry, on fire prevention initiatives via the Fire Free Alliance. In November 2018, the Palm Oil NGO (PONGO) Alliance and the Government of Sabah announced a partnership through a Memorandum of Understanding to support projects in the Kinabatangan region towards sustaining wild populations of orangutans in both oil palm plantations and natural forests. As a member of the PONGO Alliance, Musim Mas will support the work under this partnership to make landscapes resilient for forests, wildlife and people.

On human rights and labour issues, Musim Mas was one of five companies that committed to the Decent Rural Living Initiative (DRLI) in 2018, DRLI focuses on tackling labour rights challenges in Indonesia’s palm oil sector by developing improvements in working conditions across the

industry. This pre-competitive, collaborative approach aims to ensure sustainability in the palm oil sector in the long-term through meaningful, permanent systematic changes in the way companies approach human rights challenges within the industry. A consultation took place in 2018 to narrow down specific areas that would most benefit from industry-level collaboration. In June 2019, the five parties announced two new pilot projects as strategic areas: one pilot with a focus on developing contracts that provide stability for casual and flexible work, and the other with an aim to improve gender parity by strengthening the role of gender committees on palm oil estates. Musim Mas will actively engage and share best practices with its partners under the DRLI to collaboratively work towards meaningful impacts in the industry.

To further promote our landscape work, we are involved in several working groups to advance partnerships, especially within the private sector, including companies from other commodities as they function within the same landscape. Examples include the Sustainable Landscape Working Group, the RSPO Smallholder Working Group, the RSPO Jurisdictional Approach Working Group, the Aceh Tamiang Working Group, and the Coalition of Sustainable Livelihoods, which is a platform exploring alternative livelihoods for smallholders through innovative approaches such as agroforestry and organic fertiliser.

ACADEMIC PARTNERSHIPS

While sustainability is an integral part of our business, we understand there are many questions left unanswered related to conservation and environmental protection. We believe that academic exploration and research are important to improving knowledge in these areas, hence we work with academic partners and support programmes and collaborations with universities, government agencies and UN bodies for research and studies.

A partial list of our 2018 stakeholder collaborations and partnerships can be found on page 72, and a full list of our collaborations can be found on our website at www.musimmas.com/sustainability/stakeholder-collaboration.

KEEPING OUR STAKEHOLDERS INFORMED

It is important that Musim Mas maintains an open dialogue with our stakeholders and constructively take in feedback to improve our operations as well as industry practices, and to ensure that we communicate proactively and are responsive to this feedback.

Communication platforms and materials:

- **Sustainability reports:** produced annually to keep stakeholders informed on material environmental and

social issues relevant to our sustainability governance. These reports replace our past sustainability journals and progress reports.

- **Musim Mas website:** provides comprehensive information about our activities for broader audiences through a dedicated [sustainability section](#). We also ensure our materials are suitable for wider stakeholders by providing easy-to-follow factsheets and [a new series of videos](#) on our sustainability journey.
- **Annual Communication of Progress (ACOP):** we submit ACOPs to the RSPO detailing our progress against the standard and the P&C.
- **Grievance system:** all external grievance cases are lodged through our online grievance mechanism, and a [grievance list](#) is publicly available on the Musim Mas website (read more on page 60). We also update stakeholders via e-mail and on our website about any grievances lodged against Musim Mas or our suppliers through the [RSPO Complaints System](#).

Environmental, social and governance ratings and sustainability rankings

As a large palm oil company, we are subject to significant public scrutiny on the environmental and social impacts of our business. Public assessments provide us with a valuable opportunity to identify areas where we have done well and areas where we need to improve.

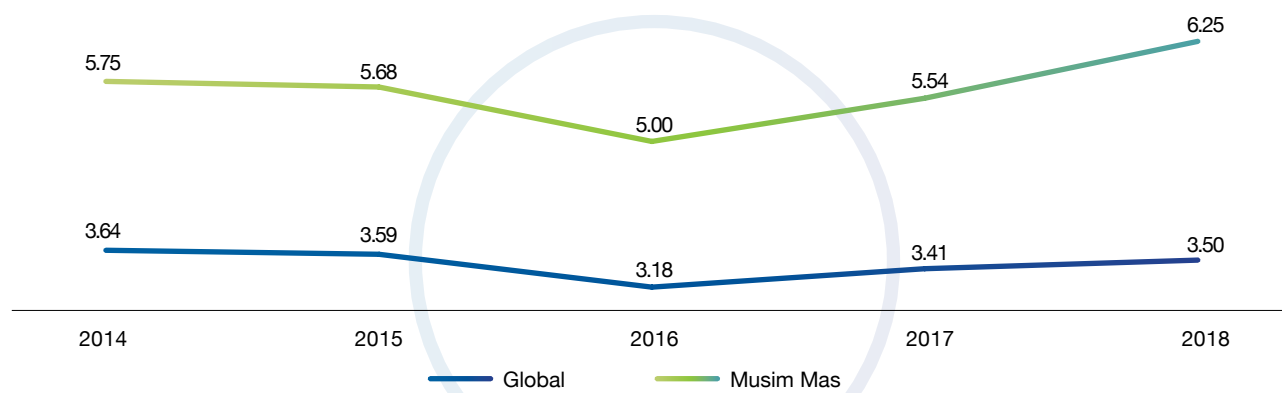
In 2018, we achieved a score of 87% on the Zoological Society of London’s Sustainable Policy Transparency Toolkit (SPOTT), which assesses the transparency and accountability on environmental, social and governance issues. This is a 19.2-point increase compared to our 2017 score, placing us fourth out of 70 palm oil producers and traders. A breakdown of our scores is available at: <https://www.spott.org/palm-oil/musim-mas-group-pt/>

In 2018, we also scored 85.5 on the Forest Heroes’ Green Tigers Index, ranking us first out of the 22 companies assessed. While these are great achievements for Musim Mas, we plan to continue improving our scores in the coming years. A breakdown of our scores is available at: <http://www.forestheroes.org/greencats/musim-mas/>

Our performance has also been benchmarked and/or rated by the following assessment platforms:

- CDP (formerly Carbon Disclosure Project) – [Climate Change, Forests and Water programmes](#)
- Global Canopy Programme – [Forest 500](#)
- EcoVadis – [Supplier Sustainability Ratings](#)
- PROPER – Indonesian Ministry of Environment rating award, *Program Penilaian Peringkat Kinerja Perusahaan dalam Pengelolaan Lingkungan Hidup*

CPO production compared to global average (MT/ha)



Source of global data: www.oilworld.biz/p/palm-oil#palm-oil (available for purchase)

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Making a difference through industry collaborations



Promoting positive environmental impacts

We are a major player in the palm oil sector and play a significant role in promoting sustainable palm oil production in our industry, thus contributing to the protection of critical ecosystems and biodiversity in and around the landscapes where we operate. We are deeply committed to environmental stewardship and continuously strive to minimise and mitigate the impacts of our operations. We are also committed to enhancing the state of the natural environment, where possible, and identifying areas where we can make a difference.

NO DEFORESTATION AND CONSERVATION COMMITMENTS

Our 2020 no deforestation targets are aligned to the commitments set out in the [New York Declaration on Forests](#). We do not permit any clearance of land classified as high conservation value (HCV) area or high carbon stock (HCS) forest. This ensures that land development is carried out responsibly and sustainably. We are also committed to the conservation of these areas and to maintaining their biodiversity, including the protection of rare, threatened and endangered (RTE) species.

Being POIG-verified means that all Musim Mas-produced oil, which makes up 10% of our total supply, is verified deforestation-free. The remaining 90% of our oil supply comes from third-party suppliers, who are subject to a strict sourcing policy that traces and eliminates deforestation within our supply chain. We also work with our consultants, Aidenvironment, and their proprietary database and information platform to monitor deforestation in the concessions of these third-party suppliers. Via our supplier workshops, we also make clear our strict no-deforestation requirements and the need to implement the HCS Approach (HCSA).

While every effort is made to exclude controversial palm oil, care is also needed to ensure that such exclusion will not adversely affect the palm oil produced by smallholders and impact their livelihoods. We recognise the challenges faced by independent smallholders in meeting the HCV or HCS requirements in our Sustainability Policy and provide assistance where we can.

More about how we address deforestation gaps within our supply chain can be found in the [Engaging with suppliers to drive change](#) section of this report.

Promoting positive environmental impacts

RESPONSIBLE LAND DEVELOPMENT

Prior to any new development of our own operations we have always followed the Roundtable on Sustainable Palm Oil (RSPO)'s New Planting Procedure (NPP), which includes a set of comprehensive and participatory technical assessments, social and environmental impact assessments (SEIA), HCV assessments, Land Use Change Analysis (LUCA), soil suitability and topographic surveys, and greenhouse gas (GHG) assessments. The NPP also includes stakeholder engagement including Free, Prior and Informed Consent (FPIC) with local communities. In 2018, there were six new plantings making up 300 hectares⁹ in Kalimantan, all of which have undergone RSPO NPP. These areas have also undergone standalone HCSA assessments.

In November 2018, the RSPO Principles and Criteria (P&C) were revised to include HCSA and will henceforth be integrated with HCV assessments. All current Musim Mas HCV and HCSA standalone assessments comply with the RSPO Interpretation of P&C 2018 Indicator 7.12.2 on identifying HCV, HCS and other conservation areas.

All HCV and HCS assessments conducted after 1 January 2015 follow the definitions set out by the HCV Resource Network (HCVRN) and HCSA respectively. To lead such evaluations, we only engage Assessor Licensing Scheme (ALS)-accredited assessors for HCV assessments and approved HCS Approach Registered Practitioner Organisations for HCS assessments.

As at December 2018, four Musim Mas HCV assessments by ALS-licensed assessors had been submitted to HCVRN and obtained a satisfactory rating.¹⁰ An additional eight completed standalone HCSA assessments had been registered with the HCSA Secretariat and undergone peer review.¹¹ In July 2019, the remaining (one) HCV assessment carried out by an ALS-licensed assessor obtained a satisfactory rating.

In early 2018, we commenced three new integrated HCV-HCSA assessments, namely for PT Sarana Esa Cita, PT Mulia Indah and PT Multipersada Gatramegah Estate II. Qualified assessors have been engaged to carry out the assessments, which will be submitted to HCVRN ALS for quality review when complete.

PROTECTION AND CONSERVATION

Musim Mas produces conservation plans that integrate recommended management and monitoring strategies with plans for the conservation areas within a concession and its wider landscape. We consult communities in the

surrounding area and strive to reach mutual agreement with village leaders on how to best manage the land.

Through our integrated conservation approach, we have identified a total of 20,958 hectares of conservation areas across our palm oil operations: 18,014 hectares in Kalimantan and 2,944 hectares in Sumatra. These areas made up of HCV area and HCS forests and are inclusive of riparian zones have been set aside for conservation management by Musim Mas. The surrounding communities are included in the designation of HCV and HCS areas, and the need for management is communicated to ensure we have community buy-in.

We have taken steps to facilitate the restoration of some of the conservation areas identified, including working with the Indonesian Forestry Agency, *Planologi Kehutanan dan Tata Lingkungan*, to restore some of our riparian zones by removing palms and replacing them with jungle trees. We have also achieved positive results by setting aside five rows of palms along riparian zones that receive no maintenance (fertiliser or spraying) in order to allow the natural vegetation to regrow. These palms are left in situ in the riparian buffer zone during replanting.

We also conduct regular and comprehensive biodiversity surveys in and around our concession areas, which include desktop reviews, field visits and engagement with local communities to assist us in maintaining inventories of plant and animal species and their critical habitats.



In 2018, we carried out a consolidated analysis of the implementation of our HCV management and monitored all Group concessions. Findings showed that there are several positive environmental factors that promote the presence of wildlife throughout our concessions. However, external factors beyond our control, such as haze and smoke from wildfires outside our areas of operation, can negatively impact the presence of wildlife. Due to these factors as well as wildlife migration, the presence/numbers of wildlife is not an absolute indicator of how well we manage our HCV areas.

To prevent illegal development within forest and conservation areas, we conduct ground patrols and monitor encroachment by analysing satellite images (Landsat) of mapped areas. The hunting of RTE species and species protected by law is prohibited at all our concessions and within our supply chain. We reiterate this requirement and share how to manage HCV areas through our supplier engagement approach when socialising our Sustainability Policy.

We strictly prohibit workers and families from keeping wildlife in captivity and engage with surrounding communities on the importance of conservation. We further support the protection and survival of the identified species with action plans, namely by installing signboards inside and outside the concession area, and by regularly engaging with the community, either ourselves directly or through agents of the Indonesian Nature Conservation Agency (*Balai Konservasi Sumber Daya Alam*). We also do not operate within nationally designated protected areas. An inventory of the fauna identified in the Group's areas of operation that fall under the International Union for Conservation of Nature (IUCN) Red List of Threatened Species can be found on page 81.

The protection of landscapes within our areas of operation that have unique characteristics – such as the presence of high-value ecology and biodiversity – is crucial to our supply chain transformation objectives. We feel it is important to safeguard these jurisdictions due to the high-risk issues they face, or risk facing. Some of these areas have been subject to deforestation and clearance of peat and may face encroachment from expanding agricultural activities. Some of these areas are especially prone to forest fires during dry seasons, and many are home to protected wildlife, including rare and endangered species. We therefore engage in key environmental and conservation initiatives to help minimise potential damage to at-risk landscapes in areas like Aceh, Riau, Sumatra and West Kalimantan.

More on our work on landscape initiatives can be found on page 68.

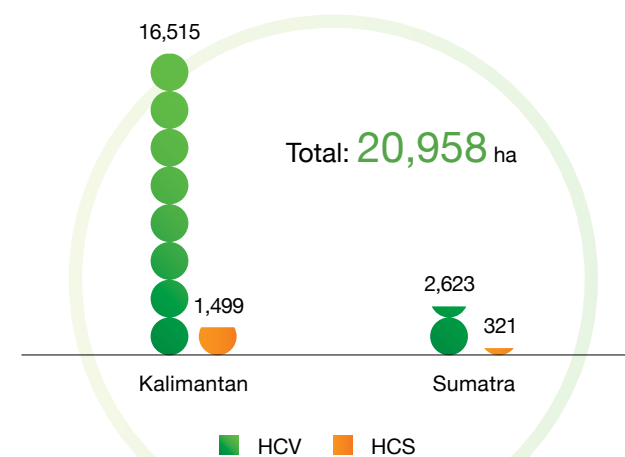
OUR ZERO-BURN POLICY

Musim Mas operates a strict zero-burning policy for all new development and replanting, and this is expected of all of our suppliers.

Within the landscapes where we operate, we take measures to ensure that we can quickly and effectively respond to any fire outbreaks. We maintain teams of highly-trained firefighters at each of our plantations, who also assist district and provincial governments. We provide all operations with firefighting equipment, ensure all factories are equipped with early warning and firefighting systems, and work with local government fire safety centres to carry out regular training for our workers.

We also monitor fire incidences and affected lands using satellite data from sources like the World Resources Institute's Global Forest Watch Fires platform, an online forest monitoring and fire alert system. If a fire is detected outside one of our concessions, it takes a longer time to despatch our teams and reach the area in question. Furthermore, the areas where fires are detected can be difficult to access, which can cause delays in extinguishing the blaze. To combat these difficulties, our control crews monitor fire activity in an area extending three kilometres beyond our concession boundaries daily. Crews take action at the first sign of an outbreak and report to headquarters immediately. This also ensures that we update the RSPO on all fire activity promptly.

Conservation area by region (ha) in 2018



Note: Overlaps in HCV and HCS areas are only reflected under HCV figures.

⁹ These new plantings occur within the balance of the unplanted areas of our existing concessions.
¹⁰ All HCV assessments conducted after January 2015 are available on the [HCV Resource Network website](http://highcarbonstock.org).
¹¹ The summaries and peer review reports are available on the HCSA website at <http://highcarbonstock.org/registered-hcsa-assessments/>.

Promoting positive environmental impacts

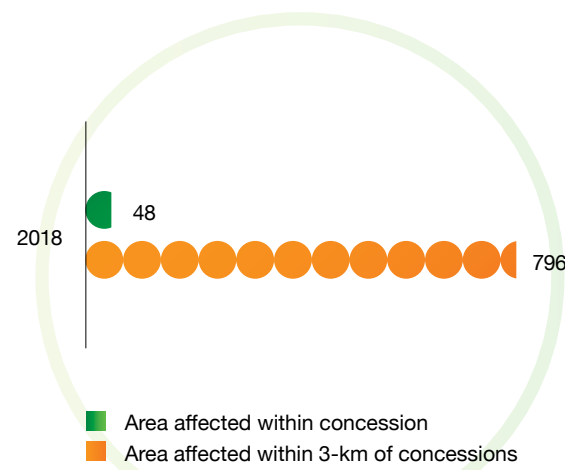
Musim Mas is a founding member of the Fire Free Alliance (FFA), a multi-stakeholder platform supporting the Indonesian Government's commitment to a haze-free ASEAN region by 2020. Under this agreement, all company members have implemented the Fire Free Village Programme (FFVP) as a means to engage local communities in protecting forests from fire. For Musim Mas, this is done through *Masyarakat Bebas Api* (MBA), a programme that covers 73 villages spanning across 466,117 hectares in Indonesia as at December 2018. In 2018, 157 trainings were carried out with communities on agronomic best practices and alternative methods of land clearance, along with socialisation on the risks of using fire for land preparation. Village heads and community members are regularly reminded to be vigilant in preventing fires. Everyone is also provided with firefighting and monitoring resources, such as fire extinguishers, safety uniform and shoes.

We further incentivise villages that remain fire-free by awarding them equipment and services to build or repair community infrastructure. In 2017, 41 villages were rewarded for successfully keeping their villages fire free and in 2018, 40 villages received rewards despite severe dry seasons.

In 2018, a significant increase in the number of fires and the total area affected was reported compared to 2017. There were 18 recorded fire incidences within our operations, resulting in 48 hectares being burnt. A total of 109 fires were recorded in areas within a three-kilometre radius of our concessions, affecting 796 hectares. Despite similar rainfall averages in Kalimantan and Sumatra compared to 2017, the months of July to September saw significantly hotter weather with the lowest amount of rainfall in July of 95 millimetres. The majority of these fires, which mostly occurred in Kalimantan, can be attributed to the dry weather during these months.

In addition, we have found that some fires were caused by community members, for example, by people disposing of lit cigarette butts on concession land, causing significant harm to areas consisting of peat. We take such matters seriously and regularly emphasise our no burn policy, and the adverse environmental impacts of peat catching fire. We also reiterate that smoking should take place outside of plantation areas and that members must dispose of cigarette butts at the designated bins we have made available.

Area affected by fire (ha)



From 2017 to 2019, we worked with Universitas Riau (UNRI) on a composting model that can be adopted by nearby communities. Three villages near our concession in Riau participated in the project, and community members were taught how to compost organic waste such as leaf litters around farms and scrub. As a result, these villages are now successfully ensuring that their lands are being kept fire-free.

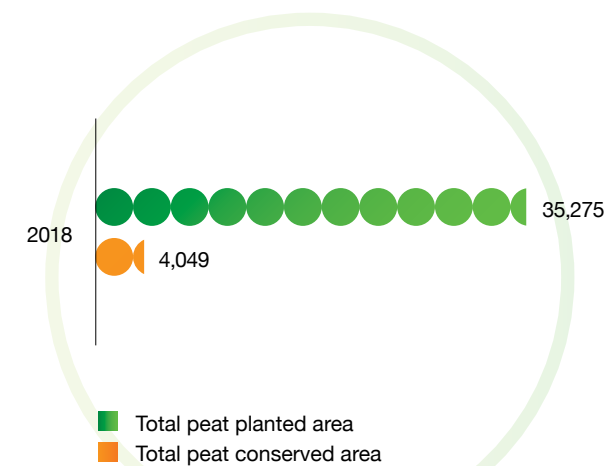
PROTECTION OF PEATLANDS

Musim Mas does not conduct any new plantings on peatlands, regardless of depth. Prior to any new development, these areas are identified through HCV and HCS assessments, and national laws are adhered to during development. Since 1 January 2008, there have been no new plantings or developments on – nor any new draining of – conserved peat areas at any of our operations. We also make clear our peat commitments to our suppliers during our engagements with them.

For plantations that currently exist on peat, we ensure that we apply best peat management practices in accordance with local regulations, and follow requirements set out in the sustainability standards we have adopted. This includes putting into place a network of water control structures to regulate water levels and maintaining water tables according to best practice in order to reduce greenhouse gas emissions. To ensure the long-term viability of drainage, we carry out the necessary drainability assessments prior to replanting.

Musim Mas has worked with the Indonesian Environmental and Forestry Ministry, *Kementerian Lingkungan Hidup dan Kehutanan* (KLHK), to evaluate our existing plantings on peat and identify critical areas for restoration. In 2018, we engaged an independent peat expert to review the critical areas identified and to explore the options for a peatland restoration mechanism where results have shown that there is no critical peat area in our operations. The peat maps have been submitted to KLHK for their follow-up action recommendations and further guidance. Maps of our peatlands and planted peat are available on page 83.

Total peat planted and conserved area (ha)



REDUCING OUR CARBON FOOTPRINT

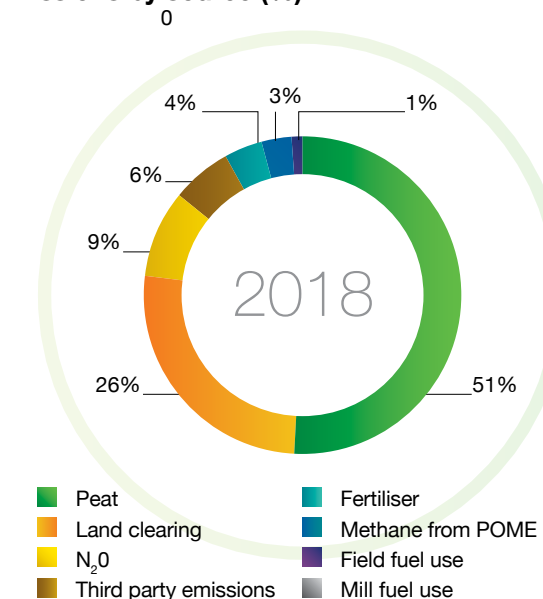
We have made great strides towards minimising greenhouse gas (GHG) emissions in our operations. This includes employing best management practices such as installing methane capture facilities at our palm oil mills, improving yield and optimising integrated pest management approaches and precision agriculture. We recognise the significant contribution of peat within our operations on our total GHG emissions and strive to apply best management practices to these areas.

RSPO PalmGHG

We calculate the GHG emissions we produce using version 3.0.1 of the RSPO PalmGHG calculator and will adopt version 4.0 in 2020. In 2018, the biggest contributors to our GHG footprint were emissions from peat and land conversion, followed by field N₂O discharge, third-party emissions, fertilisers and methane from palm oil mill effluent (POME).

The 2018 RSPO audit, which reported 2017 emissions data, showed an overall increase in net GHG emissions of 466,874 tonnes of carbon dioxide equivalent (MT CO₂e) compared to the 2017 RSPO audit covering 2016 data. Notably, we witnessed a significant rise in third-party emissions as several of our mills are now receiving more FFB from third-party suppliers. We match the emissions of the third parties supplying our mills at a similar rate as the emissions generated by our own estates. Despite this, overall net GHG emissions have not drastically risen due to our increased crop sequestration, shell exports and POME electricity credits¹² offsetting the emissions we generate.

Emissions by source (%)

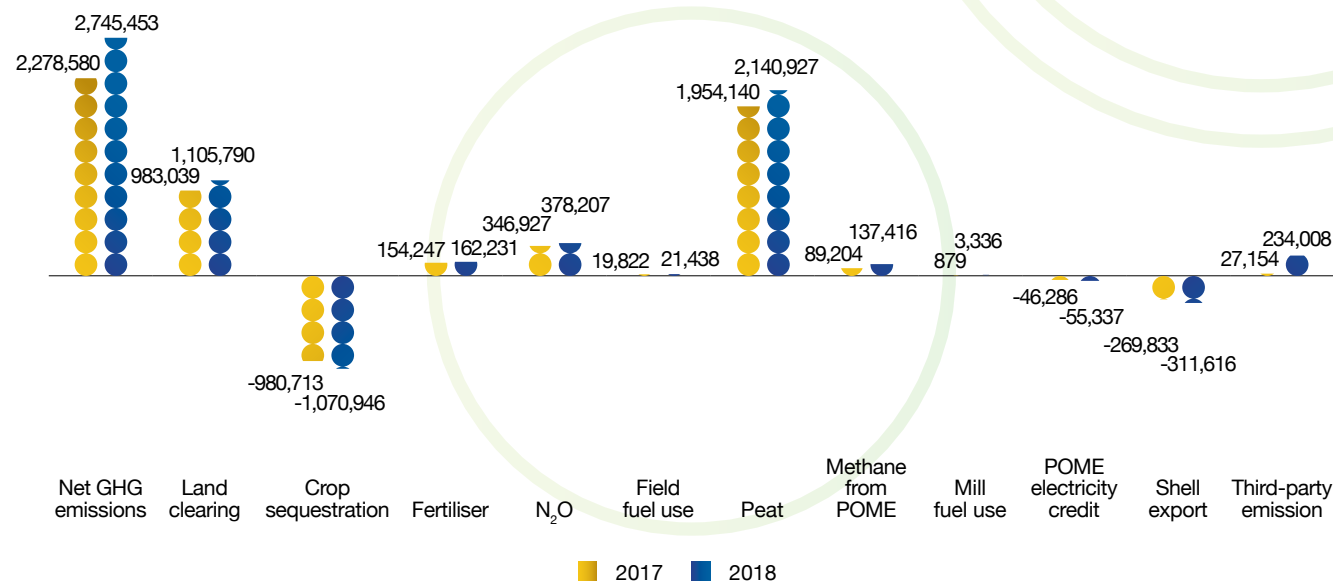


Note: While data is calculated and reported for our 2018 RSPO audit cycle, data covers 2017 figures.

¹² Musim Mas has installed methane capture facilities at each mill to capture methane emissions from POME. We also use the methane captured to generate electricity, which is sent to workers' housing and national grid. This electricity generation provides credits that further reduces the emissions of our mill operation.

Promoting positive environmental impacts

GHG emission sources and sinks (MT CO₂e)



Note:

- While data is calculated and reported for our 2018 RSPO audit cycle, data covers 2017 figures.
- GHG emissions for peat show an increase as a result of double-counting. This figure is due to the commissioning of a new mill in Sumatra that shares the same supply base with another mill in the vicinity, which has an existing all-peat plantation. The calculations follow RSPO PalmGHG requirements.
- At present, we do not have data for conservation area offset, mill electricity credits and grid electricity utilisation, and therefore these figures are not reflected here.

In 2018, our GHG emission intensity was 3.49 MT CO₂e per tonne of CPO produced (MT CPO), a slight increase from the previous year's figures. This is mainly due to two mills in Sumatra: a new mill that was commissioned in 2017, and another that shifted from producing RSPO Identity Preserved to Mass Balance volumes and now includes third-party emissions in its figures. The newly commissioned mill contributed to an increase to our peat emissions as it receives FFB from an existing Musim Mas plantation that sits on peatland. Based on the RSPO PalmGHG reporting requirements, the emissions from this plantation were counted twice towards our overall emission intensity as it supplies two different Musim Mas mills. Despite this, our overall emission intensity still saw a 41% overall reduction compared to our 2006 baseline due to our concerted

efforts to lower them over the years. We target to reduce our emissions intensity (EI) by 55% compared to our 2006 baseline, by 2025. This translates to an EI target of 2.68 MT CO₂e per MT CPO.

GHG Protocol and CDP disclosure

Since 2015, Musim Mas has been participating in the CDP disclosure programme. To calculate¹³ our scope 1 and scope 2 GHG emissions covering all upstream and downstream activities where we exercise operational control, we use the GHG Protocol accounting standard for submissions to CDP. In 2018, we participated in the CDP Forests and CDP Climate Change programmes and earned scores of B and C respectively. We have also started submitting to the CDP Water programme.¹⁴

CARBON INTENSITY (MT CO₂e/MT CPO)

	2015	2016	2017	2018
Group	3.15	3.33	3.39	3.49

Note: Data calculated and reported for each RSPO auditing cycle covers data from the year before.

¹³ We use the RSPO PalmGHG calculator to measure the GHG emissions of our RSPO-certified palm oil mills. PalmGHG is a product-based approach, covering the emissions of all activities involved in producing palm oil. We use the GHG Protocol accounting standard to report to the CDP our GHG emissions for all operations within the Group's operational control. CDP is an actor-based approach, and covers the emissions of all activities by the actor (company), even for those not involved in the production process.
¹⁴ CDP scores for first year submissions are usually not published.

SCOPE 1 & 2 EMISSIONS BY REGION 2018 (MT CO₂e)

	Indonesia	Asia (other than Indonesia)	Europe	America
Scope 1	1,354,696	53,841	57,826	0
Scope 2	209,527	22,009	16,425	40

SCOPE 1 & 2 EMISSIONS BY BUSINESS ACTIVITY 2018 (MT CO₂e)

	Oil palm plantations	Palm oil mills	Refineries & Oleochemical plants	Others
Scope 1	384,181	19,878	959,114	103,189
Scope 2	0	78	243,549	4,375

Note: Scope 1 and scope 2 figures reported in our previous Sustainability Report reflected the data submitted for the 2018 CDP submission cycle. In this report, we have re-included the 2018 submission (covering the year of 2017) to be in line with the scope of this report. For 2017 submission figures, see page 70.

We share our experiences of leading GHG reduction and monitoring practices through collaborative platforms as Co-chair of the RSPO Emissions Reduction Working Group as well as Co-lead of the ISPO GHG Working Group.

Methane recovery

We have in place certain measures to most appropriately and effectively treat the POME produced from processing FFB. For example, we use anaerobic digestion in deep open lagoons designed to significantly reduce organic compounds. All mills are equipped with solid decanter units, which enable them to produce dried decanter mass that can be used as organic fertiliser, thus reducing pollutants.

As at December 2018, 14 out of our 16 mills are equipped with methane capture facilities that harness methane from POME treatment to fuel the generation of electricity and redirect it to power our mills, estates and workers' housing. In 2018, this contributed to the reduction of 395,733 MT CO₂e in overall emissions. In September 2019, the construction of a 15th methane capture facility was completed.

Musim Mas has also been exporting surplus electricity generated by ten of our mills to the national grid, *Perusahaan Listrik Negara*, since 2014.

For more on our methane recovery methods, see page 44 of our Sustainability Report 2017.

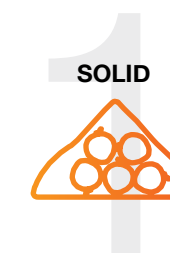
Holistic waste management

Our mills operate holistic waste management systems that aim to achieve "zero discharge" and reduce our environmental impact. These systems either minimise waste or harness it for use as inputs in other operational processes. The specific waste management solution adopted at each mill depends on factors such as seasonal inputs, local site conditions, energy requirements, mill design and crop type variations.

Waste management methods



MILL WASTE



SOLID

- Press cake fibre, empty fruit bunch fibre and kernel shells are used in palm oil mills as fuel to generate heat and electricity.
- Boiler ash is applied back to the plantation as soil conditioner.
- Decanter solid is used as fertiliser substitute.



GAS

- Boiler chimney discharges to the atmosphere are smoke free.
- Methane gas generated from the anaerobic processing of liquid effluent is collected in our methane capture facilities in all our wholly owned palm oil mills. See section on greenhouse gas emissions.



LIQUID

Palm oil mill effluent is the liquid waste from mills. It is a high strength liquor with a high biological oxygen demand (BOD) which is reduced by a process of anaerobic digestion in engineered lagoons. The resulting liquid has a BOD lower than 100ppm and this is applied to plantation as an irrigant and organic fertiliser. The anaerobic digestion process releases methane gas.

Promoting positive environmental impacts

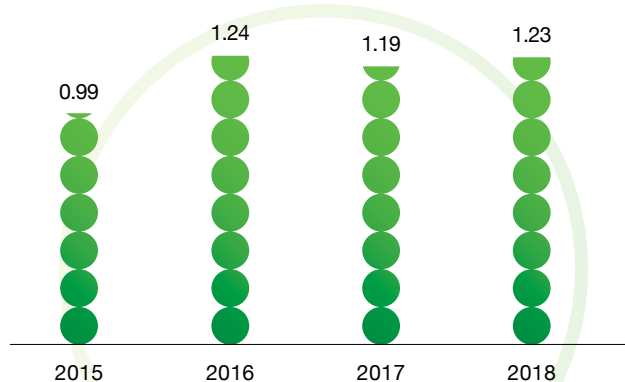
WATER ACCOUNTABILITY AND FOOTPRINT

Musim Mas recognises the importance of water as an essential and finite global resource. We strive to manage its use and to minimise the impact of our operations on this precious commodity. We have adopted a comprehensive water management plan to maintain the quality and availability of surface water and groundwater for our business and surrounding communities. Within our operations, we monitor both the water we use, i.e. what is withdrawn from its sources, and the water we consume, i.e. the portion that is not returned to the original water source.

WATER USED AND WATER CONSUMED

In 2018, we used 4.62 million cubic metres (m³) of water across our plantation and mill operations, a 5% increase compared to 2017. Water usage at the plantation level fell by 0.49 million m³ but increased by 0.72 million m³ at mill level in 2018 compared to 2017. This is largely due to the two new mills commissioned in 2017. As these mills were established in May and July 2017 respectively, data was not available for a full year previously. Moreover, due to higher processing volumes of fresh fruit bunches (FFB) in West Kalimantan in 2018, there was an increase in water usage at one of our mills. Our overall water usage intensity was 1.23 m³ per tonne of FFB produced (m³/MT FFB), a slight increase from our 2017 usage for similar reasons. Moreover, there have been changes to the FFB processing procedure which require more water, leading to a slight increase in water usage intensity.

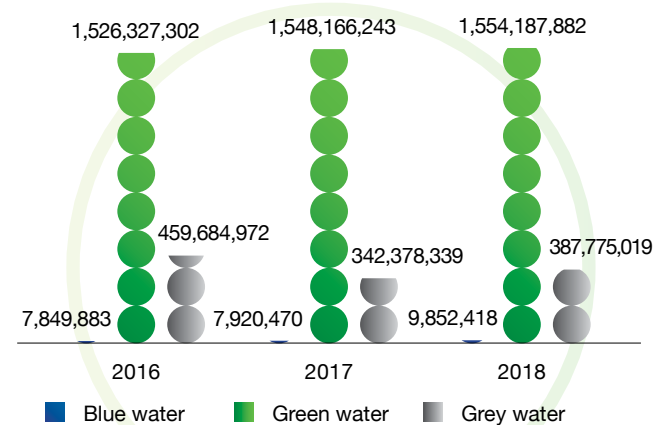
Water usage at mills (m³/MT FFB)



We calculate our water consumption using the Water Footprint Network methodology.¹⁵ In 2018, our operations registered a blue water footprint of 9.85 million m³, a green water footprint of 1.55 billion m³ and a grey water footprint of 387.78 million m³. A water balance analysis is conducted annually to compare the amount of water received by our plantations from rainfall against our total water consumption. The 2018 results show a net positive water balance.

We take measures to optimise water usage and consumption. Green water is outside the scope of our control because it is largely dependent on the local climate. Hence, our water reduction programmes are targeted at reducing blue and grey water consumption in our plantations, mills and residential areas. These efforts include programmes for recycling water at facilities for sludge cleaning, collecting water to wash equipment and scheduling fertiliser application to coincide with the dry season to reduce fertiliser runoff. Due to higher grey water consumption, we are more vigilant about our water and soil conservation practices. We target to reduce grey water consumption levels by 2.75% if fertiliser usage is 10% below 2016 levels, 5.5% if fertiliser usage is 20% below 2016 levels, and 8.25% if the fertiliser usage is 30% below 2016 levels.

Water consumption (m³)



Note: In 2018, we have revised the assumptions we adopt in the calculation of our blue water consumption, and have therefore restated 2016 and 2017 figures from the previous sustainability report.

SAFEGUARDING WATER QUALITY AND MANAGING EFFLUENTS

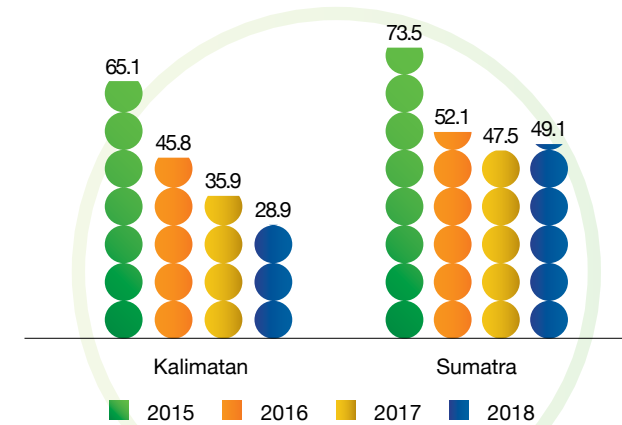
All effluent is either discharged through watercourses or applied to land as fertiliser.

This effluent is treated before it is released into local rivers. The Kalimantan mill received a license for discharge in November 2018. We maintain biological oxygen demand (BOD) levels below 100 milligrams per litre (mg/L) and COD levels below 350 mg/L to avoid any impact on groundwater and nearby water sources, according to acceptable regulatory thresholds.

For other mills, we repurpose POME and apply it to plantation land to provide moisture, nutrients and organic matter that enhance the soil. Due to new mills in Kalimantan and Sumatra, there has been an increase in FFB processed and therefore higher volumes of treated effluent were discharged for land application in 2018.

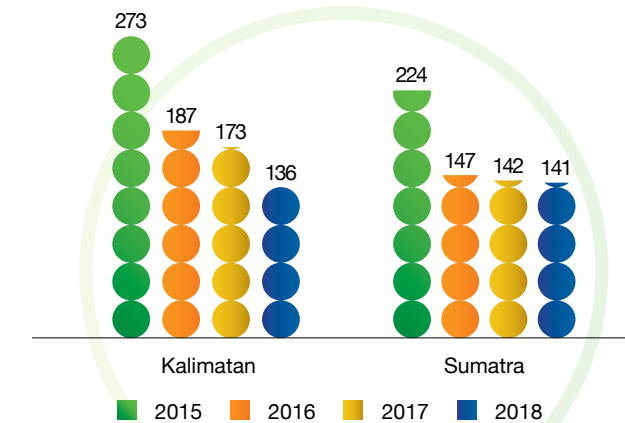
We also monitor phosphorus and nitrogen levels in watercourses. Since our first Palm Oil Innovation Group (POIG) verification audit, we have reviewed the number and location of water monitoring points at our operations, and have added new ones to better reflect inlet and outlet positioning. In cases where elevated phosphorus and nitrogen levels are identified, we have implemented measures to reduce these levels by adjusting fertiliser rates and procedures.

Land application BOD levels at mills by region (mg/L)



Note: Indonesian Government regulations require BOD levels to remain below 5,000 mg/L.

Land application COD levels at mills by region (mg/L)



Note: Indonesian Government regulations require COD levels to remain below 350 mg/L.

RIPARIAN ZONE MANAGEMENT

Riparian zones serve as a buffer between natural waterways and land used for agricultural development. As such, they can help prevent soil erosion and minimise surface runoff. Buffer zones also help maintain and enhance biodiversity.

Following legal requirements pertaining to land development for oil palm cultivation, we maintain 50-metre riparian buffer zones for small rivers and 100-metre buffers for wide rivers. In addition to adhering to legal requirements and other voluntary codes, we have also strengthened our monitoring process by regularly evaluating water quality. As part of our focus on biodiversity, we also conduct surveys on the presence of birds, butterflies, reptiles and small mammals in riparian zones.

¹⁵ The Water Footprint Network methodology categorises water consumption under three categories: “green water” for rainwater consumption, “blue water” for consumption of water from fresh surface or groundwater (water withdrawn from rivers, lakes and municipal water sources), and “grey water” for the amount of water used to dilute pollutants.
Source: <https://waterfootprint.org/en/water-footprint/what-is-water-footprint/>, accessed 12 August 2019.

Promoting positive environmental impacts

Riparian buffer restoration and remediation project in PT Musim Mas

In 2007, we embarked on a restoration and remediation project at one of our plantations in Sorek, Riau. During the restoration of the river buffer, the first row of oil palms on either side of the waterway was removed and replaced with jungle trees. The oil palms in the second to the fifth rows were left untouched, and no fertilisers or pesticides were applied to enable the undergrowth to grow out naturally. We also carried out the introgression of jungle saplings under the oil palms and set aside a riparian buffer when replanting the old palms.



Restored riparian reserve in PT Musim Mas, Sorek site



REDUCING CHEMICAL USE

Optimising and reducing reliance on chemical fertilisers and pesticides is important to Musim Mas, and we are constantly looking for organic substitutes where possible. We have adopted international standards and best practices for guidance on the exclusion of certain chemicals, such as those classified as Class 1A or 1B pesticide hazards by the World Health Organization, and those listed on the Stockholm or Rotterdam Conventions, the Forest Stewardship Council's Highly Hazardous list, or the prohibited pesticide list published by Rainforest Alliance's Sustainable Agriculture Network.

Since 2011, we have banned the use of paraquat at all Musim Mas-owned plantations. To protect the health and safety of our workers, we have implemented policies detailing the requirements and procedures on utilising personal protective equipment (PPE) during pesticide application. All workers handling chemicals attend regular training as well as free regular medical check-ups.

We track the use of pesticides applied at each of our operations regularly and monitor toxicity levels to ensure health and safety requirements are being met. From 2015 to 2018, toxicity levels of pesticides in use have remained comparable to industry standards, and we believe our current range of 320-520 toxicity units per hectare is largely aligned with best practices within the palm oil industry.

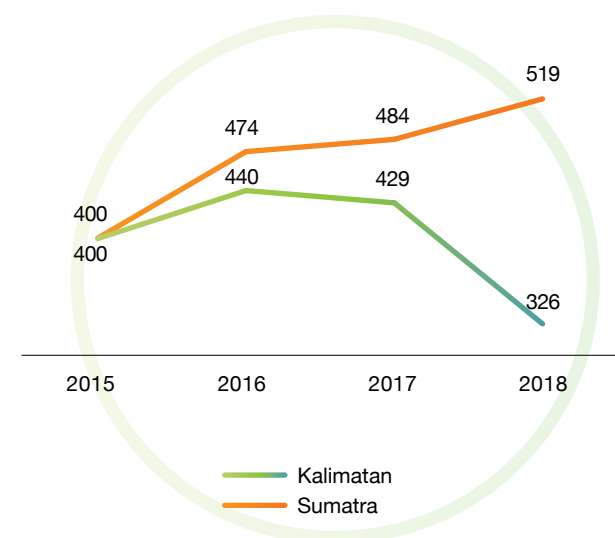


PHASING OUT PESTICIDES EFFLUENTS

Our integrated pest management (IPM) system combines biological, cultural, physical and chemical tools to reduce the use of pesticides and herbicides and their associated environmental and health risks. Supported by our research and development (R&D) teams, we study and employ best management practices to effectively keep pest outbreaks at bay and only use pesticides when imminent outbreaks are detected via regular pest censuses. Our monitoring system provides a 48-hour turnaround towards the recommendation of pesticide use following the detection of an outbreak through a census.

In November 2018, Musim Mas carried out an independent review to assess the effectiveness of pesticides used at one of our plantations in Riau. The review evaluated our pesticide management approaches against POIG requirements and included proposals for alternatives with timebound plans for their phase-out where necessary. Musim Mas received approval from the POIG Organising Committee exempting the limited use of the few remaining POIG-prohibited pesticides during a phase-out period while our R&D department works diligently to eliminate the use of – and reliance upon – these chemicals as we switch to alternatives. By December 2018, Musim Mas successfully ended the use of two of these pesticides with plans to phase out the rest by December 2021.

Toxicity per hectare by region



Promoting positive environmental impacts

Musim Mas pesticide phase-out plan

Active ingredient	Type	Toxicity-rats mg/kg LD ₅₀	Expected phase-out date	Remarks
Brodifacoum	Rodenticide	0.4	Phased out Dec 2018	–
Permethrin	Insecticide	430-4,000	Phased out Dec 2018	–
Benomyl	Fungicide	>5,000	Dec 2019	Mainly used to control fungal pathogens in oil palm nurseries and used alternately with other fungicides to prevent resistance to fungal disease. Musim Mas is carrying out a fungicide trial to screen for alternatives.
Glufosinate-ammonium	Herbicide	2,000	Dec 2019	Musim Mas will immediately phase out this pesticide if a promising alternative is found.
Cypermethrin	Insecticide	240-4,150	Dec 2020	A widely used synthetic pyrethroid insecticide to control numerous types of insect pests. Musim Mas is currently in the process of evaluating several pesticides to screen for alternatives and will immediately phase out Cypermethrin if a promising alternative is found.
Mancozeb	Fungicide	>5,000	Dec 2020	Mainly used to control fungal pathogens in oil palm nurseries and used alternately with other fungicides to prevent resistance of fungal diseases. Musim Mas is carrying out a fungicide trial to screen for alternatives and will immediately phase out Mancozeb if a promising alternative is found.
Chlorpyrifos	Insecticide	135-163	Dec 2021	There is currently no alternative to Chlorpyrifos, which is presently used to treat termites. Musim Mas is conducting a trial to screen for alternatives (see next page). Musim Mas will immediately phase out Chlorpyrifos if a promising alternative is found.
Coumatetralyl	Rodenticide	16.5	Dec 2021	An alternative has been identified and is waiting for Indonesian Government approval. Musim Mas will immediately phase out Coumatetralyl once approved.
Warfarin	Rodenticide	186	Dec 2021	An alternative has been identified and is waiting for Indonesian Government approval. Musim Mas will immediately phase out Warfarin once approved.
Carbosulfan	Insecticide	250	For emergency use only	There is currently no alternative to Carbosulfan, which is an insecticide/nematicide used to control red stripe weevils and red ring disease. Musim Mas is seeking approval from the POIG Organising Committee for emergency use, which is to be granted within three days depending upon the urgency of the matter. As at July 2019, there have been two instances of Musim Mas seeking and receiving POIG approval to use Carbosulfan to curb the outbreak of red stripe weevils affecting young palms at one of our estates.

Trialling of Hexaflumuron to reduce use of Chlorpyrifos

Until an alternative is found, Chlorpyrifos is still needed to protect infested palm from being killed by termites in the field. In September 2018, Musim Mas began a trial to evaluate the effectiveness of Hexaflumuron (a slow-acting chitin synthesis inhibitor) within a baiting system. Hexaflumuron is expected to reduce the colonies of termite pests in the field and is widely used elsewhere for termite control. To be conclusive, this trial will need two to three years to completely eradicate all termite colonies in the field. With this alternative, we expect the usage of Chlorpyrifos to decline by 70% every year. The aim is to eliminate the use of Chlorpyrifos as it will not be required should this trial succeed.

MAINTAINING SOIL HEALTH AND STRUCTURE

Unsustainable agricultural activities can contribute to the long-term deterioration of soil health and soil structure. It is therefore vital that we follow good agricultural practices that sustain our future productivity and safeguard our environment.

We promote topsoil fertility by maintaining appropriate levels of organic matter for specific soil types. To do this, we reuse cleared vegetation, including cut fronds from harvesting or pruning, to return nutrients to the soil. Waste biomass from our mills – including boiler ash and dried decanter solids – are applied to enhance soil quality. We further protect soil health by planting legume cover crops following the clearance of old palms.

The growth of moss, soft grasses and ferns is encouraged under older palms. This type of ground cover inhibits the growth of weeds and helps to minimise the depletion of soil organic matter from exposure to sunlight and erosion. In hilly regions, where the angle of slopes falls within limits defined by legal or voluntary codes, we plant oil palms in terraces to trap rainwater, reduce surface runoff and minimise soil erosion.



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Making it count by protecting human and labour rights in our operations

Social Responsibility



We are committed to the United Nations (UN) Universal Declaration of Human Rights, the International Labour Organization (ILO) Declaration on Fundamental Principles and Rights at Work, the UN Declaration on the Rights of Indigenous Peoples, the Food and Agriculture Organisation's Voluntary Guidelines on the Responsible Governance of Tenure, and the UN Guiding Principles on Business and Human Rights.

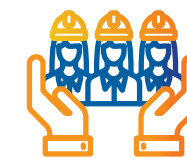
Musim Mas seeks to respect, protect and, if necessary, restore the human rights of our employees. Since 2015,

we have worked on aligning our policies and practices with the Free and Fair Labor in Palm Oil Production Principles. In 2016, an independent labour audit was conducted in collaboration with Verité to assess the situation at our operations. Since then, we have used these findings to take active measures that address overtime hours, protect the legal rights of undocumented workers, strengthen policies to ensure benefits are equally delivered regardless of gender, and strengthen housing policies in line with international standards where Indonesian legal standards are unclear.

Strengthened labour practices based on 2016 labour assessment



1. Capped normal normal period overtime hours at 14 hours a week and three hours a day; ensuring all overtime is voluntary and paid in accordance with legal standards; reviewing of rotation system to address work life balance; and limiting the number of off days workers may choose not to take.



3. Provide unrestricted menstrual leave to female workers in accordance with applicable laws; recognise female workers as heads of families for housing entitlement as verified in the Family Card; Gender Committees engaged with third parties to better understand gender issues.



2. Formalised temporary workers through short-term employment contracts and insurance; upon compliance with the employment terms, these workers are recruited as permanent workers.



4. Studied water consumption patterns in the household to derive a new water distribution system to ensure equitable supply of free clean water to all households.

Social Responsibility

We are also committed to building sustained, long-term relationships with communities, thus ensuring that they all have access to the benefits of a sustainable model of oil palm development. Prior to commencing any new development, we adhere to the Roundtable on Sustainable Palm Oil (RSPO) New Planting Procedure (NPP), and undertake social and environmental impact assessments (SEIA) to review social conditions and implement Free, Prior and Informed Consent (FPIC) with affected communities. We then develop and implement management and monitoring plans in line with the outcomes of these findings. Our operations are also in alignment with the Social Requirements outlined under the HCSA toolkit, namely 11 of the 14 Social Requirements that were formally adopted by the High Carbon Stock Approach (HCSA) Steering Group in November 2018.

We recognise that in this labour-intensive industry, there is a risk that human rights abuses and violations can occur within the supply chain. To ensure that the rights of local and indigenous communities impacted by the production of palm oil are not violated within our supply chain, we emphasise the 'No Exploitation' pillar of our No Deforestation, No Peat, No Exploitation (NDPE) policy to our suppliers and third-party suppliers. Recognising the complexities and challenges across the industry, we also actively work with peers in the landscapes and sectors we operate to improve the livelihoods of local communities.

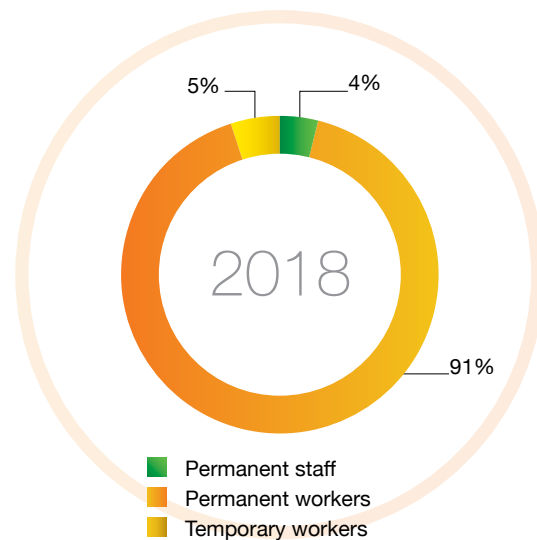
In March 2018, Musim Mas joined forces with four other major players in the industry under the umbrella of the Decent Rural Living Initiative (DRLI) convened by Forum for the Future. The aim of this pre-competitive collaboration is to provide practical and meaningful recommendations to help rural workers secure their long-term ability to thrive, regardless of gender. In June 2019, two collaborative pilot projects were announced: one around developing contracts to minimise the instability associated with casual and flexible work, and one on strengthening gender committees on estates. DRLI members are hopeful that the platform and pilots will eventually be scaled up to include smallholders.

In addition to the POIG platform, Musim Mas is also represented in the RSPO Human Rights Working Group and the HCSA Social Requirements Working Group. Under the latter, Musim Mas joined two of the four sub-working groups that were formed to finalise the remaining requirements (under the HCSA toolkit), on food security and livelihoods and the application of these provisions to existing operations.

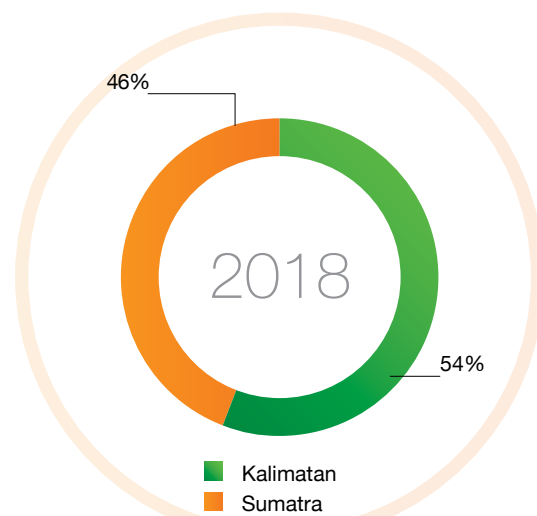
PROTECTING HUMAN RIGHTS IN THE WORKPLACE

We employ a workforce of more than 37,000 across our global operations as at 31 December 2018, and a critical part of our commitment to labour standards is to safeguard the livelihoods of all staff and workers across the Group and to provide development opportunities for them.

Employees by category (%)



Employees by region (%)



We want to ensure that every employee is empowered to succeed in a safe, progressive work environment with access to equal or better standards compared to the wider palm oil industry. Each employee should expect to be treated with dignity and respect, to be adequately and fairly compensated for overtime, and to have access to a fair and accountable grievance system.

WAGES, BENEFITS, WORKING HOURS AND CONDITIONS

At our plantation and mill operations, we monitor local economic developments to make sure that pay and working conditions at Musim Mas not only comply with legal or industry minimum standards, but also that these are sufficient to provide a decent living wage. All salaries and opportunities are based on merit without discrepancy between genders. Maintaining transparent and reliable records of all working hours and wages is also mandatory. All workers receive copies of their contracts, and it is our policy that all workers retain control over their identity documents. Workers are informed when their collective work agreement is made publicly available four months in advance of any change. Pocketbooks have been created to improve understanding of our personnel policies.

Musim Mas lowest monthly wage (IDR)

	2015	2016	2017	2018
Kalimantan	1,735,000	1,934,600	2,095,000	2,458,000
Sumatra	1,615,000	1,800,750	1,949,285	2,289,228

Note: Lowest monthly wages may differ regionally and within provinces. Wages listed above are the lowest paid within each respective province. A full breakdown of all minimum wages in each region of Indonesia is available [here](#).

In addition to monetary compensation, Musim Mas provides workers with free facilities such as health care, child care, housing (including electricity and water), education and transport. These in-kind benefits are valued at an equivalent of 70% more than the minimum wages set by local governments. In 2018, 12,944 Musim Mas-owned houses were made available to employees in Sumatra and Kalimantan. Parental leave and retirement provisions are provided according to national law, and workers are insured for work-related risks and hazards, including disability and invalidity due to occupational hazards.

We work together with workers' unions and local government offices to conduct annual living wage surveys to ensure that wages, including in-kind benefits provided, are sufficient to cover workers' and staff living costs. Musim Mas will also be aligning our methodology with the guidelines published by RSPO in 'Decent Living Wage' Guidance, which was released in June 2019.

We endeavour to ensure our workers are equipped for the workplace through relevant training and awareness sessions. Beyond this, we provide work development opportunities by investing in capacity building and technical skills programmes. These programmes include occupational safety and health specialist training, training and licensing to operate heavy equipment, job-specific training and sustainability workshops.

We further support the welfare of our workforce through substantial investments in infrastructure development, including roads, housing, water supplies, medical facilities, schools and other amenities. We pay special attention to ensure that our workers and residents in surrounding communities are provided access to clean, safe water in their homes. We regularly organise interactive programmes and events across our operations to maintain two-way communication with all employees.

Improving working hours

Since 2017, we have focused our efforts on overtime restrictions. Following the assessment and recommendations put forward by Verité, Musim Mas reviewed the number of workers needed annually and the requirements for different job scopes and types. Through continuous dialogue with union representatives and government bodies, we have agreed upon maximum permissible overtime by taking into account applicable laws and have made this part of our workers' collective agreement. We now cap overtime at 14 hours a week and three hours a day.

During extraordinary periods, for instance, peak crop season, certain work such as maintenance is scheduled for Sundays to ensure minimal disruptions to our operations and the timely processing of fruit bunches. These extra hours are recorded as rest-day work and/or overtime and are paid a premium. Employees who choose to work overtime do so voluntarily.

Musim Mas also conducts motion studies collaboratively with workers to determine harvesting targets. This process includes the systematic recording and critical examination of existing practices and is built into workers' performance assessments. We then develop and propose more efficient and effective methods, both to the workers and for the company, to carry out the work required.

NO CHILD, SLAVE OR FORCED LABOUR

Musim Mas does not allow the use of forced or trafficked labour, and we do not employ child labour in our operations. Our recruitment policy prohibits the employment of any individual under the age of 18, and all job applicants are verified against minimum age requirements. We recently improved our documentation system for personnel files

Social Responsibility

in our recruitment procedures, as well as ensured that all records are up to date. Our policies and procedures are regularly shared with our employees and workers unions through workshops and briefings, to eliminate risk of workers bringing family members under the age of 18 to help them in the field or be physically present on the premises. To bolster this, we emphasise the importance of education and provide schools and childcare facilities for children living in and around plantations. For information on our schools and childcare facilities, please refer to the section on Protecting children's rights and providing access to education on page 48.

NO HARASSMENT AND ABUSE, NOR UNLAWFUL OR UNETHICAL DISCRIMINATION

Musim Mas does not tolerate discrimination or harassment in any form and has implemented measures that allow employees to lodge complaints anonymously. All complaints and grievances are managed to ensure that there is no risk of reprisal. A Gender Committee has been established at each of our operations to review and uphold policies and issues pertaining to human rights and equality, with a focus on vulnerable groups such as women and children. This includes promoting discussion of gender-related issues, knowledge-sharing, and socialising our human rights and equality policies among our workforce and communities. These committees are responsible for establishing appropriate measures to address concerns such as menstruation leave and breastfeeding. Committee members are also trained by external experts to address and facilitate the resolution of sexual assault and domestic abuse cases. Each committee is made up of men and women who were elected by staff and works under the guidance of Group management.

We believe our policies covering harassment, abuse, discrimination and other types of misconduct must be enforced in a meaningful and consistent way. In 2018, we standardised our disciplinary and termination systems, including the application of sanctions and warnings, to ensure they incorporate proper appeal procedures and clearly defined roles. These procedures also include an integrated investigation process to guarantee the objectivity of any disciplinary decision resulting in sanctions.

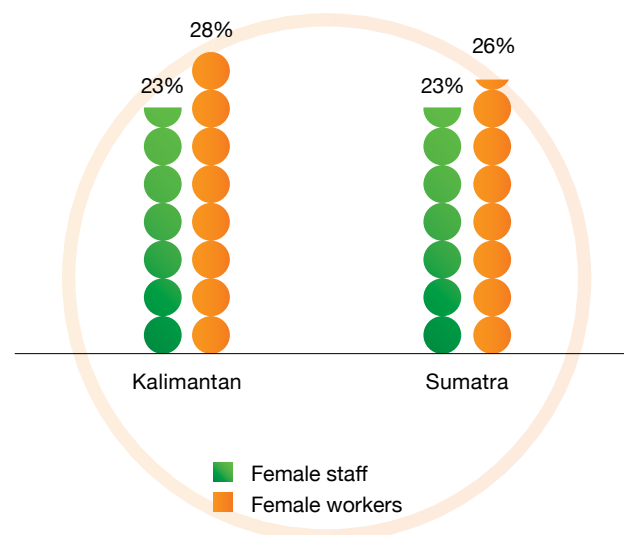
EQUAL OPPORTUNITIES

Musim Mas has policies in place to ensure that workers are employed and promoted based on their competency, capability and experience, regardless of gender, race, nationality, religion, age or union affiliation. We treat all employees equally and reward them fairly based on merit.

Of a total 21,943 employees across our plantations and mills, 80 are managers at middle and senior levels. Women account for 23% of our overall staff and 27% of workers at mill- and plantation-level.

Housing facilities are also provided to the heads of families under their registered Family Cards¹⁶, regardless of gender.

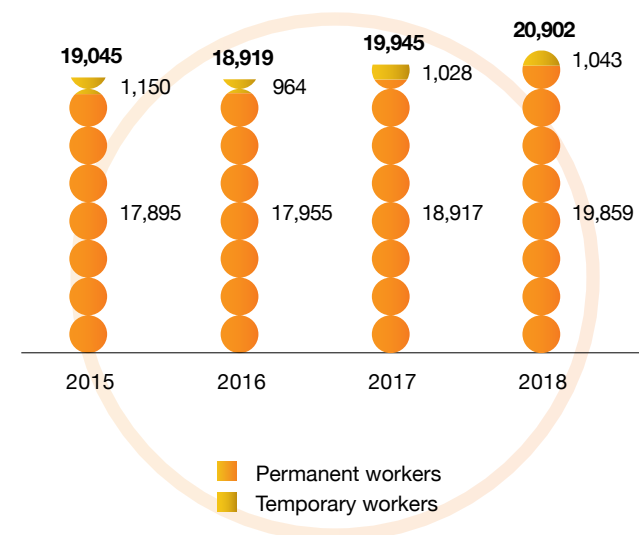
Number of female staff and workers of total workforce by region 2018 (%)



TEMPORARY WORKERS

We respect the rights of all contract, temporary and migrant workers, regardless of gender. As at December 2018, 5% of workers at Musim Mas are considered temporary or short-term contract workers. To ensure that all workers' efforts are formally recognised, we officialise the employment status of temporary workers through short-term contracts, as well as provide them with insurance. This provides flexibility to those who opt for temporary work instead of full-time employment. Some women prefer short-term and temporary work because such arrangements allow them to better manage other domestic responsibilities. Workers hired under short-term contracts can become eligible for permanent to be recruited permanently, as long as they have worked for three months under the contract.

Number of workers by contract type



FREEDOM OF ASSOCIATION, UNIONS AND COLLECTIVE BARGAINING

We respect the right of all workers regardless of employment status to join workers' unions. Currently 80.5% of our workers belong to unions. Our collective labour agreements are in line with government regulations and has been registered with the local manpower offices. This agreement is valid for all employees, whether they are unionised or not, and currently covers all staff. Members are free to meet during working hours to discuss any issues without the presence of management representatives.

The Group's management and workers' unions representing our employees maintain positive relationships and meet regularly to discuss matters of concern to members, such as overtime and compensation, working hour policies based on type and variety of work available, work-life balance and menstruation leave.

WORKER COMPLAINTS AND ACCESS TO GRIEVANCE MECHANISM

We are committed to ensuring that all permanent and temporary workers have access to a transparent and accountable grievance mechanism without fear of reprisal or dismissal. Our internal, site-level grievance procedure has been communicated to our workers, and we regularly post reminders about the system on public boards. Our whistleblowing procedure is also incorporated into our internal grievance mechanism. Employees can raise complaints through anonymous whistleblowing lines, suggestion boxes located around our operations, grievance logbooks at administrative offices, over the phone to our Public Affairs Department (*Hubungan Masyarakat*) and through the workers' union.

Recognising the distances between estate offices and head offices, we developed a centralised system in 2018 to consolidate and review grievance cases. Complaints filed with supervisors are escalated to their managers, and all grievances are either processed within a week or raised during regular management meetings for discussion and resolution. Management regularly recaps and provide updates on all complaints filed.

Musim Mas respects and ensures the anonymity of all complainants. their data is protected to avoid any conflict with other affected parties. Internal complaints are handled within the organisation.

Addressing workers complaints/grievances

To address workers complaints and grievances, we endeavour to:



1. Communicate the complaint/grievances procedure to stakeholders/workers at least once a year.



2. Assist illiterate parties in submitting their complaints/grievances.



3. Respect and ensure the anonymity of complainants, human resource departments, community spokespersons and whistleblowers, and to protect all parties conveying complaint/grievances.



4. Record all complaints/grievances in a complaints/grievance book.



5. Coordinate with management heads and follow-up on all complaints/grievances submitted within agreed-upon timeframes.



6. Coordinate with an independent party or mediator regarding a complaint/grievance, if needed.

¹⁶ Family Cards are official documents required by the government office to prove residency and family relationships.

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7. Resolve the complaint/ grievance as soon as possible with a solution that benefits both parties while still considering the legal position or the laws and regulations applicable in Indonesia.



8. Record wholly and accurately all phases of the complaint/ grievance resolution process, including a record of parties involved.

OCCUPATIONAL SAFETY AND HEALTH

Guided by International Labour Organization (ILO) core conventions and national laws and regulations, our occupational safety and health (OSH) policy ensures a safe and healthy workplace for all our employees. The goals, performance and programme of the OSH management system are overseen at the Group level, setting out clear objectives for improvements across our mills and estates.

Safety, Health and Environmental Quality committees enforce health and safety protocols in working environments, including identifying potential hazards and ensuring the availability and optimal condition of safety equipment. These committees meet quarterly to discuss safety issues and concerns, and meeting outcomes are reported to the Indonesian Ministry of Manpower. The chair of each committee is the highest-ranking person responsible for the safety of company personnel.

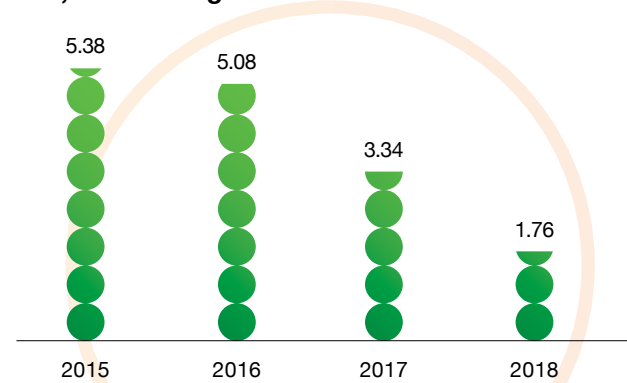
We conduct regular training and safety exercises, including basic safety, first aid and emergency response training, fire-fighting drills and material data safety sheet socialisation on chemicals. We also inculcate the habit of donning adequate PPE, such as gloves, helmets, boots, masks and safety clothing. To further encourage a safety mindset, we included built safety criteria in our employees' personal performance evaluations.

As at December 2018, there are 25 clinics and 2,043 first aid kits strategically located across our plantations to ensure easy access for workers that require first aid or other forms of medical attention. Workers who handle herbicides and pesticides are given monthly medical check-ups to ensure their continued wellbeing. We maintain records on employee illnesses, which are summarised in monthly reports. dominant health issues are analysed so that action plans can be prepared to limit their occurrence or prevent these illnesses from spreading further. Information on health issues is made known to all workers as a preventive measure.

As a result of our concerted safety efforts, we are pleased to report a reduction of 43% in the total number of accidents reported at our operations compared to 2017 figures. The majority of these injuries stem from activities near oil palm trees, where there is a significant risk of cuts due to the presence of fronds and thorns. Other sources of injuries are a result of working tool accidents and motorcycle accidents. However, in 2018, the severity of the accident cases doubled compared to the previous year. One of these cases was the result of a worker fracturing his leg during a car accident, while other incidents occurred when exiting a truck or while walking. We take this rise in severe cases seriously and carry out and review a hazard and identification risk assessment after each incident. We are also conducting refresher workshops for all workers on our OSH policies and measures.

It is with great sadness that we must report one fatality in 2018, which was due to a truck accident on the road. To minimise chances of such incidents recurring in future, we have emphasised safe driving rules to all workers, regularly carry out safety training and ensure that signboards and speed bumps are installed on all roads.

Lost time accident rate (Frequency rate) per 200,000 working hours



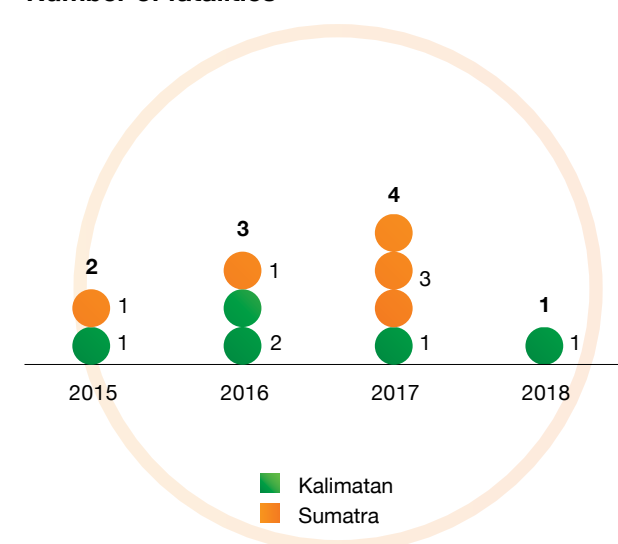
Note: Lost time accident rate (Frequency rate) measures the productivity lost due to accidents and is calculated as follows: number of accidents x 200,000 man-hours divided by total man-hours worked.

SEVERITY RATE

	2015	2016	2017	2018
Group	17.16	19.63	25.21	43.50

Note: Data is based on Indonesia's Ministry of Manpower's guidelines on the number of days lost for severe cases such as loss of body function/part (e.g. lost finger, broken legs, etc.), and not the actual days of absence or medical leave taken by the employee.

Number of fatalities



PARTNERSHIPS WITH COMMUNITIES

Palm oil production is a powerful engine for rural development and has the potential to raise millions out of poverty. Through the multiplier effects that the sector has created, the livelihoods of around 50 million people are directly or indirectly dependent upon palm oil and its derivatives in Indonesia alone. In tandem with generating significant revenues, the sector also contributes towards eradicating poverty and promoting economic growth in the country.

Musim Mas uses every means at our disposal to support rural communities including, but not limited to, providing jobs, basic amenities, medical services and education. Through long-term partnerships with communities and civil society organisations, we take to heart and work to address issues that are important to the communities in the areas where we operate. At every point of contact, we respect and uphold all human rights, including the rights of indigenous and local communities, families, and other tenure holders. We also invest in building shared value that allows both our communities and our organisation to reap the benefits of sustainable palm oil production.

UPHOLDING LAND AND COMMUNITY RIGHTS

We continue to uphold the rights of local communities and indigenous landowners and support them in determining the use of their land. No developments or expansion of our operations are permitted without their Free, Prior and Informed Consent (FPIC), whereby all compensation for lost benefits or any relinquishing of rights is conducted in a voluntary manner agreed upon by the communities.

Throughout the FPIC process, we continuously try to achieve an optimal balance between community needs, the conservation of natural values, and economic benefits. There are currently no open or outstanding conflicts with communities in our existing operations.

Prior to any new development or expansion, participatory mapping is conducted to gather an understanding of social culture, land use, village boundaries, religious values and important issues for the community, including food security issues. This process involves direct participation from local communities. It includes focus group discussions and feeds into land-use plans. In 2018 we began and completed a participatory mapping exercise across all our operations in Sumatra and Kalimantan, covering 66 villages and communities, and even more is being done through our integrated HCV-HCSA assessments.

All information and proposed development plans are shared with local communities. Information is openly available, including impact assessments, proposed benefits and legal arrangements. This includes the identification and management of high conservation value (HCV) areas and high carbon stock (HCS) forests. It is important that Musim Mas maintain a constructive and mutual dialogue with all stakeholders to ensure open and transparent communication. All consultations between growers and/or millers and local communities are facilitated by a neutral party. Potential community development projects always involve both village heads and villagers, and our standard operating procedures ensure workers are represented at bilateral and joint consultative committee meetings. We maintain documentation of all negotiations concerning any compensation for loss of legal or customary rights, as well as all other complaints and grievances.

As part of our commitments to the HCSA and to be POIG-verified, we have been working on Integrated Conservation Land Use Plans (ICLUPs), which are management plans that integrate the findings of HCV, HCS, peat areas and input from community consultations. As the HCSA Steering Group is still working on defining the ICLUP methodology, Musim Mas is taking an interim, precautionary approach by setting aside these areas, with the consensus of the local communities and input from relevant village heads or chiefs. We recognise that ICLUP should not be a one-off effort, but part of ongoing community engagement. Hence, conservation and land use planning have been integrated into our existing community programmes such as Fire Free Village Programme, our scheme smallholder programme (*Kredit Koperasi Primer Anggota*), our Village Development Programme, and our HCV management and monitoring protocol.

Social Responsibility

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PROTECTING CHILDREN'S RIGHTS AND PROVIDING ACCESS TO EDUCATION

As at December 2018, there are 12,822 children below the age of 18 living on our plantations. As we believe that education is the key to economic development and better livelihoods, we provide free education for all employees' children. Due to the geographical remoteness of plantation areas where families have limited alternatives, it is critical that young children of parents who work at estates have access to childcare facilities. Musim Mas has established childcare centres at each estate and its services are available to the workers for free. This allows workers to tend to their work knowing that their children are provided with healthy and nurturing environments for their formative years and developmental needs are tended to. At ages five or six, children start their formal education at kindergartens.

We have also built and funded nine schools within our plantations in Sumatra and Kalimantan. Rated as the top educational institutions in each of their respective regions, our schools provide elementary education to 5,148 children of Musim Mas employees and children from the surrounding communities. We also provide free transport for students who attend other neighbouring secondary schools. Beyond basic education, all students have access to computer classes and extra-curricular activities such as sport, music and leadership programmes. Through the Anwar Karim Foundation, we provided 6 scholarships in 2018 for underprivileged elementary students in support of equal education opportunities. In collaboration with *Gerakan Nasional Orang Tua Asuh* (GNOTA), Musim Mas also provides uniforms and books to students living in the communities surrounding our plantations every schooling year.

We are also active in programmes that involve sharing our best practices with other stakeholders to provide a better understanding of children's rights at plantations. In 2018, Musim Mas spoke at clinic sessions in seminars organised by the RSPO to introduce the provisions of the Children's Rights and Business Principles to all relevant stakeholders based in Indonesia. These sessions looked at findings and practices from a pilot project conducted between August 2017 and June 2018 at RSPO members' oil palm plantations on respecting and protecting children's rights. The key points discussed during the seminar centred around initiatives targeting maternity protection and breastfeeding, childcare, health and nutrition, water, sanitation and hygiene, access to education, child protection, child labour and young workers, as well as their impact on children living on plantations.

COMMUNITY HEALTH AND FOOD SECURITY

Musim Mas provides free health care to all workers and local communities through 25 medical centres. The service includes medical check-ups and routine vaccinations for

infants. Supported by the Anwar Karim Foundation, free public health programmes have also been established through polyclinics in Medan and Surabaya. To ensure that all employees and community members have access to the national health insurance plan, all medical centres also partner with *Badan Penyelenggara Jaminan Sosial* (BPJS) Kesehatan, the Indonesian Social Insurance Administration Organisation.

At each of our facilities, we have implemented various programmes to maintain and/or strengthen food security. Through these, we also strengthen the locale's food production system by diversifying its food source. Free food is provided to children under five through our integrated family planning service centre.

We also provide all our plantation workers with enough land to cultivate fruit and vegetables. As at 2018, the land area provided for this purpose totalled 19 hectares. We also require community members that sell land to the company to confirm that they have retained enough land to meet their own needs.

While some basic goods can be purchased at local stores, local communities depend on cultivation and garden produce to fulfil basic dietary needs and as a source of income. As part of our participatory mapping exercises, we assess current land-use patterns and identify potential garden plots and farmlands in concessions and surrounding community areas. The results of this mapping exercise are incorporated into social management plans and included in participatory land-use planning following the HCSA guidelines. Musim Mas also sits on the sub-group on food security and livelihoods that is part of the HCSA Social Requirements Working Group.

VILLAGE DEVELOPMENT PROGRAMME (VDP)

While our smallholder cooperative approach targets individual scheme smallholders, Musim Mas has implemented an outreach programme tailored to community-managed plantations. Launched in 2000, the Village Development Programme was set up to promote economic independence and improve the welfare of communities in surrounding areas by managing oil palm plantations while the land remains under the community ownership of these villages.

Essentially, the programme facilitates funding and investment for oil palm development while providing communities with technical guidance and training on oil palm cultivation. Once the oil palm enters its productive years, it is sold to Musim Mas, and the villages that own the plantation receive the proceeds from sales of FFB. These monies are used to cover operational expenses and to reimburse initial investment costs in instalments. The procedure for establishing a plantation

(which is covered by our corporate social responsibility (CSR) programme through an interest-free loan), maintaining the land, harvesting the oil palm trees, and sharing benefits is similar to the mechanism employed with scheme shareholders, but the beneficiaries are village authorities.

As at December 2018, 16 villages are part of the programme, six in Sumatra and ten in Kalimantan. In 2018, these villages generated a combined income of IDR 1.06 billion, which is about 15% higher than the income generated in 2017.

OTHER ONGOING CSR PROGRAMMES

In addition to our community programmes, we operate a long-standing outreach initiative through the Anwar Karim Foundation. Through the Foundation, Musim Mas runs programmes that address needs like economic development, and community facilities and infrastructure.

In 2018, about 77% of CSR funding was allocated to Yayasan Anwar Karim (YAK) schools established for the children of Musim Mas staff. Each YAK school has 15 to 20 classrooms, and is equipped with support facilities such as computer labs, libraries, places of worship e.g. mosques, school clinics, canteens, and buses.

Other outreach initiatives include providing shelter for orphans and the elderly in Surabaya, and contributing to the livelihoods of the underprivileged. The Foundation also supports national efforts to tackle the impact of natural disasters, such as despatching food and other necessities to the affected areas after the 2018 earthquake and tsunami in Sulawesi. Other community projects include the construction of wells, road repairs, free medical aid, and financial assistance for local community projects. These programmes create employment and increase income levels across the communities we operate in.

Supporting systems to provide access to clean water

Access to clean water is limited in some parts of Indonesia. To address this issue, we frequently inspect employee housing to ensure an adequate supply of clean water. Musim Mas has also implemented a water rationing system that provides clean water at no cost to all worker households, at a rate of 120 litres of water, per person, per day, to a maximum of five persons per house, which exceeds current Indonesian and World Health Organization (WHO) recommendations.¹⁷

We also consistently raise awareness of our workers and residents in surrounding housing areas to promote the efficient use of water and reduce waste.

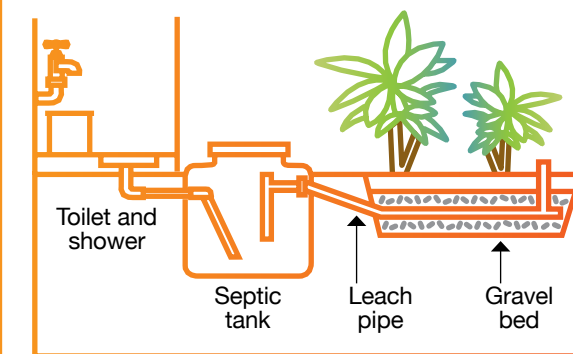
Improving access to safer water with Safe Water Gardens

While clean water is already accessible to communities in our plantations, we believe we can do more for communities in neighbouring villages. Ill health from poor water quality has ripple effects on the household, including child mortality, strained financial resources from medical bills and lower school attendance, particularly for menstruating girls.¹⁸ In 2018, Musim Mas sponsored a pilot project for Safe Water Gardens with the aim of improving access to safer water.

Safe Water Garden units manage and recycle wastewater, and use it to nourish a garden. The plants in the garden also help to absorb the nutrients from the wastewater, which would otherwise pollute groundwater or neighbouring water bodies. These units improve village food security as households gain additional sources of staple food – like bananas and chilli – and also help reduce healthcare costs.

Installing a household Safe Water Garden costs Musim Mas less than USD300, which is similar to the cost of a soak pit.¹⁹ Routine checks are performed at each household to fine-tune the wastewater systems during the pilot stages. Musim Mas hopes Safe Water Gardens can be made available to all villagers so they can enjoy maintenance-free autonomous sanitation systems.

Basic schematic of a Safe Water Garden unit



17 According to WHO, between 50 and 100 litres of water per person per day are needed to ensure that most basic needs are met and few health concerns arise. Source: United Nations, Office of the High Commissioner for Human Rights (OHCHR), United Nations Human Settlements Programme (UN-HABITAT), World Health Organization (WHO). (The) Right to Water, Fact Sheet No. 35. 2010. Available at <https://www.ohchr.org/Documents/Publications/FactSheet35en.pdf>, last accessed 18 October 2019.

18 Palm Oil and Children in Indonesia: Exploring the sector's impact on children's rights. UNICEF, 2016.

19 Many toilets in lower-income households feature a traditional soak pit – a porous-walled chamber that allows water to leach into the ground. As it is not properly covered, it often overflows during rainy seasons and pathogens can spread and contaminate food and water. In addition, improperly treated water leached from the soak pit pollutes neighbouring water wells as they share the same water table (upper surface of groundwater).

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Making a change with traceable and transparent operations

Engaging suppliers to drive change



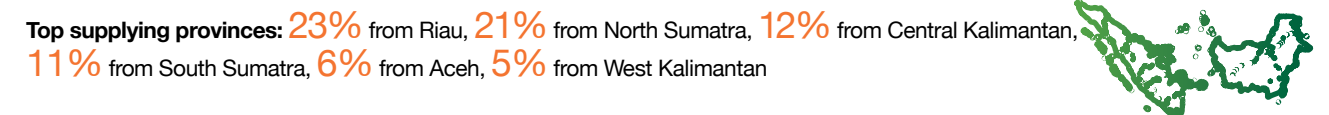
Our [Sustainability Policy](#) outlines NDPE commitments for our own operations, and extends to our third-party suppliers. Third-party suppliers represent 90% of our palm oil procurements. We invest significant resources in improving traceability and in supporting our suppliers to ensure their adherence to our Policy requirements. To drive real transformation on the ground and deliver the desired impacts, we recognise the crucial need for industry leaders to look beyond the immediate suppliers to the broader palm oil sector. We actively engage independent smallholders (supplying – or not – to our mills and our suppliers), in collaboration with other stakeholders, to increase their awareness of sustainability and improve their practices.

Our [Policy Implementation Plan](#) specifies how we aim to meet our 2020 goals, and articulates our strategy

to achieve the desired impacts. This plan guides our approach to commitments made for our directly owned and managed operations, third-party suppliers, as well as broader landscape-level and industry-wide interventions. In early 2019, Musim Mas developed a phased approach to scale up our smallholder outreach. In September 2019, we also launched an [NDPE Roadmap](#) outlining our targets to support a responsible, deforestation- and exploitation-free supply base beyond 2020. This roadmap covers milestones pertaining to traceability, our engagement with supplier groups, impacts on primary and secondary supplier groups, and our smallholder outreach.

We will be revising our Sustainability Policy, articulating our aspirations and targets beyond 2020, with a special focus on group suppliers and independent smallholders.

Supply base overview (January to December 2018)



Certified supplier mills

Type of Certification	No. of third party mills	Percentage of total number of third-party mills
RSPO	136 (28 supplier groups)	23%
ISPO	197 (71 supplier groups)	33%
ISCC	57 (20 supplier groups)	10%

Engaging suppliers to drive change

NDPE ROADMAP TOWARDS A RESPONSIBLE SUPPLY BASE BEYOND 2020

Category/Indicator	September 2019	December 2019	December 2020	December 2025
Traceability²⁰ milestones	Achieved 85% traceability to independent smallholders supplying to the Group's mills	Trace 80% to the Group's supply base of independent smallholders Achieved	Achieved 100% traceability to Musim Mas Group's concessions as at 2015	
	Achieved 54% traceability to supplier groups' plantations	Trace 60% to supplier groups' plantations	Trace 80% to supplier groups' plantations	Trace 100% to supplier groups' plantations
		Trace 30% to supplier groups' independent smallholders using risk-based traceability ²¹	Trace 43% to supplier groups' independent smallholders using risk-based traceability	Trace 95% to supplier groups' independent smallholders using risk-based traceability
Engagement with supplier groups	Engaged 40% of supplier groups on NDPE	Engage 60% of the supplier groups on NDPE	Engage 80% of the supplier groups on NDPE	Engage 90% of the supplier groups on NDPE
	Received commitment from 54% of supplier groups to abide by our NDPE principles	Receive commitment from 60% of the supplier groups to abide by NDPE principles	Receive commitment from 80% of the supplier groups to abide by NDPE principles	Receive commitment from 90% of the supplier groups to abide by NDPE principles
	Received completed SATs from 45% of the supplier groups	Ensure 45% of the supplier groups complete the SAT Achieved	Ensure 90% of the supplier groups complete the SAT	
Primary supplier groups (30% of the Musim Mas supply base: 15% from plantations and 15% from smallholders)	100% of primary supplier groups are covered by a roadmap	Ensure 100% of primary supplier groups are covered by roadmap Achieved		
			Verify systems and processes put in place by 10% of primary supplier groups	Verify systems and processes put in place by 100% of the primary supplier groups

20 Unless otherwise stated, all traceability targets refer to the volume of CPO traceable to plantation.
21 Risk-based traceability is a Musim Mas approach to map smallholders' villages against a landscape map and prioritise risk areas for traceability.

Category/Indicator	September 2019	December 2019	December 2020	December 2025
Secondary supplier groups (60% of the Musim Mas supply base: 25% from plantations and 35% from smallholders)	Received commitment from 52% of supplier groups to abide by our NDPE principles		Receive commitment from 25% of supplier groups to abide by our NDPE principles	Receive commitment from 100% of the supplier groups to abide by NDPE principles
			Ensure secondary supplier groups making up 20% of total volumes are covered by a roadmap	Ensure 100% of secondary supplier groups are covered by a roadmap
			Verify systems and processes put in place by secondary supplier groups making up 5% of total volume	Verify systems and processes put in place by 100% of secondary supplier groups
Outreach to smallholders	Engaged 22,748 independent smallholders under the Indonesian Palm Oil Development for Smallholders programme	Engage 20,000 independent smallholders under the programme Achieved	Engage 25,000 independent smallholders under the programme	
	Engaged two suppliers to begin the Extension Services Programme (ESP) at their mills	Engage two supplier groups to adopt ESP at their mills ²² Achieved	Engage five supplier groups to adopt ESP at their mills	

To maintain our position as an industry leader, we are continuously strengthening our team to support and monitor our third-party supply chain, by dedicating more resources and identifying new tools, partners, and initiatives enabling us to progress.

In this report, we expand on the components within the Policy Implementation Plan, provide details on our

progress and map out our planned activities to meet our 2020 targets. We also highlight the targets outlined in our NDPE Roadmap. Where possible, we share examples of best practices, challenges and lessons learnt from our efforts. To read about how we implement sustainability in our operations, see the sections on [Our approach to sustainability](#), [Promoting positive environmental impacts](#), and [Social responsibility](#).

22 We have revised this target to be supplier-focused instead of targeting the number of smallholders engaged. This is because we ultimately engage with smallholders through suppliers and smallholder numbers can vary between suppliers and agents.

Engaging suppliers to drive change

OUR APPROACH TO SUPPLIER ENGAGEMENT

Policy Implementation Approach

We believe in actively engaging our suppliers by providing them with the support they need to drive change and enhance their performance, thus moving them towards sustainable and responsible practices. We have categorised supplier engagement for the following groups:

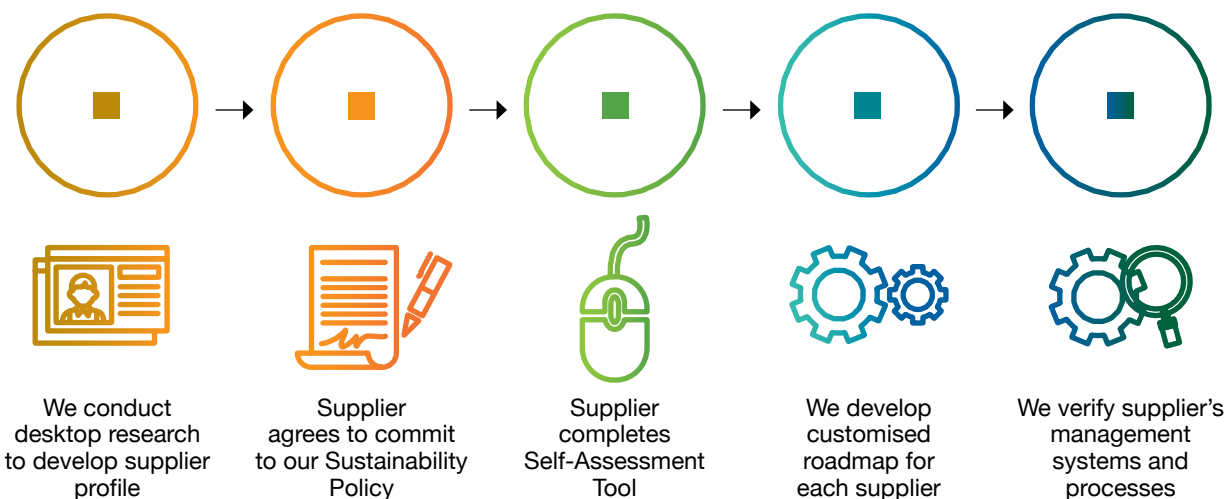
- 1) **Primary suppliers**
- 2) **Secondary suppliers**
- 3) **Independent smallholders** supplying Musim Mas independent mills and third-party supplier mills (primary and secondary)

Out of the volume we procure, one third comes from primary suppliers (those who supply key volumes to Musim Mas and are typically large- or medium-sized companies), and two-thirds come from secondary suppliers (those who supply limited volumes to Musim Mas and are typically medium- or small-sized companies). About 40% of the total volume originates from smallholders.

We tailor our engagement approaches to help our suppliers on their sustainability journey. Each individual supplier has a different starting point to engagement, but the following outlines our engagement strategy:

Our suppliers have been made aware of and have pledged to uphold our NDPE commitments. In 2019, we have communicated more details on our Sustainability Policy and the practical implications of adhering to its commitments. We want to ensure that our suppliers and us are on the same path towards a responsible supply chain. To aid this process, our recently published [NDPE Roadmap](#) provides clear targets towards achieving a responsible supply base beyond 2020.

Overview of supplier engagement process



Tailored supplier roadmaps and progressive engagement

No two suppliers are the same. They vary in resources and are faced with obstacles that are unique to them and their surroundings. Therefore, it can be challenging to expect a standardised approach to supplier compliance with our NDPE policy. To address this issue, we have adopted a systematic and tailored approach to ensure that each supplier receives adequate attention that will enable them to work towards meeting our requirements, beginning with the identification of key material issues for each supplier.

Through desktop research using publicly available information and using information provided by our suppliers, we develop supplier profiles that outline the different stages of each supplier's sustainability journey. These profiles detail company operations and potential sustainability risks, and provide entry points for the creation of roadmaps. Once engagement begins, suppliers must agree to comply with the main elements of our Sustainability Policy. We then engage and train suppliers to complete the Self-Assessment Tool (SAT), a means of self-declaring operational information against our sustainability indicators.

Throughout the engagement process, we maintain an open dialogue with suppliers, and progressively educate them on the components of the Policy. We seek to bridge any gap towards compliance through avenues such as workshops,

the SAT and bilateral discussions. We also continuously seek feedback from suppliers to make our due diligence process more accessible.

Based on our desktop research and responses to the SAT, we would carry out a gap analysis of each supplier against our Policy commitments. In partnership with our suppliers and consultants, we then assemble tailored roadmaps with time-bound plans enabling each supplier to achieve the mutually agreed NDPE requirements. These roadmaps provide benchmarks and milestones that demonstrate suppliers' compliance and allow us to monitor their progress.

In 2018, we initiated the process of assembling group-level supplier profiles. We began this undertaking for 20 supplier groups, or 8% of our supply base. As at September 2019, we have completed this exercise for 100% of the supplier groups currently supplying Musim Mas and this process is now part of the actions we take for all new engagements. As at September 2019, we have achieved our target of covering all primary supplier groups by roadmaps. We aim to have secondary suppliers making up 20% of total supply base volumes covered by roadmaps by 2020, and 100% by 2025.

NDPE ROADMAP: SUPPLIER ENGAGEMENT ACHIEVEMENTS AS AT 30 SEPTEMBER 2019

End target	Achievements as at 30 September 2019
Engage 90% of supplier groups on NDPE by December 2025	Engaged 40% of supplier groups on NDPE
Receive commitment from 90% of supplier groups to abide by NDPE principles by December 2025	Received commitment from 54% of supplier groups to abide by NDPE principles
Ensure that 90% of the supplier groups complete the SAT by December 2020	Received completed SATs from 45% of supplier groups – December 2019 target achieved
Ensure that 100% of primary supplier groups are covered by a roadmap by December 2019	100% of primary supplier groups are covered by a roadmap – Target achieved

Engaging suppliers to drive change



1. ENGAGING SUPPLIERS

As of September 2019, 40% of our supply base has successfully been engaged on NDPE. Our suppliers have undergone training, including on our SAT and grievance process. Our target is to engage and receive a firm commitment to our Sustainability Policy implementation from 60% of our suppliers by December 2019, 80% by December 2020, and 90% by the end of 2025.

Workshops are the mainstay of our programme. It is an opportunity for our supplier engagement team to communicate the key point of our Sustainability Policy, and to engage in interactive sessions. The main items discussed are:

- Environment – protecting HCV areas and HCS forests, no burning, protecting peatlands including applying best management practices.
- Governance – adhering to required national and local laws and regulations and conducting business ethically that is free from corruption or bribery.
- Workplace human rights – including zero tolerance for child and forced labour, implementing proper policies and practices to prevent harassment and discrimination, and to have in place measures for safe and healthy work environments for employees.
- Community rights and social issues – socialising the concept of Free, Prior and Informed Consent (FPIC) where operations may affect the rights of indigenous people and local communities and how to be fair and inclusive of smallholders and outgrowers in the supply chain.
- Traceability – achieving traceability to plantation within the supply chain, using the risk-based approach.
- SAT – teaching suppliers how to understand, fill-in and submit our SAT form.
- Certification – recognising that certification may not always be feasible for suppliers in the short-term, we encourage our suppliers to achieve certification, and assist them wherever possible.

For more detail, see our [Sustainability Policy](#).

From January to September 2019, three workshops have been carried out for 28% of 285 supplier groups²³. Participation in the workshops has been high and active. The direct engagement between our suppliers and our teams is valuable to both sides, increasing the knowledge of our suppliers and our understanding of where success and challenges lie. We have two more workshops planned in Q4 2019. To meet our NDPE Roadmap commitments, we will continue building capacity not just through supplier workshops, but will also hold focus group discussions to assist suppliers with limited capacity in developing their roadmaps.



2. SUPPLIER COMMITMENT

In 2018, we drafted an agreement letter between Musim Mas and our suppliers that provides a written statement of their adherence to our Sustainability Policy, and also indicates their implementation of sustainable best management practices to the best of their ability, all the while allowing our team to verify the systems and processes that they have put into place in accordance with the roadmaps.

As of September 2019, we have received commitments from 54% of all suppliers towards a goal of 60% by the end of 2019. We are aiming to secure commitments from 80% of supplier groups by December 2020, and from 90% of suppliers by December 2025.



3. SELF-ASSESSMENT TOOL

In 2018, we developed the Musim Mas Self-Assessment Tool (SAT) that allows suppliers to self-declare information about their operations and identify potential risk areas at the mill level. As at September 2019, 45% of our supplier groups have completed their self-evaluations, achieving our December 2019 target ahead of schedule. We will continue working towards having 90% of all supplier groups reporting their SATs by 2020.



4. CUSTOMISED ROADMAPS

Based on our desktop research and remote monitoring, we develop Group-level supplier profiles that detail our suppliers' operations and outline potential sustainability risks. These profiles, coupled with their SATs, help us identify the entry points on each of our suppliers' roadmaps.

As individual suppliers are generally at different stages in their sustainability journeys, each of their entry points, action plans and associated timelines varies. We therefore develop a customised roadmap with implementation milestones for each supplier, which serves as the basis of our engagement efforts and provides the framework for a time-bound plan demonstrating their compliance to our Policy provisions.

We have achieved our December 2019 target of ensuring that 100% of primary supplier groups are covered by a roadmap. We will begin the process for secondary suppliers in 2020 and are aiming to cover those who represent 20% of total volumes by the end of 2020 and those who represent 100% by the end of 2025.



5. SUPPLIER VERIFICATION²⁴

Since 2016, we have engaged third party consultants to verify the performance of some high-risk mills²⁵ against our policy commitments, in specific landscapes. The mills assessed may not necessarily supply Musim Mas but is representative of the Group's supply base within the high-risk areas. The verification highlights

gaps and challenges that mills may face towards being compliant with our NDPE commitments. It also help us identify the engagement strategy to adopt for the priority landscapes, through understanding the common and broader sustainability challenges for those landscape.

VERIFICATION INDICATORS BASED ON THE MUSIM MAS SUSTAINABILITY POLICY'S EIGHT PRINCIPLES:

Principle	Number of indicators
Land tenure and legislation	7
Deforestation	6
Development on peat lands	3
Use of fire	1
Management of environmental impacts	3
GHG emissions	2
Social compliances	14
Supply chain	5
Total	41

We review the recommendations from the verifier and evaluate those that could be best addressed by the supplier, and those that would be better implemented through collaboration with existing landscape-level initiatives implemented by civil society organisations (CSOs) or the Indonesian government. Assessments have been completed for a total of 20 mills from 2016 to 2018 in critical landscapes, namely Riau, South Sumatra and Central Kalimantan,²⁶ and is representative of the 46 mills that supply to Musim Mas within these areas.

Using this information, in 2020, we will begin group-level verification of the systems and processes that our suppliers have implemented according to their roadmaps to meet the commitments they have made. Previously we targeted the verification of a specific number of primary supplier groups, but this has been revised to reflect percentages to track progress more meaningfully. Our target is now to verify 10% of our primary supplier groups and secondary supplier groups who make up 5% of total volumes by December 2020.

²⁴ Third-party verification refers to assessments carried out by an organisation independent of the supplier and Musim Mas with and who has no vested interest in either parties' operations, ensuring the credibility of the assessments.

²⁵ Musim Mas adopts a supply-shed approach to identify high-risk mills, and does not consider all mills in a particular landscape to be high risk, unless they are located in areas with landscape characteristics such as the existence of protected nature reserves or highly biodiverse zones.

²⁶ Diagnostic reports for mill verifications are available at <http://www.musimmas.com/sustainability/traceable-supply-chain/diagnostic-report-on-mill-verifications>

²³ From January to September 2019, we have identified 610 third party mills under 285 supplier groups.

Engaging suppliers to drive change

Aside from active engagement, our team also carries out remote monitoring of suppliers' concessions via satellite imagery for evidence of deforestation, be it land-clearing or fire. Since 2018, we have a partnership with AidEnvironment to augment our monitoring work. If any activity is detected, Musim Mas is alerted, and we engage our suppliers to verify the possibility of potential breach of our Sustainability Policy.

Our sustainability team also stays current with all issues through active media monitoring on sustainability issues related to our suppliers. In 2018, we recorded 255 media mentions related to our suppliers, of which 124 were positive. These mentions were collected via platforms such as Chain Reaction Research, Mongabay, Foresthins and Infosawit, and highlighted topics pertaining to sustainability, legality, social issues, labour and the environment. We continue to monitor issues and address them with our suppliers through engagement.

TRACEABLE SUPPLY CHAIN

Policy Implementation Approach
We will adhere to 100% traceability to plantations by ensuring policy compliance at mill level.

Ensuring a traceable and transparent supply chain remains a high priority on the Group's agenda. We employ two approaches to map the supply base of our processing facilities: traceability to the mill, and traceability to plantation. Since 2015, we have achieved 100% traceability to mill. This means we can trace the source of products processed at the refinery level down to the mill or crude palm oil (CPO)/palm kernel (PK).

Our efforts are geared towards achieving full traceability to plantation. As of December 2018, 80% of CPO is traceable to plantation for our operations, while 56% traceability has been achieved for our total supply base (own operations and third-party suppliers). For independent smallholders that supply our mills, we can trace 85% of the CPO to plantation level as of September 2019, surpassing our December 2019 target of 80%. We aim to achieve 100% traceability by the end of 2020.

From January to December 2018, we have identified 598 individual third-party mills that belong to 263 parent companies. 94% of our third-party supply base comes from Indonesia, 5% comes from Malaysia, and less than 1% comes from other countries. As of September 2019, we can trace 54% of CPO originating in supplier groups' plantations, targeting 60% traceability by the end of 2019, 80% by December 2020 and 100% by December 2025. To achieve these targets, we will continue to pursue our efforts to assist our suppliers' mapping and traceability activities.

Ideally, we would like to trace all the CPO that comes from fresh fruit bunches (FFB) back to the plantation and to the individual smallholders. One method we have used to address this is engaging with key suppliers at the group level, creating an avenue to receive information from their suppliers, as well as independent smallholders.

Early in our traceability journey, we realised the main challenge is about independent smallholders who may also sell FFB through local agents. Their numbers, small size, as well as lack of reliable land titles or of a village-level land registrar are stumbling blocks for traceability. To tackle these obstacles, we developed an approach to map smallholders villages in a landscape corresponding to a mill's supply shed and prioritise risk areas. This risk-based traceability methodology is approximately three times faster to implement and costs about 13 times less than a full field

accounting, which is labour-intensive and requires frequent updates. The main advantage of this traceability approach is that it focuses on the areas most at risk of deforestation. Halting deforestation is an overarching priority.

Using this 'risk-based traceability' approach, we aim to trace 30% of CPO from independent smallholders that sell to our supplier groups by the end of 2019 and are raising this target to 43% by 2020, and 95% by 2025.

Lists of our CPO and PK suppliers, as well as our third-party suppliers' GPS coordinates have been made available since 2018 on the Musim Mas website and can be accessed at: <http://www.musimmas.com/sustainability/traceable-supply-chain/supply-chain-map>

ENCOURAGING SUPPLIERS TO PUBLISH DATA ONLINE

It is the Group's current practice to make all wholly owned and subsidiaries' concession maps publicly available through online platforms. In September 2018, Musim Mas

joined industry peers in making a joint appeal to third-party supplier groups to adopt the same practice. We also support initiatives to ensure full transparency in the palm oil supply chain.

A transparent supply chain will enable us to more efficiently monitor suppliers efforts to ensure compliance with our Sustainability Policy and address environmental and social risks. Since we define our third-party suppliers at the group level i.e. palm oil companies with related ownership, we also approach them at the group level to support them in improving their management systems. Defining "group" ownership can sometimes be complicated, in particular for family-owned companies. When assessing relationships between companies, we review all information available to us, starting from what is shared by our suppliers. In specific cases, for example of small, crossed shareholding due to family ties, we can also take into consideration the principle of "arm's length" (the companies must demonstrate they operate independently of each other in all aspects).

Risk-based traceability approach



NDPE ROADMAP: TRACEABILITY ACHIEVEMENTS AS AT 30 SEPTEMBER 2019

End target	Achievements as at 30 September 2019
	Achieved 100% traceability to Musim Mas Group's concessions as of 2015
Trace 100% to Musim Mas Group's supply base of independent smallholders by December 2020	Achieved 85% traceability to Group's supply base of independent smallholders – December 2019 target achieved (80%)
Trace 97% to supplier groups' plantations by December 2025	Achieved 54% traceability to supplier groups' plantations

Note: Unless otherwise stated, all traceability targets refer to the volume of CPO traceable to plantation.

Engaging suppliers to drive change

GRIEVANCES

Guided by international standards that include the UN Guiding Principles on Business and Human Rights, our grievance mechanism empowers internal and external stakeholders to report concerns about our operations and our supply chain. Our grievance mechanism is an integrated one that incorporates our Controlled Purchase Protocol, which in turn enables us to set up incentives for third-party suppliers based on their progress in resolving specific grievances.

We provide access to independent expert advice for the affected parties and maintain a list of experts at all our operations, including independent legal and technical experts and local government and community representatives. Our grievance process obliges us to respect and protect the anonymity of the complainants to prevent any potential conflict or reprisal. Stakeholders may provide information anonymously using a form on our website, by e-mail, phone text, phone call or in writing. We communicate the availability of these complaints channels on signs at our plantations and mills.

Internal grievances

We have implemented a site-level grievance mechanism for internal complaints to ensure that employees and workers have access to a transparent and accountable avenue for raising grievances without fear of reprisal or dismissal. Incorporated into this mechanism is our whistleblowing policy, which is communicated to all employees. For more information on our internal grievance procedures and how they are addressed, see page 45.

External grievances

We make public our external grievances, which are divided into two main categories: compliance grievances and dispute grievances. Compliance grievances may involve breaches of our Sustainability Policy, the RSPO Standards and/or the Palm Oil Innovation Group (POIG) Charter. Dispute grievances may involve conflicts between two or more parties. Under each of these categories, grievances are further divided into complaints against Musim Mas and complaints against our third-party suppliers. The category under which each grievance is filed determines the approach we use to assess it.

Our website provides a comprehensive overview of how we categorise and process the different types of external grievances: <http://www.musimmas.com/sustainability/group-supplier-engagement-grievance/grievance-list>.

Since 2015, a total of 41 complaints have been submitted by external stakeholders through our grievance mechanism. The majority of these cases have concerned deforestation, but a few of these have also focused on social conflict. All cases received thus far, except for one, were complaints against our third-party suppliers. The case directly relating to Musim Mas was filed in 2017 and closed in 2018.

In 2018 alone, six grievances were filed against third-party suppliers, and all pertained to concerns around deforestation and/or development on peat. Three of these have been closed to date, and we are working diligently to address the remaining open cases. In 2019, as at September, six new complaints have been filed: three about deforestation and three about peat clearance. No matter the circumstance, we endeavour to address and provide updates on all open cases within three months of the filing of a grievance.

We share our stakeholders' concerns that our third-party suppliers need to adhere to the commitments laid out in our Sustainability Policy, especially to the rules about committing to transparent milestones in their transformation efforts. We take breaches of the Policy and continued non-activity seriously, and both can lead to a cessation of business relations. We recognise, however, that in some instances, our influence can be limited if we act alone and, for this reason, we try to work with other buyers to push for transformation on the ground.

In cases where we do suspend business activities with suppliers, we continuously work with them to remain updated on progress in open cases, and to provide support in finding tailored solutions and developing action plans to resolve the grievances. Read more on how we manage Policy breaches on the next page.

For open complaint cases within the RSPO related to our suppliers, we respect and defer to the RSPO Complaints Panel processes.²⁷ We look forward to improvements of the RSPO Complaints system, bringing more transparency in the monitoring of action plans.

A full list of grievances submitted by external parties, as well as details about each case, is available at: <http://www.musimmas.com/sustainability/grievance/grievance-list>. We are continuously looking for ways to make our grievance reporting more comprehensive to ensure stakeholders remain informed and welcome any feedback for improvement.

²⁷ For further context, see our [Open Letter to the RSPO](#) dated 30 November 2018.

MANAGING POLICY BREACHES

Policy Implementation Approach

We shall not knowingly source from suppliers who refuse to comply with our policy commitments or are found to be in breach of our Sustainability Policy. Should any incidents be uncovered, we will take the following steps:

- 1) **Engage with the supplier**
- 2) **Initiate a grievance procedure**
- 3) **Activate our Controlled Purchase Protocol (CPP)**

Building on our Policy Implementation Plan, the revised CPP includes the requirement for a stop-work order in selected cases. If the supplier has no intention of working towards a resolution, Musim Mas will issue a 'cessation of business' notification.

Musim Mas does not knowingly source from suppliers who refuse to comply with our policy commitments or are found to be in breach of our Sustainability Policy. Yet, immediate cessation of business ("suspension") is not the best solution to transform the supply base. Our experience has demonstrated that maintaining engagement with our suppliers goes a long way in seeking behavioural change and for a powerful relationship with our suppliers – the type that can be trusted to endure and to transform business practices.

We believe in building long-lasting relationships with our suppliers. The buying and selling of palm oil are the most concrete expressions of these relationships and are crucial for the implementation of our commitments. We engage actively with all our suppliers, promote open exchanges and stand by suppliers who demonstrate their willingness to participate and work towards a sustainable palm oil industry. In cases where suppliers are proven to have committed egregious violations of our policies and commitments, show no intention of changing or fail to deliver on agreed-upon improvements, they will be subject to a 'cessation of business' notification.

For those who demonstrate their intent to change with us, we have established the Controlled Purchase Protocol (CPP), a systematic process linking grievance resolution milestones to target-driven purchases. Established in 2015, the CPP is based on conditional progress, and is not a guarantee that full, pre-grievance purchasing will resume, as the 'cessation of business' remains a possibility until all set conditions are fulfilled.

The following principles guide our CPP:

1. **Willingness to engage:** The supplier shows intent and a willingness to engage in further understanding and addressing the root cause of the grievance.
2. **Positivity to act:** The supplier allocates adequate resources towards addressing the grievance and can demonstrate commitment from the highest management level.
3. **Demonstrating progress:** The supplier issues progress reports that prove action has been taken towards achieving the agreed-upon milestones and criteria.

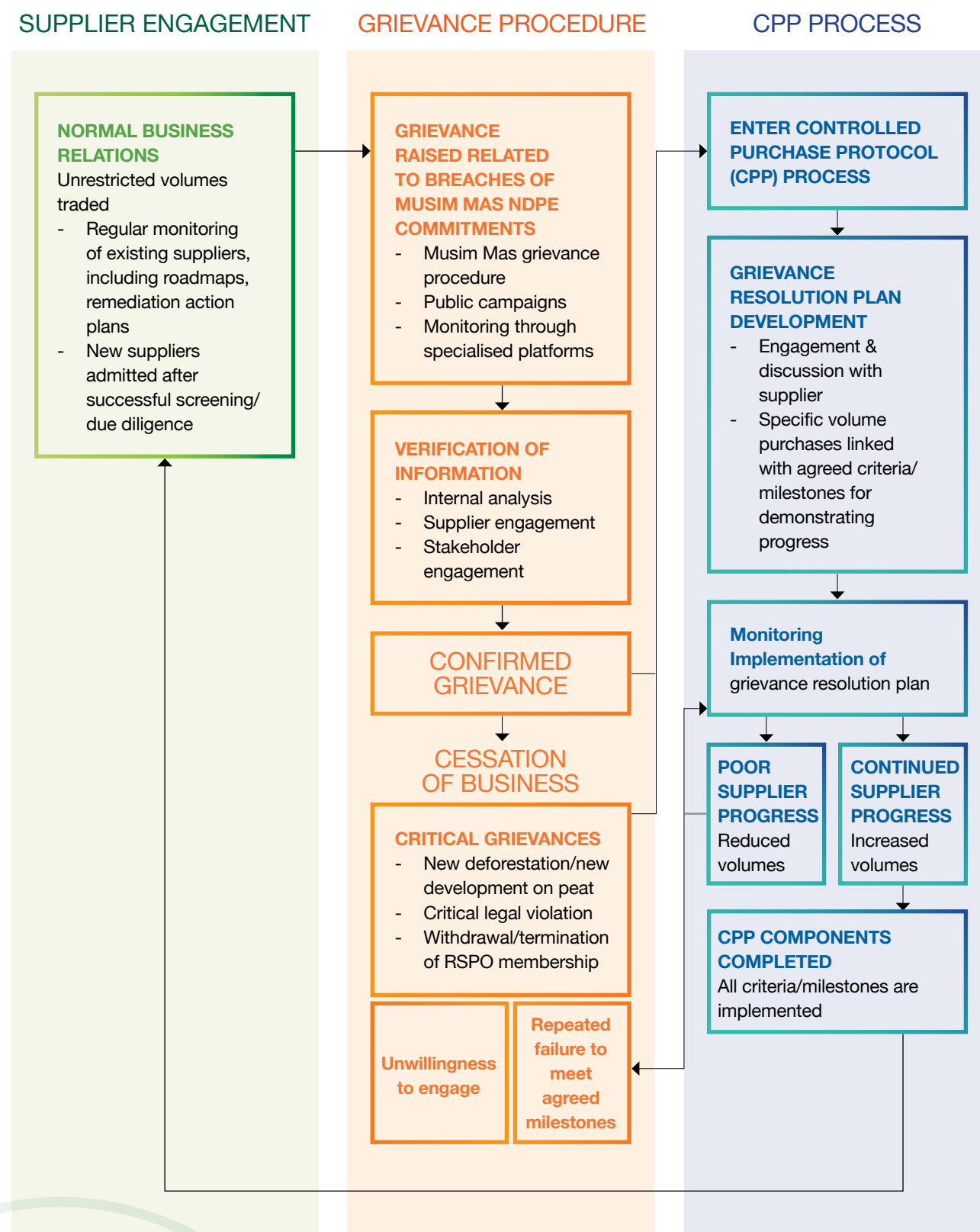
SUPPLIER ENGAGEMENT THROUGH THE CPP

The CPP allows Musim Mas to link the management of grievances to the way we conduct business with our suppliers. Our approach to supplier engagement encompasses three main workstreams:

1. **Grievance management:** Our grievance procedure outlines our process for receiving, logging and verifying all complaints lodged against our suppliers or us. Once grievances are verified to be factual, the supplier then engages in our CPP process. For specific critical grievances, this automatically results in the cessation of business relations with the supplier. For more on grievances, see page 60.
2. **CPP:** The CPP describes how we link the progressive resolution of grievances to a gradual resumption of business. Suppliers only exit the CPP process once they have met and implemented all conditions resolving the complaint.
3. **Supplier engagement:** Continuous monitoring of suppliers is essential both to ensuring overall group-level progress towards our NDPE policy compliance and to proactively safeguard against major NDPE violations within our supply chain. We support our suppliers' engagement through regular meetings, workshops and direct support for the drafting and reviewing of critical documents.

Engaging suppliers to drive change

How the CPP functions within the grievance procedure and supplier monitoring



REVISED CONTROLLED PURCHASE PROTOCOL

The CPP formalises our approach towards suppliers who are allegedly involved in deforestation, development on peat, or exploitation issues and the revised version will come into force in January 2020. Suppliers who have been proven to engage in these activities will automatically be subject to the Protocol, at the group level.

Activated after a grievance has been raised and verified, the CPP links resolution milestones to purchase volumes. All purchases from a supplier will be put on hold unless they meet certain conditions and resolve the specified issues. The Protocol is designed to motivate suppliers to engage positively with us, for example, by allocating time and resources towards the resolution of a grievance, by demonstrating their commitment to an action plan, or by making progress towards the agreed-upon milestones.

Ceasing business relations

A 'cessation of business' notification will be issued in the following situations:

- Critical grievances**
 - Verified cases of new deforestation/new development on peatland: Cases of new deforestation and new development on peatland that have been verified by the findings of third-party platforms and have been confirmed through an internal verification.
 - Critical legal violations: Verified and confirmed cases of severe human or labour rights abuse, including the systemic use of child or forced labour, and any sentence or order pronounced by a court in the supplier group's country of jurisdiction demonstrating a breach of our NDPE commitments. Where necessary, Musim Mas will conduct an internal verification of the case and/or seek support from third-party experts. This process might require some time, during which new purchases will not be possible.
 - Termination or withdrawal of RSPO membership: Once made public, the termination of the RSPO membership of one of our suppliers will be considered a critical grievance and will lead to a cessation of business. The self-withdrawal of RSPO membership will also be considered as a critical grievance, except if it is endorsed by the RSPO, so that self-withdrawal cannot be used to avoid a sanction from the RSPO. This rule will equally apply to our customers who are RSPO members. Termination of RSPO membership of one of our customers will lead to a cessation of business.

2. Unwillingness to engage

The supplier fails to allocate adequate resources towards addressing the grievance and cannot demonstrate commitment from the highest management level.

3. Poor supplier performance

The cessation of business will occur should a supplier repeatedly and consistently fail to achieve the milestones and meet the criteria specified within the resolution plan that was developed jointly with Musim Mas and was agreed upon by the supplier.

As at September 2019, we have ceased sourcing from a total of 14 suppliers due to non-compliance.

Staged CPP process and associated volumes allowed for purchasing

The steps outlined at each stage of the CPP reflect specific criteria that must be met before resuming new purchasing at the stated volume. In the case of outstanding long-term purchases, the volume will be adjusted to comply with the amounts indicated in the CPP, except in the month following entry into the CPP. All maximum durations are based upon the date of entry into the CPP.

Upon verification, Musim Mas will confirm in writing that the supplier has made progress in meeting the criteria required to complete each step.

STAKEHOLDER COLLABORATION AND ENGAGEMENT

A sustainability policy is only as effective as its implementation. This is why we continuously invest significant time and resources to understand and plan how both internal and external stakeholders can implement our sustainability commitments. We work closely with industry experts and our consultants – such as AidEnvironment, Daemeter and Proforest – to fine-tune our engagement with suppliers.

We work with industry peers, civil societies, customers and local governments on (i) landscape initiatives and (ii) industry approaches. Through these approaches we ensure we are active contributors to transforming the wider palm oil industry. Musim Mas has identified four priority landscapes, based on their importance to our supply base, or for their situation in terms of deforestation risk:

- Aceh Tamiang, Aceh.
- Musi Banyuasin, South Sumatra.
- Siak and Pelalawan, Riau.
- Sambas, West Kalimantan.

Engaging suppliers to drive change

Policy Implementation Approach
It is essential to contribute to the transformation of the wider palm oil industry to complement our policy implementation. We approach this strategy through:

- 1. Landscape initiatives**
- 2. Industry approaches**

We will also draw on our experience and knowledge to support the Indonesian government with additional perspectives from the private sector.

Independent smallholders make up approximately 40% of our supply base, and therefore we place great emphasis on working with these stakeholders to drive change in the industry.

WORKING WITH SMALLHOLDERS

Smallholder farmers account for roughly 40% of Indonesia's total palm oil production each year. By 2030, they are expected to manage 60% of oil palm plantings.²⁸

Smallholders have a pivotal role to play in the implementation of our Sustainability Policy to achieve our business goals.

We recognise our corporate responsibility to empower smallholders to improve their sustainability practices, livelihoods, and access to the growing sustainable palm oil market. See page 47 to read about the work we do with communities.

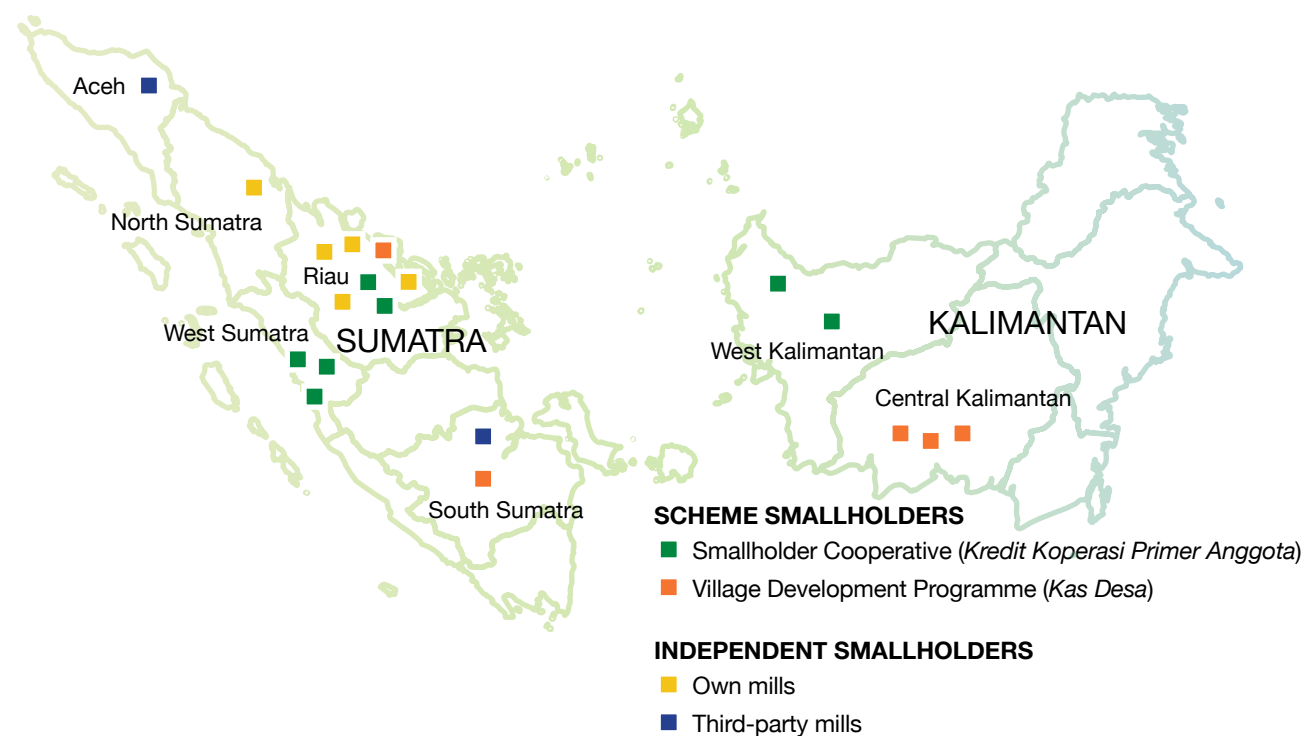
We support both scheme and independent smallholders through tailored programmes and initiatives.

Scheme smallholders

We reach out to our scheme smallholders in two ways. One is through our smallholder cooperative *Kredit Koperasi Primer Anggota* (KKPA), tailored to families that own a plantation. The other is through our Village Development Programme (VDP), a community-based approach designed for villages that collectively manage plantations. Both programmes were initiated voluntarily, well before the 2007 establishment of Indonesian regulations requiring companies to facilitate the creation of plasma smallholder schemes for the benefit of surrounding communities.

The KKPA is tailored to family units who own two hectares of land or less, and provides smallholders with practical

Locations of Musim Mas scheme and independent smallholder programmes



²⁸ Palm Oil Agribusiness Strategic Policy Initiative (PASPI). Source: [Presentation](#) by Prof. Dr. Ir. Bungaran Saragih, M.Ec., PASPI, last accessed 15 October 2019.

support, including bank loan guarantees, agricultural training, and the transfer of quality seeds and fertilisers. Launched with 762 smallholders in 1996, the KKPA now comprises 2,423 smallholders cultivating a total planted area of 4,624 hectares as at 31 December 2018, inclusive of the smallholders under the VDP. The smallholders under the KKPA scheme in PT Agrowiratama achieved compliance with the RSPO certification requirements in 2010, making it the first smallholder scheme in Indonesia to meet the criteria of the Indonesian National Interpretation of the RSPO Principles and Criteria.

The KKPA scheme continues to increase in both productivity and income, although total income for 2018 was inevitably affected by the depressed global CPO prices.

SCHEME SMALLHOLDER FFB PRODUCTION AND INCOME

	2015	2016	2017	2018
Production (MT)	92,162	87,510	101,845	110,036
Income (billion IDR)	85.68	98.55	127.93	112.17

For information on the Village Development Programme, see page 48.

Independent smallholders

We support independent smallholders that supply to both our own and third-party mills through multiple projects and initiatives. While all FFB harvested by scheme smallholders is purchased by the Group, independent smallholders are not bound to any specific mill and are free to sell FFB to the highest bidder.

As their operations are of a relatively smaller scale (typically with a planted area of below 25 hectares), independent smallholders tend to be disadvantaged by limited financial resources and limited access to technology and

best operational procedures, resulting in low yields and unsustainable practices that make it difficult and costly for them to achieve RSPO or ISPO certification.

These smallholders work in a free market and can sell to the buyer of their choice. However, they usually face barriers to entering the sustainable palm oil market, despite competitive prices. Unfortunately, smallholders who do not wish to or are unable to prioritise sustainable production may end up selling their FFB to the 'leakage market' thereby contributing to the growth of a less sustainable supply and market.

To address these obstacles, we work closely with independent smallholders through partnership programmes and initiatives to help them bridge the gap between current practices and those that are more efficient and sustainable. To ensure our engagement continues creating positive impacts across the industry, Musim Mas has developed a three-phased approach to scale up our smallholder efforts.

INDONESIAN PALM OIL DEVELOPMENT FOR SMALLHOLDERS PROGRAMME

A 2014 baseline study by the International Finance Corporation (IFC) found that 97% of smallholders had not received formal farm training recently, that 99% are unaware of sustainability certifications, and that the majority face issues with formal land certificates. The study also revealed that smallholders are employing archaic or inefficient methods of farming, resulting in a productivity rate lower than companies.

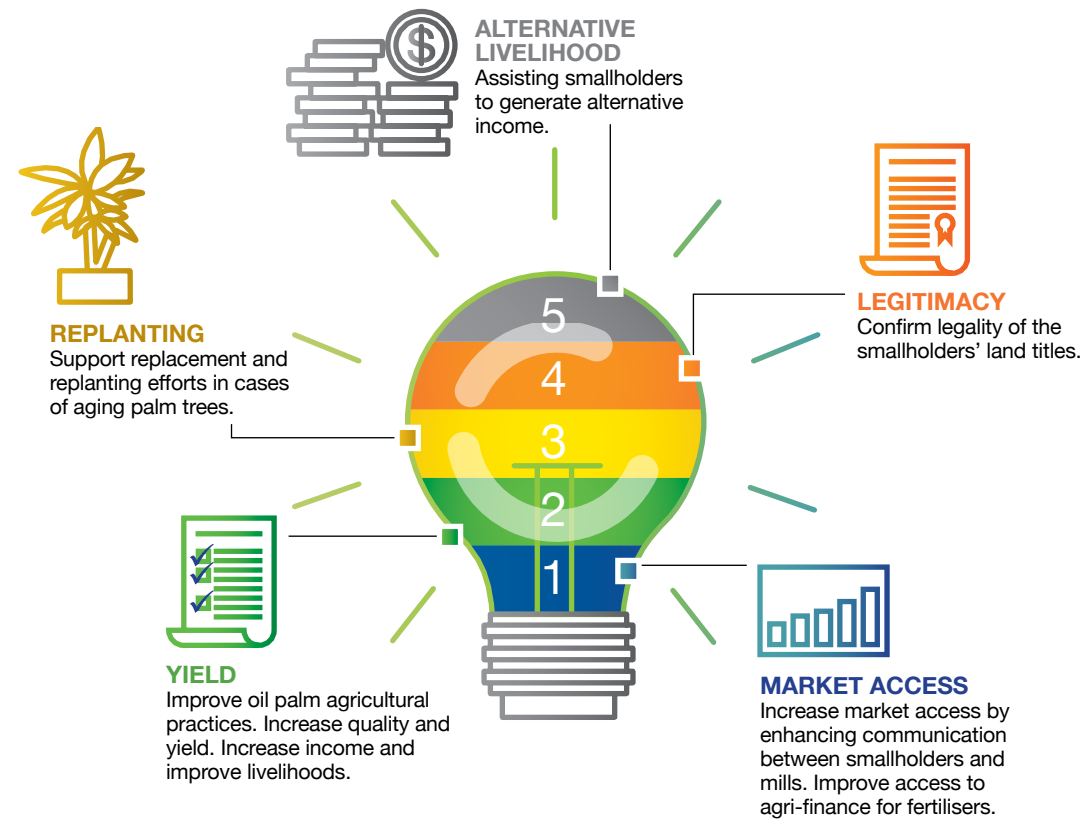
Musim Mas and IFC launched the Indonesian Palm Oil Development for Smallholders programme in 2015. The programme supports independent smallholders in meeting the same efficient farming standards as industrial plantations and empowers smallholders to produce sustainably. This programme provides agronomic training, financial support and access to global markets. We also educate smallholders on legal requirements, such as terminating all use of paraquat and good agricultural practices. These components are designed so that smallholders can work towards compliance with our NDPE policy.

NDPE ROADMAP: INDEPENDENT SMALLHOLDER ACHIEVEMENTS AS AT 30 SEPTEMBER 2019

End target	Achievements as at 30 September 2019
Engage 25,000 independent smallholders under the Indonesian Palm Oil Development for Smallholders programme	Engaged 22,748 independent smallholders under the Indonesian Palm Oil Development for Smallholders programme
Engage five supplier groups to adopt the Extension Services Programme (ESP) at their mills	Engaged two supplier groups to begin the ESP at their mills – December 2019 target achieved

Engaging suppliers to drive change

Training modules for independent smallholders under the programme



As at August 2019, 22,748 smallholders have been engaged under this programme, exceeding our target to reach 20,000 smallholders by the end of 2019. Through this engagement, we are building the capacity of 2,000 smallholders to achieve RSPO certification by 2020 in North Sumatra and Riau. We are on track to achieving this target with over 700 having undergone RSPO auditing as at September 2019.

In May 2019, independent smallholders around our PT Siringo-Ringo subsidiary in Rantau Prapat, North Sumatra began receiving funding to replant their oil palm from the Indonesian Government's Palm Oil Fund Management Agency (*Badan Pengelola Dana Perkebunan Kelapa Sawit (BPDPKS)*), a breakthrough in financial access for independent smallholders. This was achieved via the successful formation of a farmer association, *Maju Lancar Mandiri Labuhanbatu* as part of this initiative.

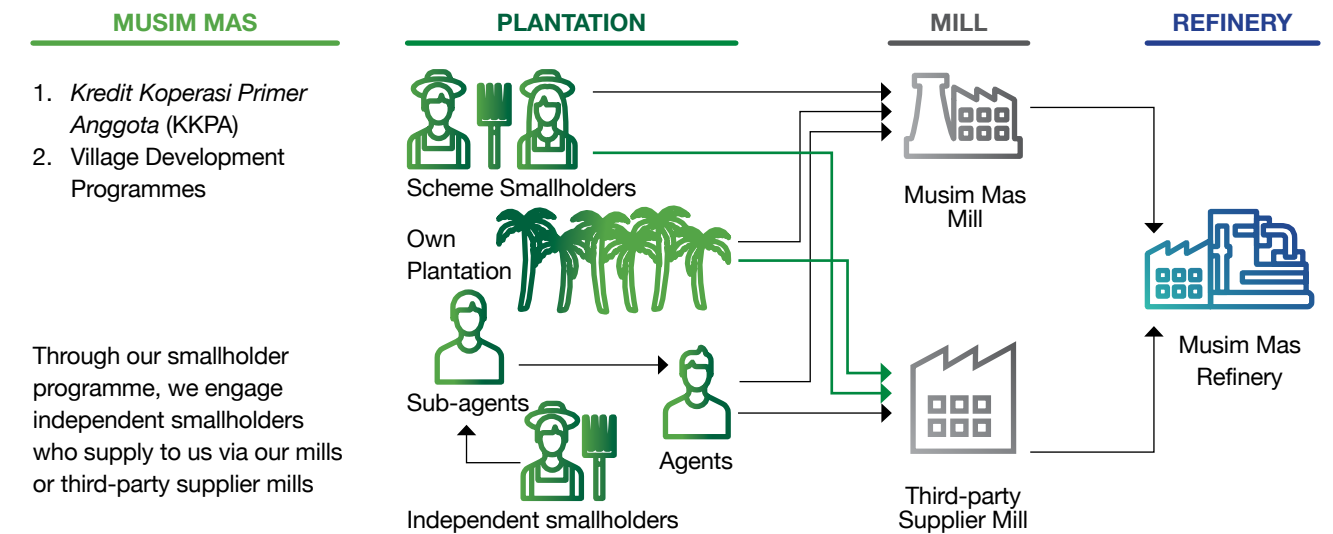
EXTENSION SERVICES PROGRAMME

We understand that a majority of our third-party suppliers lack the sustainability knowledge, skills and resources to meet our NDPE commitments. To set them on their certified sustainable palm oil journey, Musim Mas decided to apply what we have learnt from the Indonesian Palm Oil Development for Smallholders programme to the independent smallholders who sell to our third-party suppliers.

In 2017, the Musim Mas Extension Services Programme (ESP) was launched. The curriculum of ESP mirrors that of the IFC programme, with a strong emphasis on good agricultural practices to assist independent smallholders in improving their yields.

The ESP combines hands-on training with informal theory sessions. Field assistants follow up with one-on-one sessions to tailor the programme to each smallholder's needs, as every smallholder is at a different farming stage and relies on different farming materials.

Training and assistance via the Extension Services Programme



As at September 2019, we have engaged a total of 1,047 independent smallholders at our own and third-party supply bases in Aceh, Riau, Central Kalimantan and South Sumatra. We aim to engage a total of five suppliers via the ESP by 2020. Initially, our target was focused on the number of independent smallholders engaged under ESP. However, we ultimately engage with these smallholders through our suppliers. For this reason, coupled with the fact that the number of smallholders varies because some of them sell through agents, we have revised our target to make it supplier-centric.

SCALING UP OUR GEOGRAPHICAL IMPACT

Through our smallholder engagement to date, we have learnt that:

- The presence of a neutral party can help accelerate and facilitate engagements.

- Consolidated effort is needed to prevent overlapping smallholder programmes and engagement fatigue experienced by smallholders and suppliers.
- Scaling up the smallholder programme geographically encourages holistic planning for the livelihoods of smallholders and the community.

We have therefore developed a strategy for different ways to scale up smallholder programmes to increase their magnitude and reach:

- Option I: Through the Indonesian Palm Oil Development for Smallholders programme with IFC for smallholders associated with our own mills.
- Option II: Through the ESP for smallholders associated with our own and third-party suppliers' mills.
- Option III: Through engagement with smallholders associated with mills within specified districts through Smallholder Hubs.



Engaging suppliers to drive change

Smallholder Hubs

We are working to establish Smallholder Hubs that will serve as a common platform where palm oil companies can pool resources and share their expertise to train independent smallholders regardless of whom they sell to, within a specific district. Musim Mas is currently in talks with NGOs to discuss how the Smallholder Hub concept can be integrated into their existing multi-stakeholder programmes, which would involve government and private sector collaboration at the district level.

Ultimately, we acknowledge the limitations of what a single company can do to address NDPE concerns. We are wary of the delicate balance between economic prosperity, developing the community and conserving the environment. Therefore, to make Smallholder Hubs a reality, we are working with stakeholders who share common goals, including provincial governments, government departments, buyers, NGOs and civil society organisations (CSOs), growers, mills, consultants and, of course, smallholders.

Landscape initiatives

Concurrent with our vision to establish and benefit from Smallholder Hubs, we are also involved in projects that target specific geographic areas, provinces and landscapes that are deemed to be high risk.²⁹ The four priority landscapes are Aceh Tamiang (Aceh), Musi Banyuasin (South Sumatra), Siak and Pelalawan (Riau), Sambas (West Kalimantan).

Identifying priority landscapes forms part of our approach to engaging with our third-party suppliers, but is also key to our strategy for forming and participating in collaborative initiatives with key stakeholders. These landscape projects, which involve working with peer companies, NGOs, CSOs and the government, create an interesting dynamic where competing companies band together to develop and implement projects that generate long-term change on the ground.

We initially targeted engagement with the stakeholders in each of these priority areas through multi-stakeholder initiatives by 2020, but were able to formalise these initiatives in 2019 due to the support of the industry and local actors.

Independent smallholders trained under the Indonesian Palm Oil Development for Smallholders programme (as at August 2019)

Province	District	Musim Mas' mill	Mill name	Start date	No. of smallholders trained
North Sumatra	Rantau Prapat	✓	PT Siringo-ringo (SRR)	Apr 2015	9,025
Riau	Pelalawan	✓	PT Sinar Agro Raya (SAR)	Oct 2016	3,816
	Rokan Hilir	✓	PT Bahana Nusa Interindo (BANI)	Oct 2016	4,933
	Rokan Hulu	✓	PT Indomakmur Sawit Berjaya (ISB)	Oct 2016	4,974

Independent smallholders trained under ESP (as at September 2019)

Province	District	Musim Mas' mill	Mill name	Start date	No. of smallholders trained
Aceh	Aceh Tamiang	×	PT Pati Sari	Apr 2018	197
Riau	Indragiri Hilir	✓	PT Guntung IdamanNusa (GIN)	Dec 2018	319
Central Kalimantan	Karamuan	✓	PT Multipersada Gatramegah (MPG)	Apr 2019	136
South Sumatra	Musi Bayuasin	×	PT Bastian Olah Sawit (BOS)	Dec 2017	395

²⁹ These high-risk areas were selected based on various factors, including operational presence and leverage, as well as landscape characteristics such as the existence of protected and/or highly biodiverse areas.

Overview of landscape initiatives Musim Mas is involved in

Priority landscape: Aceh – Leuser Ecoystem

Programme focus and aim: Empower third-party suppliers and independent smallholders in Aceh Timur, Aceh Tamiang and Aceh Singkil to produce oil palm sustainably and work towards having an NDPE commitment. This includes training smallholders on good agricultural practices, and working on their land legality. In addition, we aim to build the capacity of the government at the district level to implement a Smallholder Hub.

Progress in 2019:

1. Conducted assessments across five mills in Aceh Timur, Tamiang and Singkil.
2. Established a smallholder programme with our third-party supplier in Aceh Tamiang.
3. Supported one mill in achieving 100% traceability to plantation.
4. Built relationships with sub-district government and village heads in Singkil.
5. Designed an implementation plan to limit forest encroachment with The Sustainable Trade Initiative (IDH).

Priority landscape: Riau – Siak and Pelalawan

Programme focus and aim: A private-sector coalition that aims to support the Siak Green District Initiative in its efforts to achieve sustainable palm oil production, aligning the delivery of sourcing commitments with the development goals of the district. These goals include protecting and enhancing forests, improving the livelihoods of smallholders and local communities and establishing traceability data.

Progress in 2019: Collaboration announced and in the process of project planning.

Stakeholders involved: Musim Mas, Cargill, Nestlé, PepsiCo, GAR, Unilever, CORE, Sustainable District Platform (LTKL), Siak regent (*bupati*).

Priority landscape: Riau – Siak

Programme focus and aim: Develop a new satellite monitoring system with WRI and other stakeholders to alert the public of cases of deforestation in Indonesia, starting with a pilot project in Siak.

Progress in 2019: Musim Mas became one of the funders of the satellite monitoring system, which will be developed over two years.

Stakeholders involved: World Resources Institute (WRI) with Musim Mas, Bunge, Cargill, Golden Agri Resources, Mondelez, Nestlé, PepsiCo, Sime Darby, Unilever, Wilmar.

Priority landscape: West Kalimantan – Sambas

Programme focus and aim: Working with Aidenvironment to balance forest conservation with economic development, by supporting local communities on social forestry knowledge and capacity by:

- Providing access to local forest areas and land legalisation.
- Establishing sustainable use and forest management practices.
- Establishing small business models to improve land use.

Progress in 2019:

1. 4 villages with social forestry potential covering 12,891 ha.
2. 1 village received social forestry permits and 3 were in process.
3. Representatives from 6 villages received training about business model development in Java.
4. Local management organisations were installed.

Activities planned for 2020: Facilitate land legalisation process for 500 farmers, by working with the local Ministry of Development and Planning, Aidenvironment and other stakeholders.

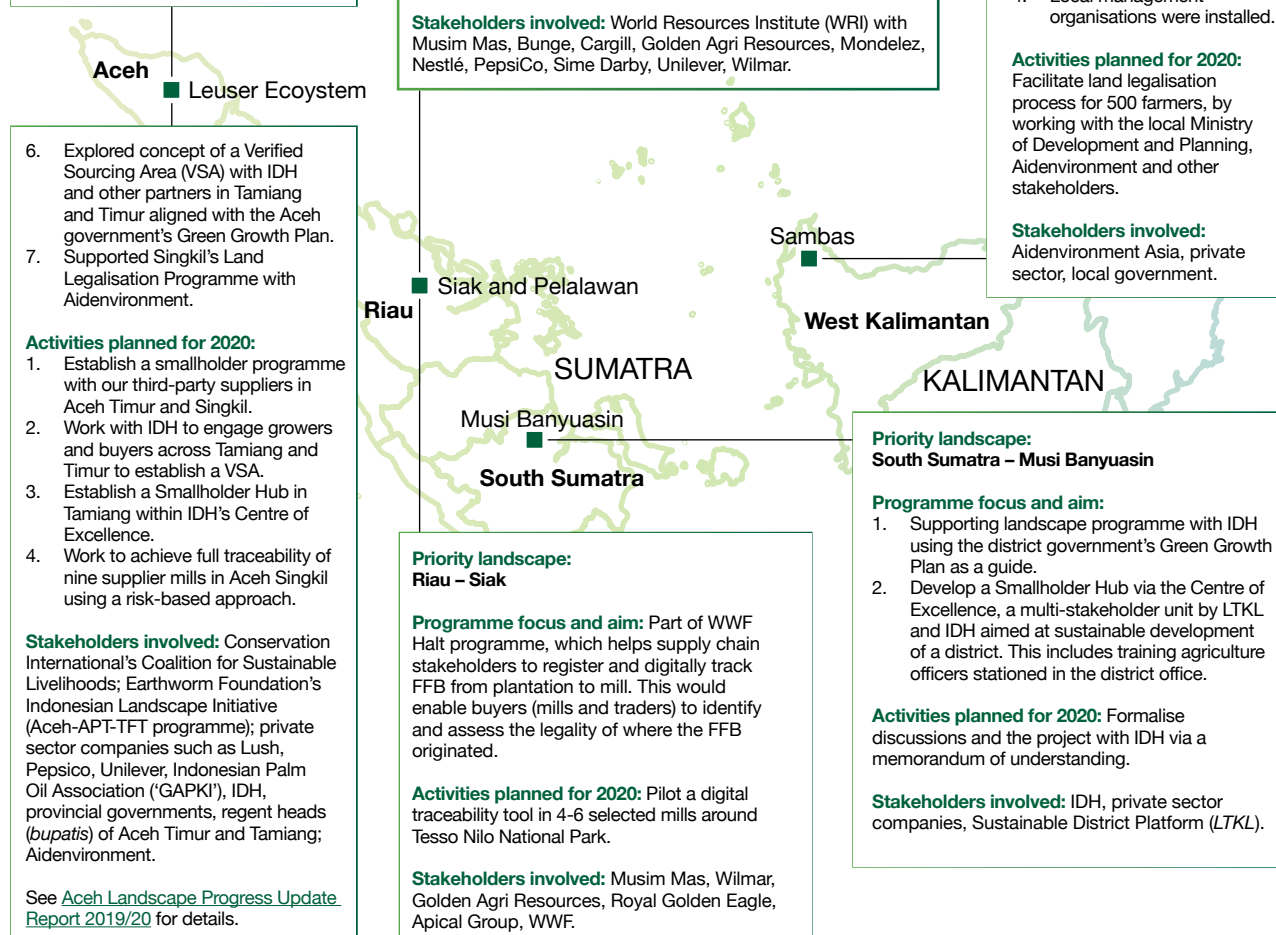
Stakeholders involved: Aidenvironment Asia, private sector, local government.

Priority landscape: South Sumatra – Musi Banyuasin

1. Supporting landscape programme with IDH using the district government's Green Growth Plan as a guide.
2. Develop a Smallholder Hub via the Centre of Excellence, a multi-stakeholder unit by LTKL and IDH aimed at sustainable development of a district. This includes training agriculture officers stationed in the district office.

Activities planned for 2020: Formalise discussions and the project with IDH via a memorandum of understanding.

Stakeholders involved: IDH, private sector companies, Sustainable District Platform (LTKL).



Engaging suppliers to drive change

Engaging independent smallholders and third-party suppliers in Aceh

We have established landscape initiatives in Aceh to address the imminent risks of encroachment into the Leuser Ecosystem, and we closely engage with our third-party suppliers in three priority areas: Timur, Tamiang and Singkil. After carrying out scoping studies and mill assessments with local partners, we realised that, even though mills in these areas may be interested in sustainable production, they might not have the capacity, resources or know-how to engage the independent smallholders from whom they source. To address the gap between knowledge and action, we have developed tailored supplier engagement approaches. We reach out and assist our third-party suppliers, including the smallholders who supply them, and work towards sustainable production. To date, we have achieved the following with three suppliers:

PT Ensem Sawita, Aceh Timur: In partnership with another palm oil company, Musim Mas engaged with PT Ensem Sawita, as well as the agents and smallholders who supply them. PT Ensem Sawita achieved 100% traceability to plantation in 2019 through multiple traceability trainings and by educating the mill's suppliers on the importance of conserving the Leuser Ecosystem and the land on which they operate. We are providing further support to them to ensure the implementation of proper standard operating procedures to monitor the FFB received from smallholders.

Mopoli Raya, Aceh Timur: Since 2015, Musim Mas has been actively engaging with Mopoli Raya to improve the mill's sustainability policy and practices, including a requirement that they implement the same policies and practices for their own suppliers. Our engagement with the mill continued even though we put on hold our purchases from them. In March 2019, Mopoli Raya proved their strong commitment to sustainability by publishing the following documents on their website:

1. Environmental Policy, Social Policy, Corporate Social Responsibility Policy, and a Policy on Child Labour.

2. A declaration in the form of a 'Letter of Commitment' addressed to Musim Mas and declaring that an area of 1,382 hectares within the PT Aloer Timur concession (a subsidiary of Mopoli Raya) is now designated HCV and HCS and will not be developed in the future.

3. HCS Assessment and Pre-HCV Assessment Reports conducted in PT Aloer Timur.

As part of our Controlled Purchase Protocol, we resumed business relations with them in April 2019. We are also exploring the possibility of extending our smallholder programme to Mopoli Raya. More on our engagement with Mopoli Raya can be found [here](#). Their progress was also commended by Rainforest Action Network [here](#).

PT Pati Sari, Aceh Tamiang: In 2015, we worked with third-party supplier PT Pati Sari to better understand their supply base and procurement practices. We also ensured that they were complying with legal and operational requirements and conducted awareness and compliance training on our Sustainability Policy. Since 2018, we have engaged with independent smallholders supplying PT Pati Sari under our Extension Services Programme, which empowers our third-party suppliers to engage their independent smallholders. To date, our two-person team has provided training and support to 179 smallholders on improving market access, increasing yields through good agricultural practices, replanting efforts and confirming the legality of their land titles. We are also in talks with mills in Timur and Singkil to develop and localise the Extension Services Programme.

For more information about our landscape projects in Aceh, see our [2019 progress report](#) or visit our website for updates: <http://www.musimmas.com/sustainability/landscapes/engagement-in-aceh>



Stakeholder partnerships and collaborations

Stakeholder partnerships/ collaboration	Nature of platform	Role of Musim Mas
Multi-stakeholder platforms & initiatives		
Aceh-APT-TFT³⁰ (Leuser Ecosystem)	Multi-stakeholder working group under <i>Areal Prioritas Transformasi</i> (APTs) in Aceh Tamiang and Aceh Singkil	<ul style="list-style-type: none"> Member of Aceh-APT Working Group since 2017 Working with the programme for the Musim Mas landscape initiative in Aceh
China Sustainable Palm Oil Alliance	Platform to promote sustainable Palm Oil in China	Member of the Alliance since December 2018
Conservation International's Coalition for Sustainable Livelihoods	Initiative focused on collective action to drive economic development, reduce poverty and improve natural resource management in the Indonesian provinces of North Sumatra and Aceh	Working with the programme for the Musim Mas landscape initiative in Aceh
Consortium of Resource Experts (CORE)	Environmental risk assessments at the landscape-level, implementation of intervention programmes for smallholders and suppliers, overall implementation of Sustainability Policy	<ul style="list-style-type: none"> Implementation partnership Working with CORE to meet Musim Mas' commitments on sourcing sustainable palm oil
Decent Rural Living Initiative	Improving the protection of human and labour rights in agriculture by delivering practical and realistic recommendations to help rural workers secure their long-term ability to thrive	One of five companies participating in the initiative
	Conducting pilots on contracts for casual/flexible work, and gender balance at oil palm plantations	
Fire Free Alliance (FFA)	A voluntary, multi-stakeholder platform that contributes to the development of land and forest fire solutions in Indonesia	Founding member of FFA since 2016
High Carbon Stock Approach (HCSA) Steering Group	A methodology supporting no deforestation	<ul style="list-style-type: none"> Member of the HCSA Steering Group since 2015 and member of its Executive Committee (HCSA decision-making body) Member of Working Groups/Committees on: <ul style="list-style-type: none"> Social Requirements High Forest Cover Landscapes (HFCL) Protection Membership
Indonesia Sustainable Palm Oil (ISPO)	Indonesian government regulation and certification for sustainable palm oil production	Co-lead of ISPO's Greenhouse Gas (GHG) Working Group

30 TFT is now known as Earthworm Foundation

Stakeholder partnerships/ collaboration	Nature of platform	Role of Musim Mas
Multi-stakeholder platforms & initiatives		
International Finance Corporation (IFC)	Assistance to independent smallholders in the areas surrounding Musim Mas operations in Indonesia	Sole Indonesia-based partner with International Finance Corporation (IFC), a member of the World Bank
Palm Oil Innovation Group (POIG)	Multi-stakeholder initiative focused on responsible palm oil production verification and innovation	<ul style="list-style-type: none"> Member of POIG since 2015 Member of the POIG Organising Committee (POIG decision-making body) Chair of the Traders & Processors Working Group, having led the development of the POIG Traders & Processors Charter Member of Working Groups on: <ul style="list-style-type: none"> Verification Retailers & Manufacturers Communications
PONGO Alliance	Management and protection of orangutan and other wildlife habitats within oil palm landscapes. New focus with Government of Sabah on Kinabatangan region	Founding member of the PONGO Alliance since 2017
Roundtable on Sustainable Palm Oil (RSPO)	Sustainable palm oil production certification and multi-stakeholder initiative	<ul style="list-style-type: none"> Member of the RSPO since 2004 Substantive member of the P&C Review Task Force Alternate member for Indonesian Growers in RSPO Board of Governors Substantive member of various Working Groups: <ul style="list-style-type: none"> Smallholders Biodiversity and High Conservation Values Human Rights Emissions Reduction (Co-Chair) Peatland P&C 2018 Indonesian National Interpretation No Deforestation Taskforce Remediation & Compensation Taskforce Standards & Certification Standing Committee Assurance Taskforce
Sustainable Landscapes Working Group (IDH)	Multi-stakeholder working group focused on priority landscapes in Indonesia	Sustainable Landscapes Working Group (IDH)
Tropical Forest Alliance (TFA) 2020	Organisation promoting responsible growth without depleting natural capital	Member of the Alliance since December 2018

Stakeholder partnerships and collaborations

Stakeholder partnerships/ collaboration	Nature of platform	Role of Musim Mas
Academic/research partnerships		
Helsinki University, Universitas Riau (UNRI) and Institut Pertanian Bogor	Research projects with communities	Social impact and management in oil palm
National University of Singapore	Sustainability research/projects	Musim Mas Professorship Fund
Oxford University	Academic partnership	Master programme on High Conservation Values (HCV) management
Princeton University	Conservation and biodiversity research	<ul style="list-style-type: none"> Monitoring winged species in HCV areas Doctorate project on aqua biodiversity
UNICEF	Academic research	Collaboration for children's rights and development
Crops for the Future Research Centre and University of Nottingham Malaysia Campus	Training programme	Doctoral Training Partnership Programme

Base data

Category/Indicator	Measurement unit/ breakdown	FY2018	FY2017	FY2016	FY2015
ECONOMIC					
Income statement					
Revenue	US\$ billion	7.5	7.3	5.5	5
LAND AND PRODUCTION					
Total titled land area	ha	198,837	194,204	193,729	193,497
Oil palm plantations					
Planted area	ha	121,968	121,494	119,994	116,280
Mature	ha	108,035	101,621	97,348	95,118
Immature	ha	13,933	19,873	22,646	21,162
Nucleus planted area	ha	117,344	116,875	115,405	111,971
Mature	ha	103,780	97,526	93,493	91,866
Immature	ha	13,564	19,349	21,911	20,105
Scheme smallholder planted area	ha	4,624	4,620	4,589	4,308
Mature	ha	4,255	4,095	3,855	3,252
Immature	ha	369	524	734	1,056
Production and productivity					
Total FFB	MT	3,815,493	3,341,946	2,781,095	3,073,391
FFB production – own plantation	MT	2,703,918	2,272,841	1,944,448	2,138,567
FFB production – scheme smallholders	MT	110,036	101,845	87,510	92,162
FFB volume purchased from third parties	MT	1,001,538	967,260	749,137	842,662
Crude palm oil	MT	860,295	754,568	629,794	703,397
Palm kernel	MT	220,853	191,371	158,484	177,856
FFB yield – own plantation	MT FFB/ha	25.9	22.7	20.5	23.1
FFB yield – scheme smallholders	MT FFB/ha	27.0	27.0	25.4	28.0
Extraction rate – crude palm oil	%	22.6	22.6	22.7	22.9
Extraction rate – palm kernel	%	5.8	5.7	5.70	5.8

Base data

Category/Indicator	Measurement unit/ breakdown	FY2018	FY2017	FY2016	FY2015
Conservation area³¹					
Total conservation area	ha	20,958	21,028	19,228	19,228
Total HCV area	ha	19,138	19,228	19,228	19,228
Total HCS area	ha	1,820	1,800	0	0
Peat					
Total peat area planted	ha	35,275	35,287	35,293	35,293
Total peat area conserved	ha	4,049	3,536	3,536	3,536
Certification					
RSPO certified – own plantation area	ha	135,824	135,710	135,710	135,710
RSPO certified – scheme smallholder area	ha	3,494	3,474	3,454	3,252
RSPO certified mills	no.	12	10	10	10
ISPO certified	no.	4	4	4	4
ISCC certified	no.	12	11	10	10
POIG audited mills	no.	8	4	2	0

ENVIRONMENT

Water usage					
Plantation	m ³	0.65 million	1.14 million	1.01 million	1.0 million
Mill	m ³	3.97 million	3.25 million	2.82 million	2.50 million
Water usage per tonne of FFB processed – mills	m ³ /MT FFB processed	1.23	1.19	1.24	0.99
Water consumption³²					
Blue water	m ³	9.85 million	7.92 million	7.85 million	N/A
Green water	m ³	1.55 billion	1.55 billion	1.53 billion	N/A
Grey water	m ³	387.78 million	342.38 million	459.68 million	N/A
Effluents					
BOD levels river discharge – Sumatra	mg/l	55	66	77	77
BOD levels river discharge – Kalimantan	mg/l	29	N/A	N/A	N/A
BOD levels land application – Sumatra	mg/l	49	48	52	73
BOD levels land application – Kalimantan	mg/l	29	36	46	65

31 In the 2017 Sustainability Report, HCV area was partially double-counted as it was included in the HCS area calculations. Any overlaps in HCV and HCS areas have been reflected under HCV figures.

32 Blue water consumption data using the Water Network Methodology for 2016 and 2017 have been restated as we have revised the assumptions we use for calculating blue water consumption figures in 2018.

Category/Indicator	Measurement unit/ breakdown	FY2018	FY2017	FY2016	FY2015
Phosphorus and nitrogen in water courses					
P-level inlet – Sumatra	mg/l	0.88	0.18	N/A	N/A
P-level outlet – Sumatra	mg/l	0.26	0.17	N/A	N/A
P-level inlet – Kalimantan	mg/l	0.06	0.06	N/A	N/A
P-level outlet – Kalimantan	mg/l	0.04	0.06	N/A	N/A
N-level inlet – Sumatra	mg/l	2.97	1.02	N/A	N/A
N-level outlet – Sumatra	mg/l	1.23	0.93	N/A	N/A
N-level inlet – Kalimantan	mg/l	2.46	0.81	N/A	N/A
N-level outlet – Kalimantan	mg/l	1.85	0.57	N/A	N/A
Fertiliser type and usage					
Inorganic fertiliser	MT	140,569.26	140,571.11	163,636.59	134,443.50
Palm oil mill effluent	m ³	2.05 million	1.59 million	1.45 million	1.40 million
Total inorganic fertiliser (DDS and boiler ash)	MT	66,673	70,001	48,465	55,227
Herbicide usage					
Toxicity per hectare planted – Sumatra	toxicity/ha	519	484	474	400
Toxicity per hectare planted – Kalimantan	toxicity/ha	326	430	440	400
Energy consumption from renewable sources					
Palm kernel shells	'000 MT	48.42	42.93	30.25	30.13
Palm kernel shells – energy	Million Gigajoule	0.73	0.65	0.46	0.45
Palm fibre	'000 MT	779.96	645.93	570.48	630.27
Palm fibre – energy	Million Gigajoule	6.00	5.00	3.98	4.94
GHG emissions					
Total carbon emissions at mill	MT CO ₂ e/MT CPO	3.49	3.39	3.33	3.15
Fire incidents³³					
Hotspots within concession	no.	69	35	90	433
Fires within concession	no.	18	4	14	89
Area burnt within concession	ha	47.91	4.74	107.75	1,472.25
Hotspots surrounding concession boundaries	no.	269	130	15	41
Fires surrounding concession boundaries	no.	109	33	6	26
Area burnt surrounding concession boundaries	ha	795.51	125.90	21.46	643.92

33 The high number of fires and area affected in 2015 were attributed to the lower rainfall compared to following years. The efforts of Musim Mas through the FFA and FFVP also contributed to the significant drops in fire in 2016 compared to 2015.

Base data

	Indonesia	Asia (other than Indonesia)	Europe	America
SCOPE 1 & 2 EMISSIONS BY REGION 2017³⁴				
Scope 1 (tCO ₂ e)	2,983,745	35,697	47,896	0
Scope 2 (tCO ₂ e)	182,597	16,015	13,738	44

Category/Indicator	Measurement unit/ breakdown	FY2018	FY2017	FY2016	FY2015
EMPLOYEES					
Employees at Group-level					
Group total	no.	37,871	37,938³⁵	29,573	N/A
By country	Indonesia	36,156	36,495	28,301	N/A
	Malaysia	237	221	214	N/A
	Singapore	345	295	256	N/A
	Other countries	1,133	927	802	N/A
By category	Management level	661	440	390	N/A
	Non-managerial	37,210	37,498	29,183	N/A
By gender	Male	29,754	30,207 ³⁵	22,148	N/A
	Female	8,117	7,731	7,425	N/A
Employees at plantation- and mill-level					
Total permanent employees by region	Sumatra	9,144	8,956	8,853	9,227
	Kalimantan	11,676	10,939	10,093	9,755
Total staff (permanent only)	no.	961	978	991	1,087
By gender	Male	738	737	757	837
	Female	223	241	234	250
Turnover – Kalimantan	%	20%	14%	12%	17%
Turnover – Sumatra	%	14%	14%	9%	13%
Total workers	no.	20,902	19,945	18,919	19,045
By contract type	Permanent	19,859	18,917	17,955	17,895
	Temporary	1,043	1,028	964	1,150
By gender	Male	15,263	14,337	13,672	13,848
	Female	5,639	5,608	5,247	5,197
Turnover – Kalimantan	%	42%	30%	42%	51%
Turnover – Sumatra	%	16%	11%	17%	19%

³⁴ Scope 1 and scope 2 figures reported in the previous Sustainability Report reflected the data submitted for the 2018 CDP submission cycle. This data is for 2017 submission (covering the year of 2016).

³⁵ 2017 data has been restated.

Category/Indicator	Measurement unit/ breakdown	FY2018	FY2017	FY2016	FY2015
HEALTH AND SAFETY					
Lost time accident rate (Frequency rate) (per 200,000 working hours)	Total	1.76	3.34	5.08	5.38
Severity rate (average days lost per accident)	Total	43.50	25.21	19.63	17.16
Fatalities	no.	1	4	3	2

SOCIAL AND COMMUNITY**Support for smallholders**

Scheme smallholders	no.	2,423	2,423	2,423	2,304
Scheme smallholder programmes	no.	7	7	7	7
Trainings provided to scheme smallholders	no.	121	99	85	57
Total income of scheme smallholders	Billion IDR	112.2	127.9	98.6	85.7
Independent smallholders covered by programmes	no.	15,394	9,652	3,178	539

Base data

FAUNA INVENTORY UNDER IUCN RED LIST OF THREATENED SPECIES

IUCN status	Scientific name	Common name	Species
Critically Endangered (CR)	<i>Alcedo euryzona</i>	Raja Udang Kalung Biru	Javan Blue-banded Kingfisher
	<i>Presbytis chrysomelas</i>	Surili Serawak	Bornean Banded Langur
	<i>Batagur affinis</i>	Biuku/Tuntong Sungai	Southern River Terrapin
Endangered (EN)	<i>Mycteria Cinerea</i>	Bangau Bluwok	Yellow billed Stork
	<i>Ciconia stormi</i>	Bangau Strom	Storm's Stork
	<i>Pycnonotus zeylanicus</i>	Cucak Rawa	Straw-headed Bulbul
	<i>Nasalis larvatus</i>	Bekantan	Proboscis Monkey
	<i>Hylobates moloch</i>	Owa Jawa	Silvery Gibbon
	<i>Hylobates albibarbis</i>	Owa Kalimantan	Bornean Agile Gibbon
	<i>Hylobates agilis</i>	Owa Ungko	Agile Gibbon
	<i>Hylobates syndactylus</i>	Siamang	The Siamang
	<i>Tapirus indicus</i>	Tapir Asia	Malayan Tapir
	<i>Heosemys spinosa</i>	Kura-kura Duri	Spiny turtle
	<i>Orlitia borneensis</i>	Kura-kura Sungai Kalimantan	Malayan Giant Turtle
	Vulnerable (VU)	<i>Ciconia episcopus</i>	Bangau Hitam
<i>Leptoptilos javanicus</i>		Bangau Tongtong	Lesser Adjutant
<i>Chloropsis sonnerati</i>		Cica Daun Besar	Greater Green Leafbird
<i>Spizaetus nanus</i>		Elang Wallace	Wallace's Hawk Eagle
<i>Acridotheres javanicus</i>		Kerak Kerbau	Javan Myna
<i>Arborophila orientalis</i>		Puyuh Gonggong Biasa	White-faced Partridge
<i>Melanoperdix niger</i>		Puyuh Hitam	Black Partridge
<i>Sus barbatus</i>		Babi Berjenggot	Bornean Bearded Pig
<i>Aonyx cinereus</i>		Berang-Berang Cakar Kecil	Asian Small-clawed Otter
<i>Macaca nemestrina</i>		Beruk	Pig Tailed Macaque
<i>Presbytis thomasi</i>		Kedih	Thomas's Langur
<i>Nycticebus coucang</i>		Kukang Sunda	Sunda Slow Loris/ Greater Slow Loris
<i>Cervus unicolor</i>		Rusa Sambar	Sambar Deer
<i>Amyda cartilaginea</i>		Bulus	Asiatic Softshell Turtle
<i>Tomistoma schlegelii</i>		Senyulong/Buaya Sepit	False Gharial
<i>Ophiophagus hannah</i>		Ular Kobra/Ular Anang	King Cobra
<i>Cuora amboinensis</i>		Kura-kura Batok	Southeast Asian Box Turtle
<i>Pelodiscus sinensis</i>		Kura-Kura Tempurung Lunak	Chinese Softshell Turtle

IUCN status	Scientific name	Common name	Species
Near Threatened (NT)	<i>Malacopteron affine</i>	Asi Topi Jelaga	Sooty-capped Babbler
	<i>Napothera macrodactyla</i>	Berencet Besar	Large wren-babbler
	<i>Psittacula alexandri</i>	Betet Biasa	Red-breasted Parakeet
	<i>Psittacula longicauda</i>	Betet Ekor Panjang	Long-tailed Parakeet
	<i>Dicaeum everetti</i>	Cabai Tunggir Coklat	Brown-backed Flowerpecker
	<i>Meiglyptes tukki</i>	Caladi Badok	Buff-necked Woodpecker
	<i>Meiglyptes tristis</i>	Caladi Batu	White-rumped Woodpecker
	<i>Actenoides concretus</i>	Cekakak Hutan Melayu	Rufous-collared Kingfisher
	<i>Chloropsis cyanopogon</i>	Cica Daun Kecil	Lesser Green Leafbird
	<i>Chloropsis cochinchinensis</i>	Cica Daun Sayap Biru	Javan Leafbird
	<i>Aegithina viridissima</i>	Cipoh Jantung	Green Lora
	<i>Macronus ptilosus</i>	Ciung Air Pong Pong	Fluffy-backed Tit-babbler
	<i>Pycnonotus bimaculatus</i>	Cucak Gunung	Orange-spotted Bulbul
	<i>Pycnonotus cyaniventris</i>	Cucak Kelabu	Grey-bellied Bulbul
	<i>Pycnonotus eutilotus</i>	Cucak Rumbai Tungging	Puff-backed Bulbul
	<i>Icthyophaga humilis</i>	Elang Ikan Kecil	Lesser Fish-eagle
	<i>Icthyophaga ichthyaetus</i>	Elang Ikan Kepala Kelabu	Grey-headed Fish-eagle
	<i>Rhabdotorrhinus corrugatus</i>	Julang Jambul Hitam	Wrinkled Hornbill
	<i>Phaenicophaeus diardi</i>	Kadalan Beruang	Black-bellied Malkoha
	<i>Anthraceros malayanus</i>	Kangkareng Hitam	Black Hornbill
	<i>Argusianus argus</i>	Kuau Raja	Great Argus
	<i>Trichixos pyrropygus</i>	Kucica Ekor Kuning	Rufous-tailed Shama
	<i>Harpactes kasumba</i>	Luntur Kasumba	Red-naped Trogon
	<i>Anthreptes rhodolaemus</i>	Madu Leher Merah	Red-throated Sunbird
	<i>Psittinus cyanurus</i>	Nuri Tanau	Blue-rumped Parrot
	<i>Trichastoma rostratum</i>	Pelanduk Dada Putih	White-chested Babbler
	<i>Chrysophlegma humii</i>	Pelatuk Kumis Kelabu	Chequer-throated Yellownap
	<i>Prionochilus thoracicus</i>	Pentis Kumbang	Scarlet-breasted Flowerpecker
	<i>Garrulax palliatus</i>	Poksai Mantel	Sunda Laughingtrush
	<i>Treron fulvicollis</i>	Punai Bakau	Cinnamon-headed Green-pigeon

Base data

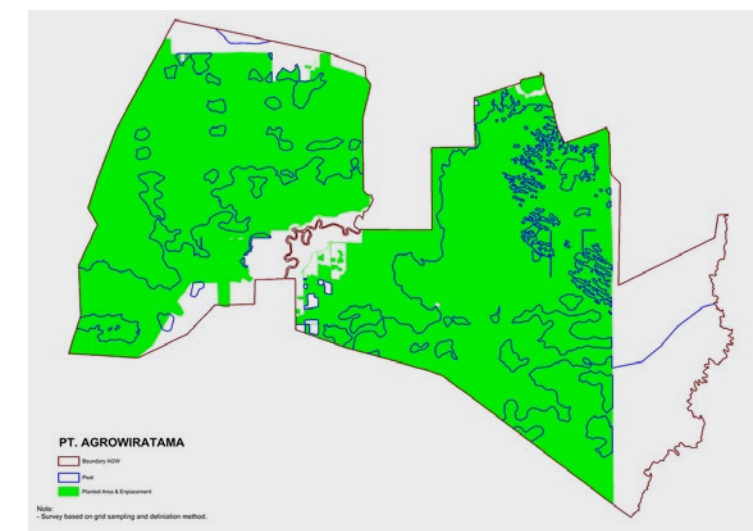
IUCN status	Scientific name	Common name	Species
Near Threatened (NT)	<i>Buceros rhinoceros</i>	Rangkong Badak	Rhinoceros Hornbill
	<i>Buceros bicornis</i>	Rangkong Papan	Great Hornbill
	<i>Eurylaimus ochromalus</i>	Sempur Hujan Darat	Black-and-yellow Broadbill
	<i>Pericrocotus igneus</i>	Sepah Tulin	Fiery Minivet
	<i>Loriculus pusillus</i>	Serindit Jawa	Yellow-throated Hanging Parrot
	<i>Cyornis umbratilis</i>	Sikatan Rimba Dada Kelabu	Grey-chested Jungle-flycatcher
	<i>Caloramphus hayii</i>	Takur Ampis	Malay Brown Barbet
	<i>Magalaima rafflesii</i>	Takur Tutut	Red-crowned Barbet
	<i>Platylophus galericulatus</i>	Tangkar Ongklet	Crested Jay
	<i>Pityriasis gymnocephala</i>	Tiong Batu Kalimantan	Bornean Bristlehead
	<i>Pteropus vampyrus</i>	Kalong Besar	Large Flying Fox
	<i>Trachypithecus cristatus</i>	Lutung Kelabu	Silvery Lutung
	<i>Trachypithecus obscurus</i>	Monyet kacangata	Dusky Leaf Monkey
	<i>Hemigalus derbyanus</i>	Musang Belang	Banded Civet
	<i>Cyclemys dentata</i>	Kura-kura Bergerigi	Asian Leaf Turtle

HERBICIDES USED AT MUSIM MAS PLANTATIONS

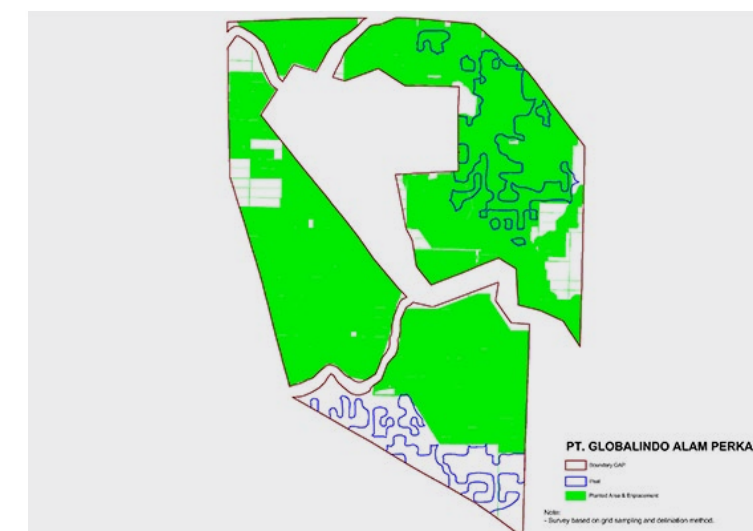
Description/trade name	Active ingredient description	Class WHO
Ally 20 WG	Metsulfuron methyl	U
Meta Prima 20 WG	Metsulfuron methyl	U
Metafuron 20 WG	Metsulfuron methyl	U
Basta 150 SL	Ammonium glufosinate	II
Glufo 150 SL	Ammonium glufosinate	II
Inteam 150 SL	Ammonium glufosinate	II
Garlon 670 EC	Triclopyr	II
Prima Up 480 SL	Glyphosate isopropylamine	III
Kleanup 480 SL	Glyphosate isopropylamine	III
Smart 486 SL @ 20L	Glyphosate isopropylamine	III
Round UP	Isopropylamine glifosate	III
Lindomin @ 20L	Dimetyl amina 2,4-D	II
ABOLISI 865SL	Dimetyl amina 2,4-D	II
LIDING 240 EC	Clethodim	III
KIXOR 70WG	Saflufenacil	III
Starane 290EC	Fluroxypyr	U

Peat maps

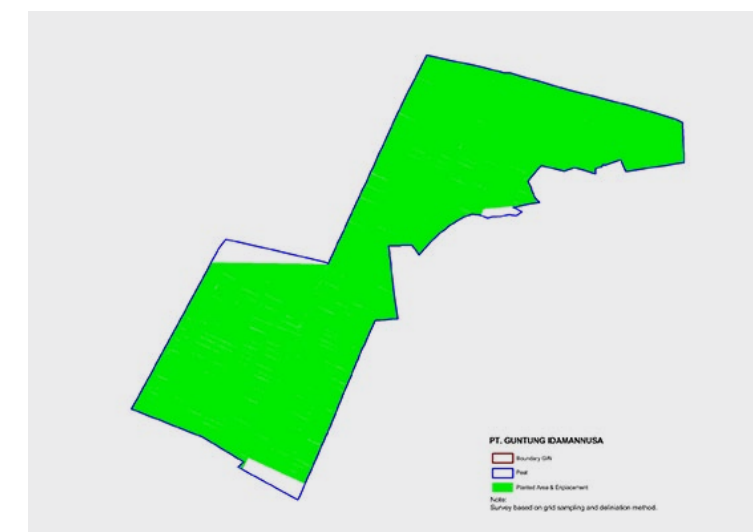
PT. AGROWIRATAMA



PT. GLOBALINDO ALAM PERKASA



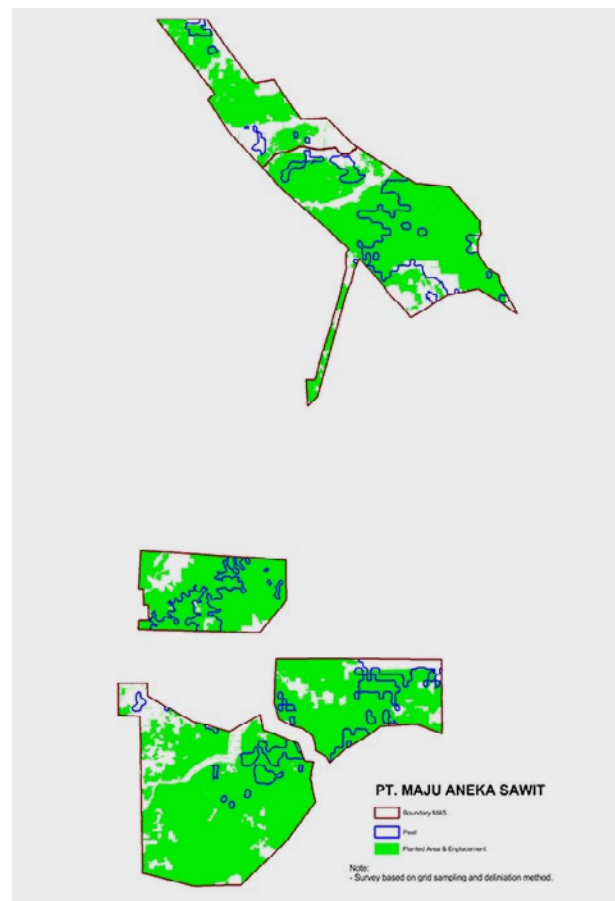
PT. GUNTING IDAMAN NUSA



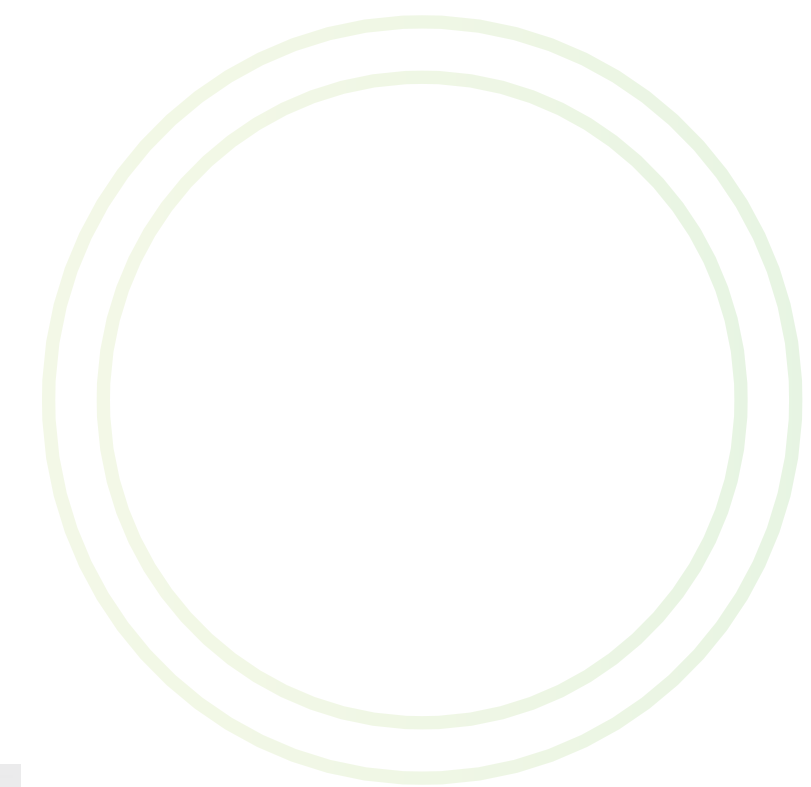
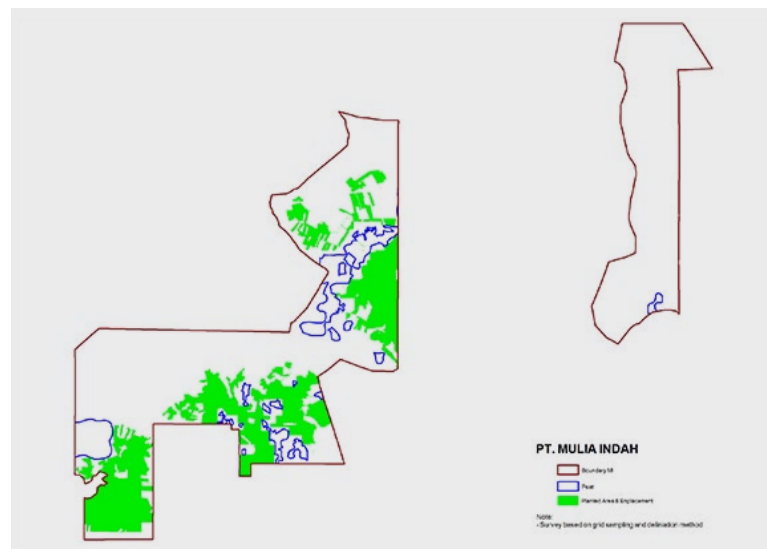
□ Boundary AGW
□ Peat
■ Planted Area and Enplacement
 Note: Survey based on grid sampling and delineation method.

Peat maps

PT. MAJU ANEKA SAWIT

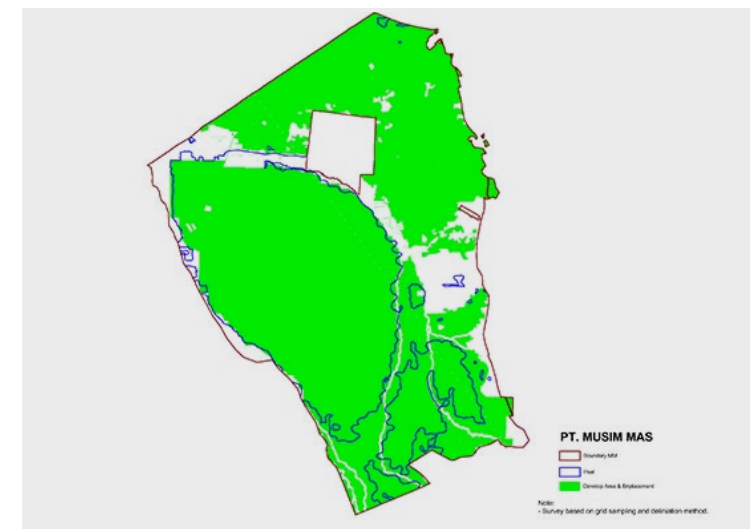


PT. MULIA INDAH

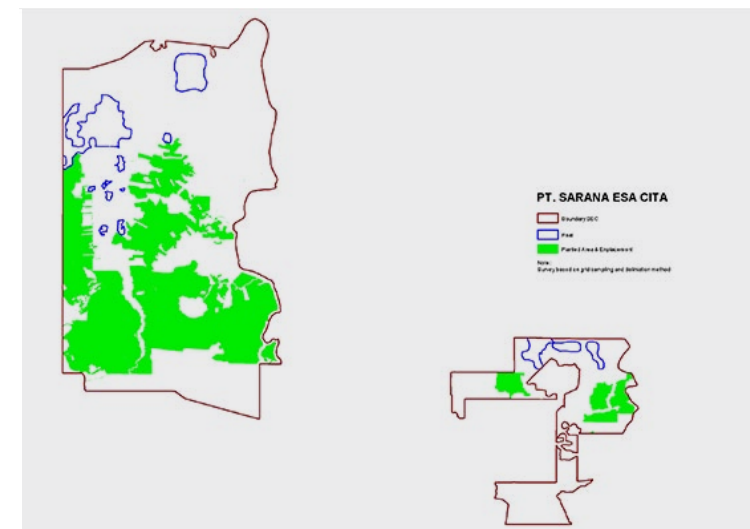


□ Boundary AGW
□ Peat
■ Planted Area and Enplacement
 Note: Survey based on grid sampling and delineation method.

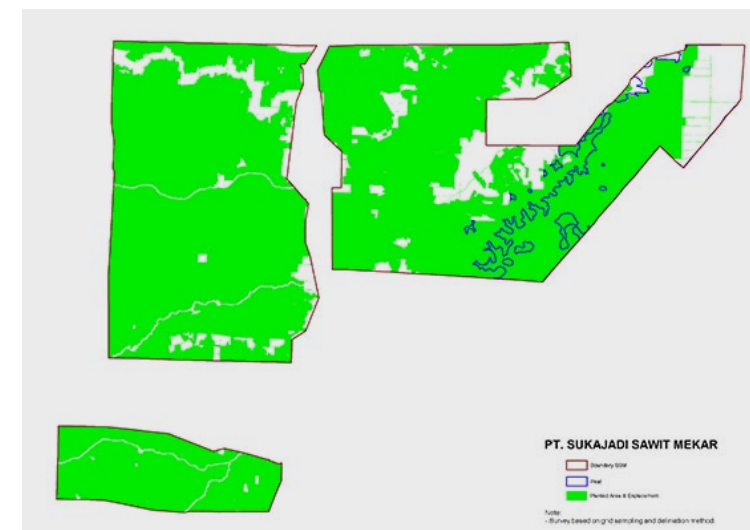
PT. MUSIM MAS



PT. SARANA ESA CITA



PT. SUKAJADI SAWIT MEKAR



□ Boundary AGW
□ Peat
■ Planted Area and Enplacement
 Note: Survey based on grid sampling and delineation method.

GRI Index

The Global Reporting Initiative (GRI) is a multi-stakeholder standard for sustainability reporting, providing guidance on determining report content and indicators. GRI is the first and most widely adopted global standard for sustainability reporting and has been designed to enhance the global comparability and quality of information on environmental and social impacts, thereby enabling greater transparency

and accountability of organisations. Sustainability reporting based on the GRI Standards should provide a balanced and reasonable representation of an organisation's positive and negative contributions towards the goal of sustainable development. This report has been prepared in alignment with the GRI Standards: Core option.

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	103-3	Evaluation of the management approach	No harassment and abuse, and unlawful or unethical discrimination, 44
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Glossary

Annual Communications of Progress (ACOP)

Annual Communications of Progress (ACOP) ACOPs are mandatory reports submitted by Ordinary and Affiliate RSPO members to gauge their progress towards 100% RSPO certified sustainable palm oil.

Biodiversity

The diversity (number and variety of species) of plant and animal life within a region.

Biological Oxygen Demand (BOD)

The amount of oxygen used when organic matter undergoes decomposition by micro-organisms. Testing for BOD is done to assess the amount of organic matter in water.

Book & Claim

An RSPO supply-chain model providing tradable certificates for RSPO certified palm oil to the palm oil supply base. The supply base may then offer these certificates on a web-based transaction system to end users who choose to support specific volumes of RSPO certified palm oil and or their derivatives.

Carbon dioxide equivalents (CO₂e)

Carbon dioxide equivalents provide a universal standard of measurement against which the impacts of releasing (or avoiding the release of) different greenhouse gases can be evaluated.

Chemical Oxygen Demand (COD)

The measurement of the oxygen required to oxidise soluble and particulate organic matter in water. COD testing involves using a strong chemical oxidising agent to chemically oxidise the organic material in a sample of wastewater under controlled conditions.

Effluents

Water discharged from one source into a separate body of water, such as mill process water.

Extension Services Programme (ESP)

A programme developed to address the challenges of independent smallholders who supply indirectly to Musim Mas through our third-party suppliers.

Extraction rate

The amount of oil extracted from oil palm fruit at a mill. Crude palm oil (CPO) is extracted from the flesh; palm kernel oil (PKO) from the nut.

Family cards

Official documents required by the government office to prove residency and family relationships.

Fresh fruit bunch (FFB)

Bunch harvested from the oil palm tree. The weight of the fruit bunch ranges between 10 kg to 40 kg depending on the size and age.

Free, Prior and Informed Consent (FPIC)

Principle that a community has a right to give or withhold its consent to proposed projects that may affect the lands they customarily own, occupy or use.

Global Reporting Initiative (GRI)

A multi-stakeholder standard for sustainability reporting, providing guidance on determining report content and indicators.

Good Manufacturing Practices Plus Feed Safety Assurance (GMP+ FSA)

Standards that have been developed to harmonise requirements for feed in order to ensure quality and safety throughout the entire feed chain. GMP+ FSA certified companies must demonstrate that they meet all requirements and conditions for the assurance of feed safety.

Greenhouse gas (GHG) emissions

Gases in the atmosphere that absorb and emit radiation within the thermal infrared range. The primary greenhouse gases in the Earth's atmosphere are water vapour, carbon dioxide, methane, nitrous oxide, and ozone. Scope 1 GHG emissions are emissions released into the atmosphere as a direct result of an activity, or series of activities, at a facility level. Scope 2 GHG emissions are those released into the atmosphere from the indirect consumption of an energy commodity.

High Carbon Stock Approach (HCSA)

A global methodology used in agricultural land development planning that is currently being applied in fragmented tropical landscapes on mineral soils in the humid tropics. The methodology distinguishes HCS forest areas for protection from degraded lands with low carbon and biodiversity values that may be considered for development.

High Conservation Value (HCV)

The HCV concept was originally developed by the Forest Stewardship Council (FSC) with the aim to standardise the definitions and evaluation approaches for a natural forest that should be set aside for conservation. There are six possible HCVs that can be identified, covering environmental and social aspects of a natural forest.

Identity Preserved

An RSPO supply-chain model wherein sustainable palm oil from a single identifiable certified source is kept separate from ordinary palm oil throughout the entire supply chain.

Independent smallholder

Small growers that cultivate up to 50 hectares, and are self-financed, managed, and equipped, and that are not bound to any one mill.

Indonesia Sustainable Palm Oil (ISPO) Mandatory national sustainable palm oil standard.

Indonesian Palm Oil Development for Smallholders

A programme developed in partnership with the International Finance Corporation to support independent smallholders in meeting the same farming standards as those adopted by large palm oil organisations.

Integrated Pest Management (IPM)

IPM is the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimise risks to human health and the environment. IPM emphasises the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms.

International Finance Corporation (IFC)

An international financial institution that offers investment, advisory, and asset-management services to encourage private-sector development in developing countries.

International Labour Organization (ILO)

Is a tripartite world body representative of labour, management and government, and is an agency of the United Nations. It disseminates labour information and sets minimum international labour standards called "conventions", offered to member nations for adoption.

International Sustainability and Carbon Certificate (ISCC)

A global biomass and bioenergy certification scheme.

Introgression

Introgressive hybridisation (introgression) is the genetic modification of one species by another through hybridisation and repeated backcrossing. Introgression is essential in the evolution of flowering plants and is also important in plant breeding where a desirable trait can be transferred from wild to crop species.

Italian National Certification System for Biofuels and Bioliquids (IT SNC)

Under the EC Renewable Energy Directive, this Italian national action plan gives an overview of national policy concerning renewable energies, its goals and main strategic lines of action. The certification guarantees the reliability of information demonstrating compliance with the biofuel and bioliquid sustainability criteria, and that the information given by the economic operators belonging to the production chain of said products is independently verified.

IUCN Red List

Based in Switzerland, the International Union for Conservation of Nature and Natural Resources (also known as The World Conservation Union) is an organisation involved in the preservation of natural resources. IUCN publishes the Red Data Book, which lists the endangered species of every nation.

Kredit Koperasi Primer Anggota (KKPA)

A smallholder primary cooperative credit scheme, voluntarily initiated by Musim Mas in 1996, that provides smallholders with practical support to acquire the skills and technology needed to undertake palm oil cultivation.

Mass Balance

An RSPO supply-chain model that allows the mixing of RSPO-certified and non-certified palm oil at any stage in the supply chain provided that overall company quantities are controlled. The Mass Balance model is constructed in such a way that volumes of RSPO-certified product shipped will never exceed volumes received by the end-user.

New Planting Procedure (NPP)

The RSPO NPP consists of a set of assessments and verification activities to be conducted by RSPO grower members and certification bodies prior to a new oil palm development, in order to help guide responsible planting and ensure that social and environmental requirements have been met. The NPP report goes through a 30-day public consultation and planting and associated development can only begin once the NPP is complete and RSPO approval is granted.

Non-governmental organisation (NGO)

Is used in this report to refer to grassroots and campaigning organisations focused on environmental or social issues.

PalmGHG

The RSPO PalmGHG is a tool that calculates the emissions generated and sequestered from activities and processes engaged during agricultural and mill stages. Refer to detailed scope and boundaries at <https://www.rspo.org/certification/palmghg/palm-ghg-calculator>.

Glossary

Palm Oil Innovation Group (POIG)

A multi-stakeholder initiative that strives to achieve the adoption of responsible palm oil production practices by key players in the supply chain through developing and sharing a credible and verifiable benchmark that builds upon the RSPO, and creating and promoting innovations.

Palm oil mill effluent (POME)

A by-product of processed fresh fruit bunch (FFB).

Peat

An accumulation of partially decayed vegetation matter. Peat forms in wetlands or peat lands, variously called bogs, moors, muskogs, pocosins, mires, and peat swamp forests.

Program for Pollution Control, Evaluation, and Rating (PROPER)

Indonesia's national public environmental reporting initiative that uses a colour-coded rating scheme to grade factories' performance in pollution control against regulatory standards.

Risk-based traceability

A Musim Mas approach to mapping smallholders' villages against a landscape map and prioritising risk areas for traceability.

Roundtable on Sustainable Palm Oil (RSPO)

A multi-stakeholder organisation based in Kuala Lumpur, Malaysia, that has developed a certification scheme for sustainable palm oil. All RSPO members must comply with the RSPO Principles and Criteria (P&C), a set of stringent standards for the production of sustainable palm oil.

Sustainable Supply Chain Certification (SCCS)

An RSPO standard with auditable requirements designed for use by organisations in the palm supply chain to demonstrate implemented systems for the control of RSPO-certified oil palm products.

Scheme smallholders

Smallholders operating under a programme initiated by the Indonesian Government to encourage the development of smallholders' plantations, where plantation companies (the nucleus) assist and support the surrounding community plantations.

Segregated

The segregated supply chain model assures that RSPO-certified palm oil and its derivatives delivered to the end-user come only from RSPO-certified sources. It permits the mixing of RSPO-certified palm oil from a variety of sources.

Self-Assessment Tool

A Musim Mas developed-tool for suppliers to self-declare operational information against Musim Mas sustainability indicators.

Social and Environmental Impact Assessment (SEIA)

A process for predicting and assessing the potential environmental and social impacts of a proposed project, evaluating alternatives, and designing appropriate mitigation, management and monitoring measures.

Stakeholders

Any group or individual who is affected by – or can affect – a company's operations.

Sustainability

A term expressing a long-term balance between social, economic and environmental objectives. Often linked to sustainable development, which is defined as "development that meets the needs of current generations without compromising the needs of future generations".

Toxicity

Toxicity measures the degree to which a substance is harmful to living organisms. Toxicity in agricultural chemicals is measured using the LD50 methodology, i.e. the toxicity units corresponding to a lethal dose for 50% of a population of rats.

Village Development Programme (VDP)

A programme developed for scheme smallholders and tailored to villages where plantations are community-managed rather than individually owned.



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