



SIIA Haze Outlook

2020

June 2020

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About the SIIA Haze Outlook 2020

The SIIA Haze Outlook 2020 report provides a risk assessment of the probability of a severe transboundary haze incident affecting Indonesia, Malaysia, and Singapore. The haze is a recurring air pollution problem in Southeast Asia, posing serious health hazards and contributing significantly to climate change. The SIIA Haze Outlook is produced by the Singapore Institute of International Affairs (SIIA) with information from several sources and through engagements with our many stakeholders. Our risk assessment is based on three factors: **weather** (temperature and rainfall conditions), **peat** (policies and action related to peatland management), and **people** (fire prevention and suppression efforts on the ground). The SIIA Haze Outlook 2020 is supported by the Lee Foundation.

This is the second annual edition of the SIIA Haze Outlook. Our inaugural report was released at the Singapore Dialogue on Sustainable World Resources, organised in May 2019 by the SIIA. The SIIA Haze Outlook 2020 comprises not only research and analysis but also builds on the SIIA's ongoing engagement with sustainability and resource sector stakeholders in the region. A total of 13 stakeholders were interviewed for this report, representing a cross-section of palm oil companies, pulp and paper (pulpwood) companies, non-governmental organisations (NGOs), and academics.

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Executive Summary

The haze is a recurring transboundary air pollution problem that periodically darkens skies across Southeast Asia, caused by toxic smoke from forest and peat fires largely in Indonesia. In addition to posing a serious health hazard, the smoke released by forest and peat fires is also a major driver of climate change. In 2015, which saw the most serious transboundary haze incident in nearly two decades, greenhouse gas emissions from Indonesia accounted for 4.8 per cent of the world's total emissions – making Indonesia the fourth largest emitter that year.¹ Subsequent years saw relatively fewer fires in the region. But another severe haze incident occurred in 2019, raising questions about whether the transboundary haze will return in 2020.

The SIIA Haze Outlook 2020 report concludes that there is a moderate risk of a severe transboundary haze incident in 2020 – rated **Amber** on a scale of Green, Amber, and Red. Why? The dry season in 2020 is expected to be milder than the unusual drought conditions seen in 2019, and fire management policies remain in place, with the Indonesian government and the largest plantation and forestry corporations in the resource sector expending effort to prevent and effectively suppress blazes on the ground. However, there remain concerns that small growers and medium-sized companies have not strengthened their commitments to prevent the use of fire for land management and improve sustainability practices.

Moreover, new for 2020 are the impacts of the COVID-19 pandemic. While at the time of this report, the scope of the outbreak in Indonesia has not been fully ascertained, negative trends have already emerged. The need to focus on combating COVID-19 is hindering fire prevention and law enforcement efforts. The pandemic is also consuming time and financial resources that would have been allocated for fire and haze response. Additionally, the economic impacts of the pandemic also affect the resource sector, with companies facing greater pressure to be both sustainable and profitable.

SIIA Haze Outlook

Risk of a Severe Transboundary Haze Event in 2020:

AMBER*



Weather: In 2019, prolonged drought conditions were the chief driver of the fires and haze. However, the dry season in 2020 is expected to be milder than in 2019. Both the Indian Ocean Dipole (IOD), the phenomenon that exacerbated the 2019 dry season, and the El Niño–Southern Oscillation (ENSO) are projected to be neutral into the second half of 2020. The ASEAN Specialised Meteorological Centre (ASMC) forecasts near-normal to slightly-above-normal rainfall for Indonesia, Malaysia, and Singapore. A number of meteorological agencies differ, however, and offer more severe predictions.



Peat: Nearly half the hotspots detected across Indonesia in 2019 were on peatlands. These are of special concern, as fires on degraded peat release more particulate matter and emissions contributing to climate change than fires on mineral soil. Peat fires are also much harder to put out. While non-government organisations (NGOs) have criticised the relaxation of some land management regulations in Indonesia, there have been positive signals on environmental policy

from the government of President Joko Widodo (Jokowi), following his return to office for a second term. Indonesia's forest moratorium is now permanent; no new commercial licenses will be granted on primary forests and peatland. There are also reports that the government will extend the operating mandate of the Peatland Restoration Agency (Badan Restorasi Gambut, BRG), which the President created during his first term in office. However, the extension has yet to be enacted, and measures to limit travel and gatherings amidst the COVID-19 pandemic have interrupted peatland restoration work.



People: What resource companies and local communities do is critical, and efforts to educate people to take steps towards sustainability are ongoing. However, due to the COVID-19 pandemic, in-person engagement with rural communities and smaller plantation companies has been suspended. Indonesian authorities now have less capacity to prevent illegal burning and forest encroachment, as they are preoccupied with recalibrating COVID-19 policies as Indonesia reopens. In the event that a haze crisis does occur, public health systems and the supply of N95 face masks will be further stressed, potentially to breaking point. In the longer term, the economic disruption and lower market prices caused by the pandemic may impact private sector sustainability initiatives, and there are concerns that small growers may cut costs by resorting to the use of fire for land clearing.

*  GREEN: Low Risk  AMBER: Moderate Risk  RED: High Risk

The SIIA Haze Outlook 2020 report is set out in five sections, with additional research findings in appendices. We begin with an analysis of the 2019 transboundary haze incident. 2019 was a bad year for forest and land fires, with major blazes occurring across the globe. Although the 2019 fires in Indonesia affected a much smaller area than the blazes in the Amazon and Australia, the Indonesian fires produced considerably more emissions. The report also explores Indonesian government policy on fire prevention and peat restoration, noting that despite the severity of the 2019 fires, Indonesia did indeed achieve its target of reducing hotspots to 50 per cent of the number seen in 2015, though more still needs to be done.

Next, we consider the likelihood of a transboundary haze event in 2020, summarising risk factors and key issues to watch in the coming months. The second section of the report notes that climatic conditions are expected to be neutral this year, but the third section highlights that human factors remain a cause for concern. This year's SIIA Haze Outlook report includes a fourth section discussing Environmental, Social and Governance (ESG) practices in the resource sector, recognising that action from companies is key to improving sustainability in the resource sector. The largest companies have adopted strong ESG policies, but the greatest challenge for the sector is among small and medium-sized growers who have no international visibility. Smaller firms primarily conduct business at a local level, with no participation in international certification schemes and industry groupings. Finally, the report surveys the impacts of the COVID-19 pandemic. While the situation is still unfolding, we attempt to map both the immediate implications of the virus for fire and haze preparedness, as well as the potential consequences in the long run, if the economic downturn caused by COVID-19 is severe and recovery is slow.

1. 2019 Haze Crisis: Outcomes, Drivers and Responses

Why Did the Haze Return in 2019?



Weather: Unlike 1997 and 2015, 2019 was not an El Niño year – there was no strong positive ENSO in the Pacific Ocean. However, there was a strong positive IOD that peaked in October. The IOD is a similar phenomenon to El Niño, involving warmer than average sea surface temperatures, but for the Indian Ocean rather than the Pacific Ocean. 2019 saw one of the most severe IOD occurrences on record, causing low rainfall and exacerbating droughts in both Indonesia and Australia.²



Peat: Similar to previous years, a significant number of fires occurred on degraded peatlands in 2019. In their natural state, peatlands are wet and fire-resistant, but when drained for agriculture or dried out due to the loss of tree cover, they are vulnerable to fire. Indonesian officials argue, with some evidence, that efforts to rewet and revegetate degraded peatland since 2016 have reduced the risk of fires. However, some peatland fires persist. Despite their efforts, Indonesian agencies face considerable challenges in achieving the ambitious national targets for large-scale peatland restoration.



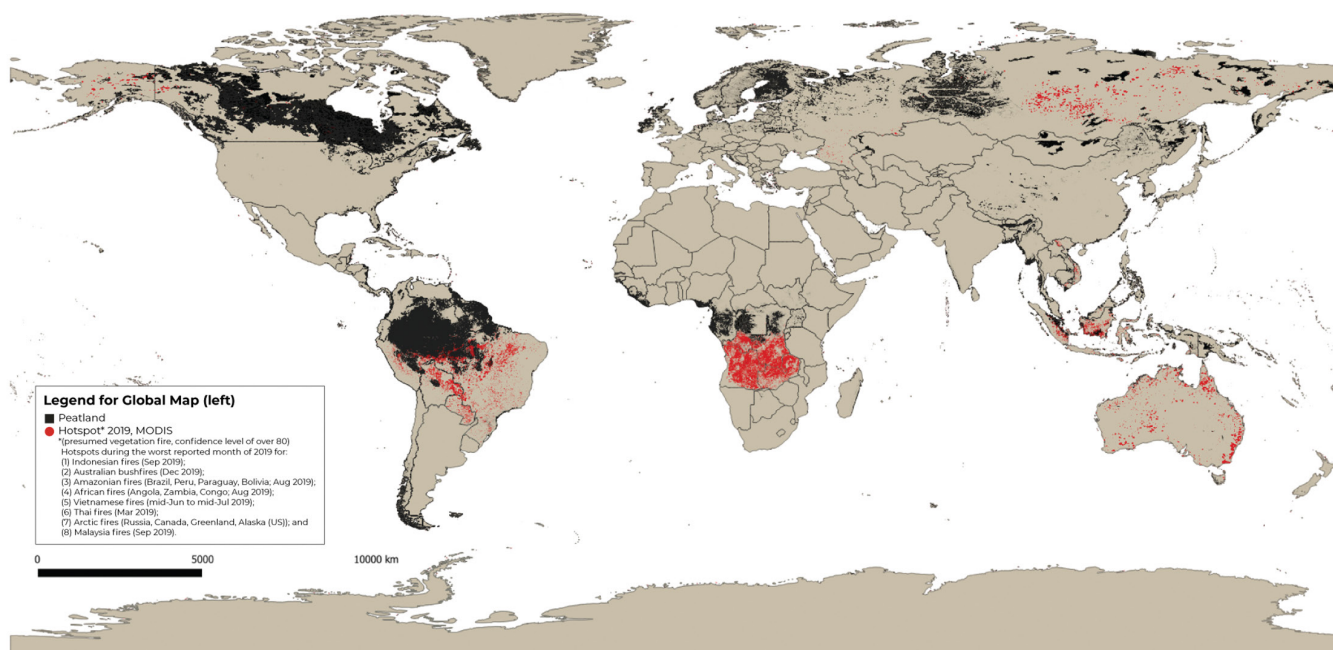
People: The scale and spread of the 2019 fires suggest that some fires were started by commercial plantation operators, not only by smallholders and community farmers.³ Increasingly, the resource sector is acknowledging that medium-sized companies seem to be at fault. However, it is extremely difficult to ensure such firms improve their sustainability standards. Most of these companies, unlike larger ones, are not formally linked to business groups and have no international presence. Stricter law enforcement is needed, but it remains challenging for local authorities to police Indonesia's vast rural landscapes.⁴

Impact and Emissions: The 2019 Haze in Context

2019 saw major forest fire incidents across the globe, including massive wildfires in the Amazon and Australia. Southeast Asia suffered the worst fires and haze since 2015, adversely affecting regional air quality and public health. Indonesia itself bore the brunt of the 2019 haze. The World Bank estimates that the total economic loss in the eight affected Indonesian provinces of Riau, Jambi, South Sumatra, Central Kalimantan, East Kalimantan, South Kalimantan, West Kalimantan, and Papua was some USD 5.2 billion, or 0.5 per cent of Indonesia's GDP.⁵

The Indonesia National Agency for Disaster Management (BNPB) estimates that 942,000 hectares was burned between January and October 2019. Other estimates suggest an even larger area – some 1.6 million hectares.⁶ However, by either estimate, the area burnt in Indonesia was far less than the over 2.6 million hectares burnt in 2015. Indonesia’s 2019 burnt area was also considerably smaller than the areas burnt in the Amazon in 2019 and Australia between 2019 and early 2020. Australia and the Amazon, respectively, suffered fires on some 12.6 million hectares and 7.1 million hectares of land.⁷

Figure 1: Map of hotspots for selected fire events in 2019



Source: Khor Reports (2020). Data: Hotspots from GFW Fires and NASA, peatlands from Jiren Xu et. al. (2018)

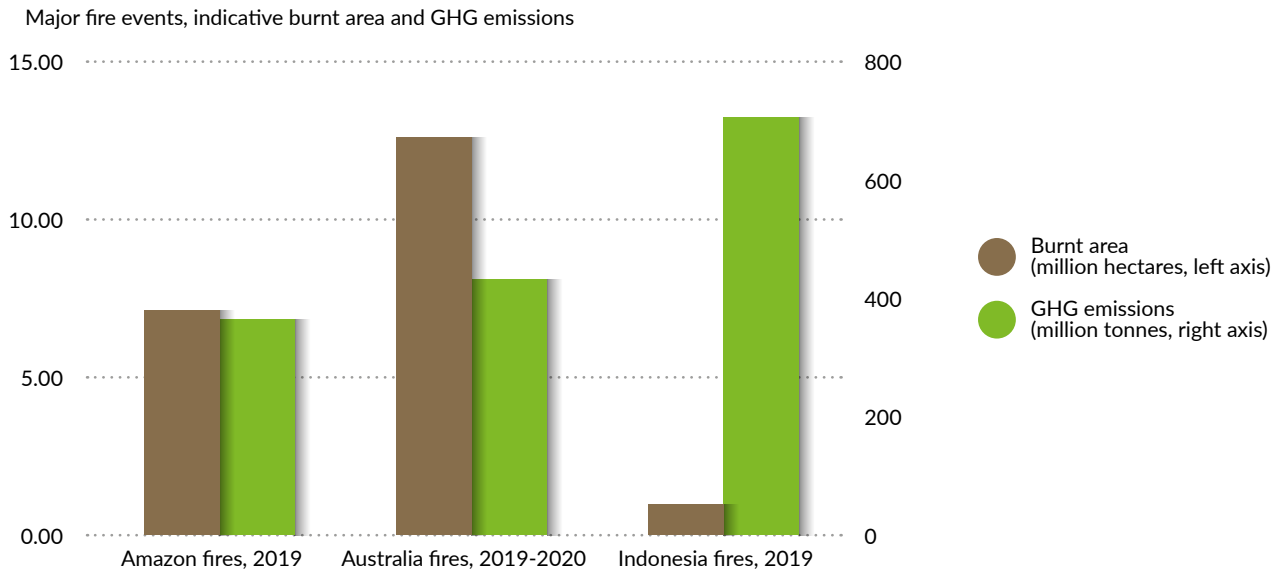
Comparing Fire Events in 2019

This map shows hotspots (red dots) detected by satellites corresponding to the locations of selected major wildfires around the world: the Indonesian fires (Sep 2019), Australian bushfires (Dec 2019), Amazonian fires (Aug 2019), African fires (Aug 2019), Vietnamese fires (Jun-Jul 2019), Thai fires (Mar 2019), and Arctic fires (Jun-Jul 2019). Hotspots in Malaysia for September 2019 are also included. Peatlands are indicated in black shaded areas. The fires in Indonesia affected a comparatively small area compared to fires elsewhere in the world, but are thought to have released more greenhouse gas emissions.

The Indonesian fires affected a smaller area, but released a significantly higher amount of greenhouse gas (GHG) emissions than the fires in the Amazon and Australia. The Copernicus Atmosphere Monitoring Service (CAMS) estimates that the Indonesian fires released some 708 million tonnes of GHG emissions, comparable to the annual emissions of a major industrial economy such as Germany. In comparison, the fires in Australia released 434 million tonnes of emissions, and the fires in the Amazon released some 366 million tonnes.⁸ The Indonesian fires released more emissions because nearly half of the fires were on peatlands. Peat comprises partially decomposed plant matter that acts as a greenhouse gas sink. This means that fires on degraded peatland consequently release more emissions than fires on mineral soil.

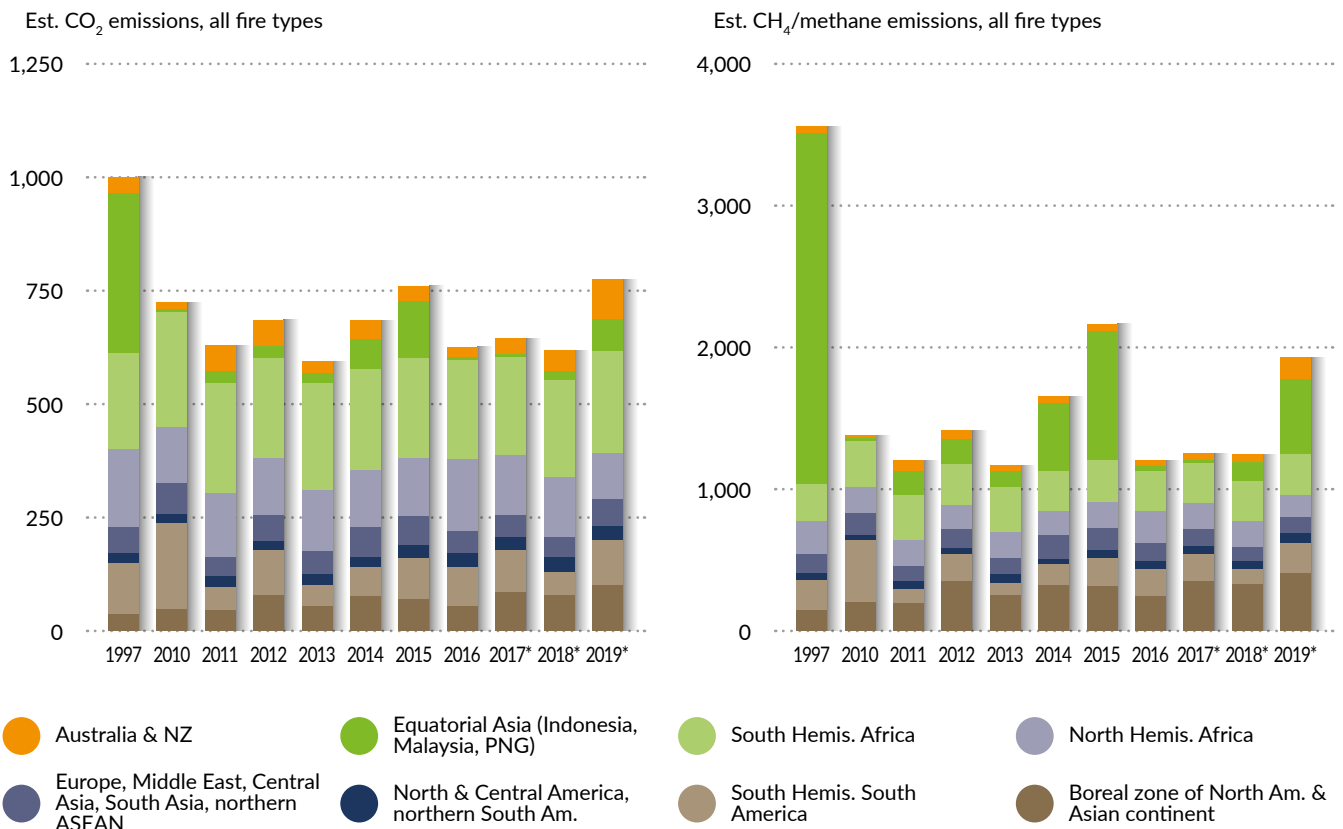
Breaking down GHG emissions from fires into separate carbon and methane figures, the Global Fire Emissions Database (GFED) estimates that fires in Southeast Asia in 2019 accounted for a proportionately larger share of global methane emissions (28 per cent) than of global carbon emissions (9 per cent). That said, the GFED data also confirms that emissions from the 2019 fires in the region were not as severe as those from the Indonesian fires in 1997 and 2015.⁹

Figure 2: Comparing fire events - burnt area and GHG emissions



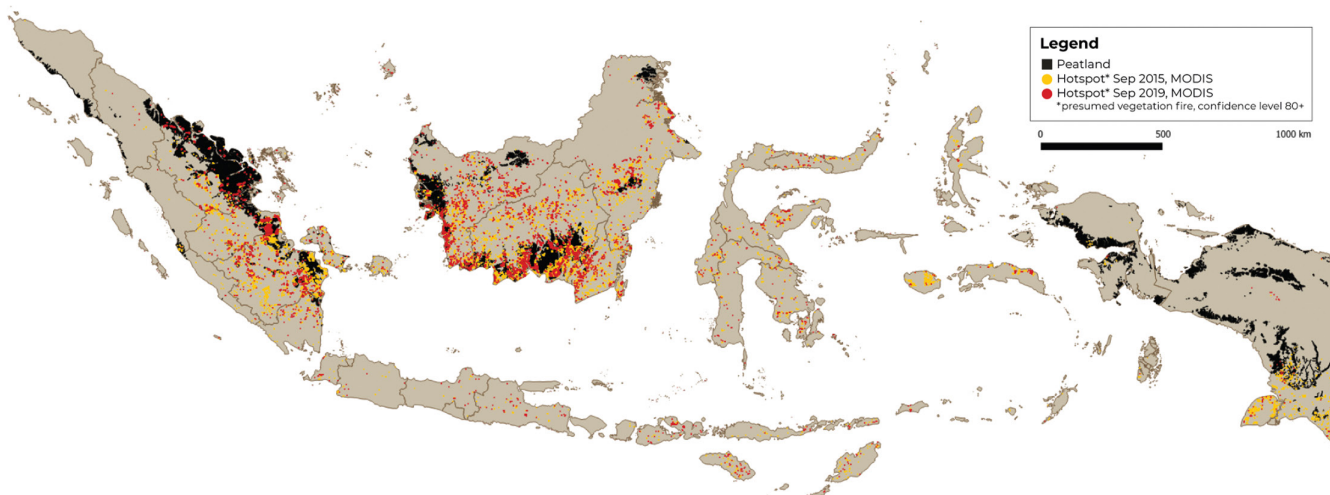
Data: Copernicus Atmosphere Monitoring Service (CAMS)

Figure 3: Global emissions from wildfires by region, 1997 and 2010-2019



Note: Emissions estimates in 1e13 g for the globe. Data: Global Fire Emissions Database version 4.1.

Figure 4: Map of hotspots and peatlands in Indonesia, 2015 and 2019



Source: Khor Reports (2020). Data: Hotspots from GFW Fires and NASA, peatlands from Jiren Xu et. al. (2018)

Comparing 2015 and 2019: Hotspots and Peatland Locations in Indonesia

Figure 4 shows hotspots for 2015 (yellow dots) and 2019 (red dots) in Indonesia, with peatlands in black. According to the World Resources Institute's (WRI) Global Forest Watch (GFW) Fires, during the peak of the fire season in 2019 from August to September, 29 per cent of hotspots were in Central Kalimantan and 16 per cent in West Kalimantan. However, provinces in Sumatra also saw a significant proportion of fires. 10 per cent of hotspots were in Jambi, 9 per cent in Riau, and 9 per cent in South Sumatra.

During the height of the 2019 dry season, 69 per cent of hotspots in Indonesia were outside known company concessions, according to data from GFW Fires. 17 per cent of hotspots were in palm oil concessions, 11 per cent were in pulpwood concessions, and 3 per cent were in logging areas. Zooming in on the palm oil sector, only about 4 per cent of hotspots were on concessions linked to major business groups. However, GFW Fires analysis is based on a mix of older official maps and voluntary disclosures of concession locations by Roundtable on Sustainable Palm Oil (RSPO) members, and the map data used for this analysis is neither comprehensive nor up to date. Any illegal burning conducted by a corporate entity outside a concession area would also not be reflected in this breakdown.

In 2019, Indonesian authorities targeted at least 55 companies for investigation. But the outcome of these cases remains unclear, with investigations and any formal court proceedings typically taking years to resolve.

Indonesian Government Initiatives: Fire Prevention and Peat Restoration

Fire Prevention

In 2017, Indonesia set a national target of halving the number of hotspots in the country by 2019, compared to the number recorded in 2015. In order to meet this target, Indonesian authorities have increased engagement with villages, upgraded fire response capabilities, improved water management in rural areas, and strengthened law enforcement. The government has also threatened to revoke the operating permits of any concession holders found responsible for setting fires. Despite the severity of last year's dry season, Indonesia did indeed achieve its goal. The number of hotspots in 2019 was only slightly over 50 per cent of the number recorded in 2015.

However, President Jokowi was still alarmed by the spike in the number of hotspots recorded last year. In August 2019, he said that officials would be fired if they failed to tackle forest and land fires, adding that Indonesia would be "ashamed of facing other countries if we cannot solve the smoke problem".¹⁰

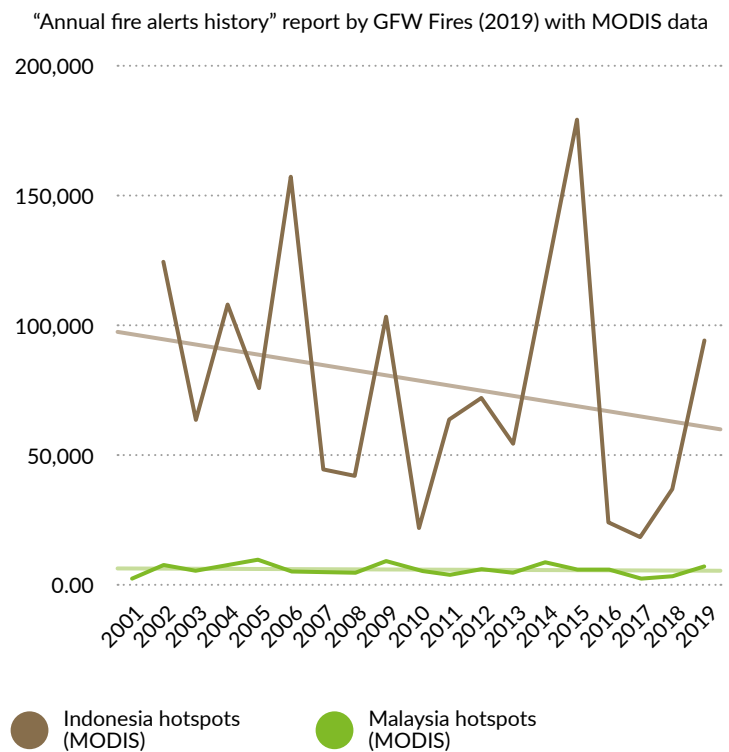
Peat Restoration

President Jokowi established the BRG in 2016, tasking the agency with restoring some 2.5 million hectares of degraded peatland from 2016 to 2020. However, over half of this area is within company concessions, meaning that peat restoration must be conducted by companies rather than directly by the BRG. According to the BRG's official three-year review, as of 2018 the agency had rewetted and restored some 63 per cent of the BRG's targeted area outside company concessions, including in conservation areas and other public land.¹¹

Prior to the COVID-19 outbreak, which has interrupted the construction of infrastructure for peat restoration, the agency was on track to complete its peat restoration efforts on public land by the end of 2020. However, progress by plantation and forestry companies has been slower, with the BRG reporting that only about 18 per cent of targeted restoration area within concessions had been restored as of early 2019.¹²

Unfortunately, the agency's future beyond 2020 is unclear. Media reports have said the President is inclined to renew the agency's mandate, but thus far no new presidential regulation has been issued. Even if the BRG's operating period is extended, it remains to be seen how much funding it will receive post-2020, especially given the impact that COVID-19 has had on the Indonesian economy. The most positive outcome would be for the BRG's mandate not only to continue but to be strengthened, with more resources for the institution in its second phase.

Figure 5: Hotspot trends for Indonesia and Malaysia



Data: WRI GFW Fires and NASA. Malaysian hotspots included for comparison purposes.

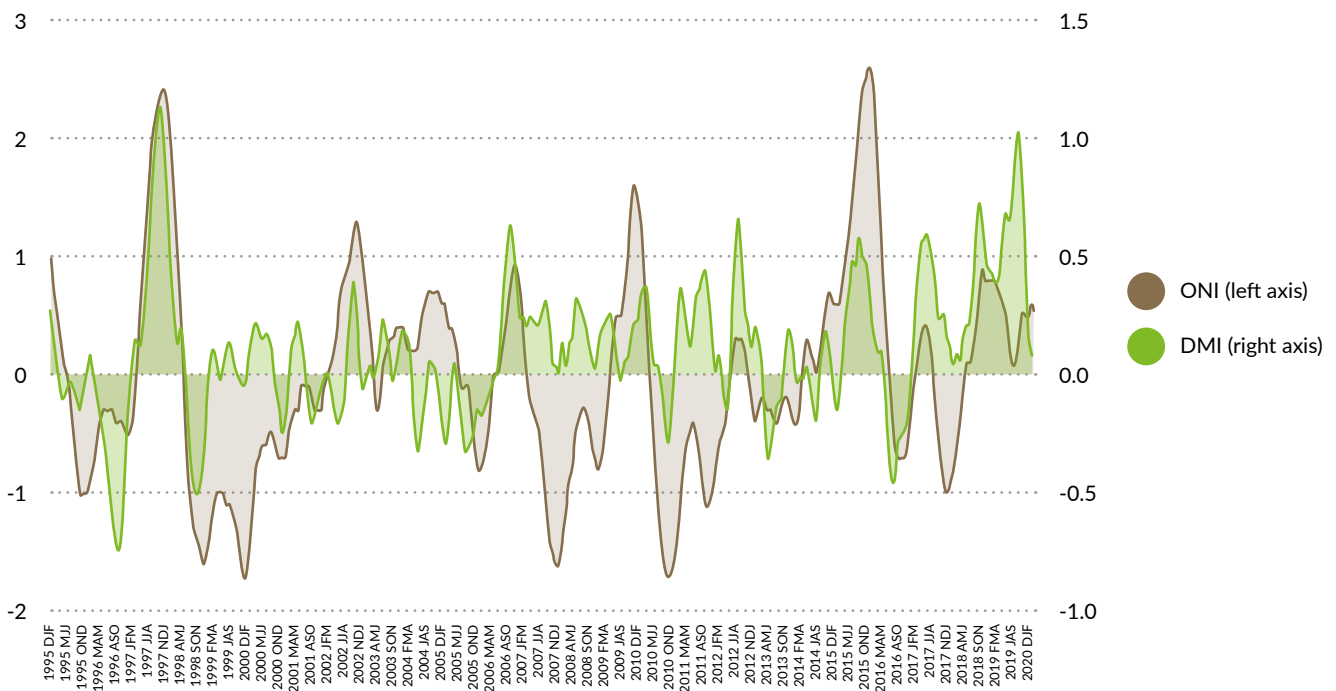
2. Weather Forecasts for 2020: Temperature, Rainfall, and Fire Risk

Previous transboundary haze incidents were caused by prevailing winds blowing smoke from forest and land fires in Kalimantan and Sumatra to Malaysia and Singapore. However, as it is difficult to accurately forecast wind direction in advance, the meteorological section of this report focuses primarily on factors affecting the likelihood of fires on the ground in Kalimantan and Sumatra.

Based on interviews with experts, the SIIA Haze Outlook 2020 report concludes that the June to September 2020 dry season is not expected to be severe. Compared to the same period in 2019, based only on climatic factors, there should be less danger of fires and haze. The ASMC notes that ENSO and IOD phenomena, which exacerbated fire risk in previous haze years, have remained muted for the first half of 2020 and are likely to remain neutral going forward.¹³ As of June 2020, some projections suggest 2020 may in fact be a La Niña year, with lower sea surface temperatures in the Pacific Ocean driving heavier rainfall in Asia.

Figure 6: Climate events portending warmer and drier conditions appear muted for now

A high Oceanic Niño Index (ONI; gold) points to dry risk from El Nino events and a high Dipole Mode Index (DMI; green) points to dry risk from Indian Ocean Dipole Events



Data: National Oceanic and Atmosphere Administration (NOAA)

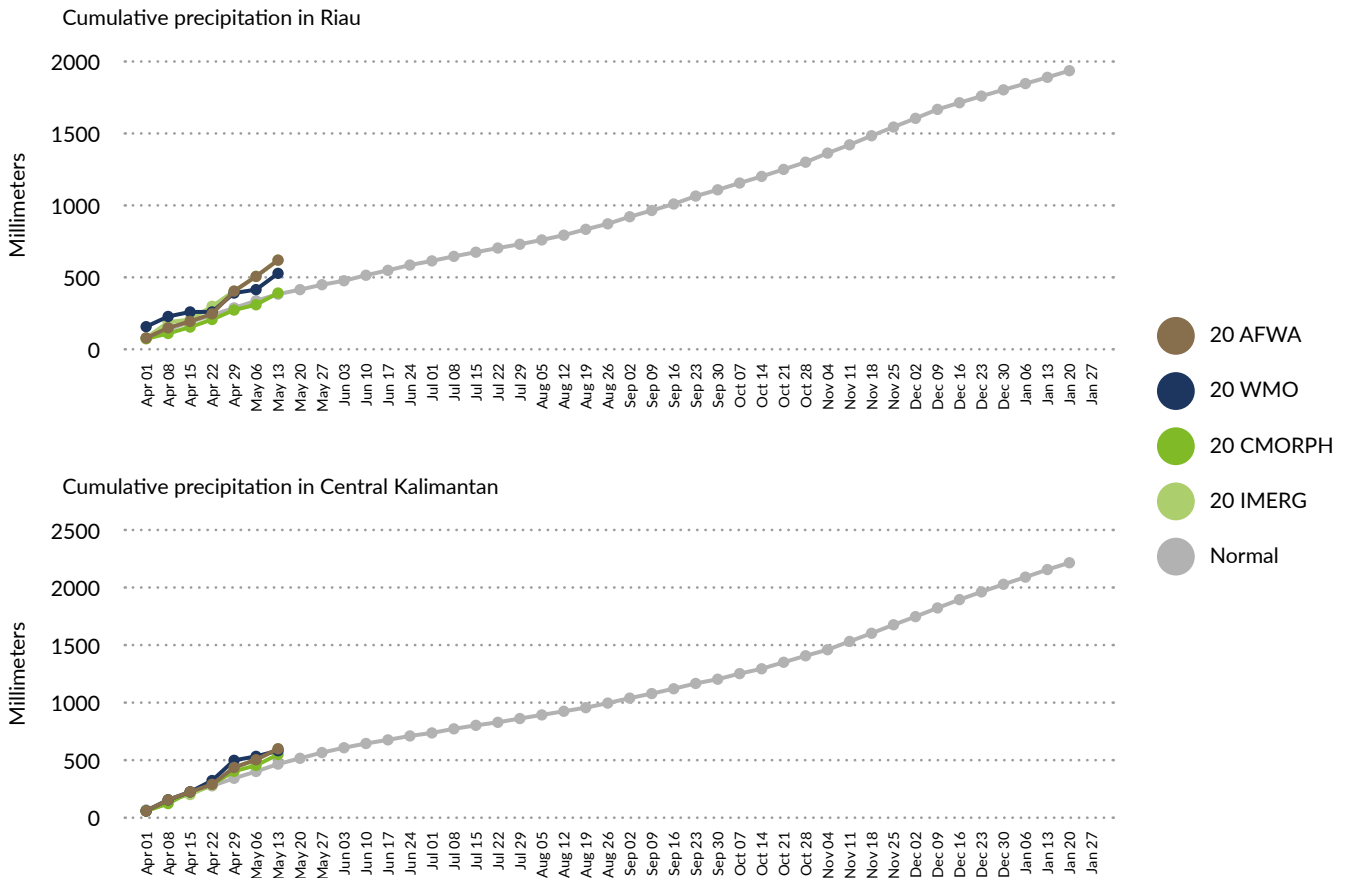
Oceanic Niño Index (ONI): A low positive reading since the start of 2020 points to a weak-to-neutral ENSO.

Dipole Mode Index (DMI): A low positive reading since the start of 2020 points to a negative-to-neutral IOD.

While the ENSO and IOD may not be factors in 2020, there are some predictions that 2020 will be an exceptionally warm year. The National Oceanic and Atmospheric Administration (NOAA) in the United States is forecasting that 2020 will almost certainly be a top ten year in terms of temperature, and potentially even the hottest year on record globally.¹⁴ However, meteorologists interviewed for this report noted that this general trend of rising global temperatures is expected due to global warming. Average temperatures are likely to continue increasing

in the long term, regardless of other climate drivers such as ENSO and IOD. Rising temperatures alone do not necessarily mean that 2020 will see significantly greater fire risk. Aside from temperature, rainfall is also an important indicator, as the weather can be both hot and wet, rather than hot and dry.

Figure 7: Rainfall risk indicators appear muted as at mid-May 2020



Data: USDA and NOAA¹⁵. Graph shows rainfall trends as of May 2020 based on four prediction models, Air Force Weather Agency (AFWA), World Meteorological Organization (WMO), Climate Prediction Center morphing method (CMORPH), and Integrated Multi-satellite Retrievals for Global Precipitation Measurement (IMERG)

At the overall regional level, the ASMC forecasts slightly above-normal rainfall over southern ASEAN through to July, with other sources such as the United States Department of Agriculture (USDA) and NOAA appearing to concur.

Weather forecasts do vary, especially at the local level. In May 2020, Indonesia’s Meteorological, Climatology, and Geophysical Agency (BMKG) forecast that, for areas of Indonesia facing a dry season later this year, 30 per cent will see drier-than-usual weather conditions.¹⁶ It appears that Indonesian authorities are actively using this cautionary forecast from BMKG as a call to action. Indonesia’s Environment and Forestry Ministry has used artificial rains to douse fires, wet peat and fill water reservoirs in Sumatran peatlands in May, to reduce the risk of haze compounding respiratory ailments caused by COVID-19.¹⁷ The BRG has also called for similar weather modification for West Kalimantan.¹⁸

In summary, the meteorological factors that typically influence fires and haze are expected to be neutral for 2020, with conditions during the dry season in 2020 likely to be better than in 2019. The risk of fires and haze in 2020 therefore comes from what meteorologists call anthropogenic activities, or human behaviour, which the following sections of this report explore.

3. Human Factors: Issues to Watch in 2020

The 2019 fires highlighted several issues that may still pose a challenge to haze prevention in 2020 and beyond. While the Indonesian government under President Jokowi has taken concrete steps to strengthen environmental protection in the country and promote better fire management, some questions remain regarding firefighting capabilities and changes to regulations governing private sector behaviour.

Effectiveness of Fire Response, Law Enforcement, and Community Engagement

Some 23,000 personnel from the military, police, the National Agency for Disaster Management (BNPB), and other agencies were deployed at the height of the haze crisis in 2019.¹⁹ While the scale of Indonesia's response illustrates the government's commitment to tackling fires, manpower alone is not sufficient. The 2019 fires showed that many firefighters were still not adequately equipped. One company representative interviewed for this report pointed out that although it is positive that the Indonesian government is willing to mobilise the military to respond to fires, the soldiers are not trained as firefighters.

In addition, some companies noted that during the 2019 dry season, their firefighters were unable to suppress fires within conservation areas, due to such areas being legally off-limits. There were concerns that creating physical access for firefighters, for instance by clearing paths through forest areas, might facilitate illegal encroachment by other parties and create a greater problem in the long term.

Indonesian law allows harsh penalties to be imposed against errant companies, but bringing cases to court and collecting fines remains difficult, even for government lawyers. Indonesia's Ministry of Environment and Forestry has taken at least 17 companies to court for fires in their concession areas in recent years. Judgements have been won against nine of them, but only one firm has paid the fines imposed by the court.²⁰ The disparity demonstrates that Indonesia's laws are sound, but gaps remain in prosecution and enforcement.

Questions have also been raised about the effectiveness of both government-led and private sector engagement with local communities to promote fire prevention. Independent studies have suggested that such programmes can be effective, provided that economic incentives are in place. However, experts also point out that there may be difficulties down the road if villages are merely adopting fire-free behaviour in exchange for incentives, or are only able to avoid the use of fire with outside support. If programmes are discontinued or scaled down in the future, there is a danger that some communities may revert to their previous practices.²¹ Using fire to clear land is still cheaper than using machines or chemicals. The potential fragility of fire-free village schemes has been underscored by the COVID-19 pandemic, which has already impacted the implementation of some programmes.

Moratoriums, Regulations, and the Omnibus Bill

Indonesia has had a moratorium on the granting of new commercial licenses on primary forest and peatland since 2011, a ban which has been periodically extended. In August 2019, President Jokowi made the moratorium permanent, a move widely welcomed by NGOs and the international community. In 2018, the President also imposed a separate three-year moratorium on new palm oil plantation licenses and the expansion of existing concessions. Although these moves are seen as positive, some deforestation has still been observed in areas covered by the moratoriums.²²

Additionally, while Indonesia has moved to strengthen its protections for forests and peatland at a broad level, some specific regulations have been relaxed. In 2019, the Ministry of Environment and Forestry redefined its guidelines for the protection of peat landscapes, only requiring concession holders to protect peat domes instead of all peat areas deeper than three meters as well as those with high biodiversity. NGOs argue that the new Ministry regulation effectively allows for more drainage and conversion of peatlands, noting that the 2019 fire season saw a significant number of hotspots in peat areas that were no longer protected due to the regulation change.²³

Indonesia is also currently in the midst of a wide-ranging effort led by President Jokowi to streamline dozens of laws, in order to increase the ease of doing business and attract more investment. Some proposed changes under the “omnibus bill” have been welcomed from a sustainability standpoint. For instance, plantation concession holders will be able to carry out extensive conservation work within their concessions without needing to apply for a separate ecosystem restoration permit. However, other aspects of the omnibus bill have proven more controversial. Indonesian provinces will no longer be required to maintain at least 30 per cent of their territory as forest area, and companies will have reduced liability for fires in their concessions. The omnibus bill may also scrap the requirement for palm oil companies to allocate at least 20 per cent of their land to plasma smallholders, which critics say may weaken private sector initiatives to help smallholder farmers adopt sustainable practices.²⁴ At present, the omnibus bill is being postponed due to COVID-19, and only some of the proposed revisions are being carried forward. It is not clear if the changes concerning the resource sector will be among them.

Political Drivers

Beyond Indonesia’s national politics, studies suggest that major fire and haze incidents in Indonesia tend to coincide with regional and local election periods.²⁵ Although there is no clear evidence of wrongdoing, some interviewees approached for this report speculated that certain local politicians may be willing to turn a blind eye to the use of fire by growers, either in exchange for votes, or out of fear of alienating agricultural interest groups. 2019 was a general election year for Indonesia. In 2020, local elections are expected for 270 regions, including in fire-prone areas within Sumatra and Kalimantan. Originally, the elections were due on 23 September 2020, coinciding with the dry season, but the polling date has now been moved to 9 December 2020 due to the COVID-19 pandemic.

Key Issues: Private Sector Action and COVID-19

Although several of the above risk factors involve Indonesian government policy, most revolve around regulations and guidelines for the private sector. Plantation companies therefore remain on the front lines of Indonesia’s efforts to combat the haze. The following section of the SIIA Haze Outlook 2020 report therefore takes a closer look at Environmental, Social, and Governance (ESG) standards in the resource sector. The other major factor affecting fire and haze risk in 2020 is the COVID-19 pandemic, which the final section of this report examines.

4. Assessing Private Sector Action: An ESG Approach

Environmental, Social and Governance (ESG) practices of large companies

The return of the transboundary haze in 2019 once again cast a spotlight on sustainability practices in Indonesia's agriculture and forestry sectors. Companies operating in Indonesia argue that the 2019 fires and haze situation could have been worse, contending that community engagement programmes, fire prevention efforts, and peatland restoration work on the ground have had a positive impact. For example, major firms interviewed for this report confirmed that their corporate firefighting teams respond to fires outside their concession boundaries at the request of Indonesian authorities, and that this is now standard industry practice. Initiatives such as the Fire Free Alliance also enable companies to share information on best practices regarding community engagement on fire prevention.

Given their international exposure, the largest businesses argue that the reputational risk from not upholding sustainability standards more than justifies the added costs of doing so. Indeed, most major business groups in the plantation and forestry sector are members of international industry bodies such as the RSPO; they publish annual sustainability reports that outline their public commitments to No Deforestation, No Peat and No Exploitation (NDPE) and other sustainability standards.

Figures 8 and 9 provide snapshots of the Environmental, Social and Governance (ESG) practices of four major companies across the palm oil and pulpwood sectors, with a focus on areas relating to the prevention and management of fires and haze. The information was compiled from interviews as well as public disclosures by the companies as part of their sustainability reporting efforts.

Although most leading companies appear to have strong ESG practices in place, there remain issues to address. Analysts have long noted that even though there are growing efforts, such as using blockchain technologies, to address this, many larger companies lack full supply chain traceability. Traceability is particularly an issue in the palm oil sector, where up to 40 per cent of total supply across the industry comes from smallholders, unlike the pulp and paper industry which has fewer small actors. A survey of private sector sustainability reporting reveals that the leading pulp and paper companies are more comprehensive in disclosing information about their suppliers than major palm oil companies. Asia Pulp & Paper (APP) and APRIL, for instance, include their suppliers' concessions in various indicators published in their annual sustainability reports. In addition, a number of companies interviewed for this report pointed out the lack of incentives from Indonesian authorities for companies to go above and beyond the basic ESG practices required by law. One company representative explained that other countries give plantation and forestry firms tax incentives if they provide public goods, for instance building roads in their areas.

Risks from small and medium-sized companies

Resource sector companies, NGOs, and experts now argue that the greatest risk of fires comes from small and medium-sized companies, rather than major business groups. While the activities of smallholder farmers and local village communities are still a concern, experts argue that many of the 2019 fires in Indonesia appeared to be systematic efforts to clear land for commercial planting. This suggests that businesses are at fault – but not necessarily the largest ones. Unlike major companies, many small and medium-sized companies are not accountable to international certification schemes, resulting in weaker oversight of their activities. Many are focused on the domestic Indonesian market, which places a smaller premium on sustainable practices than international buyers. Small and medium sized players may also be more capital constrained. They are therefore less likely to invest in preventative measures against fires, and more likely to use fires for short-term financial gains. Some may even be operating on illegally-occupied land, and therefore know that they cannot qualify for certification schemes or programmes intended to encourage sustainability among growers.

Figure 8: ESG practices of selected pulp and paper companies

	Asia Pulp & Paper ²⁶	APRIL ²⁷
Conservation Area	613,997 hectares (21 per cent of total concession area in Indonesia)	370,070 hectares (83 per cent of planted area in Indonesia)
Management of Conservation Area	<ul style="list-style-type: none"> • No clearing of high conservation value (HCV) and high carbon stock (HCS) areas • Aims to restore 78,057 hectares of degraded forest, beginning with 5,000 hectares as of 2018 • Spatial Monitoring and Reporting Tool (SMART) patrols for conservation areas and nearby villages 	<ul style="list-style-type: none"> • Targets conservation or restoration of 1 hectare for every 1 hectare of plantation • Uses historical encroachment and land dispute data in monitoring system • Manages 150,693 hectare Restorasi Ekosistem Riau (RER) peat restoration project
Fire Prevention and Management	<ul style="list-style-type: none"> • 799 firefighters (excluding Rapid Response Teams). Rapid Response Teams in all Sumatra concessions; plans to expand in West and East Kalimantan • Joint patrols with local authorities • Aims to reach detected fires in under 2 hours and contain in under 8 hours, for a 5 km radius around all concessions 	<ul style="list-style-type: none"> • 1,080 Rapid Response Team members including 260 professional firefighters across all estates and supply partners • Uses satellite hotspot monitoring from NASA-based systems that indicate thermal anomalies within a 1.1 km² area, fire monitoring towers, and CCTV • Coordinates fire suppression with local authorities up to 20 km outside concession areas
Supplier Engagement	<ul style="list-style-type: none"> • Monitors forest change in supplier concessions with satellite imagery; satellite maps and HCV reports are public • Second independent assessment of supply chain in 2018 concluded that APP Partners are accurately declared and companies involved in deforestation no longer supply to APP 	<ul style="list-style-type: none"> • GIS and remote sensing monitoring of supply partner concessions; aims to cover all open market suppliers • Helps suppliers meet sustainability requirements via workshops and site visits • Aims to eliminate open market suppliers by 2024, only retaining long-term suppliers who comply with APRIL's forest management policies
Community Engagement	<ul style="list-style-type: none"> • Introduced Integrated Forestry and Farming System (IFFS) in 2015 • Engages with 335 villages, targeting 500 by 2020 • Collaborates with communities for economic development, land dispute resolution, forest and fire patrols • Aims to train 1,000 women to improve livelihoods; programme currently benefits 16,807 households 	<ul style="list-style-type: none"> • Founding member of Fire Free Alliance (FFA), set up in 2015 • Introduced Fire Free Village Program in 2015, following pilot in 2014. Total land area covered via partnerships with 36 communities is almost 10 times the size of Singapore • Provides agricultural materials to communities covering 2,300 hectares of land; assists with mechanical no-burn methods and soil compaction • Provides community infrastructure as no-burn rewards

Incorporating supplier and smallholder engagement into ESG frameworks

Currently, both NGOs and major private sector firms face challenges in engaging with the smaller businesses in the sector. In many areas, it is difficult to identify who owns and operates a particular plantation. To some extent, NGOs have had relatively greater success in communicating with smallholder farmers and villages on fire prevention and sustainable practices, than with small to medium-sized firms.

Greenpeace has alleged that major consumer goods companies and traders continue to buy palm oil from supplier firms accused of illegal burning.²⁸ However, private sector representatives argue that relatively few companies have actually been found liable for illegal burning by Indonesian courts, and it is difficult for business groups to terminate their relationships with suppliers on the basis of unproven allegations.

One NGO interviewed for this report also noted that cutting off a contract when a supplier infraction is detected is often counterproductive. Cutting off a supplier means lower output for the buyer, while the supplier accused of unsustainable or illegal activity could easily find a new buyer. The original buyer then loses any leverage to influence the behaviour of the original supplier. This is why many NGOs are now recommending that larger companies instead work to rehabilitate errant suppliers rather than cut them off. It also costs more for buyer firms to onboard new suppliers than to rehabilitate existing ones.

The engagement of small and medium-sized companies by large companies, through their supply relationships, is one way to improve the overall sustainability of the resource industry. Experts have noted that by putting a price premium on sustainable products, large companies have the power to influence a significant portion of the global supply chain to become more sustainable via a trickle-down effect. Unilever, for instance, consumes 8 per cent of global palm oil production.²⁹

Figure 9: ESG practices of selected palm oil companies

	IOI ³⁰	Musim Mas ³¹ (*data accurate as of December 2018)
Conservation Area	14,900 hectares (8 per cent of planted area in Indonesia and Malaysia)	20,958 hectares (17 per cent of planted area in Indonesia)
Management of Conservation Area	<ul style="list-style-type: none"> • Protection of HCV and HCS areas, no new development on peatland • South Ketapang Landscape Initiative works with companies, government, and local communities on peat management, biodiversity, flood and fire prevention, and livelihood development 	<ul style="list-style-type: none"> • No clearing of HCV or HCS areas; involves communities in Integrated Conservation Land Use Plans • Maintains, and restores where necessary, natural vegetation in riparian strips, providing ecosystem services • Monitors encroachment and biodiversity within forest and conservation area
Fire Prevention and Management	<ul style="list-style-type: none"> • Fire monitoring system includes alert system, fire towers and drones, and patrolling • Trains staff on fire prevention and response to fire incidents • Conducts socialisation and awareness programmes on fire prevention with stakeholders 	<ul style="list-style-type: none"> • Firefighters at each plantation, who also assist district and provincial governments • All factories equipped with early warning and firefighting systems • Regular training for workers with local government fire safety centres • Monitors fire activity for 3 km radius around concessions
Supplier Engagement	<ul style="list-style-type: none"> • Helps suppliers meet sustainability commitments, e.g. via Earthworm Foundation's Tools for Transformation • Partnered Aidenvironment for group-level risk assessment to ensure NDPE compliance of suppliers and mills • Has three-step traceability approach tracing palm oil to mill, mill risk analysis, and on-site mill verification 	<ul style="list-style-type: none"> • Works with Aidenvironment to monitor deforestation in 100 per cent third-party supplier concessions (90 per cent of total supply) • Launched NDPE Roadmap towards Responsible Supply Base in 2019 with milestones on traceability, concession monitoring, supplier engagement (including verification of their management systems and processes), and outreach to smallholders
Community Engagement	<ul style="list-style-type: none"> • Community engagement is being conducted in both Malaysia and Indonesia • Joined FFA in 2017 and has started fire awareness programme which now involves seven Indonesian villages • Provides infrastructure, e.g. roads, electricity, water, and schools • Signs MOUs with villages on land management and livelihood development 	<ul style="list-style-type: none"> • Founding FFA member, has 73 villages across Indonesia participating in Fire Free Village Programme • Trained 16 villages in oil palm cultivation under Village Development Programme • New development or expansion requires consent from communities and compensation for lost benefits/rights • Funded nine schools and provides free healthcare through 25 on-site clinics for workers and communities • Partners with IFC to train more than 31,000 independent smallholders to produce sustainably since 2015

Major companies are increasingly collaborating with NGOs to engage with their supply chains. For example, WRI Indonesia uses the Accountability Framework initiative (AFi) to help larger companies assist their suppliers to improve their sustainability practices. WRI works with the companies to get their suppliers to fill out self-assessments on their ESG standards, identifying shortcomings or areas for improvement. WRI and the buyer companies can then help these suppliers set NDPE targets or adopt other commitments.

Similar programmes are also in place to connect companies to smallholder farmers and communities. An initiative by IDH – the Sustainable Trade Initiative in Jambi has enabled companies such as Indofood and Asian Agri to provide technical assistance to 2,500 smallholders, improving their sustainability practices and helping them achieve sustainability certification. Such programmes not only allow larger firms to demonstrate their commitment to good ESG practices, but also enable companies to secure a supply of sustainably-sourced product to support their global output.

Role of independent certification

Certification schemes can also help ensure that companies adhere to ESG standards and help their suppliers to do so. At a national level, the Indonesian Sustainable Palm Oil (ISPO) and Malaysian Sustainable Palm Oil (MSPO) certifications are now mandatory in their respective countries, and are geared towards inclusiveness – making it easier for smaller companies and smallholders to come on board. Critics question whether national certification schemes are rigorous enough, given their lower bar for entry, but the certification bodies recognise this concern and are working to strengthen their standards.

While plantation and forestry certification schemes naturally target resource-producing countries, efforts are also under way to engage with consumer markets. In the wood and paper sector, the Programme for the Endorsement of Forest Certification (PEFC), a global alliance of national forest certification systems, is now promoting chain of custody (COC) certification within Southeast Asia to ensure traceable and sustainable sourcing of forest-based products. Last year, the Singapore Accreditation Council recognised PEFC's COC certification scheme, facilitating Singapore's recognition of certified sustainable forest products from markets such as Indonesia and Malaysia. This is significant as Singapore is both a consumer market in its own right, as well as a major financial and transshipment hub. What certification it accepts can have suasion.

Looking ahead

More must be done to understand what actions resource sector companies are taking in terms of fire prevention, land and peat management, as well as community and smallholder engagement, with an eye towards fire and haze prevention. In addition, more analysis is needed on ways to incentivise companies, especially the small to medium-sized ones, towards stronger ESG commitments including environmental protection, labour and human rights, and accountability to stakeholders. As engaging with small and mid-sized companies is difficult, it is important to examine the ESG practices of large companies – they set the tone for the industry, and are able to influence other companies in their supply chains. The ESG practices of resource sector companies will be analysed in more detail in a forthcoming report from the SIIA.

5. COVID-19 Impact on Haze Risk

Over the course of 2020, the COVID-19 pandemic has disrupted everyday life on a global scale and thrown economies into disarray. For this report, we interviewed private sector, government, academia, and NGO representatives to understand the effects of the COVID-19 outbreak on the risk of fires and transboundary haze.

Most interviewees cautioned that it is too early to determine the full implications of COVID-19. However, interviewees also highlighted that sustainability initiatives and haze preparedness have already been impacted by the pandemic. Battling on two fronts, against both the haze and COVID-19, might push resources to breaking point and hinder economic recovery in the region.

Direct impact on sustainability initiatives and preparedness



Expenditure: The Indonesian government has diverted spending to address the pandemic: in April, the Ministry of Environment and Forestry reduced its 2020 budget by 17 per cent (US\$101 million).³² Reports say the COVID-19 response is also tapping into disaster relief funding, which means that those funds may not be available in the event of a haze crisis.



Resources: COVID-19 has stressed healthcare systems and led to an increased demand for personal protective equipment. A major haze incident in 2020 would put further strain on healthcare and the supply of N95 masks. During the 2019 haze period, temporary clinics had to be opened to treat thousands of Indonesians afflicted by respiratory illnesses.



Restoration: According to the BRG, efforts to rehabilitate ecosystems and prevent fires have been impacted, as construction of infrastructure to rewet drained peat areas has halted.



Enforcement: Local authorities are now focused on enforcing social distancing regulations. Less capacity is available to prevent illegal forest encroachment and burning. Plantation companies warn that current restrictions have made it more difficult to patrol their areas.



Response: Social distancing measures are impacting the work of firefighting teams. Training of volunteer firefighters in villages has been affected, and community firefighters may be less willing or able to respond to fires while COVID-19 restrictions remain in effect.



Certification: Certification bodies have had to move towards greater remote auditing of plantation and supply chain companies. However, this is not entirely negative, as it provides an impetus for firms to accelerate digitisation. RSPO-certified growers are also concerned that movement restrictions will impact their ability to conduct sustainability audits of their plantations.



Engagement: In-person community engagement for fire and haze prevention has been suspended, as meetings and large gatherings are no longer possible. Engagement with small to medium-sized plantation firms conducted by NGOs and large companies has likewise suffered. Additionally, farmers and smaller growers are now less able to request assistance with mechanical land clearing and soil compaction. Equipment and crews may not be available during this time, which means some growers may resort to the use of fire to clear land.

Potential economic impact

Although COVID-19 has definitely affected fire prevention, as well as the capacity to respond to fires and haze, it is less evident whether the economic downturn caused by COVID-19 will encourage or discourage the use of fire by plantation operators and farmers to clear land. As of April, there were already fires occurring across Indonesia and ASEAN's other agrarian economies. One interviewee argued that this implies there may not be significant deviation from past year's trends.

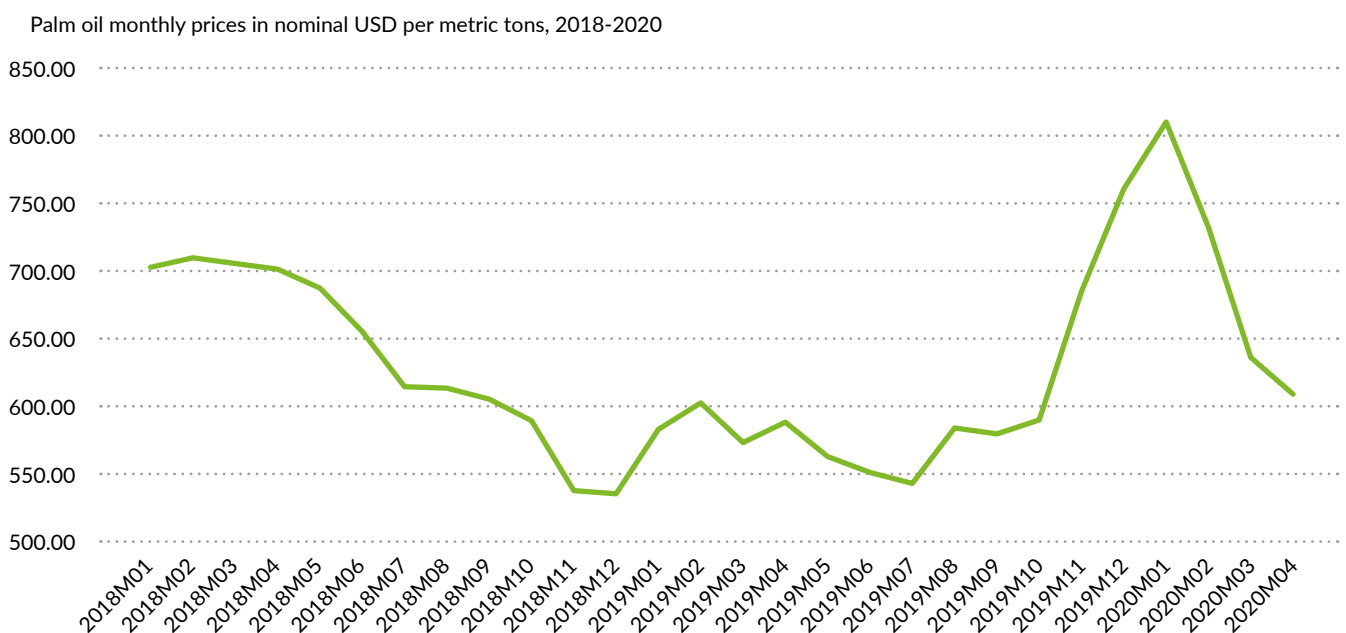
Several companies and NGOs noted that plantations are a long-cycle business and are therefore better able to resist economic shocks like COVID-19. Some smallholders and communities may also have a degree of crop diversity and subsistence farming, increasing their resilience.

However, various market indicators suggest Indonesia's plantation sector is seeing an overall negative impact from COVID-19. That said, the pandemic is not affecting all commodities equally. Pulp and paper companies interviewed for this report noted that the economic downturn is affecting their operations, but did not cite it as a chief concern. Palm oil companies expressed greater worry about lower demand and falling prices.

Although one firm noted they are seeing a surge in demand for some oleochemicals used in the manufacture of disinfectants and hygiene products, the demand for other palm oil derivatives has trended downward since the start of 2020. Biofuel demand has dropped in tandem with global transport volume decreasing. Some analysts suggest that edible vegetable oil demand has also fallen due to more people cooking at home, with people tending to use less oil in their home cooking than commercial chefs do in restaurants. Indonesia's palm oil exports to China plunged by 57 per cent in January, with export volume to other top palm oil consuming markets also dropping.³³

Additionally, the COVID-19 crisis comes on the back of what was already considered a tough year for the palm oil industry. Over the course of 2019, palm oil prices were generally low, influenced by factors such as the European Union's decision to phase out palm oil based biofuels. Although crude palm oil prices did recover towards the end of 2019, those gains have since been erased by the pandemic.³⁴

Figure 10: Palm oil prices (January 2018 to April 2020)



Data: World Bank

It remains to be seen what impact COVID-19 will have on fires and haze. To some extent, weak export volume and low commodity prices are disincentives for growers to clear land and expand plantations. The economic downturn also means that less capital is available, and all growers require capital to operate.

Most interviewees also agreed that the sustainability budgets and long-term business strategies of major resource sector companies have not yet been affected. For instance, although palm oil prices have fallen sharply since January 2020, at present they have not dropped below the average level in 2019. But if the downturn persists and commodity prices fall further, some experts have warned that the economic crunch may affect private sector funding for areas not directly related to production, including community outreach and fire prevention efforts.

The largest growers will likely manage to keep their sustainability programmes in place, with their scale allowing them to ride out the downturn without affecting their business continuity. But smaller growers have lower margins and may be more heavily affected. It was reported in late April that palm oil farmers had already seen a 20 to 30 per cent drop in income due to the virus.³⁵ Therefore, smaller growers might see the need to continue land clearing, while resorting to slash and burn practices as a cost-saving measure.

COVID-19 has also increased pressure on food security, and there are now more calls in Indonesia to maintain or ramp up food production. There is currently no evidence that efforts to increase food security will also heighten fire risk, but this is an additional factor to watch.

Impact depends on duration of the crisis

All stakeholders interviewed for this report agreed that the final impact of COVID-19 on haze risk depends on the duration of the pandemic. There is some optimism that consumer patterns may return to more normal levels by the latter half of 2020 as lockdowns are eased, heralding a swift recovery.

However, if the disruption caused by COVID-19 persists for a longer period, through the latter half of 2020 and into 2021, the consequences may be severe. Should a major haze incident occur in the ASEAN region while the world is still battling the pandemic, this would add to the public health burden, with poor air quality exacerbating respiratory ailments. Although regional policymakers and business leaders are understandably preoccupied by the fallout from the pandemic, early measures must be taken to ensure that the fires and transboundary haze do not recur during this period, and that adequate resources are in place to respond promptly to fires and haze alongside COVID-19.

Conclusion

The SIIA Haze Outlook 2020 report concludes that there is a moderate risk of a severe transboundary haze incident in 2020 – rated **Amber** on a scale of Green, Amber, and Red.

Based on meteorological and policy indicators alone, our risk assessment for 2020 would be more optimistic than 2019. The dry season in 2020 is expected to be milder than 2019, with the meteorological factors that typically influence fires and haze expected to be neutral this year. It also appears that the Indonesian government and the largest resource sector companies are continuing efforts to prevent and suppress fires on the ground, although there are some issues that bear watching.

However, the disruption caused by the COVID-19 outbreak is negatively impacting the implementation and enforcement of fire prevention and sustainability initiatives. The economic shock triggered by the pandemic also creates considerable uncertainty. There are already questions about smallholders' and medium-sized companies' acceptance of sustainable practices. There is a danger that smaller growers with less resilience and tighter margins may resort to the use of fire to clear land amidst the present economic downturn. These factors lead the SIIA Haze Outlook 2020 to evaluate that there is a moderate risk of a severe transboundary haze episode in the months ahead.

This report provides a risk assessment, not a prediction. Southeast Asia may still see clear skies in 2020 if the global economy recovers swiftly from the pandemic, and if fire and haze preparedness in Indonesia are not further hindered by a prolonged COVID-19 crisis. But concerted action to strengthen sustainability commitments within the resource sector is needed, particularly among small to medium-sized companies within the region's supply chains. A forthcoming report from the SIIA will dive deeper into the resource sector's ESG practices.

In August 2016, following the 2015 haze crisis, the Association of Southeast Asian Nations (ASEAN) set the goal of achieving a haze-free region by 2020. Regardless of whether a transboundary haze incident occurs this year, initiatives to promote sustainability must continue. It is crucial that sustainability does not fall off the radar even as the world struggles with the fallout of COVID-19.

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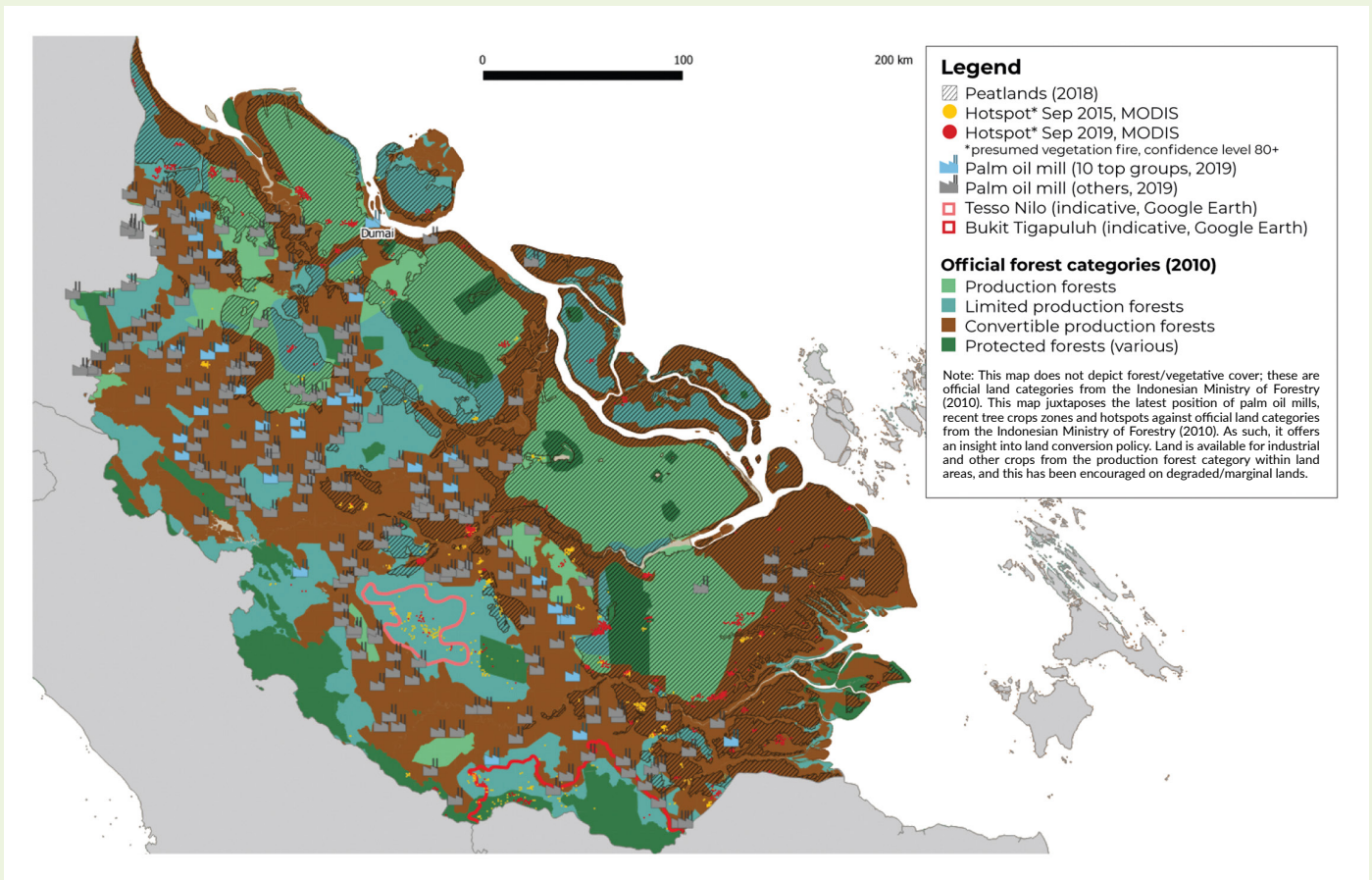
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Appendix A: Case Studies (Riau and Central Kalimantan)

Figure 11: Plantation zones and fire-prone areas in Riau



Data: GFW, NASA, Jiren Xu et al. (2018), and Khor Reports estimates

Geographical Overview

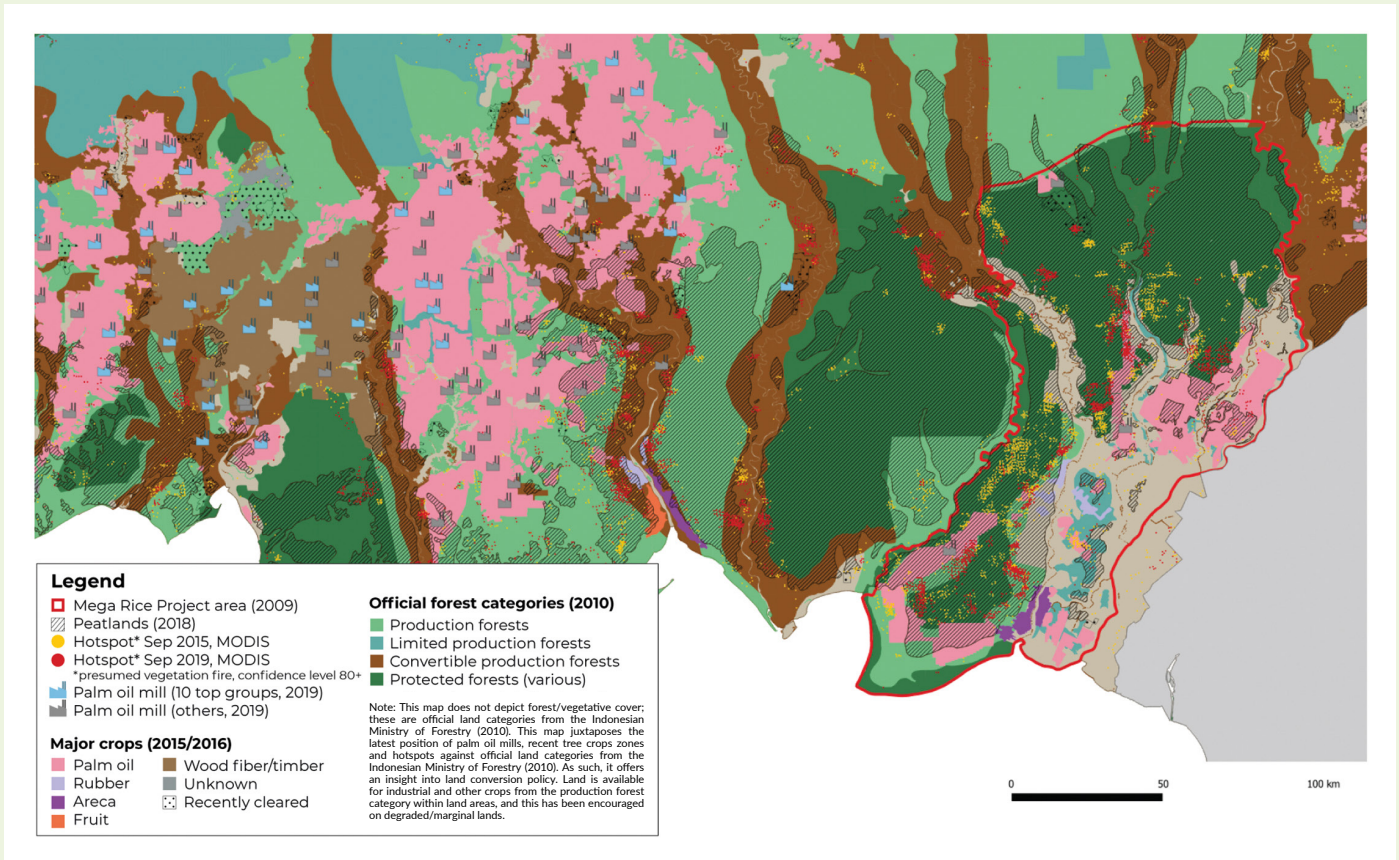
Peatland (indicated in grey diagonals) comprises some 43 per cent of Riau province’s 9 million hectares of land area, with significant areas of deep peat in Giam Siak Kecil, Kampar and Kerumutan. Oil palm and pulpwood concessions are a big feature in Riau’s landscape. The northern half of Riau has more pulpwood concessions towards the coast, while oil palm dominates the interior. In the south, both are present in the coast and interior.

Palm oil mills have largely been developed in convertible production forest areas (indicated in brown). Plantation and mill development in Riau appears largely mature, although NGOs remain concerned about expansion near protected areas, including the national parks of Tesso Nilo and Bukit Tigapuluh.

Analysis of Hotspot Locations and Conclusion

In 2015 and 2019, hotspots were detected in pulpwood zones in the middle to southeast of Riau, near palm oil areas in central and south Riau, and in protected forests that are considered conservation areas. Riau appears to have seen slightly more fires on peatland in 2019 compared to 2015, suggesting a need for improved fire and peatland management.

Figure 12: Plantation zones and fire-prone areas in Central Kalimantan



Data: GFW, NASA, REDD+, and Jiren Xu et al. (2018), and Khor Reports estimates

Geographical Overview

In Central Kalimantan, palm oil mills are primarily located in the western part of the province, though there are some mills in the east close to and within the Mega Rice Project (MRP) Area.

The MRP, indicated on the map with a red border, was initiated in 1996 by then-President Suharto. Considerable investment was made to drain peatland and convert forest area to rice paddies before the project was abandoned. Much of the area was found to be unsuitable for rice cultivation. Environmentalists and academics argue that a significant proportion of Indonesia's emissions from fires and haze now come from this area.

Currently, there is significant palm oil cultivation within the old MRP area, with some rubber plantations. But there have also been attempts to conserve and manage the area, including the Kalimantan Forests and Climate Partnership's REDD+ project in 2009. In 2018, the BRG and the Indonesian Ministry of Agriculture re-established farmland in Pulau Pisang (in the southwest). To avoid a repeat of previous agricultural failures, mapping has been conducted to determine better areas for farming.

Analysis of Hotspot Locations and Conclusion

Although hotspots were still detected within the MRP area in 2019, there were fewer fire alerts within the MRP in 2019 compared to 2015. This suggests that efforts to improve peat and land management in the area are seeing some success.

Appendix B: Literature Review – Trends in Research on Fires and Haze

For the 2020 edition of the SIIA Haze Outlook, we reviewed recent academic literature related to fires and haze in order to understand current research trends, focusing especially on papers published in the context of the most recent haze crisis in 2019. In the past, a considerable amount of academic research focused on the causes of fires. As understanding of the haze has evolved, more experts are moving beyond the underlying reasons and towards practical solutions to solve problems on the ground. Overall, experts agree that more can, and should, be done.



Fire: Among some 150 research papers and articles published from late 2018 to early 2020, half were on the detection and analysis of fires, including the effects of fires on peatland (Hamzah et al., 2019; Hendrawan, 2019; Indratmoko and Rizqihandari, 2019; Putra et al., 2019; Vetrita and Cochrane, 2019; Wang et al., 2020; Yusuf, Hapsah, Siregar, and Nurrochmat, 2019; Silviana, Saharjo, and Sutikno, 2019). Studies also explored advancements in early warning using ground sensors and satellite data (Kadir, Irie, and Rosa, 2019; Sanjaya et al. 2019), as well as methods of fire risk mapping and models to predict fires in advance (Rezainy, Syaufina, and Sitanggang, 2020; Maulana, Syaufina, Prasetyo, and Aidi, 2019).



Peat: A third of the papers were on peatland management, suggesting improvements to current practices or calling for more research. Core issues included water management (Triadi 2020; Suryatmojo et al., 2019; Novitasari et al., 2019), peatland restoration and conservation (Harrison et al., 2019; Mardhatillah, Pamoengkas, and Istomo, 2019), fire management on peatlands (Arief, Nukman, and Elwita, 2019; Larasati, Kanzaki, Purwanto, and Sadono, 2019), as well as peatland mapping and analysis (Susanti and Anjasmara, 2019; Widodo et al., 2019; Zhou, Li, Waldron, and Tanka, 2019).

Notably, one study found that deep peat is much more common in Sumatra than previously thought (Vernimmen et al., 2020). This is significant, as deep peat sequesters more greenhouse gases, and consequently also releases more emissions when degraded and burnt. Better mapping efforts are therefore needed to understand Indonesia's peat landscapes. There are promising avenues being investigated by mapping experts, such as the use of Light Detection and Ranging (LiDAR) for mapping (Sabiham, Setiawan, Minasny, and Fiantis, 2018).



People: Some academics evaluated the efficacies of fire control regimes, such as how local communities are adapting to the nationwide zero burn policy (Waluyo, 2019) and the effectiveness of fire-free community engagement programmes (Watts et al., 2019, Yamamoto, Takeuchi, and Köhlin, 2020). Some studies found little difference in fire prevention activities between participating and non-participating villages, suggesting that further strengthening of community engagement is needed, and that economic incentives are necessary for programmes to be effective.

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The SIIA's Sustainability Programme was established in 1997 when it organised Singapore's first haze dialogue with the Singapore Environment Council. Since then, the Sustainability Programme has evolved to address sustainability issues ASEAN faces with a focus on the haze and resource sector and using finance as a lever to advance sustainability in the supply chain. As part of its Sustainability Programme, the SIIA facilitates dialogues between government, private sector and NGOs to prevent and mitigate the recurrence of transboundary haze. One of the SIIA's key platforms is its flagship event, the Singapore Dialogue on Sustainable World Resources (SDSWR). Since it was launched in 2014, the annual event attracts about 300 high-level participants from government, private sector, academia and NGOs to share best practices and discuss new commitments and noteworthy cross-sector collaborations in ASEAN's resource sector. A key research output by the Institute is the SIIA Haze Outlook report. Launched in 2019, the report serves as a risk assessment and predictive tool for countries in the region to determine the likelihood of a severe transboundary haze incident.

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