

# **ACTION AGENDA FOR A NEW FOOD AND LAND USE ECONOMY IN INDONESIA**

**FOOD AND LAND USE COALITION INDONESIA**

***DRAFT FOR CONSULTATION***

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## EXECUTIVE SUMMARY

Indonesia is at an important moment in its history. President Jokowi has set out his priorities for his second term in office, including economic growth, deregulation, infrastructure development, innovation and technology (Widodo, 2019). He has placed a strong focus on human resources development and on improving the lives and prospects of young Indonesians in particular. He has spoken of the need for Indonesians to eat healthier food and of his deep desire to put an end to the stunting and malnutrition which continue to affect many millions of Indonesian citizens. Finally, the President has also articulated his desire to protect Indonesia's unique environment, including by preventing further deforestation and loss of peatland, devolving land and power to Indonesia's rural and indigenous communities, and reversing the deterioration of Indonesia's air quality due to haze, fires and air pollution.

The Government of Indonesia has set out an ambitious vision on climate and sustainable development, articulated in Indonesia's 'Vision 2045' and in the National Planning Department BAPPENAS' signature 'Low Carbon Development Initiative' (or 'LCDI'; BAPPENAS, 2019). The LCDI demonstrates how robust climate action would generate strong and sustained economic growth, more and better jobs for the Indonesian people, and enable Indonesia to meet the UN Sustainable Development Goals and Paris Agreement.

In particular, the LCDI describes how concerted action on food and land use will be critical to meeting Indonesia's low carbon goals, given that at least 52 percent of the country's greenhouse gas emissions (GHGs) are attributable to the food and land use sector. The LCDI sets out five priority actions which will be central to achieving these reductions:

1. Permanent extension of the forest and peatland moratoriums currently in place in Indonesia;
2. Integrated, comprehensive, spatially explicit land use planning at national and sub-national levels;
3. The establishment of new financial models for conservation and restoration in sustainable jurisdictions;
4. The creation of better, more productive agricultural value chains and reduced food loss and waste;
5. Policy reform and constructive action to achieve Indonesia's nutrition and food security goals.

This Action Agenda for a New Food and Land Use Economy, prepared by the Indonesia platform of the Food and Land Use Coalition (FOLU), is intended to provide analysis and recommendations to support the Government of Indonesia – and the whole of Indonesian society – to achieve the goals and targets set out in the LCDI (as well as in President Jokowi's vision for his second term).

For each of the five priority sets of actions, the Action Agenda sets out the context, why the issue is so important, what needs to be done, and which sets of actors would need to act to deliver on the LCDI's recommendations. The Action Agenda also draws on insights and analysis from the Food and Land Use Coalition's Global Report, 'Growing Better: Ten Critical Transitions to Transform Food and Land Use', published in September 2019 (FOLU, 2019).

## 5 critical recommendations to meet the goals of the LCDI

On LCDI Priority 1, the FOLU Action Agenda reaffirms **the vital importance of the primary forest and peatland moratoriums** that have been put in place in Indonesia and supports the Government of Indonesia's recent decision to make these permanent and to enforce them more rigorously. It also makes the case for the moratoriums to be extended to cover significant areas of secondary forest, which are also important for meeting Indonesia's climate and biodiversity goals. If these moratoriums are not made permanent, enlarged in scope, and properly enforced, the evidence suggests that it will be impossible for Indonesia to achieve its LCDI goals. The Action Agenda therefore sets out the strong economic and business case to enact and then abide by these moratoriums.

On LCDI Priority 2, the FOLU Action Agenda makes the case for Indonesia to agree and then implement an **integrated, comprehensive, long-term national spatial plan** which reconciles the competing demands on its land and marine environment, including urbanization, energy, infrastructure, agriculture, fishing and conservation. Indonesia's 'One Map' policy (Government of Indonesia, 2019) forms the basis for this effort and requires ongoing political support for its implementation. The political, business and economic case for implementing the One Map policy is strong – to do so would be to establish a level playing field in which Indonesian companies can thrive by operating in the 'right' areas, while safeguarding local communities and the critical ecosystems on which Indonesia's long-term resilience and economic growth depends. The implementation of the 'One Map' would also enable Indonesia to overcome the political, transaction, reputation and economic costs associated with unresolved conflicts over its land (as well as marine waters). Concerted action on the One Map is also consistent with Indonesia's status (and stature) as a G20 country.

Third, the FOLU Action Agenda supports the LCDI's call for Indonesia to undertake further urgent efforts to protect and restore the country's vital natural ecosystems – including its rainforests, peatlands, rivers, mangroves, marine waters, and grasslands – by stepping up its efforts to foster **sustainable jurisdictions** and **nutritionally sensitive landscapes** (landscapes which deliver positive nutrition outcomes within those jurisdictions) across the archipelago. Millions of Indonesians living in urban areas depend on the water that flows from forested landscapes and on the protective effects of peat swamp forests and mangroves, which mitigate flooding (Global Commission on Adaptation, 2019). The Action Agenda argues that Indonesia needs to protect this unique natural capital and restore what has been damaged, and that regional authorities have a critical leadership role to play in this regard. There is also a pressing need for better **financial models to support conservation and restoration** in these landscapes, and for greater flows of public and private finance to local communities to support these efforts.

The fourth priority of the LCDI is for Indonesia to undertake significant further steps to improve its **agricultural supply chains** by achieving **greater productivity**, ensuring **better access to markets and improved incomes for smallholders**, and embarking on a national effort to **reduce food loss and waste**. Better agricultural production and value chains would render Indonesian agriculture more profitable and resilient, reduce the country's dependence on imports, grant Indonesian commodities greater access to global markets with an increasing commitment to sustainability criteria, and enable the country to better compete with its peers. It would also significantly reduce the GHG emissions attributable to Indonesia's agriculture, including those caused by deforestation, peatland loss, and fire. Fortunately, the evidence suggests that Indonesia can meet its agricultural development and export goals on its existing farm land, without agriculture leading to further forest and ecosystem loss. To achieve this goal requires a combination of incentives and enforcement, explicitly linking increased agricultural productivity to the protection and restoration of critical ecosystems.

Fifth, the FOLU Action Agenda supports the Government of Indonesia's efforts to deliver on its ambitious **national nutrition and food security** plans, to ensure an end to malnourishment and obesity by (at the latest) 2030. This will require a combination of investment, regulation, public-private sector collaboration and leadership at the national and local level. In 2016-2018, about 22 million people in Indonesia still endured hunger (ADB, IFPRI, 2019). Here, the moral and economic challenge is to ensure that every Indonesian has access to a nutritious, healthy and sustainable diet; that no Indonesian should go to bed hungry every night; and that Indonesia can address the huge economic and societal impact caused by growing rates of obesity and diabetes.

In summary, the FOLU Action Agenda seeks to highlight some of the most promising avenues by which to implement the LCDI's five priority action areas on food and land use. It also shows how action in these areas would deliver broader benefits in terms of boosting economic growth, securing food supplies, improving health and nutrition and generating lasting prosperity for Indonesia's people. In other words, the LCDI's five priorities on food and land use form the indispensable underlying bedrock of the country's efforts to build a fairer, more prosperous and more inclusive economy and society, consistent with the vision articulated by President Jokowi since his re-inauguration.

### 3 cross-cutting recommendations

In addition to these five core priorities, the FOLU Action Agenda sets out three additional cross-cutting recommendations which the Coalition believes will be critical to achieving the LCDI and the Government of Indonesia's broader goals.

First, the FOLU Action Agenda makes the case that Indonesia (like every country) would benefit from setting out a **long-term vision** of how the Sustainable Development Goals (SDGs) might be achieved, bringing together all the relevant strands of the national and local government, as well as key actors from the private sector, civil society, academia and the financial community. To a significant degree, this is already being done in the Indonesia Vision 2045 and National SDG Policy exercises that BAPPENAS is leading. It is clear that for Indonesia to achieve the SDGs, in particular those related to food and land use, it will be necessary to set out ambitious, science-based, long-term targets and pathways behind which the whole of Indonesian society can mobilize. If Indonesia Vision 2045 can adopt a more specific focus and set of goals on food and land use in the next iteration of this work, this will also help to chart a long-term pathway by which Indonesia could meet the goals set out in this Action Agenda.

Second, the FOLU Action Agenda makes a strong case for the **reform of existing public support and fiscal incentives** to the food and land use system in the country. Just as Indonesia reformed its gasoline subsidies to powerful effect a few years ago, in a way which was beneficial to the national finances as well as to low-income households, now it is arguable that reforms of an equivalent magnitude need to be undertaken in the sphere of agriculture, nutrition, and food. Reforms to the public support system for agriculture and fertilizers, coupled with revised fiscal incentives to promote healthier diets, would deliver major economic, social and environmental benefits to food producers and consumers alike. There is a strong economic (as well as political economy and equity) case for undertaking such reforms.

Finally, the FOLU Action Agenda sets out a few considerations on how the **political economy** and **governance** challenges associated with a 'just rural transition' to a new food and land use economy might best be addressed. In every country, there are challenges facing the transition to a new food and land use economy along the lines described in the Action Agenda – Indonesia is no exception. The vested interests

behind the status quo are in some instances powerful and entrenched. There is, however, a strong body of evidence to suggest that better food and land use governance is in the interests of the majority, and that those who stand to lose out in the short term from such a transition would ultimately benefit from its realization, and can be supported along the way with appropriate investment, safety nets and compensatory measures. The challenge is to ensure a robust ‘political economy’ strategy, to act with bravery and courage, and to keep focused on ‘the size of the prize’.

### **Box 1. The Size of the Prize**

If Indonesia followed the path set out in this Action Agenda, what would the economic benefit be?

Initial findings from the Food and Land Use Coalition’s economic analysis in Indonesia – building on the macro-economic and systems dynamic models used in the Low Carbon Development Initiative, and including further ‘hidden costs’ methodology and analysis adapted from FOLU’s global report, ‘Growing Better’ – suggest major gains to the economy over the short-, medium- and long-term, of in the order **of at least US\$120 billion per year, with the true cost of these gains likely to be much higher.**

A few figures illustrate the potential ‘size of the prize’. In the short-term, putting an immediate end to the forest and peatland fires which beset Indonesia year on year, would prevent health impacts and economic losses to the nation calculated to be in the order of US\$16 billion per year (World Bank, 2017). Addressing illegal forest clearing and trade would generate additional income to the Indonesian Ministry of Finance of in the order of US\$7 billion per year (Wright, 2016). Reforming inefficient and wasteful agriculture, food and fertilizer subsidies, worth at least US\$2.7 billion per year, would generate significant public dividends. Reforms to the biofuels incentive would deliver further benefits.

In the medium- to long-term, taking decisive steps to overcome malnutrition and obesity in Indonesia would lead to significant GDP growth. The incidence of diabetes in Indonesia, left unchecked, is projected to lead to cumulative reduced GDP growth of as much as 4.5% by 2030. The true, burgeoning cost of the full range of non-communicable diseases, including maladies connected with unhealthy diets, is projected to be US\$4.5 trillion by 2030, or more than four times current annual GDP.

The LCDI ‘High Scenario’ – which assumes ambitious action on the five priorities of this Action Agenda – leads to a reduction in GHG emissions by 43 percent by 2030; GDP growth of 6 percent per year; over US\$5.4 trillion added to GDP in 2045; 40,000 deaths avoided each year by 2045; extreme poverty reduced to 4.2 percent of the population by 2045; 15.3 million extra, greener and better paid jobs by 2045; the prevention of the loss of nearly 16 million hectares of forest and peatland by 2045; improved air quality; improved living conditions; closing of gender/regional opportunity gaps; and lower investment-to-GDP ratios (LCDI, BAPPENAS, 2019).

## AN INDONESIAN VISION FOR A NEW FOOD AND LAND USE ECONOMY FOR INDONESIA

FOLU Indonesia's vision is of a 'new food and land use economy' that is more efficient, productive, sustainable, healthy and resilient. Such an economy would deliver:

- **A better environment.** A 'new food and land use economy' in Indonesia would prevent further depletion of the country's rainforests and critical ecosystems. Instead, it would generate new prosperity from conservation and restoration, as well as increased ecosystem health and resilience in the face of a changing climate and the growing frequency and severity of natural disasters.
- **Better health.** A 'new food and land use economy' would provide greater economic and health benefits to the Indonesian people, by tackling the so-called 'double burden' of high rates of malnutrition and obesity which currently affects millions of Indonesians. It would also avoid the high health and economic costs currently associated with environmental degradation, forest fires, and haze (World Bank, 2017).
- **Inclusive development.** A 'new food and land use economy' would deliver better and more inclusive economic growth for Indonesia's smallholder farmers, more well-paid and skilled jobs for those involved in agriculture and the food system, and greater prosperity and well-being in rural communities.
- **Food security.** A 'new food and land use economy' could increase food security significantly by helping to stabilise or even lower real food prices, supplying enough food of the right quality and quantity and improving access for the poorest and most vulnerable. It would also generate greater economic prosperity by wasting less food and fewer natural resources.

FOLU seeks to demonstrate that the positive economic impacts of such improvements would be highly significant, both in Indonesia and the world at large (the Coalition's Global Consultation report, [Growing Better](#), sets out some of the key economic analysis and assumptions underpinning this argument). The Coalition also demonstrates that a new food and land use economy would better enable Indonesia to meet the UN Sustainable Development Goals (SDGs), as well as Indonesia's Nationally Determined Contribution (NDC) to the UN Paris Agreement.<sup>i</sup> As the world's 11<sup>th</sup> largest emitter of GHGs, and 19<sup>th</sup> largest emitter on a per capita basis (UCS, 2019), as well as home to 264 million people, what happens in Indonesia on these issues is of global importance.

The proposed economic and policy reforms set out in this Action Agenda could also boost Indonesia's access to global markets and finance for the commodities it produces, in a globalized world increasingly seeking deforestation-free and sustainable supply chains. A critical part of the vision here is that Indonesia can improve its palm oil production on existing land, reform its palm oil and biofuels policy, and ensure no further deforestation occurs as a result of palm oil development – in return for greater market acceptance and an end to trade barriers for sustainably produced Indonesian palm oil in international markets.

## STRUCTURE OF THE ACTION AGENDA

The Action Agenda begins with a few key illustrative facts and figures on Indonesia's food and land use system (Box 1). It then sets out the five priority areas of the Action Agenda. Each area begins with a context section, before then setting out the cost of inaction and the benefits of action to address this priority.

Finally, the Action Agenda sets out some suggested policy responses and ways forward, as well as an indication as to which entities would need to be involved in bringing these to bear. After these five core priorities have been addressed, the Action Agenda sets out the three cross-cutting themes of long-term SDG planning, fiscal incentive and subsidy reform, and improved governance. It then ends with some brief conclusions as well as a list of references.

#### **Box 2. The Low Carbon Development Initiative and FOLU**

The Government of Indonesia, led by the National Planning Ministry BAPPENAS, has set out an ambitious vision of a low-carbon economy, articulated in the *Low Carbon Development Initiative*, published in March 2019. The LCDI sets out that 52% of Indonesia's GHG emissions are attributable to its food and land use system, in particular forest and peatland loss.

The LCDI received technical support from a number of partners, including the World Resources Institute (WRI). WRI, as one of the co-leads of the FOLU Indonesia platform (as well as the global Food and Land Use Coalition), contributed some of the emerging findings from the FOLU work to the LCDI in the process of its formulation. Members of the FOLU Indonesia platform were also engaged in the modeling teams that led to the LCDI scenarios. The structure of the FOLU Action Agenda follows the same five priorities areas for food and land use set out in the *Low Carbon Development Initiative*. The FOLU Indonesia platform aspires to support the next phase of LCDI implementation, including in a number of LCDI's pilot provinces.

## PRIORITY 1. Permanent extension of forest and peatland moratoriums

### Context

Indonesia has made significant strides in reducing deforestation in recent years, although in absolute terms the numbers remain high: Indonesia lost 339,900 hectares of rainforest in the past year, the third highest amount in the world after Brazil (1.3 million hectares) and the Democratic Republic of Congo (481,200 hectares), according to Global Forest Watch.<sup>ii</sup>

Globally, agriculture, forestry, and other forms of land use (AFOLU) are an important source of emissions of greenhouse gases. AFOLU accounted for about 13 percent of carbon dioxide (CO<sub>2</sub>), 44 percent of methane, and 82 percent of global nitrous oxide (N<sub>2</sub>O) anthropogenic emissions, during the period 2007-2016 (IPCC, 2019). At 12 gigatonnes (Gt) (of CO<sub>2</sub> equivalent, Gt-CO<sub>2</sub>e), AFOLU represented about 23 percent of the 52 Gt of total global emissions during this period. As land also absorbs carbon dioxide, it contributed net emissions of about 5.2 Gt-CO<sub>2</sub>e in that period.

In Indonesia, AFOLU contributes significantly to national GHG emissions. At 0.8 Gt-CO<sub>2</sub>e, AFOLU (including forest and peat fires) contributed more than half (52 percent) to the 1.458 Gt-CO<sub>2</sub>e total emissions in the country in 2016 (MOEF, 2018). This was already less than the ~60 percent (0.6 Gt-CO<sub>2</sub>e) of the 1 Gt-CO<sub>2</sub>e total emissions in 2000. In 2015, total emissions in Indonesia were almost 2.4 Gt-CO<sub>2</sub>e – the highest in the country's history – due to a wildfire 'crisis'. Peat fires were responsible for about a half of the AFOLU contribution in 2015, about 0.8 GT-CO<sub>2</sub>e. The LCDI attributes 52.3 percent of Indonesia's national GHG emissions to the AFOLU sector (BAPPENAS, 2019).

In the order of 120.6 million hectares (mha), approximately two-thirds of Indonesia's land mass, are designated as forest areas (MOEF, 2018). About 68.0 mha (57 percent) of these are production forests, 29.7 mha (25 percent) protection forests, and the remaining 22.1 million hectares (18 percent) classified as conservation forests. In total, 51.8 million hectares (43 percent) of Indonesia's forests are meant to be conserved in perpetuity.

In 2014 and 2015, Indonesia recorded the biggest forest and peat land fires in its history. Burning remains a common method to clear land for agricultural purposes, despite its being banned. More than half of the 2015 fires occurred in peatlands, the carbon content of which is higher even than forests (Harris, Minnemeyer, Stolle, & Payne, 2015). Expansion of agricultural areas, notably for oil palm, was believed to have been a significant force behind the fires.

In 2011, to improve the governance of the forest sector, a two-year moratorium on the issuance of new permits in primary forest areas was passed by Presidential Regulation No. 10/2011. This Regulation was extended three times, in 2013, 2015 and 2017, with further Presidential Regulations No. 6/2013, No. 8/2015, and No. 6/2017. It was then made permanent by President Jokowi in 2019. While there is some discussion in the academic literature concerning the extent to which these moratoriums have contributed to the reversal of deforestation trends in Indonesia, a reduction in deforestation in many of the areas covered by the moratoriums has been observed (Austin, et al., 2014).

The Peatland Restoration Agency (Badan Restorasi Gambut, BRG) was established by Presidential Regulation No. 1/2016, in response to the 2015 fires (BRG, 2018). The agency was mandated to restore 2.5 mha of peatlands in seven provinces. Soon after its inception, as part of a drive for better peat land

management, a second moratorium on further peat land clearing was enforced through Government Regulation No. 57/2016, replacing Government Regulation No. 71/2014 on the Protection and Management of the Peat Ecosystem.

Peatlands are a vitally important global ecosystem. They are the largest storage of land-based carbon (Smith, 2018). When degraded, they release a significant amount of carbon to the atmosphere. Global peatlands contain approximately one-third of the world's 550 Gt of land-based carbon stocks (Murdiyarso, K. Hergoualch, & Hanggara, 2017; Parish, et al., 2007). Indonesia's peatlands may contain between 28.1 Gt and 33.6 Gt.<sup>iii</sup> For each hectare of peat land drained for oil palm production, an estimated 3,750–5,400 tonnes of carbon dioxide are released into the atmosphere over 25 years, compared with 500–900 tonnes in non-peat tropical forests (Pearce, 2007).

The fulfilment of Government Regulation No. 57/2016 would lead to total avoided GHG emissions in the order of 5.5–7.8 Gt-CO<sub>2e</sub> over a 15-year period (2016-2030) (Norway Government, 2016). These estimates include avoided emissions resulting from stopping business-as-usual expansion of plantations on peatlands; CO<sub>2</sub> removals (sequestration) resulting from the conservation of these areas (versus conversion under business as usual); and avoided emissions that could result from restoring the hydrology of peat within existing plantation areas.

A third moratorium was then established on the further expansion of oil palm plantations, enforced in 2018 by Presidential Instruction No. 8/2018. This moratorium effectively means that no new oil palm plantations can be approved in the country.

These three moratoriums are at the heart of the government of Indonesia's efforts to reduce deforestation in Indonesia, and they have contributed to tangible results. In 2017, the incidence of forest fires was reduced by about 89 percent, while deforestation decreased by about 60 percent,<sup>iv</sup> and by as much as 90 percent in peat forests (Seymour, 2019). In the approximately 65 million hectares covered by the primary forest moratorium, deforestation has been reduced by 38 percent.<sup>v</sup>

On 5 August 2019, shortly before his re-inauguration, President Joko Widodo signed Presidential Instruction No. 5/2019 on the Termination of the Issuance of New Permits and the Improvements of the Management of Primary Natural Forests and Peatlands, otherwise known as the 'permanent moratorium', which came as a result of the positive outcomes achieved in reducing deforestation in areas covered by the moratorium. These areas (as well as others covered by Indonesia's national REDD+ policy) are now expected to receive results-based REDD+ payments as stipulated by Government Regulation No. 46/2017.<sup>vi</sup>

### **Economic cost of inaction and benefits of action**

Deforestation costs the country dearly. The 2015 mega-fires burned 2.6 mha of Indonesia's forests and peatlands, affecting some 60 million people and causing more than 100,000 premature deaths in Indonesia, Malaysia, and Singapore.<sup>vii</sup> (It is too early to quantify the losses attributable to the fires in 2019). Economic losses from the crisis were estimated at \$16 billion (Rp. 221 trillion), which very likely was an underestimate.<sup>viii</sup> Meanwhile, the cost of restoring about 2.5 mha of burned peatlands within the BRG's mandate areas in seven provinces ranges in the order of at least \$1.3 billion for initial *capital* costs and about \$400 million for recurring *operational* costs.)<sup>ix</sup> This is far higher than non-tax state revenues from the forestry sector that amounted to only about \$1.8 billion in the period of 2011-2017 (MOEF, 2018).

The palm oil industry has been rapidly growing in Indonesia, such that the country is now the largest producer in the world. Today, oil palm plantations occupy about 12.3 mha of land, of which 4.8 mha, about 39 percent, are managed by smallholders. Large- and mid-size plantations occupy the largest portion of plantation areas – about 6.8 mha (55 percent). A small portion, about 0.75 ha, are classified as state-owned plantations (Van Gelder, Sari, & Pacheco, 2017). From 4.2 mha in 2000 (BPS, 2017), oil palm plantation areas have expanded to 12 mha in 2017. In 2017, palm oil production reached 34.5 million tonnes (2.8 tonnes per ha), almost double from 17.8 million tonnes (1.7 tonnes per ha) in 2013. Its export value increased to \$20.7 billion from \$17.1 billion (BPS, 2017). At Rp471 trillion (\$33.6 billion), estate crops and plantations contributed about 3.5 percent to the country's Rp13,6 trillion (almost \$1 trillion) gross domestic product (GDP), or 26.4 percent of the Rp1,8 trillion (\$127.6 billion) contribution to the GDP from the agriculture sector.

The rapid growth of the sector leads to growing pressure for forested and peatland areas to be converted for agricultural purposes. As such, tenurial and agrarian conflicts are also on the rise. In 2016 alone, at least 450 conflicts occurred on 2.8 mha of land. A large portion of these – 162 conflicts (36 percent) – were recorded on 1 mha of oil palm plantation areas. The costs of social conflicts for palm oil companies are substantial, estimated to range between \$77,000 and \$2.5 million per plantation in tangible costs, equivalent to about 51-88 percent of a plantation's typical operational costs. The intangible costs of these tensions may be even higher, estimated at \$600,000-\$9 million per plantation due to a company's tarnished reputation and the ongoing risk of violence (Barreiro, et al., 2016; Arumingtyas & Zamzami, 2017).

For palm oil companies, operational costs may increase when they disregard sustainability. One plantation company, for example, had to pay almost \$3 million in a case brought by a smallholder in 2010, for not respecting their ancestral rights to the land. In 2016, the same company faced a similar case in which it may have to pay 600 million Indonesian rupiah in damages (Levicharova, Paul, & Wakker, 2016). A plantation company in Riau was fined \$81 million for forest fires that occurred in 2014 on 3,000 ha of its concessions, an amount only slightly less than its revenue in the first six months of 2016. Another company risks having to pay \$5.2-\$6.1 million in restitution for clearing 260 ha of high conservation value forests, as well as 1,800 ha of peatland areas. (The company has been given an option to avoid the fine by showing that it is committed to conserving an equivalent amount of forested land elsewhere (The Chain, 2016). Through RSPO's Remediation and Compensation Procedures, companies that caused deforestation in high conservation areas after November 2005 must restore them or pay \$2,500 per ha for conservation efforts (RSPO, 2015).

Sustainable palm oil practices have been shown to provide financial benefits, including higher revenues and greater stock values and returns (Levicharova, et al., 2017; Deutsche Asset & Wealth Management (UK) Limited, 2015). A price premium for sustainable palm oil of between 2 and 7 percent is increasingly being worked into the core economics of a number of the world's major palm oil markets (citation). In addition, sustainable agricultural practices in palm oil plantations can lead to efficiency gains of as much as 35 percent in the net production of crude palm oil (CPA) per ha, leading to a 45 percent increase in revenue per ha (Levin, 2012; Preusser, 2015). Increasing the productivity of smallholder oil palm growers and their access to markets, tenure security and capital through better supply chain management are key to ensuring the future sustainability of the palm oil sector in Indonesia (see also Priority 4 below).

### **Box 3. Biofuels policy in Indonesia**

The issue of biofuels in Indonesia is critically important to the broader agenda on the food and land use economy. Indonesia's domestic biofuels market is poised to become one of the fastest growing in the world if its targets are met. In 2015, the Ministry of Energy and Mineral Resources (MEMR) increased the blend target for biofuels in diesel gasoline to 15 percent. The target increased again to 20 percent in 2016 and is set to rise to 30 percent by 2020, one of the most ambitious in the world (Malins, 2018). If achieved, Indonesia's annual biodiesel consumption would rise to nearly 19 billion liters (up from a production level of 3.7 billion liters in 2016) (Jong 2018; Kharina et al. 2016). Indonesia's biofuels industry is supported by a fee on crude palm oil (CPO) exports. Despite subsidies, Indonesia has so far not been able to meet its mandates due to low oil prices and vehicle infrastructure that is not compatible with such high levels of biodiesel (Kharina et al. 2016). Palm oil plantations in Indonesia are required to comply with the Indonesian Sustainable Palm Oil (ISPO) certification scheme, which covers GHG emissions, land use, biodiversity, and labor. However, plantations that supply palm oil for biodiesel are specifically exempt from ISPO compliance (Kharina et al. 2016). There is a real risk that this policy will lead to significant further deforestation in Indonesia, unless significantly revised.

Other forms of revenue also play an important role. The pact between the governments of Indonesia and Norway, set out in a Letter of Intent (LOI) governing 'results-based payments' in 2010 – through the REDD+ mechanism – stipulates that when Indonesia succeeds in reducing deforestation and degradation of forests which leads to the reduction of emissions, Norway will provide payments to the government of Indonesia of up to \$1 billion.

The LOI stipulates that Indonesia's performance needs to be validated and verified through scientifically sound and mutually agreed monitoring, reporting and verification methods, and that this is shown in terms of units of reduced deforestation (hectares, with appropriate weighting for carbon content) or the resulting reduced emissions of carbon (tonnes of carbon). The implicit value of the LOI is about \$5 for every ton of reduced emissions of carbon dioxide. Already, the Government of Norway has committed to pay \$24 million for the 4.8 million tonnes generated in the 2016-2017 period of the initial monitored, reported, and verified reduction of emissions from reduced deforestation in Indonesia (Seymour, 2019). If the positive trend continues, more disbursements would be expected to follow shortly, pending further progress on key deliverables of the LOI.

### **Political economy and governance challenges**

Historically high levels of deforestation and the continuing frequency of Indonesia's forest fires are a demonstration of ongoing governance failures in Indonesia's forests, peatlands and agricultural lands (to which we return in the 'Governance and Political Economy' section below). These governance challenges are not new: they are addressed in Forestry Law No. 5/1967, which was then superseded by Forestry Law No. 41/1999. These laws define about 140 mha of forest lands as forest areas owned and managed by the government, disregarding past ownership by local and indigenous communities. As a result, land tenure conflicts have intensified. The ambiguous definition of forests and forest area, high levels of corruption, and ongoing tenurial conflicts have been deemed among the most important underlying causes of deforestation in Indonesia (Sunderlin & Resosudarmo, 1996; Purba, et al., 2014; Toumbourou, 2007). A decision by the Constitutional Court No. 35/2012 adjusted the Forestry Law No. 41/1999 by redefining indigenous forests as those owned by indigenous communities. Implementation of this law is not yet

complete: in the order of 50 percent of indigenous forest areas are under some form of formalization process, while indigenous peoples' group AMAN and others have called for much more comprehensive and accelerated implementation of the MK 25/2012 decision.

Current reforms to land use policy are driven by the desire to increase legal certainty concerning land ownership, by redistributing land assets to rural and indigenous communities. These reforms have been seen as an attempt to revive Law No. 56/1960 on Land Reform. The purpose of this policy was to increase land ownership by smallholder farmers from 0.3 to 2 ha per farming family, while increasing farmlands by 1 mha outside Java. Ministerial Regulation No. 18/2016, established by the Minister for Agrarian and Land Administration, enacted on April 7, 2016, stipulates that individual ownership of land should be limited to 20 ha in sparse regions and only 12 ha for less sparse regions. Transfer of ownership can only be carried out between people in the same sub-districts and only for agricultural purposes (Tigris, 2016). The social forestry program initiated in 2016 also committed the government to increase community-managed forests from 1.7 mha to 12.7 mha in five years, although so far only in the order of 5,454 permits to manage 2.5 mha have been distributed to about 600,000 families (Evans, 2019). Recent cuts to the Government's budget for the social forestry programme suggest that it will be very difficult to deliver on the full goals of the programme by 2021.

As described above, a significant amount of deforestation in Indonesia has been attributed to the expansion of oil palm plantations. Because palm oil is alternately the largest or the second largest export earner in the country, the national government has tended to be protective towards the industry. Most recently, the European Union (EU) announced plans to ban the use of oil palm as a bioenergy feedstock by 2030, following the advice of its environmental stakeholders. More recently, the EU imposed import duties between 8 and 18 percent on Indonesian palm oil products (Chalmers & Munthe, 2019) due to widespread concern in the EU about deforestation associated with palm oil.

Although the Government of Indonesia has responded citing the livelihoods of the 18 million people who depend on the palm oil industry (Sindo, 2019), the Indonesian Palm Oil Association (Gabungan Pengusaha Kelapa Sawit Indonesia, GAPKI), a powerful industry lobby, understands that ongoing trade attrition with the EU would be detrimental to Indonesia (GAPKI, 2018)). In 2018, the value of exports from Indonesia to the EU reached \$17.1 billion, while Indonesian imports from the EU were only \$14.1 billion. Such a situation could mean that Indonesia would lose the \$3 billion trade surplus. Similarly, in 2017, the EU made about \$3.2 billion dollars' worth of investments in Indonesia, becoming the fourth largest investor, while European companies in Indonesia employ about 1.1 million people<sup>x</sup>.

### Policy/business responses and ways forward

A series of inter-locking policy responses could strengthen the so-called 'permanent moratorium' and consolidate the country's commitment to reducing deforestation and loss of peatland:

- Raise the status of the current 'permanent moratorium' – which is *de facto* an open-ended moratorium – covering primary forests and peatlands to the status of permanent protection, enshrined in law. **This means turning the current moratorium into a fully-fledged, permanent law.**
- Extend the **permanent moratorium to include secondary forest**. Secondary forests in Indonesia are in many cases (if only selectively logged) areas with high carbon stock and high biodiversity,

and protecting them would be an important contribution to meeting Indonesia's NDC and LCDI goals.

- Put in place a set of proactive and comprehensive strategies to meet emerging trade concerns on deforestation-related commodities, including a **traceability system** for key products, to produce premium quality sustainable commodities such as palm oil, demonstrating to the world that Indonesia is committed to sustainable agricultural production.
- Devise **innovative financial models** to support sustainable agriculture, by: (1) exploring alternative sources of income to support conservation within agricultural landscapes, including payment for ecosystem services models such as 'ecological fiscal transfers' (Melbourne, 2019), and (2) working with financial institutions and investors to encourage proactive investment in sustainable agriculture (and divestment from unsustainable practices). [See Priority 3 below for further detail on these models].

### Who needs to act

Ultimately, responsibility for decisive action to consolidate and render permanent these moratoriums rests with the President's office, as only the President has the authority to instruct all Ministries and sub-national entities to respect the moratoriums put in place. The Environment Minister and Ministry is then in the lead on delivery of the moratoriums, working closely with other relevant line ministries, including agriculture, land use planning, environment and foreign direct investment.

## **PRIORITY 2. Enhanced, integrated long-term national spatial planning**

### **Context**

Integrated, long-term, spatially explicit national land use planning – on land as well as in Indonesia’s marine areas – is of fundamental importance to ensuring the long-term sustainability of Indonesia’s food and land use system.

A more integrated, comprehensive approach to national planning and resource management is called for in Indonesia’s Nationally Determined Contribution (NDC), namely a ‘landscape approach’ that aims to secure food, water, and energy security based on sound ecosystem management. It is anticipated that this approach will be strengthened in the nation’s next medium-term development plan and reflected in subsequent spatial plans, with a particular policy focus from BAPPENAS on ‘nutritionally sensitive’ landscape planning that would help address the national priority to overcome malnutrition.

The Government of Indonesia’s ‘One Map’ Policy is a significant national effort to tackle the problem of overlapping concessions, inconsistencies and conflicts across jurisdictions and land-based resource sectors, caused by inconsistent sectoral maps and a lack of transparency and coordination that enables overlapping concessions to be issued without checks in the system.

Better spatial planning for land-based and maritime sectors to guide decisions covering multiple sectors – such as mining, infrastructure, fishing, agriculture and conservation – will be enabled by the One Map, both nationally and locally. This is especially the case in areas of vital primary forest, peatland and marine ecosystems in which concession licenses have already been given, but which can no longer be developed as a result of the moratoriums and other policy reforms enacted by the national government.

Here, it is vital to ensure high levels of information and transparency surrounding utilization rights and concession allocations. In the case of proposed land ‘swaps’ arising from adjudications from the One Map process, communities and other stakeholders need to have undergone a full ‘free prior and informed consent’ (FPIC) before taking decisions arising from these proposed resource re-allocations. To do otherwise would not only infringe on basic legal rights; it would also raise unfair barriers to the government’s policies of social forestry and land reform. Transparency, equity and free, prior and informed consent are important operating principles in the allocation of licenses and land use rights.

### **Economic cost of inaction and benefits of action**

The economic cost of inadequate and inconsistent spatial planning is significant in Indonesia. In the first instance, communities, land conflicts with oil palm plantations were found to have serious negative impacts on household welfare and incomes, especially from the loss of access to forests and forest resources. Traditionally forest-dwelling communities have met most of their consumption needs through their own efforts, including game, fish, fruit, vegetables, rattan, wood, honey, and clean water. However, if their accessible forest land is converted to plantations, people will then have to purchase most of these basic necessities, which represents a serious economic burden especially on lower income households.

The Government of Indonesia loses out on potential revenues to the state, as a result of insufficient knowledge by revenue-collecting authorities of which companies are producing which commodities where.

The costs arising from conflicts between competing concession-holders and local communities, as well as the economic losses to the country in terms of lost government tax revenue from the unplanned and unsustainable exploitation of natural resources in regions where plans are insufficient or not well-enforced, are also significant.

Indonesia's Corruption Eradication Commission (KPK) has since 2009 initiated a National Movement to Save Natural Resources (GNP-SDA). In the case of mining alone, in 2014, KPK interrupted 947 mining licences that had been given inappropriately or which had had their terms changed mid-course, saving the state IDR 23 trillion (or US\$1.75 billion) through new tax revenue (Nuraeni, 2019).

The same applies in cases of natural resource corruption in the natural resource sector, including forestry. In one case, the former head of Pelalawan District in Riau province was jailed for 11 years for having received illicit payments in exchange for the illegal issuance of timber felling licenses which caused losses to the state amounting to IDR 1.28 trillion.<sup>xi</sup>

The largest direct costs for plantations were for the loss of income from disrupted operations and the time spent dealing with conflicts. These costs were as high as 88 percent of the operational costs for a plantation, with a big impact on the company's income and profits. A less tangible cost of conflict is the effect on a company's reputation, which can affect the willingness of investors to provide finance for a company, or reduce demand for its products and its overall market value – a particularly real prospect at a time when a number of investors and sovereign wealth funds have demonstrated their willingness to divest from unsustainable palm oil.

### **Political economy and governance challenges**

The status quo benefits some powerful actors. Concession-holders benefit from controlling access to information about the location and extent of their concessions. Local district leaders can also benefit at election time by granting concession licences, including oil palm licenses. Natural resource businesses (e.g., mining, plantation, forestry, and fisheries businesses) can in some cases be linked to financing political contests, at the regional and national levels. This can then mean that some actors in official positions are then ' beholden ' to these interests who played a part in their ascendance to power. This political economic reality can make it difficult for some in public institutions to enforce the rules regarding due process in terms of the granting of concessions and permits.

As the President of Indonesia reiterated when launching the One Map Geospatial Portal in December 2018, maps and other information concerning forest area concessions and other natural resources should be shared and made accessible to decision-makers and (in some cases) the public, rather than kept within the purview of only a few ministries, as has been the practice.

Indonesia has, for many years, under the auspices of the Extractive Industries Transparency Initiative (EITI), publicly disclosed the boundaries of oil, gas and mining concessions, but some government agencies continue to withhold data regarding, for example, the boundaries of palm oil and forestry concessions.

The Government of Indonesia is currently advancing a regulation on who can access the unified One Map database. To that end, the government is drafting ministerial and presidential regulations that will govern the sharing of One Map data.

Article 33 of the Indonesian Constitution states that: “The land, the waters and the natural resources within Indonesia shall be under the powers of the State and shall be used to the greatest benefit of the people.” Giving the Indonesian people full sight of how natural resources are being used (ostensibly for their benefit) is consistent with this article.

Without ready access to concession information across all sectors, including for the public, it is arguable that Indonesia will be unable to make informed decisions as to how state lands can be used for the maximum benefit of the Indonesian people.

### Policy/business responses and ways forward

Notwithstanding the political economy challenges, it remains the case that only with a universally agreed and adhered to One Map will the government be able to make informed decisions with respect to zoning and the allocation of resource concessions on state lands (and at sea).

The **strengthening of the One Map**, and the full implementation of the policy responses which will follow from its realization, is therefore the overarching policy response required.

The One Map geospatial portal has now officially been launched. But there are still indications that BIG, the Geospatial Information Agency which is in charge of it, needs support from government leaders to be able to complete the task, particularly with respect to:

1. the **sharing of the maps of resource licenses of certain sectoral ministries**;
2. the **harmonization of boundaries** drawn by provinces which are, at times, in conflict with one another (West Papua vs. Papua, for example), because of differing assumptions held by provincial mapmakers;
3. **demarcating and including in formal maps customary land of indigenous communities**.

This issue of transparency will become more critical, and possibly more contested, as the government’s social forestry and land reform policies move towards more land being allocated to smallholder ownership and more forest areas being allocated to community-based management or co-management in partnership with forest management units. Continuing lack of transparency about private-sector licensing will tend to impede the progress of these important social policies.

### Who needs to act

The Office of the President, or one or more of the Coordinating Ministries, would be best positioned to support BIG to obtain data from selected agencies, based on common standard spatial standards across different sectors and jurisdictions.

To varying degrees, the One Map would benefit from greater cooperation and disclosure of licences and data from the Ministries of Agriculture, Home Affairs, Marine and Fisheries, Energy and Mineral Resources, and Environment and Forestry.

Representatives of indigenous groups need to be involved in mapping their ancestral land, with organizations specialised in forestry and those engaged in development or land-related planning to assist them in producing maps that could be officially incorporated into the One Map.

## PRIORITY 3. Enhanced conservation and restoration in sustainable jurisdictions

### Context

To achieve the conservation and restoration of Indonesia's ecosystems and biodiversity – on land and in Indonesia's marine waters – will require a strong enabling environment and a commitment to provide significant additional public and private investment for these actions, especially at the sub-national level where many of these critical land- and seascapes are situated.

Examples of such incentives potentially include: protected areas; ecological restoration concessions (IUPHHK-RE); payment for ecosystem services models, including 'ecological fiscal transfers'; jurisdictional approaches to sustainable commodity sourcing; and ongoing preparations by the government of Indonesia to receive additional resources from international climate finance sources.

The following are some of the reasons why the conservation and restoration of these ecosystems remains so important:

- Recent scientific findings show that rainfall declines near areas of forest clearing, affecting agricultural productivity in critical agricultural landscapes (Lawrence & Vandecar, 2015).
- Forest area loss exacerbates flood-related disasters, increases their numbers, and leads to downstream siltation which results in soil degradation and reduced capacity of reservoirs and irrigation systems, affecting crop production;
- In addition to their critical role in sustaining agriculture, natural ecosystems – including forests and peatlands – are vital for the well-being of indigenous peoples and smallholder farmers who depend on them for their livelihoods, as well as for protection against floods and droughts (IKI, 2017).
- The health of these ecosystems is vital for ecotourism as well as other viable, sustainable business models designed for the 'forest frontier'. If well-managed for the long-term, Indonesia's terrestrial and marine ecosystems could make it the premier ecotourist destination of the Pacific (Tizabi, 2018).
- Fish and shellfish provide the primary source of animal protein (50 percent or more of total animal protein intake) in the Indonesian diet and employment to more than 5.9 million fishermen and fish farmers.
- Indonesia is home to the Coral Triangle, which covers just 2 percent of the global ocean, but which provides habitat to over three-quarters of all of the world's known coral species (CEA, 2015). Indonesia's reefs cover 85,707 km<sup>2</sup> which represents about 14 percent of the world total.<sup>xii</sup> These corals and reef fish are endangered by destructive fishing practices, with cyanide and blast fishing widespread throughout the archipelago even in protected areas.
- A study found that the economic value in terms of infrastructure and asset protection provided to a single village from a mangrove forest – situated on Tanjung Dudepo beach, in Dudepo village,

in Bolaang Uki Sub-District, in Bolaang Mongondow Selatan District, in North Sulawesi Province – is equal to IDR 1,417,215 per metre per year (about US\$150 per metre).

- Mangrove forests add 4mm of soil height every year, which means they actually expand the land area of Indonesia.
- Indonesia committed under Aichi Target 11 of the Convention for Biological Diversity to achieve 10 percent coastal and marine protection by 2020. Indonesia had declared 19.14 million hectares of Marine Protected Areas (MPAs) as of December 2017, or 96 percent of its total commitment to establish 20 million hectares by 2020 (CEA, 2018). The MPAs are not yet fully protected in terms of implementation of strict protection.
- The Government of Indonesia has made ambitious commitments to restore degraded forests and peatlands. The Government of Indonesia considers that nation's ecosystems to be natural assets and a bedrock to the country's future competitive advantage. It also considers ecosystems central to securing the country's GHG emissions reductions, its water-food-energy nexus and to its plans for biotechnology to be an important sector of the country's economy.

### Economic cost of inaction and benefits of action

A 2006 study (based on 2002 data) found that 10 million hectares of smallholder tree-based and forest-based production activities, much of it grown inside Indonesia's Forest Zone – including plantation crops that emulate forest functions (such as coffee, oil palm, rubber and spice trees) and non-timber forest products, together with forests grown by forest farmers on public land outside of the Forest Zone (known as *hutan rakyat*) – all together contributed US\$6.2 billion in economic value each year (Noordwijk, et al., 2007). This was more than 3 percent of Indonesia's overall economic output at the time, and provided jobs for nearly 4 million people.

In contrast, a much larger area of the Forest Zone (50 million hectares) was allocated to large scale commercial forestry, which produced about US\$2.1 billion in value added from timber harvesting from natural forests as well as industrial timber plantations, and another US\$2.4 billion from processed wood products, pulp and paper. This amounted to 2.4 percent of overall economic output, but provided jobs for only half a million people.

In other words, even fifteen years ago, the economic gains of social forestry (which at that time did not include the more recent, but still-incipient, creation of *adat* forests) exceeded those of the industrial forestry sector (Simangunsong, Brown, Brown, & Justianto, 2006).

The negative economic impact of forest and peat fires in the year 2015 was estimated at US\$16 billion (The World Bank, 2016 ). The implication of this is that fully restoring the ecological and hydrological integrity of these fire-prone, degraded peatlands (around 2.5 mha) would avoid similar economic damages in the future—which otherwise can be expected to recur on the order of once every decade or so with successive El Niño-induced droughts. This translates into a value of US\$640 per hectare per year for the ecosystem services of restored peatlands in avoiding fire and haze (not even counting the additional value of other peatland functions).

The estimated commercial value of undeclared, illegal logging in Indonesia was between US\$60.7 to US\$81.4 billion between 2003 and 2014 (Wright, 2016). Among other implications, this results in significant loss of tax and non-tax revenue, which could be spent on the health care and education of millions of Indonesians.

Losses from illegal, unreported and unregulated (IUU) fishing have been greatly reduced by Indonesia's policies established in 2014 to protect its fisheries from foreign poaching vessels. The policies have also resulted in a 25 percent reduction in illegal incursions by fishing fleets from other countries (Gokkon, 2018). Before 2014, Indonesia lost an estimated US\$4 billion per year to IUU. Despite these significant policy improvements, overfishing and destructive fishing remain a major problem. If Indonesia does not take urgent further steps to better manage its marine fisheries, its catch and profit may decline by at least a third by 2035 (and by at least 50 percent for some species, such as skipjack).

### Political economy and governance challenges

Many of Indonesia's most vital ecosystems are insufficiently governed: the presence of the state is weak; enforcement capacity is low; strong interests often prevail to re-zone as 'non-forest' areas which were previously zoned as forest. The challenges also pertain to communities: while often the best stewards of some of these areas, they also in many instances act in ways which are inconsistent with optimal conservation and restoration outcomes. Implementation of conservation policies for marine and coastal areas is insufficient, while overlapping portfolios, conflict among ministries and government institutions further affect conservation.

### Policy/business responses and ways forward

Some of the most promising means of addressing these challenges include:

- **Amend selected fiscal transfer formulas** (especially the *Dana Alokasi Khusus*) to reward subnational regions which are demonstrably maintaining their dryland and wetland forest cover, as set out by a recent group of high forest cover districts in the Cikini Communique in Jakarta in September 2018.
- **Implement a mangrove moratorium** in critical mangrove ecosystems around the country, and establish the mechanisms necessary to enable REDD+ and PES markets to fund mangrove conservation and restoration.
- **Establish 'restoration hubs' at the subnational level** to catalyse restoration action at landscape and/or jurisdictional scales in each priority region, replicating ideas for 'investment hubs' in other fields.
- Scale up **blended finance instruments** including development guarantees, insurance and technical assistance to make sustainable land use an "investable" asset class for the private sector.
- Finally, **mobilize and increase international flows of public and private finance** – from the Green Climate Fund, the Global Environment Facility, bilateral and multilateral development banks and agencies, carbon markets and the International Civil Aviation Organisation – to conservation and restoration of critical ecosystems.

**Box 5. FOLU's Work in Papua and West Papua**

Since early 2018, the FOLU Indonesia platform has been actively engaged in a regional effort in Papua and West Papua, led by local and Indonesian NGO EcoNusa.

The focus of the work has been on articulating an alternative development pathway for the region which respects its high forest cover and which generates better livelihoods, as well as enhanced food and nutrition security, for local people. As part of this effort, work by the University of West Papua – with support from CIFOR – articulated the extent to which local crops, coupled with aquaculture and eco-tourism, could generate better economic and nutrition returns for local people than the plantation economy. This study found that there is an attractive alternative development path for the region.

**Who needs to act**

The Government of Indonesia's Ministry of Environment and Forestry is the critical lead institution in this area, responsible for policy formulation, implementation, monitoring and enforcement. But there is also a need for other line Ministries to abide by the vision set out by the Ministry of Environment and Forestry, including Ministries of Finance, Land Use Planning, Agriculture, Mining and Interior Affairs. Indonesia's ambitious conservation and restoration goals can only be realized if there is joined-up, aligned government from the level of The President and the key co-ordinating ministries. There is also a need for leadership and commitment from sub-national leaders in each of the jurisdictions concerned.

## **PRIORITY 4. Better, more productive agricultural value chains and reduced food loss and waste**

### **Context**

Indonesia faces a set of three interlocking challenges and opportunities in its agricultural production and value chains:

- i. to sustainably intensify its agricultural production on its existing agricultural land, thereby enabling the country to meet its climate goals by protecting its remaining tropical forests and critical ecosystems (and enabling its palm oil to be classified as ‘deforestation-free’ in global markets);
- ii. to ensure that its smallholders and indigenous peoples benefit from greater poverty alleviation, improved incomes and a better standard of living from their lands and the crops they produce, including by ensuring better market access (and then ensuring in turn that these improvements in smallholder livelihoods do not lead to further deforestation);
- iii. to reduce the loss and waste of the food that Indonesian farmers, including its smallholders, produce – currently estimated to be in the order of 30 percent of Indonesia’s food.

Priority 4 sets out a set of recommendations pertaining to how to address this triple challenge, beginning with a context section on each of these three issues.

### ***Sustainable agricultural intensification***

Indonesia has made significant progress in intensifying its agricultural production and attaining greater agricultural productivity in recent years, although it continues to lag behind some of its regional peers. Agricultural productivity has typically grown by 3.3 percent per year. In the palm oil sector, companies and producers have focused on achieving greater yields on their existing land (one major palm oil company, interviewed for this report, said that it had not increased its plantation land bank for at least the past 5 years).

The University of Nebraska’s recent work on closing the yield gap in Indonesia – the Global Yield Gap and Water Productivity Analysis, carried out in partnership with the national government – demonstrates that Indonesia can meet its palm oil targets on existing land, through yield increases and improved farming practices on the country’s existing palm oil estate.

The palm oil value chain in Indonesia continues to become more transparent and more fully digitised. The establishment of a further set of behavioural incentives, such as payments to enable proven fire-free production in the fire season, is necessary. Some of these incentives can be established by provinces themselves: in North Kalimantan, the provincial government has linked funds transfers to communities to their performance against five criteria, including prevention and management of forest fires, green open space, waste management, water resource protection and air pollution management (SYSTEMIQ, 2019). But others need to be generated from within the palm oil value chain itself (e.g. brands, traders, refineries, finance institutions paying for deforestation-free / fire-free production), with additional support being provided by global climate finance from public and private institutions.

The Government of Indonesia has been pursuing a major agricultural intensification programme, *Upsus Pajale*, focused on improving rice, soybean and maize production by increasing fertilizer and seed subsidies, financing the provision of pre- and post-harvest machinery, improving irrigation infrastructure, building new dams, and maintaining existing dams and irrigation canals. The government has also been carrying out a major extension programme to utilize/optimize abandoned/less-utilized agricultural land for rice, maize, and soybean cultivation and to connect new rice fields with irrigation infrastructure.

### ***Enhanced access of smallholders to market through agricultural value chains***

The agricultural sector remains Indonesia's second biggest source of employment (30.5 percent of Indonesia's labour force). It contributes to the lives and livelihoods of more than 27 million land-holding agricultural households.<sup>1</sup> These showcases how Indonesia's farmers and smallholders plays a central role in driving Indonesia's economy.

The majority of these farmers and smallholders live in rural areas where poverty is persistent. Indonesia's Ministry of Villages' Development Index in 2015 reported that two-thirds of villages in Indonesia are underdeveloped as compared to the urban population; more than 27 percent of them are struggling to provide sufficient welfare for their people (MoV, 2015; Bappenas, 2014). In addition, rural poverty from September 2014 to September 2018 only reduced by 0.66% (BPS, 2018).

In a number of Indonesia's most important agricultural supply chains, it is smallholder farmers that are often at a disadvantage. Many Indonesian smallholders grow crops or breed animals on an individual basis, so they have little bargaining power vis-à-vis traders and intermediaries. They often face information asymmetries too: not knowing who the other players in the market are, storage and sale practices after their sale, and latest trends in terms of consumer demands. Nor do they control the terms on which they participate in the value chain.

As a result, Indonesia's agricultural value chains – in which producers are linked to food processors, consumers and the market – need to be re-purposed to enable Indonesian smallholders to produce higher-quality products and to earn more income. Actions to enhance these value chains should encompass marine and freshwater-based supply chains, as well as land-based agricultural commodities. On the land, increasing the productivity of smallholders and their access to market through better supply chain management is critical to achieving greater agricultural sustainability. A package of support to enable smallholders to increase their productivity and to provide financial incentives to reward smallholders who do not use fire to clear the land, coupled with appropriate monitoring and enforcement measures to prevent their further encroachment into forest and peatlands, is critically important here. The Climate Smart Microfinance project, supported by NICFI through Norfund in West Kalimantan is one such example. Indonesia's KUR scheme for smallholders is another. The national CPO fund could to a much larger degree be used to benefit smallholders. Markets also have a vital role to play: traders, suppliers and consumers need to send a strong signal to producers that they expect (and are willing to pay for) the additional costs of the measures described above.

The social and economic impact of oil palm and other large-scale agriculture on smallholders (often migrants) is often very different to the impact these crops have had on indigenous peoples or other forest dependent people who are not directly involved in growing these crops. A number of studies indicate that

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<sup>1</sup> Results of Inter-Censal Agricultural Survey 2018, Badan Pusat Statistik Indonesia, 2018

while smallholders in many cases have benefitted from agricultural production, forest peoples living around the plantations and smallholder lots are worse off than before these crops were introduced in the area.

#### **Box 6. FOLU Work in East Kalimantan**

East Kalimantan is committed to becoming a global leader in mitigating climate change. In 2009, the East Kalimantan government formulated and declared its commitment to ensure a 'Green East Kalimantan'. Since 2018, the FOLU Indonesia platform has engaged in East Kalimantan through the presence of FOLU partner, The Nature Conservancy, which in turn implements its work in East Kalimantan through a local foundation, Yayasan Konservasi Alam Nusantara. The key focus of the work has been to support the government's Rural Area Primary Product Program (*Program Unggulan Kawasan Perdesaan*, PRUKADES) to promote sustainable intensification of agricultural production on non-forested land, while protecting East Kalimantan's remaining tropical forests and critical ecosystems. Informed by spatially explicit system dynamic modelling and value chain analyses, the foundation's work identifies key commodity value chains which would provide greater benefit to village communities and supports smallholders to forge more direct market relationships with key buyers, thereby securing a better price and therefore better livelihoods from the 'deforestation-free' cocoa, pepper, rubber and other crops they produce. Better and more productive value chains of these commodities are then linked to East Kalimantan's commitment to protect and restore its remaining tropical rainforests, including the biodiversity-rich forests of the Berau district.

#### **Food loss and waste**

Indonesia has one of the world's highest rates of per capita food loss and waste,<sup>xiii</sup> reaching 300 kg per capita per year in one detailed assessment.<sup>xiv</sup> This is the result of a combination of factors, including poor infrastructure and multi-stage value chains with multiple stages between the farm gate and the consumer, often spread across challenging and distant geographies. These levels of food loss and waste result in significant economic losses for farmers, fishers, companies, and citizens, add to harmful greenhouse gas emissions, waste large areas of land and water used to produce food that is never consumed, and never provide needed nutrition to millions of malnourished and/or stunted Indonesians (Lipinski, et al., 2013).

The Government has expressed its firm desire to tackle food loss and waste through a series of policy measures and national initiatives, all now brought together under a public-private partnership since late 2018 (supported since its inception by the FOLU Platform in Indonesia). The issue of food loss and waste is also being targeted in the next, implementation phase of the *Low Carbon Development Initiative*. Community-based organizations and private companies are also increasingly exploring innovative ways to address food loss and waste in their own areas and supply chains.

#### **The costs of inaction and the benefits of action**

Indonesia is a net importer of grains, horticultural produce, and livestock. In spite of a decline in its share of GDP over the last 50 years, agriculture still accounted for 14 percent of GDP in 2014<sup>xv</sup>, when agriculture employed around 40 million people.<sup>xvi</sup> It is estimated that a 7 percent per annum increase in smallholder productivity could result in a \$50 billion increase in agriculture revenues and help reduce dependency on imported food by 2030.

Improving Indonesia's agricultural value chains – including but not limited to ensuring climate-sensitive and resilient improvements to Indonesian infrastructure – would have vast multiplier effects. Globally, investments in the reduction of food loss and waste return an average of US\$14 for every US\$1 invested.<sup>2</sup> Given that Indonesia has among the highest rates of food loss and waste per capita in the world, there would be a major economic return from more investment in productive agriculture, more reliable transportation infrastructure, and more efficient forms of food distribution and processing.

Increasing productivity is also one way of reducing encroachment into protected forest and peatlands, whether by smallholders or large companies – provided that these productivity improvements are explicitly linked to strong ecosystem conservation and restoration commitments. In the palm oil sector, for example, plantations occupy about 12.35 mha of land, of which 4.8 mha, about 39 percent, are managed by smallholders (Van Gelder, Sari, & Pacheco, 2017). In 2017, when they occupied 45.6 percent of total plantation areas, their productivity was low, with only 2.3 tonnes per ha – contributing 40 percent of the total 34.4 million tonnes of crude palm oil produced that year. Smallholders require a larger area of farm land to produce the same amount of CPO as large- and mid-sized corporate plantations.

Reducing rates of food loss and waste would contribute significant positive economic impacts for the country. One example is rice production. Current losses at the farm level reach about 22 percent of total national rice production, making Indonesia even more dependent than it otherwise would be on imports of rice, which recently accounted for 9.07 million tonnes. Based on estimates of food loss and waste of rice commodities in Indonesia, the resulting losses reached Rp86.6 trillion (Mulyo, 2016).

An FAO study found that an important sub-sector of the global fishing industry – Indonesian shrimp trawlers – is the second most wasteful in the world in terms of the disposal on the high seas of large volumes of undesired species of fish and other marine life (known as “by-catch”). For every 1 kg of shrimp landed by Indonesian shrimp trawlers, 12 kg of other sea life were also caught in the nets and thrown away. This is not only extremely wasteful in terms of the potential human food and animal feedstock lost; it is also deeply destructive for marine biodiversity and (through the damage done by trawling to sea beds) the ocean environment.<sup>xvii</sup>

Businesses perpetuate unsustainable practices because more environmentally and financially sustainable ones may place them at a short-term competitive disadvantage. However, according to estimates by Value Chain Management International (VCMI), a 1 percent reduction in food loss and waste could produce benefits for businesses equivalent to a 4 percent increase in sales (VCMI, 2016).

### Political economy and governance challenges

Responsibility for improving Indonesia's value chains and reducing food loss and waste falls within and across the responsibilities of a number of different line ministries.

In fisheries, there is a lack of transparency concerning fishing licenses and fishing boat registration, so it is difficult to determine which business groups (national and international) are most responsible for overfishing Indonesia's waters and thereby to hold them accountable. In particular, there is a need to address illegal fishing vessels with more concerted action to ensure active marine governance and enforcement.

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<sup>2</sup>WRI 2018

No ministry or level of government is ultimately accountable for food loss and waste. The lack of a single point of accountability results in a lack of leadership and marginalization of food loss and waste in the allocation of funds and political capital. The public-private partnership underway to address food loss and waste is intended to address that, by developing a baseline for each concerned Ministry which BAPPENAS in its role as National Planning Department can then set a strategy and an indicator of success to for each implementing agency.

## **Policy/business responses and ways forward**

### ***Sustainable agricultural intensification***

**Scale up investment in climate-smart rural infrastructure**, including cold storage, to enable increased agricultural yields without further forest loss

**Increase agricultural R&D and innovation** to boost crop and livestock yields, reduce food prices, increase farm income and ensure greater economy-wide GDP, with a particular focus on climate adaptation.

**Improve investments in climate-smart irrigation**, both by improving existing systems and installing new capacity where needed.

**Scale up investment in extension services** to support precision-farming, better agricultural techniques, and increased knowledge and capacity for smallholder farmers (including from proceeds of reformed fertilizer subsidies).

### ***Enhanced access of smallholders to market through agricultural value chains***

**Improve schemes to provide smallholders** with access to improved planting stock, better technologies, training and extension services

**Provide greater finance to smallholders** to support their efforts to pursue better agricultural practices, to form co-operatives and to establish more processing facilities nearer their communities (including through mechanisms such as the National CPO Fund and the KUR scheme)

**Provide greater internet and mobile communications access** to smallholders, to increase their access to climate data, market conditions and direct communications with buyers

**Adopt a gender-sensitive lens in efforts to support smallholders**, recognizing that many of the most pressing challenges faced by smallholders fall disproportionately on women, including women heads of household

### ***Food loss and waste***

**Develop a national strategy to reduce food loss and waste**, encompassing all relevant line ministries (Health, Agriculture, Environment, Infrastructure and others) with binding targets for reduction set by National Planning Ministry BAPPENAS

**Establish food loss and waste reduction goals** in ‘big waste’ sectors, such as hospitality, catering, food processing, farming and grocery retailing

**Leverage behavioural science** to design grassroots campaigns that engage social media, religious communities, young people and public institutions in efforts to raise awareness and to reduce food loss and waste

**Increase investment in climate-resilient rural infrastructure, cold storage facilities** and improved value chains from farm to fork

### **Who needs to act**

The Ministries of Agriculture, Maritime and Fisheries, Environment, Trade, Cooperatives and Small and Medium Enterprises, State-Owned Enterprises (SOE) all have a role to play in delivering on this agenda.

Additionally, the Ministry of Villages will have an important role to play in improving technical capacity for farmers in villages, supported by the Indonesian Institute of Sciences (LIPI) to enable knowledge and technology transfer for farmers.

The Indonesian Food Loss and Waste partnership is a public-private partnership to address food loss and waste bringing together national government ministries, companies and civil society organizations.

## PRIORITY 5. Scaling up nutrition and food system transformation

### Context

Over the past decade, the Government of Indonesia has made significant progress in reducing stunting. Notwithstanding these efforts, over 30 percent of Indonesian children under the age of 5 continue to suffer from stunting (Agustina, et al., 2019). Stunting has become a key measure of childhood undernutrition because of its high prevalence globally, and due to its importance for health and other developmental outcomes. Stunting increases the risk of illness, cognitive deficits and poorer school performance and mortality: a situation which successive Indonesian governments have made it a priority to address.<sup>55</sup> The root causes of stunting in Indonesia include micronutrient deficiencies associated with a poor diet; lack of availability of healthy food products and a healthy food environment; insufficient health care provision and education; and poverty and food insecurity.

While the burden of undernutrition has decreased over the past 8 years, rates of overweight and obesity have risen among adults from 28.7 percent in 2013 to 35.4 percent in 2018.<sup>3</sup> National figures also indicate that rates of maternal mortality and the burden of infectious diseases remain persistently high. At the same time, there has been a proliferation of risk factors linked to non-communicable diseases (NCDs). WHO estimates that the proportion of mortality caused by NCDs has risen from 45 percent in 1990 to 73 percent in 2016. Indonesia was ranked sixth globally for the number of people with diabetes in 2017.<sup>xviii</sup> Overcoming the double burden of malnutrition -- the coexistence of undernutrition along with overweight and obesity -- is therefore a national health and nutrition priority for the Government of Indonesia to address.

At the core of these health and environmental issues is food. Poor food consumption largely stems from the transition from traditional to today's eating patterns. A sedentary lifestyle also contributes to poor health outcomes. Together, greater consumption of high-energy foods and less physical activity can lead to increased morbidity and mortality rates, especially due to epidemic obesity and NCDs. Rates of dietary diversity in the Indonesian population are markedly low, with rice accounting for up to two-thirds of calories consumed (Stefani, et al., 2018; Vermeulen, et al., 2019), which is far above the amount set in Indonesia's dietary guidelines.

There is huge variation among dietary patterns across the archipelago. However, the low variety of foods and the unbalanced proportion of nutrients in the Indonesian diet are the same across its diverse regions. Indonesia has among the highest energy intake share from grains -- and, specifically, rice -- in the world, exceeding those of India. Rice has been the main staple food in Indonesia, and is the foremost staple crop produced in the country. In the eastern parts of Indonesia, such as in West Papua, tubers and roots were previously the main source of food in that natural habitat, but now rice production follows the same trend. While the role of tubers and other starchy food in Indonesian diets as an energy source decreased to only 2 percent of the typical Indonesian diet, the 'new' and exclusively imported commodity of 'wheat flour', predominantly used in processed instant noodles, bread and bakery goods, has become a very important source of energy in the Indonesian diet. Wheat supply growth increased sharply by 5 percent during the period of 2010-2015, much faster than rice supply growth (2 percent annually), due to an increase in the number of wheat flour mills from 5 flour mills in 2000 to become 31 flour mills in 2015 (Aptindo, 2015).

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<sup>3</sup> Ibid.

Across Indonesia, the consumption of protein, fruits and vegetables is typically low compared to other countries. In general, consumption of carbohydrate sources of food is higher than protein- and fat-source foods. This is caused by the relatively low cost of carbohydrate-source foods. A 2017 study by the World Food Programme found that 36 percent of the national population cannot afford a ‘staple adjusted nutritious diet’ – the least expensive diet that meets WHO/FAO recommended levels of energy, protein, fat, vitamins and minerals. Surprisingly, despite the fact that Indonesia is blessed with a ‘virtual cornucopia’ of tasty and exotic fruits and vegetables, national health surveys show that over 90 percent of the Indonesian population aged under 10 years had an insufficient intake of fruits and vegetables. Rates of fresh fruit and vegetable consumption are less than half the recommended daily intake and are still declining.

In addition, Indonesia has seen a marked increase in the rate of consumption of processed foods. Thirty percent of monthly food budgets are spent on ‘prepared food and beverages’, which include shop-bought processed foods and meals from catering services (Vermeulen, et al., 2019). The continuing transition to a more urban population will likely mean that Indonesians continue to consume more prepared food than food made at home. A combination of multiple factors, such as poor nutrition knowledge and low purchasing power for protein-sourced food, vegetables, and fruits, leads to sub-optimal food expenditure patterns. The high price of healthy foods will lead to a situation in which the majority of energy is sourced from cereals, causing the diet quality of the population to be lowered.

In view of these factors, Indonesia’s current food production system is unsustainable from both a health as well as an environmental perspective. A solution for Indonesia would be to create systemic change at scale and a dynamic process of continuous adaptation to create and maintain a modern food system that is healthy, resilient and sustainable. In particular, there is a need for incentives to diversify the nation’s food production and consumption to include greater quantities of fresh fish, fruit and vegetables and by launching social media campaigns and increased regulation to encourage healthier diets.

The extent of the double burden of malnutrition in Indonesia, and its economic impact, is worrying. Obesity and NCDs are no longer merely problems for high-income families, but also affect many millions of low-income families, due to the cheap price of carbohydrate source food, compared to the cost of more nutritious food, and given the dominance of instant noodles and other processed cereal products in diets that can contribute to obesity. Taxes on unhealthy foods, therefore, must be considered as a policy objective. If the national government does not start to control the extent and cost of unhealthy processed foods, there is a high risk that these will dominate food offerings and diets in both urban and rural areas.

### **The costs of inaction and the benefits of action**

Collectively, Indonesia’s NCD burden – including diabetes, cancer and heart disease – is projected to contribute to losses of US\$4.5 trillion from 2012-2030, equivalent in aggregate to losing five years of GDP.

### **Political economy and governance challenges**

Currently, 100 out of 364 districts have been prioritized as food insecure districts. They are home to 25 million people, mainly concentrated in East Nusa Tenggara, Papua, and West Papua region. The ‘nutrition transition’ makes healthy food choices difficult because of the greater affordability and availability of energy dense food, due to the expansion of access to supermarkets and fast-food restaurants. The rates of mini-market and fast-food restaurant growth have kept increasing by 3.2 percent and 10-15 percent

respectively per year, resulting in increasing consumption of oil and sugar in both high- and lower- income groups.

The trend of increased consumption of processed food also requires urgent attention, since most ‘fast food’ contains high levels of sugar, fat and salt. The majority of the foods Indonesians consume are deep-fried: this requires a massive nutrition education campaign to reduce fat/oil intake. Food safety for street vendors, hotels and restaurants should also be monitored regularly. The trend of prepared food is a good opportunity to develop a standard set of controls, education and business standards around what constitutes good quality and safe food for the betterment of Indonesian nutrition and health status. National and regional planning should consider this situation and this opportunity. Otherwise, the ongoing negative impacts of high calorie intake, particularly from sugar and fat, will continue to make themselves felt in the future.

In addition, the promotion, marketing and advertising of unhealthy foods and beverages (processed foods, high in salt, sugar and fat) is increasing rapidly in Indonesia through TV and social media that usually target children and adolescents. Many children and adolescents are highly exposed to food marketing of packaged foods, which contain high salt, sugar and fat, since they are the vulnerable population and easily influenced. This is potentially harmful given the negative impact these foods can have on their diet and long-term health. This environment is worsened by other changes in lifestyle, including the high smoking rate and low rates of physical activity.

Some groups with vested interests – including in the incumbent food industries and sectors – benefit from the perpetuation of the status quo, even though it is demonstrably detrimental to the well-being of the population. Too many intermediaries are involved in the supply chain, from farmer to consumer. Even in traditional crops, there are several traders between the farm and the marketplace, making consumers pay high while farmers earn little. These already expanded chains are often affected by price fixing and artificially limited supplies, especially of beef, rice, chilli, shallots, garlic and sugar. Cartels co-operate with bureaucrats in licensing imports to push prices higher when the market experiences shortages.

### Policy/business responses and ways forward

The proposed initiative will also align with Indonesia’s National Long-Term Development Plan (RPJPN) 2005-2025, where the Government of Indonesia commits to the provision of nutrition of sufficient quality to all households. Moreover, the Indonesian Government has already increased budget allocations to nutrition-sensitive health interventions, including increasing the Ministry of Health’s budget for convergent interventions from IDR 800 billion in 2015 to IDR 1 trillion in 2016. In addition, to support the eradication of stunting, the Ministry of Villages, through its cash for work (*Padat Karya Tunai*) programme in 2018, stipulates that cash transfers for villages are not only allocated for buildings and infrastructure, but also for public health and children’s nutrition.

In some instances, well-intentioned national food security policies – such as the use of price instruments and trade barriers to encourage domestic production – can lead to negative impacts on people’s access to food, due to the higher prices of staples and market distortions. Barriers to rice imports mean higher rice prices (or costly government subsidies), which in turn may lead to increased malnutrition.

A food systems approach takes a holistic view of the food chain from **production to processing, distribution and marketing, and consumption**. The approach aims to ensure that healthy food is available, accessible, affordable and safe for all (UNICEF, 2019).

## 1. Food Production

**Focus on nutrition fulfilment.** Policies to restrict the production of unhealthy foods are required to tackle nutrition problems. Foods high in fat, sugar and sodium coming from processed foods and sugar-sweetened beverages need to be labelled and warned against. The food industry and national and local governments need to establish strong partnerships to work on ensuring food production which is nutritionally fulfilling. In addition, concrete action in terms of subsidy and land governance reforms; the establishment of innovative incentives for more diversified food production and environmental protection; investment in increased productivity over expansion; promotion of the production of nutrient dense foods through bio-fortification and food fortification: all these provide major opportunities to secure dietary and environmental health without sacrificing agricultural jobs and GDP.

**Scale up implementation of national food and nutrition security policies:** Political will, public policy, innovation, and the fulfilment of policy goals in food and nutrition security will ensure that children and adults vulnerable to malnutrition in rural and urban areas are reached. The Food Security Council Secretariat issued the Food Security Coordination Guidance in 2017, which describes how “food affairs” should be coordinated at the national and sub-national levels. The mechanism of planning, monitoring, and evaluation of programs is led directly by the President and the Minister of Planning at the national level and by governors or mayors or regents at the sub-national level. This is an important platform. The role of the National Food Agency in creating food sovereignty, self-sufficiency, and security should be emphasized in achieving effective planning and coordination. Furthermore, the implementation and operation of this policy in key concerned line ministries or agencies should be optimized.

## 2. Food distribution and marketing

**Establish food distribution standards based on ‘selective foods’ to achieve ‘nutrition fulfilment’ rather than ‘food production’ per se:** Indonesian and multinational companies should do more to support and align themselves through the products they make and the advertising strategies they adopt with the food and nutrition security vision set by the Government of Indonesia.

**Partner with local food providers:** Indonesia is home to a wealth of inspiring voluntary initiatives around local food systems, including on food safety, waste, public awareness and access for low-income households. National and local government could empower these locally-led initiatives to provide the spur for an Indonesia-wide agenda of healthy and sustainable diets that celebrates the archipelago’s many unique food cultures.

**Restrict marketing of unhealthy foods and improve nutrition labelling:** Strong legislation to control the advertising, promotion and labelling of foods high in salt, sugar and fat is critical to ensure that men and women develop healthy eating habits. Front-of-pack nutrition labelling by using traffic light style labels can be beneficial, because they simplify information about the nutritional aspects of food and help consumers to select healthier foods (FAO, IFAD, UNICEF, WFP, & WHO, 2019).

## 3. Consumption

**Increase the consumption of a diversity of foods:** Eating a wide variety of foods is part of the message in the national dietary guidelines. Hence, promotion of national dietary guidelines in school and other

channels will be fundamental. Increased consumption of fruits, vegetables, protein, fats, nuts and legumes consumption as well as reduction of red meat consumption and energy intake, particularly sugar, were identified as essential factors in increasing the diversity of foods consumed for nutrition and broader diet-related health and environment benefits (EAT-Lancet Commission, 2019).

### **Who needs to act**

To resolve Indonesia's malnutrition challenges by establishing a sustainable food system, the Government of Indonesia should take concrete actions in integrating related multiple actors and ensuring collaboration between them. Joint action by the Government, non-government organizations, scientists, industries, media, and communities, involving food, agriculture, trade, health, education, environment, and information are needed to shape the future of Indonesia.

The Ministries of Health, Trade, Agriculture, Finance and Environment and The Ministry of Finance, Tax Office may order tax investigations into companies suspected of hoarding commodities or forming cartels to control prices to the disadvantage of consumers. The Business Competition Supervisory Commission (KPPU) should address unfair competition in food trade and pricing. Moreover, the action of Corruption Eradication Commission (KPK) should have a role as a supervisor of fraud inside institutions which potentially tamper with the food import quota.

The Ministry of Agriculture and the National Agency for Disaster Management should work together to make a plan to control the risks of natural disasters to the food system.

## **CROSS-CUTTING THEME 1. The preparation and agreement of an ambitious long-term and integrated plan to meet the SDGs**

### **Context**

Like every country, Indonesia faces the challenge of designing a long-term, resilient food and land use system that supports economic growth, new jobs, and healthy diets, while safeguarding the underlying natural capital upon which the economy depends. BAPPENAS, the National Planning Department, is already committed to a process to examine and evaluate these complex interactions. This process involves the use of analytical tools that integrate across different knowledge domains such as macro-economy, agronomy, hydrology, ecology, and climate science. Recent global and national developments have created an opening to strengthen this capacity further.

At the global level, the Food, Agriculture, Biodiversity, Land Use and Energy Pathways (FABLE) Consortium (which is a member of the Food and Land Use Coalition) has mobilized institutions in over 20 countries to develop the data and modeling infrastructure needed to identify long-term pathways towards sustainable food and land use systems. The aim is to promote more ambitious, integrated national strategies to achieve a country's Sustainable Development Goals and to ensure alignment between national and global objectives under Agenda 2030 and the Paris Agreement on Climate Change.

As part of this effort, the Consortium is developing and sharing lessons from new planning tools that include a simple spreadsheet-based calculator and more sophisticated geospatial economic models. These tools can explore the effects of different land use and economic development scenarios on key pillars within the framework for a sustainable food and land use system. This work is led in Indonesia by modelers at the University of Indonesia and Bogor Agricultural University, and feeds in turn into BAPPENAS' long-term analysis and models.

### **The costs of inaction and the benefits of action**

The principles and benefits of good long-term planning are well established. Case studies show that well-conceived plans have anticipated problems and saved lives and money. National strategies and plans, such as those developed in Indonesia, have motivated governments at various levels and citizens to pursue common goals. Well-executed and monitored plans have helped to track a country's progress and hold decision-makers accountable. And in the best circumstances, when plans learn iteratively from past plans, they have improved the performance of government programmes and resource allocations.

Case studies also show that little or poorly executed planning has resulted in lost lives and wasted money. Plans have also under-delivered and been costly, because they were not able to find the right balance between top-down and bottom-up planning approaches. Plans have also failed because they were made at the wrong scale or were too narrowly focused. And plans have in some instances stymied innovation or resulted in inefficiencies, because they were too prescriptive or too detailed.

More integrated, participative planning that links a macro-economic and biophysical perspective, spans multiple sectors, and which examines interactions within the food and land use system, is better equipped to deliver the following benefits:

- Anticipate and manage risks of large system shifts within the food and land use system.
- Identify win-win synergies within the food and land use system and create opportunities for collaboration.
- Identify trade-offs within the food and land use system and establish effective partnerships to manage them.
- Reduce implementation costs of government programmes and use government resources more efficiently because of the above.

### Political economy and governance challenges

Any attempt to advance evidence-based, long-term development planning with a food and land use system perspective must be aligned with the Government of Indonesia's efforts to set out its mid- and long-term national development plans, as well as its Indonesia 2045 Vision. Key challenges include balancing short- versus long-term planning priorities, safeguarding existing green economy goals and targets, building integrated analytical tools and capacity, ensuring due participation in and ownership of plans, and creating incentives for implementation through establishing effective monitoring systems.

### Policy responses and ways forward

It is important that policymakers understand (and have the evidence to demonstrate) that the country's long-term food security, as well as its agricultural growth, will ultimately depend on the wise stewardship of natural resources and biodiversity: its forests, woodlands, grasslands, wetlands, and rivers. This evidence should be able to demonstrate that ecosystem protection and restoration do not impede economic growth and improvements in well-being, but are rather an essential prerequisite for it. In addition, this evidence should show that it will be more difficult to ensure resilient food production to meet the country's growing calorie needs, if cultivation is to be carried out on depleted soils or where water is scarce.

Decision-makers will also need evidence that the country can deliver on the short-term objectives of its mid-term national development plan, as well as the long-term objectives of the *Low Carbon Development Initiative* and the Indonesia 2045 Vision. The goals set out in these plans include boosting agricultural productivity and increasing forest area, ensuring food and nutrition security, shifting future protein supply to a sustainable supply mix, promoting sustainable land and water management, and advancing renewable and cleaner energy for urban and rural communities. These proposed transformations align well with putting the country on a path towards a more sustainable food and land use system.

### Who needs to act

Food and Land Use Coalition partners in Indonesia are supporting the Government of Indonesia's efforts to model its mid- and long-term development plans. This work is focused on building modelling capacity, introducing food and land use scenarios into planning and policy discussions, and supporting efforts to establish a monitoring system.

The University of Indonesia and Bogor Agricultural University are collaborating with the FABLE Consortium on science-based targets and long-term pathways. Over the coming months, the team is building two planning tools covering agriculture, bioenergy, food security, diets, water, biodiversity, and other critical dimensions of a food and land use system. The first tool is a spreadsheet-based calculator with modest

data requirements. The second tool is a geospatially-explicit, partial-equilibrium model (including global trade in agricultural and forest commodities), requiring comprehensive data sets and modelling expertise.

Within the global context, these tools will help to quantify the parameters of a food and land use system in 2030/2050 under which the Sustainable Development Goals and the Paris Climate Agreement can be realized. The global effort will also propose different paths for reaching the 2030/2050 targets from today, using land allocation modelling. It is hoped that these exercises will be of benefit to BAPPENAS' ongoing efforts to set a long-term national development plan and assess the nation's progress towards meeting its goals.

## CROSS-CUTTING THEME 2: Reform of fiscal incentives and subsidy schemes

### Context

At 9 percent of public spending in 2017, for a sector which contributes 14 percent to GDP, Indonesia's proportion of public spending on agriculture is among the highest – and fastest-growing – of all middle-income economies, as well as the countries of the OECD. Financial support for domestic producers includes generous price floors for medium-quality rice and subsidized fertilizers.<sup>xix</sup> Palm oil producers receive further incentives from Indonesia's biofuels mandate for a blend of 20 per cent biodiesel (from palm oil), rising to 30 per cent by 2020,<sup>xx</sup> the highest blend rate in the world.<sup>xxi</sup>

Some of Indonesia's current fiscal incentives and subsidy schemes in the food, land use and marine spheres could be reformed to achieve more positive outcomes for people, health and the environment. The Government of Indonesia has been a global pioneer in reforming its fuel subsidy regime. Similar reforms of arguably wasteful and counter-productive subsidies and incentives for fertilizers, biofuels and pesticides could arguably have a major impact on the country's prospects of meeting its ambitious climate and development goals, and also create more fiscal space with which to pursue other pressing social and development priorities of the government.

The intensity of inorganic fertilisers applied in Indonesia is about 70 per cent above the world average, though lower than in very high-use countries such as China and Malaysia.<sup>xxii</sup> Inefficient farming and overuse of heavily subsidized fertilisers<sup>xxiii</sup> on steep land across Indonesia leads to high rates of soil erosion and in turn land degradation. This is because steep land would be impossible to farm without the use of subsidized fertilizers, which enable the opening of fields on steep, often forested land. While the fertilizers assist with increasing the short-term fertility of the soil, they contribute to a long-term loss in soil health, leading in turn to soil erosion. This erosion, coupled with a more variable and changing climate, leads in turn to greater risk of landslides.

Over a quarter of Indonesia's land is considered heavily degraded, or approaching a critically degraded state, reducing the productive capacity of that land and often leading to greater agricultural expansion to meet demand. This soil erosion in turn contributes to high rates of natural landslides in Indonesia: 890 landslides were recorded between 1998 and 2009, killing up to 1,280 people.<sup>xxiv</sup>

The increased erosion stimulated by forest loss from agricultural conversion also has spill-over effects on water quality: increased run-off of both sediment and fertilisers contributes to already high rates of eutrophication and impacts negatively on water quality.<sup>xxv</sup>

Fertilizer in Indonesia, principally urea, is produced by five state-owned enterprises. Rice and fertilizer subsidies account for nearly all of Indonesia's agricultural subsidies. The best known fertilizer subsidy in Indonesia entails the Ministry of Agriculture providing annual payments to state-owned fertilizer producers to make up the difference between what it costs producer companies to make fertilizer, and the loss those producers would otherwise incur from selling that fertilizer at below-market-costs to small farmers.

## The costs of inaction and the benefits of action

The economic costs of fertilizer pollution are significant. Existing subsidy regimes are highly inefficient and detrimental to Indonesian taxpayers. In 2015, the latest year for which data is available, IDR 35 trillion (the equivalent of US\$2.7 billion based on the exchange rate prevailing at the midpoint of 2015) were earmarked for this particular type of fertilizer subsidy.<sup>xxvi</sup> (This US\$2.7 billion figure measures only the subsidy provided by the Ministry of Agriculture to fertilizer producers, and does not include the additional subsidy provided by private natural gas producers who have in the past been directed by energy regulators to sell natural gas to fertilizer producers at below market costs).

Notwithstanding the fact that this subsidized fertilizer is intended for sale only to small farmers (defined as those with land holdings of fewer than 2 hectares per family), there is a near constant shortage of subsidized fertilizer in Indonesia. This shortage may be due to the 'leakage' of subsidized fertilizer to unintended users, such as large agricultural (including oil palm) plantations. An estimate suggests that as much as 60 percent of subsidized fertilizer is used by the richest 40 percent of farmers, despite the government's policy to target the smallest and poorest farmers.<sup>xxvii</sup> This is poor economics as well as an inequitable outcome which prejudices the well-being of the most vulnerable, low-income farmers.

Over-use of pesticides is also a problem. Heavy use of pesticides by Indonesian rice farmers during the 1970s and 1980s led to increasingly severe outbreaks of the brown planthopper (*wereng coklat*) as a rice field pest in Java, because the pesticides killed off natural enemies that prey on the planthopper. Pesticide build-ups also caused toxic pollution in waterways and in the human food chain. The problem was to some degree overcome by the rigorous adoption of integrated pest management practices, supported through farmer field schools, and by the removal of pesticide subsidies in the mid-1980s. Rice yields increased significantly, while farmers saved money by the more judicious use of pesticides, and health risks were reduced.

Over the last two decades, however, rates of indiscriminate pesticide use have increased again to very high levels. Brown planthopper infestation is now endemic in Java and is becoming so in Sumatra, and rice yields are once again threatened. This trend can be reversed. Indonesia's experience in the 1980s shows that, with the right combination of agricultural policies, incentives (including the removal of harmful subsidies), and investment in farmer's knowledge and capabilities, food security can be achieved with less harm to the environment and human health while, at the same time, reducing the financial burdens on farmers and the nation.

## Political economy and governance challenges

Powerful vested interests benefit from the perpetuation of the system described above: both those engaged in the fertilizer and pesticide industry, as well as some of the interests engaged in the agriculture who currently benefit from their levels of access to subsidized fertilizers and pesticides. The securing of feedstock for urea fertilizers in particular comes with a significant governance risk premium: in a more hidden (and therefore un-costed) form of subsidy, the oil and gas regulator SKK Migas has in the past directed certain gas and condensate producers to sell their production to selected fertilizer manufacturers at below market prices. This led to a corruption scandal that resulted in the downfall and jailing of numerous senior officials in SKK Migas (the former Chair), DPR Commission VII on Energy (the former Chair) and the Ministry of Energy and Mineral Resources (the former Secretary General). This illustrates the scale of the political economy challenge associated with agricultural subsidy reform in Indonesia.

## Policy responses and ways forward

- As the constitutionally mandated guardian of the nation's natural resources, the national government should take steps to ensure that when SKK Migas directs and approves the sale of the government's share of equity gas by natural gas producers to the five SOEs that produce urea fertilizer, the latter will pay a fair market price for such gas rather than an artificially low one. More generally, greater transparency around all SKK Migas regulated domestic sales of the government's share of equity gas is in order.
- SOEs that produce fertilizers and the Ministry of Agriculture (which subsidizes the costs of production) need to take active steps to ensure that the re-sale of subsidized urea fertilizers intended for low-income farmers to large corporate farms and plantations is not taking place.
- Strong policies from the Ministries of Agriculture and Environment and Forestry are needed to ban the most toxic pesticides, which now endanger both human health and the environment, and to curtail the over-use of pesticides in favour of judicious pesticide use as part of integrated pest management. The Ministry of Finance can also act to make sure that public spending on pesticide subsidies, which encourages over-use, is devoted instead to farmer extension to promote ecologically sustainable pest management practices as well as other sound agricultural investments.

## Who needs to act

Responsibility for action here falls in the first instance to Ministry of Finance, although it will also require support from the Agriculture, Environment and Forestry, Energy and Mineral Resources and State-Owned Enterprises Ministries, as well as from other critical entities such as SKK Migas and the Corruption Eradication Commission.

## CROSS-CUTTING THEME 3: GOVERNANCE AND THE POLITICAL ECONOMY

To bring about a new food and land use economy in Indonesia, as in any country, will require strong governance, political will and a real strategy to enable a ‘just rural transition’ to take place. It will also require strong co-ordination between ministries, and the cessation of siloed thinking. This is aligned with the fourth pillar of President Jokowi’s vision on the need for bureaucratic reform across governmental ministries and agencies to eliminate red tape and barriers that inhibit development.

The Government of Indonesia has made significant progress in addressing some governance issues. Coordinating ministries are currently being strengthened to align ministerial regulations<sup>xxviii</sup>, and overlapping regulations are being identified and streamlined to ensure a more conducive regulatory environment<sup>xxix</sup>. The important work of the Corruption Eradication Commission is set to continue.

Notwithstanding this progress, ongoing conflicts and opacity concerning land tenure, the concession process and competing claims on the land continue to lead to substantial economic, social and environmental costs to Indonesia. In addition, Indonesia’s ranking in the World Bank’s Ease of Doing Business (EODB) index – a benchmark that assesses countries’ domestic business regulatory environments – has remained stagnant at 73<sup>rd</sup> position since 2017, despite rigorous efforts from the government to streamline the regulatory environment of the nation (The World Bank, 2019). This showcases how the current regulatory system is mired in a labyrinth of bureaucracy and process. The system is entrenched and therefore requires radical reform which cuts across red tape and ‘ego-sectoralism’.

The coordination of regulations and policies in regard to the food and land use system is key to enabling the effective implementation of the Action Agenda. The Government’s ‘coordinating ministries’ in this case have the responsibility to ensure that all ministries are issuing regulations in alignment with the SDG goals, the LCDI, and the establishment of a new food and land use economy in Indonesia.

A clear division of responsibility between ministries is also essential to ensure that there are no conflicts or overlapping remits when it comes to implementing the agenda. Fragmentation of tasks between ministries will lead to a fragmentation of implementation on the ground, reducing overall impact. Functions such as land use and water management should be managed centrally to ensure that a systemic approach is implemented, certain functions such as holistic landscape management should be decentralized to regional government with clear indicators and monitoring mechanisms.

Successful bureaucratic reform to enable a new food and land use economy will require real and sustained political commitment from The President and the relevant ministries. A bottom-up approach to realize the agenda will not be sufficient; both top-down and bottom-up approaches will be required.

## CONCLUSION

In summary, we believe that strong actions taken across these priority areas would deliver lasting benefits to the people, environment, and economy of Indonesia – and to the fulfilment of the President and his government’s vision for their second term in office. They would also make a major contribution to meeting the country’s climate and sustainable development goals, including those set out in the *Low Carbon Development Initiative*, to the benefit of Indonesia and the world at large at this critical time for the future. The FOLU Coalition offers these ideas with humility and in good faith to decision-makers across Indonesia, and we stand ready to work in partnership over the years ahead to make them a reality.

## FOLU INDONESIA

The Food and Land Use (FOLU) Coalition is a global initiative seeking to work with partners to improve the world's food and land use systems. Indonesia has been a leading country in the initiative since its inception, alongside Colombia, Ethiopia, China, India, Australia, the Nordic countries and the United Kingdom.

Since September 2017, members of the FOLU Coalition in Indonesia – including the Indonesian Business Council for Sustainable Development (IBCSD which is part of WBCSD), the International Institute for Applied Systems Analysis (IIASA), the UN Sustainable Development Solutions Network (UN SDSN), the EAT Foundation, the Global Alliance for Improved Nutrition (GAIN), SYSTEMIQ and the World Resources Institute (WRI) Indonesia – have worked together at the national and subnational levels to support the Government of Indonesia to deliver on its sustainable development and climate goals. The FOLU Coalition is represented and co-ordinated in Indonesia by Dr. Sonny Mumbunan, Senior Economist at WRI Indonesia, and Gina Karina, FOLU Coordinator, at WRI Indonesia – with a steering committee comprised of all the partners.

FOLU's engagement in Indonesia has been undertaken since the outset in close co-ordination with BAPPENAS' Low Carbon Development Initiative, which is also supported by WRI Indonesia. FOLU coalition partners have engaged directly with other relevant line ministries, including Finance, Health, Environment, Agriculture and Maritime Affairs. The Coalition's national Ambassadors include Dr. Sri Adiningsih, Felia Salim, Budiman Sudjatmiko and Dr. Rina Agustina.

The coalition's work has included in-depth modelling of land use scenarios, conducted by members of the FABLE Consortium, including those based at the University of Indonesia and Bogor Agricultural University. The FOLU Coalition has worked through IBCSD with Indonesian and multinational businesses to support Indonesia's Food Loss and Waste Public-Private Partnership. Through the work of the EAT Foundation and partners, the FOLU Coalition has also worked with the Ministry of Health to support its reform agenda to bring about a more sustainable and nutritious food system in Indonesia.

At the subnational level, the FOLU Coalition is working in East Kalimantan (through TNC), as well as in Papua and West Papua (through EcoNusa), to support both regions to implement their vision of a more sustainable food and land use system. The recommendations and analysis in this Action Agenda draw on the work of the partners referenced above, as well as a series of stakeholder engagement workshops with experts in Jakarta and in the regions.

The FOLU Coalition is committed to work in support of the Government of Indonesia to pursue this ambitious agenda and achieve this vision in the years ahead, supporting the government's national policies and mid-term national development plan with modelling and analysis, business engagement, partnerships across a national and international network of practitioners committed to these issues, and by helping to catalyse greater investment in projects in Indonesia consistent with this vision of 'a new food and land use economy'.

The FOLU Coalition platform in Indonesia is entirely nationally owned, with the ideas in these pages brought together by a network of Indonesian experts, practitioners, academics and civil society representatives over two years of engagement and discussion (led by Dr. Sonny Mumbunan and Dr. Agus Sari). They represent an authentically Indonesian vision of a brighter future for the country and its people. Please send comments and suggestions on the paper to Gina Karina: [gina.karina@wri.org](mailto:gina.karina@wri.org).

## Endnotes

<sup>i</sup> Ratified by Law No. 16 of 2016.

<sup>ii</sup> See <https://blog.globalforestwatch.org/>.

<sup>iii</sup> The figure 28.1 Gt is from Warren, M., K. Hergoualch, J.B. Kauffman, D. Murdiyarso, and R. Kolka. 2017. "An Appraisal of Indonesia's Immense Peat Carbon Stock Using National Peatland Maps: Uncertainties and Potential Losses from Conversion," Carbon Balance and Management (12/1). The figure 33.6 Gt is from Suryadiputra, I N.N., R.L. Irwansyah, T.C.W. Iwan, and S.R. Dipa. 2018. *Restorasi Lahan Gambut di HLG Londerang dan Tahura Orang Kayo Hitam, Provinsi Jambi*. Wetlands International Indonesia, Bogor, Indonesia.

<sup>iv</sup> World Bank. 2016. The Cost of Fire: An Economic Analysis of Indonesia's 2015 Fire Crisis. The World Bank, Jakarta, Indonesia; Bayu, D.D., 2017. "Sejak Tahun 2015, Titik Kebakaran Hutan Berkurang 89%," (Since 2015 Hotspots Have Been Reduced By 89%) Katadata (19 December 2017); Hamzah, H., R. Juliane, T.N. Samadhi, and A. Wijaya, 2018. "Indonesia's Deforestation Dropped 60 Percent in 2017, but There's More to Do" World Resources Institute (August 14, 2018).

<sup>v</sup> Winata, D.K. 2019. "Menteri LHK: Presiden Teken Moratorium Hutan Permanen" (Minister of Environment and Forestry: President Has Signed the Permanent Forest Moratorium) Media Indonesia (Agustus 6, 2019); Kahfi, K., 2019. "Hopes High Permanent Ban on Forest, Peatland Clearance Will Stop Deforestation" The Jakarta Post (August 18, 2019).

<sup>vi</sup> Ibid.

<sup>vii</sup> BNPB (Badan Nasional Penanggulangan Bencana). 2017. Waspada Bencana Asap Kembali, Satelit Pantau 69 Hotspot Kebakaran Hutan dan Lahan. Badan Nasional Penanggulangan Bencana, Jakarta, Indonesia; Fitri, S. "BNPB Catat Kerugian Akibat Kebakaran Hutan 2015 Rp 221 triliun", Republika (2015, December 20); Koplit, S. N. et al., 2016. "Public Health Impacts of The Severe Haze in Equatorial Asia in September–October 2015: Demonstration of a New Framework for Informing Fire Management Strategies to Reduce Downwind Smoke Exposure", Environmental Research Letters.

<sup>viii</sup> World Bank. 2016, op cit.; Bayu, 2017, op cit.

<sup>ix</sup> An initial assessment carried out by Landscape Indonesia and SystemIQ on behalf of the BRG.

<sup>x</sup> See [https://eeas.europa.eu/headquarters/headquarters-homepage/4009/eu-indonesia-relations\\_en](https://eeas.europa.eu/headquarters/headquarters-homepage/4009/eu-indonesia-relations_en).

<sup>xi</sup> See <https://megapolitan.kompas.com/read/2008/09/16/1552591/bupati.pelalawan.divonis.11.tahun>.

<sup>xii</sup> See [http://www.reefbase.org/global\\_database/default.aspx?section=r2&region=&country=IDN](http://www.reefbase.org/global_database/default.aspx?section=r2&region=&country=IDN).

<sup>xiii</sup> See <https://jakartaglobe.id/business/indonesia-second-largest-food-waster/>.

<sup>xiv</sup> See <http://www.thejakartapost.com/news/2013/11/07/food-thought-food-waste.html>.

<sup>xv</sup> See <https://katadata.co.id/berita/2019/01/09/pdb-sektor-pertanian-terus-membaik>.

<sup>xvi</sup> See <https://setkab.go.id/tantangan-masalah-pertanian-pada-pemerintahan-mendatang/>.

<sup>xvii</sup> See <http://www.fao.org/docrep/003/T4890E/T4890E03.htm>.

<sup>xviii</sup> [depkes.go.id/article/view/18121200001/prevent-prevent-and-prevent-the-voice-of-the-world-fight-diabetes.html](https://depkes.go.id/article/view/18121200001/prevent-prevent-and-prevent-the-voice-of-the-world-fight-diabetes.html)

sia. <https://hoffmanncentre.chathamhouse.org/>

Tongeren et al., "Fertiliser and Biofuel Policies in the Global Agricultural Supply Chain," OECD Food, Agriculture and Fisheries Papers, November 28, 2014, <https://doi.org/10.1787/5jxsr7tt3qf4-en>, "plainCitation": "Frank van Tongeren et al., "Fertiliser and Biofuel Policies in the Global Agricultural Supply Chain," OECD Food, Agriculture and Fisheries Papers, November 28, 2014, <https://doi.org/10.1787/5jxsr7tt3qf4-en>."

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<sup>xx</sup> OECD, "Country Snapshots," in *Agricultural Policy Monitoring and Evaluation* (Organisation for Economic Co-operation and Development, 2017), [http://www.oecd-ilibrary.org/content/chapter/agr\\_pol-2017-5-en](http://www.oecd-ilibrary.org/content/chapter/agr_pol-2017-5-en).

<sup>xxi</sup> Thom Wright and Arif Rahmanulloh, "Indonesia Oilseeds and Products Update January 2017, GAIN Report."

- <sup>xxii</sup> World Bank (2018). "Fertilizer Consumption (kilograms per hectare of arable land)", <https://data.worldbank.org/indicator/AG.CON.FERT.ZS> (accessed 13 Dec. 2017).
- <sup>xxiii</sup> Warr, P., & Yusuf, A. A. (2014), Fertilizer subsidies and food self-sufficiency in Indonesia. *Agricultural Economics- Amsterdam*. 45, 571-588.
- <sup>xxiv</sup> Santun R. P. Sitorus and Andrea Emma Pravitasari, "Land Degradation and Landslide in Indonesia," *Sumatra Journal of Disaster, Geography and Geography Education* 1, no. 2 (December 8, 2017): 61–71, <https://doi.org/10.24036/sjdgge.v1i2.87>.
- <sup>xxv</sup> Asian Development Bank (2016) VARIOUS, *INDONESIA COUNTRY WATER ASSESSMENT*. (S.I.: ASIAN DEVELOPMENT BANK, 2016). <https://www.adb.org/sites/default/files/institutional-document/183339/ino-water-assessment.pdf> (accessed 12 Feb. 2018).
- <sup>xxvi</sup> See <https://nasional.kontan.co.id/news/subsidi-pupuk-tahun-depan-capai-rp-35-triliun>.
- <sup>xxvii</sup> - "Who Is Benefiting from Fertilizer Subsidies in Indonesia?" By Camilo Gomez Osorio, Dwi Endah Abriningrum, Enrique Blanco Armas and Muhammad Firdaus. Policy Research Working Paper 5758. The World Bank, East Asia and Pacific Region, Poverty Reduction and Economic Management Unit, August 2011.
- Kit Nicholson. "Fiscal Policy Framework for the Sustainable Development of Land Based Sectors in Indonesia." UK Climate Change Unit's Low Carbon Support Project. December 2014.
- <sup>xxviii</sup> See <https://money.kompas.com/read/2019/10/23/135903126/wewenang-makin-luas-luhut-sebut-posisi-menko-punya-hak-veto>
- <sup>xxix</sup> See <https://nasional.kompas.com/read/2019/10/24/11334721/jokowi-minta-menteri-kumpulkan-regulasi-yang-tumpang-tindih-dalam-waktu-1>.

## References

- (n.d.). *Jumlah dan Persentase Penduduk Miskin Menurut Provinsi, September 2017-2018*. Badan Pusat Statistik Indonesia,.
- (n.d.). . *The State of Food Security and Nutrition in the World. Safeguarding against economic slowdowns and downturns*. Rome, FAO.
- Agustina, R., Dartanto, T., Sitompul, R., Susiloretni, K. A., Suparmi, Achadi, E. L., . . . Thabrany, H. (2019). Universal health coverage in Indonesia: concept, progress, and challenges. *The Lancet*, 393(10166), 75-102. Retrieved from [https://doi.org/10.1016/S0140-6736\(18\)31647-7](https://doi.org/10.1016/S0140-6736(18)31647-7)
- Arumingtyas, L., & Zamzami. (2017, January 12). *Konflik Lahan 2016, Sektor Perkebunan Tertinggi Didominasi Sawit*. Retrieved from Mongabay: <https://www.mongabay.co.id/2017/01/12/konflik-lahan-2016-sektor-perkebunan-tertinggi-didominasi-sawit/>
- Austin, K., Alisyahbana, A., Darusman, T., Boediono, R., Budianto, B., Purba, C., . . . Stolle, F. (2014). *"Indonesia's Forest Moratorium: Impacts and Next Steps*. World Resources Institute .
- Bappenas. (2014). *Indeks Pembangunan Desa*. Jakarta: National Development Agency of Indonesia (Bappenas).
- BAPPENAS. (2019). *Low Carbon Development: A Paradigm Shift Towards a Green Economy in Indonesia*. Jakarta: BAPPENAS.
- Barreiro, V., Iqbal, M., Limberg, G., Prasodjo, R., Sileuw, A., & Schweithelm, J. (2016). *The Cost of Conflict in Oil Palm in Indonesia* . Daemeter.
- BPS. (2017). *Statistik Kelapa Sawit Indonesia, Indonesian Oil Palm Statistics*. Jakarta, Indonesia: Badan Pusat Statistik (BPS).
- BPS. (2018). *Jumlah dan Persentase Penduduk Miskin Menurut Provinsi*. Jakarta: Badan Pusat Statistik Indonesia (BPS).
- CEA. (2015). *Indonesia Fisheries: 2015 Review* . California Environmental Associates (CEA).
- CEA. (2018). *Trends in Marine Resources and Fisheries Management in Indonesia: A 2018 Review*. California Environmental Associates (CEA).
- Chalmers, J., & Munthe, B. (2019, August 14). *EU imposes duties of up to 18% on Indonesian biodiesel*. Retrieved from Reuters: <https://www.reuters.com/article/us-eu-indonesia-biodiesel/eu-imposes-duties-of-up-to-18-on-indonesian-biodiesel-idUSKCN1V409O>

- Deutsche Asset & Wealth Management (UK) Limited . (2015). *ESG & Corporate Financial Performance: Mapping the global landscape*. London: Deutsche Asset & Wealth Management (UK) Limited .
- Evans, M. (2019, April 29). *Masa Depan Perhutanan Sosial di Indonesia: Bagaimana Mendongkrak Pengelolaan Hutan Masyarakat Hingga 750%*. Retrieved from CIFOR Forest News : <https://forestsnews.cifor.org/60560/masa-depan-perhutanan-sosial-di-indonesia?fnl=id>
- FAO. (2014). *Towards climate-responsible peatlands management*. Rome: Food and Agriculture Organization of the United Nations (FAO).
- FAO, IFAD, UNICEF, WFP, & WHO. (2019). *The State of Food Security and Nutrition in the World: Safeguarding Against Economic Slowdowns and Downturns*. Rome: Food and Agriculture Organization of the United Nations.
- FOLU. (2019). *Growing Better: Ten Critical Transitions to Transform Food and Land Use*. The Food and Land Use Coalition (FOLU). Retrieved from <https://www.foodandlandusecoalition.org/wp-content/uploads/2019/09/FOLU-GrowingBetter-GlobalReport.pdf>
- Gokkon, B. (2018, April 23). *Indonesia's crackdown on illegal fishing is paying off, study finds*. Retrieved from Mongabay: <https://news.mongabay.com/2018/04/indonesias-crackdown-on-illegal-fishing-is-paying-off-study-finds/>
- Harris, N., Minnemeyer, S., Stolle, F., & Payne, O. (2015, October 16). *Indonesia's Fire Outbreaks Producing More Daily Emissions than Entire US Economy*. Retrieved from World Resources Institute: <https://www.wri.org/blog/2015/10/indonesia-s-fire-outbreaks-producing-more-daily-emissions-entire-us-economy>
- IKI. (2017, February 3). *Building with Nature in Indonesia*. Retrieved from International Climate Initiative (IKI): [https://www.international-climate-initiative.com/en/news/article/building\\_with\\_nature\\_in\\_indonesia/](https://www.international-climate-initiative.com/en/news/article/building_with_nature_in_indonesia/)
- IPCC. (2019). *Climate Change and Land, an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. Intergovernmental Panel on Climate Change (IPCC).
- Khudori. (2010, September). Kondisi Pertanian Pangan Indonesia. *Pangan*, 19(3), 211-232.
- L.P., K., & Wilcove, D. (2008, June). Is Oil Palm Agriculture Really Destroying Tropical Biodiversity? *Conservation Letters*, 1(2), 60-64.
- Lawrence, D., & Vandecar, K. (2015). *Effects of tropical deforestation on climate*. Nature Climate Change.
- Levicharova, M., Paul, S., & Wakker, E. (2016). *Felda Global Ventures: RSPO Credentials At Risk: Immediate Cash Flow Impacts* . Washington, D.C., USA: Chain Reaction Research.
- Levicharova, M., Profundo, Steinweg, T., Aidenvironment, Thoumi, G., CFA, . . . Advisers, C. (2017). *2017 Indonesian Palm Oil Sector Benchmark: Revenue at Risk vs. Palm Oil NDPE Sourcing*. Washington, DC: Chain Reaction Research.
- Levin, J. (2012). *Profitability and Sustainability in Palm Oil Production: Analysis of Incremental Financial Costs and Benefits of RSPO Compliance*. Geneve, Switzerland: World Wide Fund for Nature (WWF), FMO, and CDC.
- Lipinski, B., Hanson, C., Lomax, J., Kitinoja, L., Waite, R., & Searchinger, T. (2013, June). Reducing Food Loss and Waste. *Installment 2 of "Creating a Sustainable Food Future", Working Paper*.
- MOEF. (2018). *Indonesia: Second Biennial Update Report Under the United Nations Framework Convention on Climate Change*. Jakarta: Ministry of Environment and Forestry (MOEF).
- MOEF. (2018). *State of Indonesia's Forest 2018*. Jakarta: Ministry of Environment and Forestry (MOEF), Republic of Indonesia.
- MoV. (2015). *Indeks Desa Membangun* . Jakarta: Ministry of Villages (MoV).
- Mulyo, R. A. (2016). *Perkiraan Kehilangan Pangan (Food Loss and Food Waste) Komoditas Beras di Indonesia. Dissertation*, 40. Bogor: Department Gizi Masyarakat Fakultas Ekologi Manusia Institut Pertanian Bogor.

- Murdiyarso, D., K. Hergoualch, S. S., & Hanggara, B. (2017). *Cadangan Karbon di Lahan Gambut*. Bogor: Center for International Forestry Research (CIFOR).
- Noordwijk, M. v., Suyanto, S., Budidarsono, S., Sakuntaladewi, N., Roshetko, J. M., Tata, H. L., . . . Fay, C. (2007). *Is Hutan Tanaman Rakyat a new paradigm in community based tree planting in Indonesia? ICRAF Working Paper Number 45*.
- Norway Government. (2016, December 5). *Press release: - Indonesia's Peat Moratorium could benefit people, welfare and climate*. Retrieved from Government.no: <https://www.regjeringen.no/en/aktuelt/indonesias-president-forbyr-a-odelegge-torvmyrer/id2522663/>
- Nuraeni, A. (2019, March 18). *How KPK Conserves Natural Resources* . Retrieved from Publish What You Pay Indonesia: <https://pwpindonesia.org/en/how-kpk-conserves-natural-resources/>
- Parish, F., Sirin, A., Charman, D., Joosten, H., Minayeva, T., & Silvius, M. (2007). *Assessment on Peatlands, Biodiversity, and Climate Change: The Executive Summary*. Kuala Lumpur and Wageningen: Global Environment Centre and Wetlands International.
- Pearce, F. (2007, November 28). *Bog barons: Indonesia's carbon catastrophe*. Retrieved from New Scientist: <https://www.newscientist.com/article/mg19626321-600-bog-barons-indonesias-carbon-catastrophe/>
- Preusser, S. (2015). *The Correlation between Economic and Financial Viability with Sustainability for Palm Oil Plantations*. Kuala Lumpur, Malaysia: RSPO.
- Purba, C., Nanggara, S., Ratriyono, M., Apriani, I., Rosalina, L., Sari, N., & Meridian, A. (2014). *The State of the Forest Indonesia: Period of 2009-2013*. Bogor, Indonesia: Forest Watch Indonesia.
- Quincieu, E. (2015). *Summary of Indonesia's Agriculture, Natural Resources and Environment Sector Assessment* . Asian Development Bank.
- RSPO. (2015). *Remediation and Compensation Procedure (RaCP) Related to Land Clearance Without Prior High Conservation Value (HCV) Assessment*. RSPO (Roundtable on Sustainable Palm Oil).
- Seymour, F. (2019). *Indonesia Reduces Deforestation, Norway To Pay Up* . Washington, DC, USA.: World Resources Institute.
- Simangunsong, B., Brown, T. H., Brown, D. W., & Justianto, A. (2006). *Welfare Gains of Returning Forest Areas to Community Management*. Jakarta, Indonesia: DFID Multi-stakeholder Forestry Program.
- Sindo. (2019, April 8-14). *Upaya Ubah Diskriminasi Sawit Uni Eropa (UE): Indonesia Jangan Gelap Mata*. *Sindo Weekly*, p. 2019.
- Siscawati, M. (1998). *Underlying Causes of Deforestation and Forest Degradation in Indonesia: A Case Study on Forest Fire" IGES International Workshop on Forest Conservation Strategies for the Asia and Pacific Region*. Kanagawa: Institute for Global Environmental Strategies (IGES).
- Soliman, T., Lim, F. K., Lee, J. S., & Carrasco, L. R. (2016). Closing oil palm yield gaps among Indonesian smallholders through industry schemes, pruning, weeding and improved seeds. *Royal Society Open Science*, 3(8).
- Stefani, S., Ngatidjan, S., Paotiana, M., A.Sitompul, K., Abdullah, M., P.Sulistianingsih, D., . . . Agustina, R. (2018). Dietary Quality of Predominantly Traditional Diets is Associated with Blood Glucose Profiles, but not with Total Fecal Bifodobacterium in Indonesian Women. *PLOS ONE*, 14(4).
- Sunderlin, W., & Resosudarmo, I. (1996). *Rates and Causes of Deforestation in Indonesia: Towards a Resolution of the Ambiguities*. Bogor: Center for International Forestry Research (CIFOR).
- The Chain. (2016, August 29). *The Chain: Sampoerna Agro Fined \$81 Million For Fires, RSPO Reaching Out to Africa and Latin America*. Retrieved from Chain Reaction Research : <https://chainreactionresearch.com/the-chain-sampoerna-agro-fined-81-million-for-fires-rspo-reaching-out-to-africa-and-latin-america/>
- The World Bank. (2016 ). *The Cost of Fire: An Economic Analysis of Indonesia's 2015 Fire Crisis*. Jakarta, Indonesia : World Bank Group.

- 
- The World Bank. (2019). *Doing Business 2019*. Washington, DC: International Bank for Reconstruction and Development / The World Bank.
- Tigris, H. (2016). *Kebijakan dan Pelaksanaan Landreform di Era Pemerintahan Jokowi-JK*. Rechtsvinding.
- Tizabi, D. (2018, February 8). *Ecotourism: Balancing Conflicting Interests*. Retrieved from Public Policy Indonesia: <https://publicpolicyindonesia.wordpress.com/2018/02/08/ecotourism-balancing-conflicting-interests/>
- Toumbourou, T. (2007). *Improving Indonesia's Forest and Land Governance: Using a Delphi Approach to Identify Efficacious Interventions*. Jakarta, Indonesia: The Asia Foundation.
- UNICEF. (2019). *The State of the World's Children 2019 - Children, food and nutrition: Growing well in a changing world*. New York: UNICEF.
- Van Gelder, J., & A. Sari, a. P. (n.d.). . 2017. *Managing Palm Oil Risks: A Brief for Financiers. Roundtable for Sustainable Palm Oil, Landscape Indonesia, Profundo, World Agriculture Center, and Center for International Forestry Research, Jakarta, Indo*.
- Van Gelder, J., Sari, A., & Pacheco, P. (2017). *Managing Palm Oil Risks: A Brief for Financiers*. Jakarta: Roundtable for Sustainable Palm Oil, Landscape Indonesia, Profundo, World Agriculture Center, and Center for International Forestry Research.
- VCMI. (2016). *Food Waste: Aligning Government and Industry Within Value Chain Solutions*. Value Chain Management International Inc. (VCMI).
- Vermeulen, S., Wellesley, L., Airey, S., Singh, S., Agustina, R., Izwardy, D., & Saminarsih, D. (2019). *Healthy Diets from Sustainable Production: Indonesia*. The Royal Institute of International Affairs.
- Wright, S. (2016, September 15). *The illegal \$81.4 billion industry destroying Indonesia's forests*. Retrieved from America Magazine: <https://www.americamagazine.org/issue/eu-licensing-system-stem-illegal-timber-indonesia>