
Monitor Emerging Issues and Responses

Establishing effective systems to address emerging issues and implement proactive solutions.



Version 1.0



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Introduction to the Palm Oil Toolkit

“Responsible Sourcing: A Palm Oil Toolkit” aims to support companies in the responsible sourcing of palm oil, and its by-products and derivatives. The toolkit is designed for all companies – refineries, traders and manufacturers in all consuming countries – particularly in Asian markets such as China and India – that are beginning to implement responsible sourcing. This guide provides a clear and accessible overview of the many initiatives that aim to address key environmental and social issues in the palm supply chain, namely deforestation, development on peat and human rights violations.

The Palm Oil Toolkit is structured around five key elements of a company’s responsible sourcing process (see Figure 1). Each element is the subject of a separate Briefing Note:

- **Element 1: Assess and plan implementation**
- **Element 2A: Understand the supply chain: main environmental and social risks**
- **Element 2B: Understand the supply chain: traceability and risk analysis**
- **Element 3: Engage within and beyond supply chains**
- **Element 4: Monitor, verify and report**
- **Element 5: Monitor emerging issues and responses**



Figure 1:
The 5-element approach for sourcing palm oil responsibly

Briefing Notes 01 to 04 focused on the development of systems and procedures to implement responsible sourcing commitments, understand risks, engage both within and beyond supply chains and to monitor progress and performance. Each of them reflects the efforts undertaken to date in the palm sector.

While progress has been made in addressing key social and environmental risks, some issues remain and have been exacerbated by external factors and a lack of risk mitigation. This briefing note highlights these emerging issues and the prevalent solutions implemented by industry players and supporters to address them. Trends in international regulations will also be introduced.

01 Emerging issues in the palm oil sector

1.1 The climate crisis

According to the analytical report¹ by Climate Action Tracker (CAT) the world is heading towards a 2.4°C warming by the end of the century, despite the new commitments made during the COP26 summit. This prediction is far greater than the previous 1.5 °C limit (the threshold to prevent catastrophic climatic impacts) set under the Paris Agreement² in 2015. Climate change is a real and pressing issue that has dire impacts on the environment and people's lives on a global scale. One billion people are expected to suffer from extreme heat stress with just an increase of 2°C.³ Depending on future socio-economic conditions, limiting global warming to 1.5°C, compared to 2°C, may reduce the proportion of the world population exposed to a climate change-induced increase in water stress by up to 50%.⁴

Oil palm is grown in tropical countries where communities and ecosystems are most vulnerable to the impacts of climate change. Rising global temperatures are causing extreme weather events, displacements, food shortages, water scarcity, creating many challenges that threaten the entire palm oil supply chain. Urgent action is needed and participation from the entire industry is necessary to effectively tackle challenges from climate change.

Contribution of oil palm cultivation to environmental degradation and climate change

Food systems are responsible for over 80% of global biodiversity loss and more than a third of global greenhouse gas emissions.⁵ To date, carbon emissions from agriculture remain the primary source of global warming, with most carbon released into the atmosphere coming from the burning of fossil fuels and land-use change, such as deforestation.

The clearing of massive areas of natural carbon sinks (such as forests and peatlands) have historically released enormous amounts of greenhouse gas (GHG) emissions. A study in 2015 linked a loss of 2.5 Gigaton (Gt C) (roughly equivalent to 1 million Olympic-sized pools) of carbon stock from tropical peatlands since the 1990s (approximately 146 Mt C a year) to industrial plantations such as oil palm.⁶ A separate study estimates a loss of approximately 174 tons of carbon for every one hectare of rainforests that is converted into oil palm plantations.⁷ In Indonesia and Malaysia, land use change driven by oil palm contributes to around 1.4% of global net CO₂e emissions.⁸ In addition, more than 5% of the global carbon dioxide emissions are associated to the degradation of peatlands.⁹ A webinar organized by WWF, World Resources Institute and World Business Council for Sustainable Development (WBCSD) in 2021 shared that agriculture, forestry and other land use emissions represent approximately 24% of global annual GHG emissions (see Figure 2).

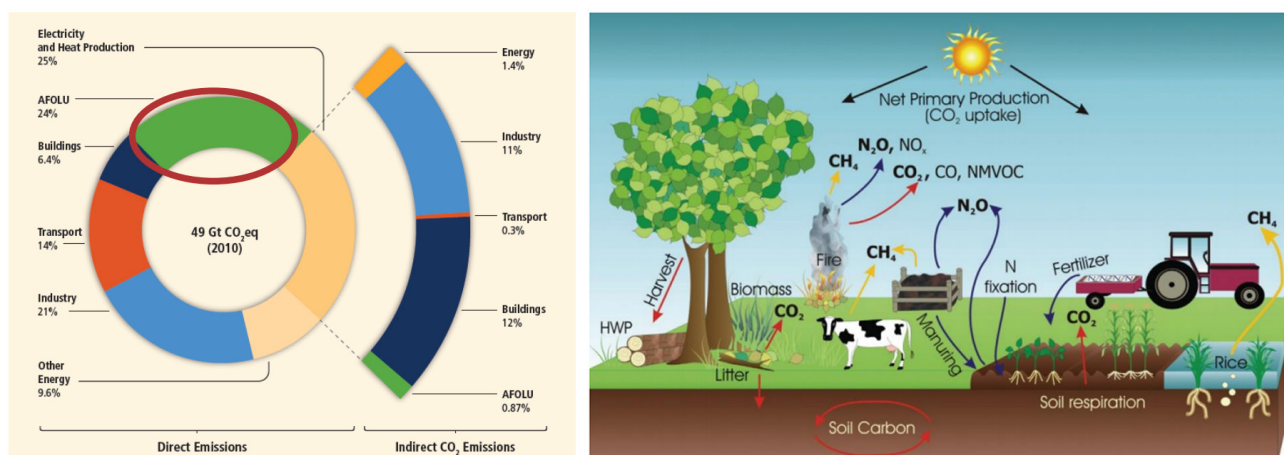


Figure 2: Agriculture, Forestry and Other Land Use (AFOLU) emissions represent approximately 24% of global annual GHG emissions (Image Source: WWF, WRI and WBCSD, 2021).¹⁰

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Palm Oil Mill Effluent (POME) is another source of GHG emissions that contributes to climate change with an estimated release of 625 – 1,467 kg CO₂e per tonne crude palm oil (CPO) per year.^{11,12} In comparison that is roughly the same amount of carbon produced in a flight travelling from India to Australia (~8,000 km) – for every tonne.

As described in **Briefing Note 02A: Understand the supply chain: main environmental and social risks**, destructive land clearing practices, namely fire use in drained peatlands, have resulted in transboundary haze events in Southeast Asia every few years since the 1990s. The resulting emissions from the 2015 haze event were roughly 1,750 million metric tons of carbon dioxide.¹³ The World Bank Group estimated a total economic loss of USD 16 billion from the fires, which was double the palm oil exports from the previous year.¹⁴

Impact of climate change on palm cultivation

The rigors of climate change will have multiple negative long-term impacts on oil palm cultivation. Research^{15,16} estimates that three-quarters of suitable land available for palm oil production will be lost by 2100 due to drought. Rising temperatures have made water stress events more prevalent. Water stress is a significant limiting factor in the growth and productivity of the oil palm tree as it is a rain-fed crop.

Producing nations such as Thailand, Nigeria and Colombia are predicted to face severe losses of suitable land in the coming decades, along with regions in the main producing countries such as Malaysia and Indonesia. A study in Malaysia projected palm oil production to face a decrease by 10-41% if temperatures increase 1-4°C above the optimum level and a decrease in rainfall by 10%.^{17,18} In Ghana, a study highlighted that predicted increases in water deficit could significantly decrease yields and productivity, from 22-25 to 6-7 tonnes/ha.

A drier, hotter climate also increases the risk of fire and smoke pollution, especially in peat ecosystems.¹⁹ Severe droughts, especially during the El Nino events, can also trigger large peat fires. These peat fires devastate landscapes and further fuel climate change by releasing a substantial amount of carbon into the atmosphere. In 2019, peat fires in Indonesia generated 708 million tons of carbon dioxide burning over 26,000 square kilometers (km²) of land.²⁰ Such events are also extremely hazardous to workers and nearby communities and cause extensive damage to the oil palm trees and surrounding buildings and property.

Research by MIT and the Swiss Federal Institute of Technology in Zurich predicted that extreme rain events will increase in amount and intensity, by 3-15%, in most regions, with the Asian monsoon regions and parts of the equatorial Pacific experiencing the largest increase. This leads to massive floods, and with prolonged waterlogging from extreme rainfall events and flooding negatively affecting nutrient uptake, root respiration and pollination, and oil palm yield and growth.^{21,22} Flooding from excessive rainfall also prevents FFB collection and harvesting activities (i.e. FFB cannot be transported from the producers to the mills in time, decreasing FFB yield and CPO production.). In 2021, large producing oil palm areas in Johor, Pahang and Perak in Malaysia were submerged in 2-3 ft of floodwater for two to three weeks causing unavoidable crop losses.²³

Sea level rise caused by thermal expansion, melting of glaciers, ice sheets, and land water storage changes is another concerning threat to the oil palm industry. CDP's (formerly the Carbon Disclosure Project) No Wood for the Trees report²⁴ found that 90% of the palm oil production regions in Southeast Asia are concentrated along low-lying areas and is threatened by coastal flooding and rising sea levels.

All businesses that source palm oil are exposed to the extreme risks to supply posed by climate change. Companies that produce palm oil could suffer disastrous outcomes to operations, translating to higher costs for businesses down the supply chain. Extreme events from climate change will trigger price volatility affecting producers, suppliers and buyers of palm oil.

1.2 Water stress

Water availability

Conversion of natural ecosystems, such as from rainforests to oil palm plantations, causes significant changes in the hydrological cycle including periodic water scarcity. The changes

are due to removal of root structures to uptake infiltrated waterflows from rain and lack of transpiration and evaporation by trees to regulate the water cycle. According to the 2019 Intergovernmental Panel on Climate Change (IPCC), agriculture accounts for roughly 70% of global freshwater use.²⁵ Moreover, hydrological cycles face disruptions when peatlands and wetlands are drained to prepare the plantations, and this can impact adjacent habitats and forests.²⁶

Clearing of mangroves for conversion to oil palm also impacts water availability and quality. Mangroves are key to protecting coasts from storm surges, seawater storms, waves and tsunamis. With expected rising sea levels due to climate change, the absence of mangroves can further exacerbate coastal flooding events and influx of saline water into river systems described earlier.

South-East Asia is a global hotspot for mangrove loss.²⁷ Research is making the link between oil palm expansion and mangrove loss increasingly clear. Expansion of oil palm, together with rice and rubber, accounts for the majority of mangrove conversion in Myanmar,²⁸ with large scale oil palm production replacing vast areas of former mangrove forests in Malaysia and Indonesia.²⁹

Deforestation also damages tree roots structures, which increases soil run-off, erosion and displacement during rain events. Hence, a significant amount of water is removed from the landscape as run-offs, carrying sedimentations as well as residual agricultural inputs such as fertilizer and pesticides.

The increased volume of run-off also leads to flood events that are progressively being linked with deforestation. A 2007 study³⁰ at the Sungai Padas river in Sarawak, Malaysia linked even small amounts of primary rainforest degradation to an increase in discharge volume of 5%, and this volume increases approximately four times when the area is cultivated with oil palm.

In peatlands that have been converted to oil palm, studies have shown increased risks of flooding due to reduced drainability. A study by Wetlands International³¹ in oil palm plantations in the Rajang delta in Sarawak, Malaysia, found that by 2109 up to 82% of existing industrial plantations will experience problems related to reduced drainability, while for areas frequently flooded by river water (where peat has subsided below high water levels), the estimate is about 64%. These areas will face increasing reductions in productivity and will eventually be flooded. Even before permanent flooding, all agricultural production would be lost. Ultimately, these areas would face a near complete loss of production within the coming decades.

A study by the German Development Institute³² has shown that current practices of oil palm production also degrade local water resources, damaging future water supplies in rural areas.

In subtropical regions, rain may not be a primary water source for oil palm (oil palm is rain-fed in other countries like Indonesia). In countries such as India, irrigation is needed, approximately 240-300 litres per palm, per day and in summer, up to 350 litres per palm, per day.³³ Therefore, increases in droughts due to climate change will require more areas to be irrigated, applying further stress to natural water sources, sinking water tables and limiting the available water supply in affected regions, and consequently impacting the surrounding communities.

Pollution and water quality

Research has found that oil palm cultivation can significantly erode water quality and threaten freshwater systems, impacting millions of livelihoods and destroying aquatic life.³⁴ The sources of water pollution from oil palm cultivation are usually sediment loads from increased surface run-off and soil erosion from converted land, and agricultural run-off from applied chemical inputs such as fertilizers and pesticides. Extensive fertilizer, pesticide and chemical usage on plantation estates also impacts the water quality in the nearby areas.³⁵

Processing palm oil requires large amounts of water and a large proportion of that water is converted to palm oil mill effluent (POME) which contains nutrients, heavy metals, high pollution indicators, oil and grease that can pollute aquatic systems, if not treated properly. Soluble organic matter from POME decreases dissolved oxygen rates in water bodies due to the increased bacterial activities. Low levels of dissolved oxygen can threaten fish and other aquatic life.³⁶

The two largest palm oil producing countries produce approximately 84 million tonnes³⁷ (Indonesia) and 50 million tonnes³⁸ (Malaysia) of POME wastewater annually. Currently, most mills

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use a conventional ponding system for the treatment of the effluent, but this system releases large amounts of GHG emissions when the biogas is released from the open ponding. At present, waste from cultivation and palm oil processing is underutilized and opportunities exist to maximize recovery to prevent environmental degradation and safeguard communities.

1.3 Impacts on human rights and livelihoods

Environmental issues that lead to negative impacts on the livelihoods of communities

The annual use of fire to clear forests (especially on peatlands) for palm oil development, in particular in Kalimantan and Sumatra in Indonesia, is one of the principal sources of polluting haze in Southeast Asia.³⁹ Depending on the severity of the haze, the impacts could affect Indigenous Peoples and local communities in the vicinity, and also cause transboundary air pollution in neighbouring countries such as Malaysia and Singapore. This can lead to an increased risk for in-utero deaths, respiratory ailments and the exacerbation of existing heart and lung diseases.³⁵ Furthermore, as oil palm plantations tend to be hotter, drier and less shaded than forests, there is an increased risk of forest or plantation fires.³⁹ It is also common for neighbouring communities to experience air pollution due to dust and smoke originating from palm oil plantation and mill activity.

The majority of the palm oil supply base is made up of independent smallholders (40% of production in Malaysia and Indonesia⁴⁰, that make up 84% of the global market⁴¹). Moreover, smallholders are particularly vulnerable to the impacts of climate change, as they lack the financial, technical and information resources needed for resilience. As climate-related risks (such as rising temperature or water stress) impact productivity, household income declines.^{42, 43, 44} Furthermore, research has also shown that climate change may also impact the health of smallholder farmers through communicable and non-communicable diseases, mental health, and occupational health, safety and other health issues.⁴⁵

The box below illustrates a case study of the effects of the reduction of ecosystem service provision on the Indigenous Peoples and local communities in East Kalimantan, Indonesia.⁴⁶

Case study: East Kalimantan, Indonesia⁴⁶

The extensive development of oil palm reduces the ecosystem service provisions and can cause economic inequities, leading to social conflict and poverty in communities. Indigenous Peoples and local communities are often acutely vulnerable to freshwater resource degradation as they rely heavily on river systems for food, drinking water, and transport. Local communities in East Kalimantan claim that palm plantations cause water pollution, resulting in a substantial decline in fish stocks and household income. This decrease in provision services has subsequently led to an increase in crime and unemployment. Furthermore, local communities have also expressed their concerns about the quality of river water used for drinking and washing and are concerned with the increase in living cost as they are now compelled to buy drinking water. Despite this, many villagers still express interest in developing oil palm plantations because of the income received, and the other benefits that oil palm offers, such as being more tolerant to natural hazards, avoiding pests that affect rice, withstanding unpredictable weather events, and supportive government policies.



(Image source: Uwe Aranas / Shutterstock.com)

Climate-induced migration and modern slavery

At the 26th United Nations Climate Change Conference (COP26) that was held in Glasgow, UK in 2021, an international NGO called Anti-Slavery International emphasized the need to recognize the critical link between climate change-induced migration and modern slavery, and the importance of collaborative action to address this.⁴⁷

A joint report written by Anti-slavery International and Institute for Environment and Development (IIED) shows that communities suffering from devastating sudden events, slow-onset climate change events, and conflict can be forced to migrate in search of a better life.⁴⁸ Climate change is a risk multiplier that exacerbates pre-existing social and economic inequalities.⁴⁸ The combination of factors such as forced displacement, exacerbation of inequalities, and destroyed assets of vulnerable communities leads to reduced resilience and negatively affects well-being, thus rendering them more vulnerable to contemporary forms of trafficking and slavery.⁴⁸ In such situations, communities who are dependent on natural resources and farming are forced to look for alternate sources of living. Regions of South Asia and Southeast Asia are particularly vulnerable to the impacts of climate change that lead to displacement and forced migration, which could result in an increase in human rights risks such as forced labour and human trafficking.⁴⁷ For example, Bangladesh, China, India and the Philippines accounted for 58% of the global disaster displacement in 2020.⁴⁹ The World Bank estimates that more than 143 million people spread out over sub-Saharan Africa, South Asia and Latin America will be forcefully displaced by 2050 due to climate change.⁴⁸

In the absence of viable local options, displaced and affected communities may pursue dangerous migration opportunities, incurring debt exposure to modern slavery.⁴⁸

Political instability

In recent years, Latin America has become the second largest palm oil producing region, contributing up to 5.7% of global palm oil.⁵⁰ The countries that are producing palm oil in this region are Colombia, Ecuador, Honduras, Guatemala, Brazil and Costa Rica. Across these countries, lack of opportunities, limited access to education and political corruption have persisted for generations, exacerbating issues of violence and displacement. For instance, since 2016, the Venezuelan political crisis has led to an outflow of 5 million migrants crossing borderlands that are controlled by gangs and rebel groups, exposing them to human trafficking and illegal recruitment.⁵¹

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Migration from Venezuela is driven by political and economic instability and it involves one of the biggest flows of vulnerable persons globally, with Colombia, Peru, Ecuador and Chile being the main receiving countries.⁵² Currently, Colombia and Ecuador are the largest exporters of palm oil in Latin America, where Colombia produces up to 1.6 million tonnes annually and was the fourth largest producer worldwide in 2016.⁵³ As such, the high migration rates of vulnerable persons into fast palm growing countries may give rise to issues related to an increased risk of forced labour and discrimination.

The box below depicts a case study in Colombia regarding the link between oil palm production and displacement.^{54,55}

Case study: Colombia

Colombia is Latin America's biggest palm producing country with a strong focus on palm oil-based biodiesel. However, high levels of land concentration and violence obstruct the possibility of equitable development in palm producing regions. A spatial relationship study conducted in 2008 found a direct relationship between oil palm and displacement in areas where oil palm was promoted. This issue of displacement is linked to the country's rural reform plans that aimed to resolve Colombia's longstanding issue with unequal land distribution. Furthermore, in 2016, Colombia's president passed a law for the formation of Rural, Social, and Economic Development Zones (ZIDRES), which grants large landowners and multinational companies legal access to *baldios** where they could develop agro-industrial projects on large tracts of land. This puts farmers and autonomous ethnic groups (who still currently have individual and collective land restitution cases) in a vulnerable position, making the land concentration conflict even worse and their political and human rights at risk.

**"vacant" lands that were expropriated territories from indigenous groups during the Spanish colonization.*



(Image source: Flickr)⁵⁶

Pandemic-related issues

Following the COVID-19 outbreak, the two biggest palm oil producing countries, Indonesia and Malaysia, were confronted with different pandemic-related issues including shortage and management of affected foreign workers.

In Malaysia, palm oil prices dropped 23% in 2020 and the output dropped approximately 4.3% due to biological stress on the palm trees and limited labour supply.⁵⁷ As Malaysia's palm oil sector relies heavily on foreign labour, the travel and movement restrictions imposed by the national government resulted in a shortage of 37,000 workers, which is nearly 10% of the total workforce. To alleviate this issue, Malaysian palm oil companies have been looking to recruit local workers, but commitment and productivity is an issue. Consequently, this labour shortfall has added urgency to companies' long-standing plans for industry mechanization. Palm oil companies such as Sime Darby, IOI and FGV are looking into development of machines and technology to aid in mechanized plantation upkeep and "precision farming" through remote sensing and artificial intelligence.⁵⁸ At the same time, the inability of foreign workers to enter Malaysia for work during Malaysia's lockdown period may have significantly impacted these workers' livelihoods.

In Malaysia, there is a discriminatory policy towards undocumented migrants, which prevents them from accessing basic health services and care facilities. It was reported that during the pandemic, undocumented workers experienced raids, arrests and torture, instilling fear among them. It was reported that migrant workers in general were also discouraged from reporting and seeking help from local authorities if they experience symptoms of Covid-19.⁵⁹

In Indonesia, despite the pandemic, palm oil producers recorded higher export sale value in 2020 than in the previous year due to stronger global palm prices. The value increase was driven by high demand for oleo chemical products by the hygiene product industry in both domestic and overseas markets.⁶⁰ However, the Transnational Palm Oil Labour Solidarity (TPOLS) sees that labour conditions have worsened among workers in palm oil plantations. During the pandemic, Indonesian plantation workers struggled to attain health protection, income and employment security, and access to basic needs. Furthermore, workers were exposed to high risks of contracting COVID-19 due to the densely packed workers' settlements, poor infrastructure, and access to public facilities. In addition, many workers did not have access to PCR testing and adequate personal protection equipment (PPE) or even medical masks.⁵⁹

02 Proactive actions needed for positive impacts

In 2017, an analysis by Munich Re revealed the total economic losses from natural disaster events in 2021 reached US\$ 280 billion globally. In Asia, one of the costliest events were the floods in China costing a total of US\$ 20 billion. To reduce our vulnerability to future impacts of climate change, there is urgent need to invest in disaster risk management and reduction. Until recently, much of the attention has been on reactive measures, such as humanitarian aid relief and readiness, to deal with rapid onset catastrophes like storms and landslides. Climate change, on the other hand, is to blame for slow-onset disasters like drought. Hence, the industry must come together and shift from reactive to proactive risk reduction measures.

In this section, we highlight examples of mitigative and adaptive measures that can be taken individually and collectively to reduce negative impacts from climate change and to ensure oil palm is not grown at the expense of the people and planet.

2.1 Public sector actions and initiatives

United States CBP sanctions on Malaysian palm oil companies

The United States Customs and Border Protection (CBP) is a law enforcement organization that implements border management and control, combining customs, immigration, border security, and agricultural protection to facilitate lawful international travel and trade.⁶² Federal statute 19 U.S.C. (United States Code) 1307,⁶³ in effect as of January 3rd 2012, "prohibits the importation of merchandise mined, manufactured, or produced, wholly or in part, by convict labor, forced labor, and/or indentured labor, including forced or indentured child labor", whereby a Withhold Release

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Order (WRO) will be issued by the U.S. CBP when the agency has reasonable evidence of the use of forced labour in the manufacturing or production process of a good entering the U.S. supply chain. It allows the CBP to detain the products in question at all ports of entry in the U.S. until/unless importers can prove the absence of forced labour in said product's supply chain.⁶⁴

In 2020, the United States (CBP) imposed bans on two Malaysian palm oil companies – FGV Holdings Berhad and Sime Darby Plantation Berhad. Both companies were issued a WRO on their palm oil and products due to allegations of forced labour.⁶⁵ Even though exports to the US are insignificant to both companies (approximately 3% of Malaysia's total exports of palm oil in 2020) the CBP ban still causes both companies severe reputational risks.⁶⁶

Following the ban, Sime Darby issued a statement saying that it is "committed to combating forced labour and has implemented robust policies to protect workers' rights"⁶⁵ and appointed an independent ethical trade consultancy to carry out a full-scale assessment of its facilities across Malaysia.⁶⁷ As for FGV Holdings Berhad, the company worked with Fair Labour Association (FLA) to revise their Group Sustainability Policy, and further strengthen and enhance their labour practices.⁶⁸ According to a press release in October 2021, FGV appointed an independent auditing firm to conduct an assessment of its company's operations against the 11 ILO indicators of forced labour.⁶⁹ As such, it can be seen that the trade bans issued by the U.S. CBP have resulted in positive actions from both companies to enhance labour practices associated with their palm oil sourcing and production.

European Union Deforestation Due Diligence

In 2021, the European Commission developed a draft proposal (i.e. EU Deforestation Due Diligence legislation) to regulate deforestation-free products entering the EU market.⁷⁰ The legislation currently covers multiple commodities: palm oil, cattle, cocoa, coffee, soy, wood, rubber and some derivatives such as chocolate, furniture, tyres and printed products. Companies that are providing the specified commodities, or derived products, to the EU market will be covered by the legislation and therefore be obligated to ensure these products are deforestation-free and legally produced. In order for the commodities or products to be considered 'deforestation-free', the commodities must be produced on land that has not been subject to deforestation after December 31, 2020.

As of December 2022, a political agreement has been reached on a joint proposal.⁷¹ As such, once this legislation is in force, companies will have 18 months to implement the new rules. This regulation applies to domestically produced and imported commodities and derived products. It is positive that the EU is taking action on deforestation caused by commodity production, however there is likely to have some unintended negative consequences, which includes driving the exclusion of small producers due to the legislation's strict requirements, which favour more formalized and larger producers. Furthermore, due to the complexity of geolocation requirements in the legislation (i.e. traceable to farm), many companies are concerned about the feasibility of achieving this level of traceability. Some benchmarking will be carried out to determine countries based on risk (standard, low or high). It is expected that low-risk countries will have a simplified due diligence process for their operations. This regulation will be reviewed in 1-5 years for the inclusion of woodlands, additional ecosystems and commodities, financial institutions and impact on smallholders by stage.

Global Methane Pledge

The Global Methane Pledge⁷² is an initiative by the United States, European Union and partners to reduce global methane emissions. This initiative received strong global support with over 100 countries that represent 70% of the total global economy (including Indonesia and Malaysia) committing to reduce methane emissions by 30% by the end of the decade. The Global Methane Assessment report⁷³ by Climate and Clean Air Coalition (CCAC) and United Nations Environment Programme (UNEP) highlighted that the successful delivery of the 2030 goals is estimated to prevent about 26 million tonnes of crop loss, 73 billion hours of lost labour from excessive heat conditions and 200,000 premature deaths each year.

The agriculture industry is currently the largest contributor of anthropogenic methane emissions globally.⁷⁴ Zooming into the palm oil context, palm oil mill effluents (POME) is the second largest

methane emission source in Malaysia.⁷⁵ This highlights the need to foster greater collaboration within the palm oil supply chain to effectively reduce methane emissions.

Commitments and progress made during COPs

Governments from around the world announced major commitments on land use and forests during the UN Climate Change Summit in Glasgow in 2021, COP 26. One of the first major deals included 141 governments that cover about 91% of the world's remaining forest committing to end deforestation by 2030. The pledge includes prominent sourcing and producing countries such as China, Indonesia, Brazil, and Malaysia. 151 countries to date have also submitted their climate plans (Nationally Determined Contributions) to dramatically reduce emissions by 2030. Additionally, under the Glasgow Climate Pact, governments have decided to shorten reviews from five to two years as laid out in the original Paris Agreement.

During COP27, 14 trader and processor companies signed the **Agriculture Sector Roadmap to 1.5°C**, which is a sectoral-wide commitment for companies to reduce their land use change emissions.⁷⁶ The roadmap has 3 objectives:

- 1) Accelerate supply chain action to reduce emissions from land use change,
- 2) Drive transformation of commodity producing landscapes, and
- 3) Support forest positive sector transformation.

Specifically for the palm oil sector, signatory companies are to focus their actions on smallholder inclusion, scaling-up forest positive action for production and forest protection in priority landscapes, and providing support on the uptake of mandatory regulatory frameworks in Indonesia and Malaysia. The signatories are ADM, AMAGGI, Bunge, Cargill, COFCO International, Golden Agri-Resources, JBS, Louis Dreyfus Company, Marfrig, Musim Mas, Olam Group, Olam Food Group (ofi), Wilmar International and Viterra.

China's stronger climate commitments and policies

During the 2020 UN General Assembly, China, the world's top emitter, declared its commitment to achieve carbon neutrality by 2060 and carbon peaking by 2030. This would mean that the country would need to dramatically cut emissions every year to strive towards a net zero economy. In addition, China also issued several other green policies such as the Guidance on Promoting Climate Change Investment and Financing, Master Plan for Major Projects on National Key Ecosystem Protection and Restoration (2021- 2035) and revised the national law on the Prevention and Control of Environmental Pollution by Solid Wastes. All have stricter regulations and policies that will prioritize China's move to achieve sustainability. As China is the second largest importer of palm oil with a total import value of 3.66 billion USD,⁷⁷ this would significantly impact how palm oil is sourced internationally.

China has also launched its first national – and the world's largest - emissions-trading scheme (ETS)⁷⁸ in 2021. This scheme allows companies to adopt more efficient equipment and facilities and trade on their saved emission allowances or alternatively purchase allowances to cover the excess emissions. At the core of it, the ETS would punish polluters to compensate for environmental damages, thus incentivizing them to slash their emissions. The ETS would be an integral tool to support China's carbon emission mitigation targets.

As such, the industry must prepare for unprecedented transition in scale and speed, in the face of new and increasing regulation and shareholder demands.

2.2. Nature-Based solutions

Healthy ecosystems are increasingly being recognised as important tools to prevent and minimise disaster risk.

The International Union for Conservation (IUCN) defines Nature-Based solutions (NBS) as:

“Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.”

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Nature-Based solutions are an important part of the global effort to meet the goals of the Paris Climate Agreement and are an integral part of decarbonization, minimising climate change risks, and building climate-resilient societies. They prioritise human-nature harmony together with ecological growth, and constitutes a comprehensive, people-centred solution to climate change. They are efficient, effective, long-term, and globally scalable. The Climate Action Summit's Nature-Based Solutions (NBS) Action Area, co-led by China and New Zealand, have urged the incorporation of Nature-Based solutions in the post-2020 global biodiversity framework, as well as consideration of natural systems' ability to aid mitigation and adaptation.⁷⁹

Industrial agriculture such as oil palm is a large greenhouse gas contributor, partly due to land conversion and degradation, processing, transportation and usage of fertilizers. Research by The Nature Conservancy and fifteen other institutions demonstrated that Nature-Based solutions could provide up to 37% of the emission reductions needed by 2030 to help buffer global temperature increases under 2°C, 30% more than previously estimated.⁸⁰ Failing to address risk factors now would translate to failure to secure investments in longer-term climate change adaptation and mitigation efforts. Investing in ecosystem management pays off in the long run, in terms of greater resilience to climate change.

Rehabilitation within concessions, linkages and connectivity

Much of the remaining forests and peatlands in the oil palm producing regions are highly fragmented, isolated and degraded due to rapid agriculture development. In addition to being the last bastions of refugia for biodiversity, they have significant importance in ecosystem regulation and providing resources to local communities. Rehabilitation and recovery of these vital areas are of crucial urgency, and this can be in the form of restoring connectivity by creating linkages between forest patches and rehabilitation peat.

There are several examples of public sector initiatives engaging with private sector operations that aim to restore forest connectivity and rehabilitate peatlands.

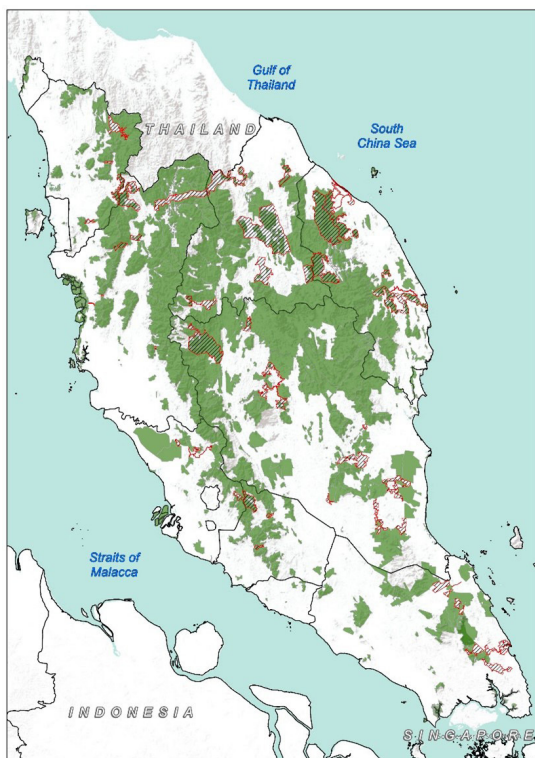


Figure 3: The Central Forest Spine (CFS) is located in Peninsular Malaysia. (Image Source: Phan, S.S., 2022; source layer from World Database on Protected Areas (2022) and Forestry Department of Peninsular Malaysia (2021)).

Central Forest Spine (CFS) Initiative, Peninsular Malaysia

The Central Forest Spine (CFS), located in Peninsular Malaysia, consists of four main forest complexes across eight states (see Figure 3). This landscape supplies approximately 90% of the population's water supply and harbours the last of the Critically Endangered Malayan tigers.⁸¹ The CFS is being degraded at an alarming rate due to rapid agriculture and industrial development. The Central Forest Spine Master Plan⁸², which was formulated under Malaysia's National Physical Plan⁸³ and adopted in 2005, aims to rehabilitate and conserve critical linkages between the forest complexes to improve the overall quality of the fragmented forests in Peninsular Malaysia.

This massive project involves the federal government ministries, state governments, people's representatives, private sectors, academic institutions, civil societies and the related communities. As many agricultural lands (predominantly oil palm) surround and exist within the CFS landscape, the federal and state governmental agencies are actively initiating in dialogues with the oil

palm companies operating here to negotiate and secure agreements in biodiversity or carbon offset scheme.⁸⁴ Government agencies such as the Federal Land Development Authority (FELDA)⁸⁵ and local sustainable certification actors (Malaysian Palm Oil Board and Malaysian Palm Oil Certification Council) are heavily scaling up certification uptake with oil palm smallholders within the area. Larger-scale oil palm concessions have also been engaged in implementing wildlife corridors. In 2020, Nestlé Malaysia pledged to restore forest reserves along the CFS as part of their Project RELeaf which aims to plant 3 million trees by 2023.⁸⁶ Similarly, Earthworm Foundation, in collaboration with the Malaysian Palm Oil Board and local partners, is supporting oil palm smallholders in the Southern part of the CFS on sustainable farming practices.⁸⁷

Reducing GHG Emissions from Peatlands and Oil Palm in Siak District, Riau, Indonesia

Close to 43% of Siak's landscape (see Figure 4) is dominated by oil palm, pulp and paper plantations with only 19% of remaining land are forested.⁸⁸ Moreover, 60% of the total oil palm area within the Siak district consist of oil palm farmers. The peatlands here are facing historical rates of peat subsidence and fire events that directly threaten livelihoods, cause health risks and releases a significant amount of Indonesia's yearly GHG emissions.



Figure 4: The Siak district is a major palm oil producing region which is located in the Riau province on the island of Sumatra. (Image Source: Wikipedia).

In 2016, the Siak government together with Winrock International and Elang worked directly with farmers' groups to implement ways where oil palm smallholders can maximize production, reduce emissions and improve the environment through improved water table management, rewetting peat, and other best management practices.⁸⁸ The Siak district government is also engaging with regional power providers and palm companies on POME-to-energy capture systems to capture methane into energy and subsequently channel the power for local communities' consumption and reduce overall emissions from palm oil mills.

Recovery plans – by individual companies

Most larger companies and organisations (including consumer good companies, traders, growers and financial institutions) in the international palm oil supply chain have made No Deforestation, No Peat, No Exploitation (NDPE) commitments.⁸⁹ In the cases where there are grievances raised for non-compliant land clearing or social or environmental harm (i.e. violations to a buyer's NDPE⁹⁰/responsible sourcing policy), a supplier can face suspension and consequently be exposed to market access risks. Recovery plans are actions that can be taken to address these liabilities and support the re-establishment of the affected company back as a viable player in the market.

Recovery plans can be conducted in either of the following options;

- i) on site or off site⁹¹
- ii) providing funding to a 3rd party programme/project
- iii) combination of the two options

Recovery plans are required to have clearly defined goals, timeframes and should be adequately resourced to ensure the delivery of the intended outcomes. Furthermore, these plans should strive to provide "additionality" to ensure there is actual "gain" aside from of the baseline requirements. For recovery plans to be qualified as "additional" they should be either;

- i) New (has not been implemented or in the plans)
- ii) (If already implemented) be extended or adapted to provide enhanced conservational or social outcomes beyond the current baseline

Element 5: Monitor Emerging Issues and Responses

The International Union of Conservation (IUCN) defines "additionality" as
"A requirement that offsetting gains must be higher than those in the expected business-as-usual scenario"

Table 1 Examples of initiatives demonstrating "additionality".

Offsets that demonstrate additionality	Offsets that do not demonstrate additionality ⁹²
Protected areas that exist on paper, but are evidently underfunded, lack adequate in-situ management, and face significant threats. ⁹³ The protected area can benefit from the additional support provided by the offset activities. ⁹⁴	Funding of protected areas that are already sufficiently financed by government programs or have low levels of threats.
Habitat restoration is the most common form of ensuring 'additionality' is met ⁹⁵ but can alternatively be reached with other measures such as habitat creation ⁹⁶ or financing areas facing impending or expected loss in biodiversity. ^{97,98}	Protection of ecosystems such as forests or wetlands that are not threatened nor undergoing degradation: in these cases, intervention (e.g., putting a fence around a forest to protect it) would lead to no material change in reality.
	Investment in an offset for economic reasons, such as a tourist lodge: in this case, the investment would have happened anyway, and so would the biodiversity gains – hence, using this as an offset would not be additional to the business-as-usual scenario.
	Improvement in the condition of habitat through management financed by government schemes to incentivise landowners to manage their land for biodiversity – once again, these outcomes are the product of existing incentives or actions, so the gains cannot be used to compensate for the impacts at a development site.

While there is an urgent call to recover and rehabilitate degraded areas, currently there is no industry-wide standard for recovery and rehabilitation plans. However, RSPO's Remediation and Compensation Procedure (RaCP)⁹⁹ can be referred to as one of the more comprehensive examples in the industry.

RSPO's Remediation and Compensation (RaCP)

The RaCP was created to address any land clearance and plantation development carried out by RSPO members after November 2005 without any prior HCV assessments. RaCP is primarily designed to encourage the preservation of biodiversity, the environment, and socio-cultural HCVs, as well as to protect the regions required to preserve them in the context of oil palm expansion. Environmental, social and conservational liabilities are calculated through a Land Use Change Analysis (LUCA) and Liability Assessments.

Katingan Mentaya Project, Indonesia, is an example of an RSPO recognized compensation project

The Katingan Mentaya Project is situated in Central Kalimantan, Indonesia and aims to protect the vital peatland habitats within the region, which harbours significant populations of the Bornean Orangutan, Proboscis Monkey and Southern Bornean Gibbon. Using carbon financing, it offers a viable alternative to conversion, preventing the release of greenhouse gases equivalent to 447 million tonnes of carbon dioxide over 60 years, making it the largest forest-based avoided emissions in the world (equivalent to the annual emissions of France!). Annually it generates 7.5 million triple gold certified carbon (equivalent to removing 2 million cars off the roads per year).

Companies can make an immediate and direct contribution to decreasing that threat and protecting natural forests by purchasing Katingan Mentaya Project verified carbon credits.

For more info on RaCP, visit: <https://rspo.org/certification/remediation-and-compensation>

For more info on Katingan Mentaya Project, visit: <https://katinganproject.com/>

Explore other recognized RaCP compensation projects at <https://rspo.org/certification/remediation-and-compensation#compensation-projects>.

2.3 GHG Scope 3 emissions

Scope 3 emissions¹⁰⁰ are all the indirect GHG emissions that are not captured under the Scope 1 and 2 reporting and are in actual fact the largest portion of an agricultural companies' footprint, potentially accounting for about 90% of a companies' total carbon impact.¹⁰¹ Hence, these are significant emissions that have been historically underreported. As such, companies have a responsibility for their supply chain's GHG emission (Scope 3).

Examples of Scope 3 emissions are purchased goods and services, capital goods, upstream and downstream transportation and distribution, waste generated in operations, business travels, employee commuting, upstream and downstream leased assets, processing and use of sold products, end of life treatment of sold products, franchises and impact of any investments. Hence, measuring Scope 3 emissions can help to identify where the largest bulk of your company's emissions are generated.

Scope 1 emissions are direct carbon emissions from sources that you own or control. This includes manufacturing and process emissions, onsite fuel combustion and emissions from company vehicles; Scope 2 emissions are indirect emissions from the use of energy that your organization buys such as electricity, heating and cooling, and steam.

Most companies currently focus on decreasing emissions through reducing energy usage and boosting efficiency within their own facilities, without accounting for the emissions throughout the value chain, namely Scope 3 emissions.

CDP¹⁰² has identified four ways companies can mitigate their Scope 3 emissions and engage their supply chains.

1. Leveraging buying power to drive transparency

- Companies can engage suppliers on sharing impacts and collecting GHG emission data to drive transparency and better management of Scope 3 emissions.

2. Set clear expectations and strategically engage with your vendors to drive action

- Companies should go beyond data collection and set clear expectations for suppliers on emissions reduction (e.g. embedding GHG reduction KPIs into the supplier management process).

3. Cascade science-based targets (SBTs) through your supply chain

- Science-based carbon emissions reduction targets are one of the best ways to keep global warming below 1.5 degrees Celsius. Through webinars and other activities, supports suppliers to set SBTs and participate in climate change disclosure.
- In addition, companies that have adopted SBTs have typically reduced their emissions by 6.4% per year, well above the average rate needed for 1.5°C alignment.

4. Join forces to accelerate action and build momentum

- Companies can come together to push suppliers to set their own reduction targets.
- In 2021, 26 CDP Supply Chain members with a total of US\$500 billion in annual procurement joined CDP's Science Based Targets Campaign¹⁰³ to encourage their suppliers to set 1.5 °C aligned SBTs.

Element 5: Monitor Emerging Issues and Responses

Companies can use the Corporate Value Chain (Scope 3) Accounting and Reporting Standard¹⁰⁴ to help calculate and assess opportunities for reduction actions. The Scope 3 framework also provides strategies to partner with customers and suppliers to address and mitigate climate impacts throughout the value chain. Moreover, measuring Scope 3 emissions allows the identification of suppliers that excel in sustainability and those who fall short. Companies can therefore enhance efficiency and save costs within their supply chain by engaging with their suppliers and support their progress on implementing sustainability initiatives. As a result, improving their competitive advantage and ultimately generate higher margins.

2.4 Regenerative agriculture

Regenerative Agriculture is a transformational approach that focuses on restoring and rebuilding soil fertility, increasing biodiversity, enhancing water quality, supporting greater carbon capture and has the potential to uplift the livelihoods of producers. Regenerative Agriculture also provides a range of benefits and impacts for the climate, biodiversity, water, soil, and livelihoods and health (see Figure 5). In most oil palm plantations industrial practices such as compaction, erosion and chemical pollution have meant that soils have lost most of their original biodiversity and suffer from diminished nutrients.

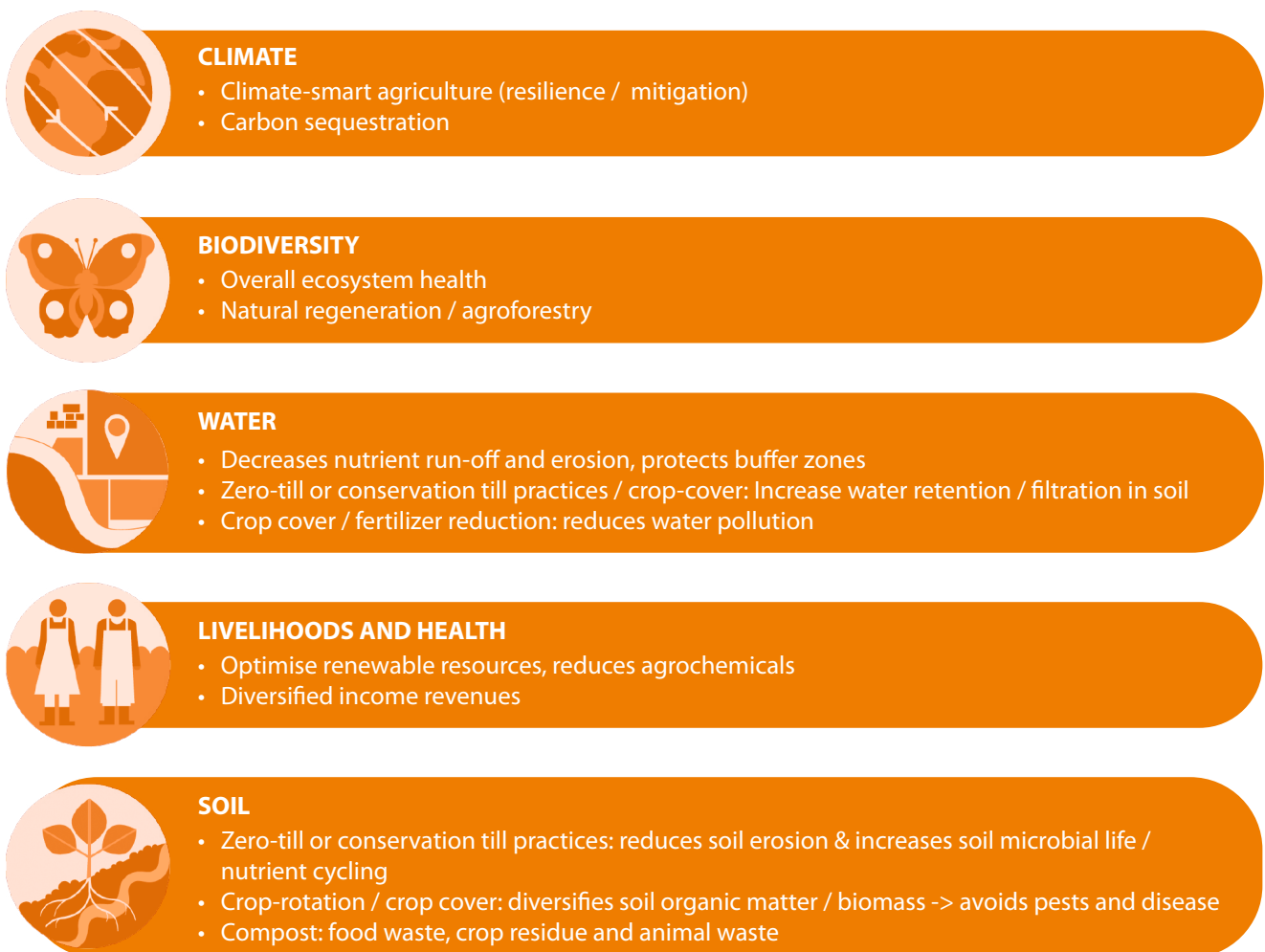


Figure 5: The positive benefits and impacts of Regenerative Agriculture. (Image Source: Proforest).

Table 2 Main practices in Regenerative Agriculture and their examples that are applicable in oil palm production.

Regenerative Agriculture practices	Related activities
Composting	<ul style="list-style-type: none"> • Frond stacking • Empty Fruit Bunch (EFB) mulching • Bio-organic fertilizer from mill waste (e.g. decanter cake)
Cover cropping	<ul style="list-style-type: none"> • Reduce/prevent usage of herbicide and weeding to allow the surrounding vegetation to grow naturally
Agroforestry	<ul style="list-style-type: none"> • Implementing polyculture and intercropping (e.g. mixing fruit trees or timber trees)
Holistically managed grazing / Silvopasture	<ul style="list-style-type: none"> • Integrating livestock (e.g. cattle, goats, buffalos) as natural biocontrol agents to substitute chemical herbicide and weeding activities

As Regenerative Agriculture can be uniquely adapted, companies can generate catered solutions with producers who struggle with sustainability challenges regardless of the regions they're located in. A number of companies have already realised its potential and have made pledges to implement Regenerative Agriculture with their producers globally.

Table 3 List of companies that have made pledges to implement Regenerative Agriculture.

Note: While the scope may cover other commodities and are not specific to palm oil, it is however expected to expand into palm oil in the coming future.

Company	Pledges
Nestle ¹⁰⁵	"Nearly two-thirds of our emissions come from agriculture. That is why we are investing CHF 1.2 billion by 2025 to contribute to building regenerative agriculture practices."
Unilever ¹⁰⁶	"Unilever is also introducing a pioneering Regenerative Agriculture Code for all our suppliers"
Cargill ¹⁰⁷	"Cargill to advance regenerative agriculture practices across 10 million acres of North American farmland by 2030"
PepsiCo ¹⁰⁸	"PepsiCo's Positive Agriculture agenda aims to source crops and ingredients in a way that accelerates regenerative agriculture and strengthens farming communities, with a focus on spreading the adoption of regenerative farming practices across 7 million acres"
General Mills ¹⁰⁹	"We will advance regenerative agriculture on 1 million acres of farmland by 2030"

2.5 Use of technology and digital services – worker voice technologies

'Worker voice technologies' encompass communication channels that are designed to give workers a direct channel to provide information about their working conditions. These tools are increasingly being used by companies as a part of responsible supply chain management.

Worker voice technologies use mobile phone technology to ask workers about their experience on topics such as wages, health and safety, discrimination, freedom of association, working hours, and wages. Depending on the tool, these surveys are conducted in person, by phone, SMS, Interactive Voice Response (through pre-recorded messages) or smart phone applications.

Element 5: Monitor Emerging Issues and Responses

As such, in order to use these tools, workers do need to possess a mobile phone, but it does not need to be a smart phone. Companies will generally conduct awareness raising sessions for the usage of these tools and workers' participation is usually incentivized with the provision of phone credit.¹¹⁰

On one hand, benefits of using worker voice technologies include increased potential to reach a large number of workers in short periods of time, greater inclusivity of workers in terms of language, discreet worker responses, higher frequency survey conducts and the possibility of conducting them in different locations in parallel. On the other hand, potential risks include data privacy risks and the displacing of traditional means of engaging workers such as via trade unions.¹¹¹

See the boxes below for three examples of worker voice technologies: MY Voice¹¹², Ulula¹¹³ and Suara Kami (Our voice)^{114,115}:

MY Voice

MY Voice seeks to support and further efforts to reduce forced and child labour by strengthening local systems that can help workers and business thrive together in the garment and palm oil industries. This includes government and civil society initiatives, private sector social compliance systems, independent forced labour and child labour and child labour remediation systems, and multi-stakeholder platforms that help ensure broad alignment on core principles and practices.

Central to this, MY Voice seeks to elevate and amplify the voices of workers and civil society in the systems that protect them and to strengthen those systems, so they can effectively remediate complaints and address root causes for both domestic and foreign workers.

For more information on MY Voice, please refer to the [MY Voice Program Brief](#).

Ulula

Ulula is a tool that allows anonymous real-time communications with workers and communities within supply chains to reduce risk, respond to challenges, exceed compliance requirements, improve productivity and help advance working conditions. This tool uses survey questionnaires to collect data and also acts as a grievance reporting tool to facilitate remediation with workers. The collected information and data is then displayed via a dashboard with data analytics. The tool also provides alerts and info to workers, communities and other stakeholders; and enables interactive training and capacity development for workers. Ulula clients include Mars, Wilmar, Pepsico, Cargill, RSPO, and Fair Labour Association.

Suara Kami (Our Voice)

Suara Kami was established by ELEVATE in partnership with the Responsible Business Alliance (RBA). It is a multi-lingual external grievance channel available in Malaysia that allows companies to gain visibility into their workplace conditions and identify new, emerging issues. Companies sourcing from Malaysia can open a helpline as a service to suppliers in support of the shared goal of protecting labour rights. The Suara Kami helpline receives calls relating to social compliance violations, working conditions, health and safety including COVID-related inquiries, and other general employment concerns including overtime payment and compensation. The helpline's toll-free number is used as a trusted channel to communicate with workers who are eligible for receiving reimbursement for recruitment fees paid.

In order to protect migrant workers in their countries of origin (i.e. Indonesia and Nepal), Suara Kami Helpline services also provide support, information and education in the pre-decision and pre-departure stages for foreign migrant workers.

To learn more about worker voice technologies, please refer to Proforest's [InfoNote](#).

2.6 Sustainability due diligence

Over the past decade, companies, investors and business initiatives have recognised the effectiveness of environmental and human rights due diligence as a means for companies to ensure long-term stability and a sustainable business performance.¹¹⁶ 'Sustainability due diligence' is an overarching framework that converges environmental and human rights due diligence and allows companies to more clearly understand the linkages and synergies between these two areas.¹¹⁷ It is hoped that this synergistic approach will allow companies to identify the interlinkages between environmental and human rights risks, develop more refined prioritization criteria and methodologies, and inform and explain their prioritization decisions.¹¹⁷

As described in **Briefing Note 02B: Understand the supply chain: traceability and risk analysis**, the UN Guiding Principles on Business and Human Rights ('UNGPs') provide guidance¹¹⁸ to companies on how they can demonstrate their respect of human rights in their operations and supply chains by undertaking human rights due diligence (HRDD) as part of a Responsible Business Conduct approach. In recognition that companies should also consider the environmental risks alongside human rights risks, as these risks are oftentimes intrinsically linked.¹¹⁷ OECD's Guidelines for Multinational Enterprises¹¹⁹ provides support to companies in assessing both direct and indirect environmental impacts.

03 Conclusion / Summary

In summary, this briefing note provides companies some insight into the potential emerging environmental and social issues and mitigative responses in the palm oil sector based on current knowledge and trends. It is by no means exhaustive. Through reading this briefing note, we hope that companies will be more aware about potential emerging environmental and social risks and the ways of addressing them through proactive actions (e.g. public sector initiatives, regenerative agriculture and worker voice tools etc.).

This briefing note marks the end of the 5 elements covered in the Palm Oil Toolkit, where the previous briefing notes focused on the development of systems and procedures to implement responsible sourcing commitments (**Briefing Note 01**), understand risks (**Briefing Note 02A** and **Briefing Note 02B**), engage both within and beyond supply chains (**Briefing Note 03**) and to monitor progress and performance (**Briefing Note 04**).

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More information is provided in the references below and at www.palmoiltoolkit.net

Please also share with us information that will improve this Briefing Note (via palmoiltoolkit@proforest.net).

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