

# IMPACTS OF EXTRACTIVE INDUSTRY AND INFRASTRUCTURE ON FORESTS

INDONESIA



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# Assessment and Scoping of Extractive Industries and Infrastructure in Relation to Deforestation: Indonesia

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# Acronyms and Abbreviations

Acronym	
AoC	Area of Concern
ASGM	Artisanal and Small-scale Gold Mining
BAPPENAS	National Development Planning Agency
BPIW	Regional Infrastructure Development Agency
CCOW	Coal Contracts of Work
CSO	Civil society organization
EIA	Environmental Impact Assessment
EITI	Extractive Industries Transparency Initiative
EODB	Ease of Doing Business
FDI	Foreign Direct Investment
FPIC	Free, prior and informed consent
GCA	Government Contracting Agency
GIS	Geographic information system
GW	Gigawatt
ha	hectare
ICMM	International Council on Mining and Metals
IFC	International Finance Corporation
IRENA	International Renewable Energy Agency
Mha	Million hectares
MoEF	Ministry of Environment and Forestry
MoEMR	Ministry of Energy and Mineral Resources
MP3EI	Masterplan for Acceleration and Expansion of Indonesia's Economic Development
NDC	Nationally Determined Contributions
PIC	Provincial Information Commissions

PwC	PricewaterhouseCoopers
SEA	Strategic Environmental Assessment
SOE	State Owned Enterprise
WWF	World Wildlife Fund

# Executive Summary

This report is part of a larger study commissioned by the Climate and Land Use Alliance (CLUA) to explore the impacts of extractive industries and infrastructure (EII) on forest loss and degradation and community rights in the Amazon, Mexico and Central America, and Indonesia.

The Indonesian archipelago hosts much of the globe's remaining humid tropical forest, concentrated especially in Papua, Kalimantan and Sumatra. While the fiber, logging and palm oil industries have been the principal proximate drivers of Indonesian land cover change, investments in resource extraction and infrastructure have also led to forest loss, greenhouse gas emissions, and rights infringement in forest communities. Their future impacts on forest may be far greater. Most of Indonesia's coal reserves are located in East Kalimantan, South Kalimantan and South Sumatra, and recent governments (Joko Widodo, "Jokowi," 2014-19 and Susilo Bambang Yudhoyono, "SBY", 2004-2014) have promoted large-scale infrastructure investment in support of extractive industry and other natural resource based economic development by linking resource extraction to domestic and international commodity and energy markets.

## Drivers of increased investment in resource extraction and infrastructure in Indonesia

A combination of global, national and sub-national factors leads to growth in investment in extractive industry and infrastructure. These factors include:

**Global commodity prices and demand:** High international gold prices, together with lack of livelihood alternatives, attract increasing numbers of people into ASGM. Continuing high levels of demand for Indonesia's coal, especially from China and India, encourage investment in coal mining. Global finance, especially from China, has flowed increasingly into infrastructure and extractive industry.

**National level development ideologies and elites:** Policies continue to emphasize natural resource extraction as central to Indonesia's development, and national elites who have become economically and politically strong from investing in these sectors advocate strongly for them. Policies to increase coal-based electricity generation as part of a strategy to increase national energy production and broaden access to energy will increase domestic demand for coal. Growing resource nationalism has strengthened the position of nationally owned coal companies, many of whom also invest in coal-based electricity generation plants. The mining sector is assisted by corruption and tax evasion which ease companies' and ASGM miners' access to mining licenses, increase profit rates, and protect illegal export of minerals.

**National development plans:** National spatial plans make explicit commitments to infrastructure-resource extraction synergies. The Masterplan for Acceleration and Expansion of Indonesia's Economic Development (MP3EI) of the SBY government sought to develop Kalimantan as a center for mining and energy production, while for Sumatra the plan emphasized oil and gas, coal, and oil palm. The Jokowi government's "special economic areas" and "strategic development areas" maintain this focus. The priority export commodities include

minerals, coal, and the products of large-scale plantations. Infrastructure is considered an enabling condition for the achievement of economic growth targets. The government has created financing instruments to facilitate investment in these areas.

**Decentralization to subnational authorities:** Following *reformasi*,<sup>i</sup> local authorities began to issue large numbers of mining licenses, frequently in forested areas and overlapping with natural resource concessions, in return for financial contributions. Subnational authorities and branches of the military have eased the growth of ASGM in return for payment or profit sharing.

## Impacts of resource extraction on forests and rights

Resource extraction and infrastructure have both direct effects on forests and indirect impacts because they facilitate the expansion of the oil palm, fiber and logging sectors. Among different extractive industries, coal mining and artisanal and small-scale gold mining (ASGM) have had the most significant impacts on the country's forests and greenhouse gas emissions. Estimates suggest that some 1.5 million Indonesians live from ASGM and are spread across the archipelago. Indonesia is the world's largest exporter of thermal coal, and significant increases are planned in domestic electricity generation by coal-fired power plants. The emissions from increased coal burning will reduce Indonesia's ability to meet its nationally determined contributions (NDC) targets.

To date, mining has had limited impacts on forest loss. Between 2000 and 2010, Sumatra, Kalimantan, Sulawesi, the Maluku Islands, and Papua lost approximately 14.7 million hectares (ha) of forests in total, with only 2.1 percent of this loss occurring within mining concessions (1). Rates of forest loss in coal mining concessions are, however, similar to those in oil palm concessions, and where mining concessions overlap with other types of concessions, as many do, forest loss increases substantially. The NGO Auriga estimates that 1.74 million ha of forest are affected by current coal mining, including 1.1 million ha that are designated as "conservation" and "protection" forests. Further, the NGO Fern estimates that 9 percent of Indonesia's remaining total forest cover is threatened by future coal mining permits.

While the coal value chain can generate livelihood opportunities and energy access for some, coal mining is also associated with the violation of community and community members' rights in areas located near to or downstream of mine sites. These include violations of rights to land and security, prior consultation, self-determination, life and physical integrity, and a healthy environment. In 2016, the National Human Rights Commission concluded that 27 deaths occurred at former coal mining sites between 2011 and 2016 in East Kalimantan.

Alluvial ASGM involves dredging and the permanent removal of forest cover by migratory strip mining over the land surface. Impacts on forests are far more widespread than from hard-rock mining. The illegality or informality of ASGM limits community mechanisms to hold such mining accountable. There is significant presence of ASGM in conservation forests.



## Infrastructure-resource extraction synergies and forest loss

The primary impacts of infrastructure on forests are indirect due to synergies with oil palm cultivation, mining, smallholder agriculture, logging and other activities catalyzed by infrastructure. These impacts can be extensive. An environmental assessment of the potential impacts of MP3EI estimated the value of Indonesia's national 'natural capital at risk' as a result of the Masterplan to be approximately \$490 billion annually, though actual impacts were expected to be lower. The largest impacts on natural resources would be in Kalimantan, Sumatra, and Papua-Maluku. The current government's Economic Stimulus Package I-XIII is mostly a reworking of MP3EI, and so these earlier cautions and aggregate assessments remain relevant.

Planned investments in thermal power plants in different provinces bring the point of demand closer to the coal mine, and so facilitate mine expansion. In a similar vein, the proposed 425 km Central Kalimantan Railway would allow up to 50 million tons of coal to be shipped out of Central Kalimantan's rainforests every year, taking the coal to ports from where it would be shipped for export or sent to power plants on Java, opening up significant portions of new forest to coal mining and other extractive industries. A consortium led by China National Railway won the tender to develop the project in April 2014, though the investment is currently on hold.

Recent historical experience suggests that infrastructure projects have been a significant driver of displacement and have weakened community rights over resources. The Internal Displacement Monitoring Centre estimates that World Bank-financed projects displaced 11,400 people between 2004 and 2013. The three projects that displaced the most people were related to resource extraction and infrastructure: a hydroelectric power project, a road infrastructure project, and a gas market development project.

## Responses to forest loss and rights violations

There have been many responses to the problem of forest loss and degradation in Indonesia, but relatively few of these address the specific roles of extractive industry and infrastructure. Regulations around safeguards (based in Law No. 32 of 2009) and efforts to harmonize regulations, particularly through the "One Map Initiative" that would address conflicting property and concessions claims, indicate efforts by the government to respond to perceived challenges of over-exploitation of resources and negative socio-environmental impacts from extractive industries and infrastructure. However, the initiative faces challenges in compiling accurate and up-to-date information about land-based permits, and nor are there current national maps for customary land, or village borders. Should the One Map ignore or erase indigenous communities' land tenure claims, it is likely to pose more social problems than it solves.

The Constitutional Court ruling in 2013 that customary forest is private forest, outside of the state forest zone, became a significant starting point for the state to acknowledge the rights of indigenous and local communities in forest and land management, and eventually for contributing to resolving land conflicts connected to forest status. At the same time, these efforts

often fall short in the context of persistent corruption and limited resources for oversight and enforcement. Civil society organizations (CSOs) have been important in advocating for increased transparency and in advancing tools, including spatial visualizations, to demonstrate to the public the extent of impacts and generate debate and advocacy, which in turn influences government action. They have also employed litigation as a means of addressing environmental and rights violations.

A range of challenges continues to face civil society and public organizations addressing forest loss and rights violations due to investment in resource extraction and infrastructure. Monitoring of extractive industries remains weak, due in part to a lack of resources (including adequately trained staff), but also because of patterns of political patronage that undermine government-mandated programming. Local communities could play a greater role in monitoring, although the legal aid offices that could provide training and support are consistently underfunded. The media can play a greater role in exposing land use infractions related to extractive industries and infrastructure, although journalists' lack of access to mining sites, paired with companies' power over newspaper advertising budgets and, sometimes, local communities, make such reporting difficult. Nevertheless, this type of reporting has been important in bringing attention to issues of rights violations around mining in particular.

Rarely do responses address the extractive-infrastructure-forest-rights relationship as an integrated problem. Some organizations work on extractive industries, fewer on infrastructure, and very few on the ways in which synergies between these two sectors operate and affect forests and community rights. Responses have paid more attention to mining than to infrastructural development.

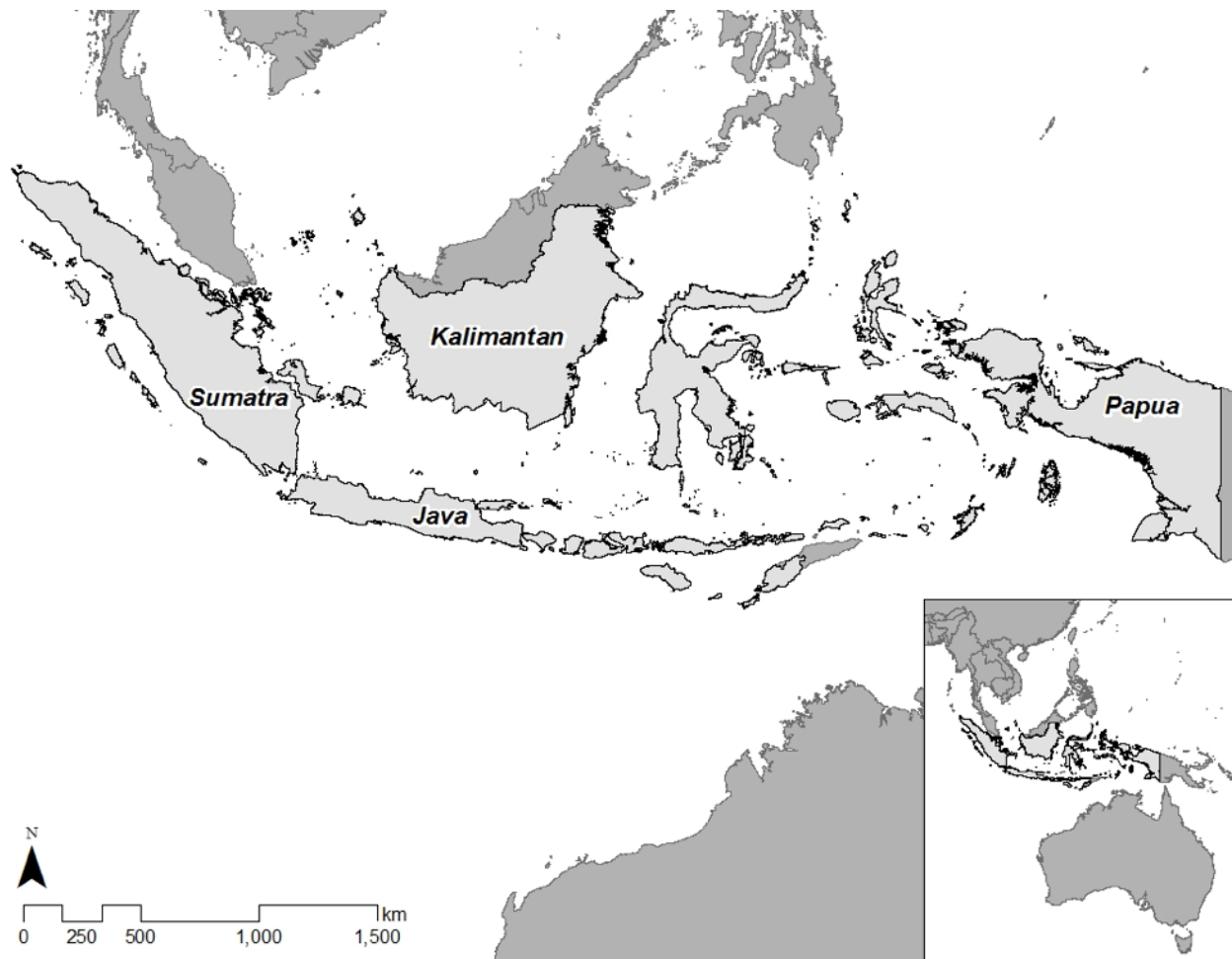
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<sup>i</sup> Reformasi refers broadly to Indonesia's process of democratic transition, beginning with the movement to end the rule of Suharto as President in 1998.

# A. Introduction

## Background/context

The Indonesian archipelago hosts much of the globe's remaining humid tropical forest, concentrated in particular in Papua, Kalimantan and Sumatra. Academic and policy research has documented the role of the expanding agricultural frontier and logging economy in the rapid loss of this forest. Frequently, this loss of forest is accompanied by the violation of the rights of communities who previously lived in and from that forest. Indonesia's first nationally determined contribution (NDC) to the United Nations Framework Convention on Climate Change, submitted in 2016 as part of fulfilling the country's commitments under the Paris Climate Agreement, identifies 'land use change and forestry' as the main contributors to the country's greenhouse gas emissions (2), with some estimates suggesting that over 80 percent of Indonesia's emissions result from forest loss, degradation and fires on peat land (3).



**Figure 1. Indonesia and the location of its major islands.**

The rapid expansion of oil palm plantations has received much attention as a key proximate driver of such forest loss (Greenpeace, 2013; Carlson et al., 2012; Harris et al., 2017). This insight has motivated much work to reduce the impact of expanding oil palm cultivation on forest cover: through land titling programs, certification initiatives, CSO-industry collaborations, coordinated intervention along the oil palm value chain, and litigation, among other public and private interventions. That said, the academic literature is not of one mind on the hierarchy of drivers of forest loss. Other authors conclude that fiber and logging industries are the main causes of deforestation (4, 5), and Abood et al. (1) argue that fiber is responsible for 12.8 percent and timber for 12.5 percent of forest cover loss, with oil palm ranking third, causing 6.8 percent of forest cover loss. Recent work also suggests that the significance of oil palm is declining and that oil palm expansion is increasingly in deforested areas (6).

## Purpose and structure of report

This report was commissioned in 2016-17 by the Climate and Land Use Alliance to provide scoping of the relationships between investments in extractive industries and infrastructure, patterns of deforestation, and the rights of forest dependent communities, especially of Indigenous Peoples. The scoping also considered ways in which different organizations have responded to these relationships, with a particular focus on civil society responses. This report on Indonesia is one of three separate regional reports and one global/synthesis report.

The report takes as a given that the expanding fiber, logging and oil palm industries are, together, the principal proximate drivers of land cover change in Indonesia. However, we ask to what extent investments in extractive industry and infrastructure (EII) are also important drivers of forest loss, related greenhouse gas emissions, and rights infringement in forest communities. We consider the potential role of extractives and infrastructure not just as *proximate* drivers, but also as *underlying* drivers that may, in some cases, be enabling the expansion of the oil palm, fiber and logging industries.

Specifically, the report addresses: the current status of these two sectors (Part B); the factors driving increased investment in extractives and infrastructure (Part C); evidence on the actual and potential impacts of these sectors on forests and forest peoples (Part D); and different ways in which state and civil society bodies have responded to these impacts (Part E). As the purpose of the paper is to scope, not to recommend, these different responses are not evaluated for their relative merits, and the paper does not make policy proposals.

In examining “extractive industry” the paper focuses on coal mining and artisanal and small-scale gold mining (ASGM) as these are presumed to be the extractive activities most likely to have significant impacts on forest cover. For “infrastructure,” the focus is on large-scale infrastructure investment (primarily roads, railways, power plants, power lines, and ports).

The report is based on a review of the academic literature; a review of policy documents; key informant interviews with civil society and public sector informants; geographic information

systems (GIS) and remote sensing analysis of concessions and forest cover; and workshops in Jakarta to discuss initial arguments and ideas.<sup>1</sup>

## B. Extractive industry and infrastructure in Indonesia: scale and status

### 1. Extractive industry

#### Overview

Indonesia is an important producer of coal, copper, gold, tin and nickel. Mining experienced strong growth during the commodity price boom of 2000-2008 and by 2010 represented 79 percent of the total revenue generated by natural resources extraction. By 2010, mining contributed almost 7 percent of GDP, up from 4 percent in 2001, though still much less than oil and gas (7). Notwithstanding the effects of the global economic crisis on commodity prices and the mining industry worldwide, coal, nickel and tin have continued to experience growth in Indonesia, as has ASGM. Coal exports generated 70 percent of the mining sector's contribution to government revenue, and export income from coal exceeds that of all other Indonesian minerals. The coal boom saw Indonesia increase its coal production from 67 million tons in 2001 to 474 million tons in 2013. There is also a significant informal and illegal coal economy, with substantial undeclared exports to India and elsewhere.

Aside from coal, formal sector production of most minerals (e.g., nickel, gold, copper) is concentrated in a relatively limited number of mine sites, meaning that the aggregate impacts of such mining on land cover and community rights are limited. Although several large nickel mines are currently under development in Indonesia, there are only two major producers at present: PT Antam and PT Inco Indonesia. Both companies are also developing their own nickel-smelting facilities. PT Inco is building an acid-leach processing plant near its Sorowako nickel mine in Sulawesi at a cost of \$1.1 billion, and PT Antam is developing a nickel smelting facility in the southeast of the island – presumably in response to Indonesia's new ban on the export of unprocessed ore (see section C1 below). The situation is similar for gold and copper produced by formal mining companies. There are four major copper and gold mines in the country. The two largest mines are run by PT Freeport Indonesia and PT Newmont Nusa Tenggara and account for 94 percent of Indonesia's copper production and more than half of the country's formally registered gold production (i.e., excluding ASGM gold). There are a further ten operational gold and silver mines in the country, but these are much smaller in scale. The government is also encouraging the development of aluminum refinery plants in Indonesia's two largest bauxite producing provinces: Riau Islands and West Kalimantan.

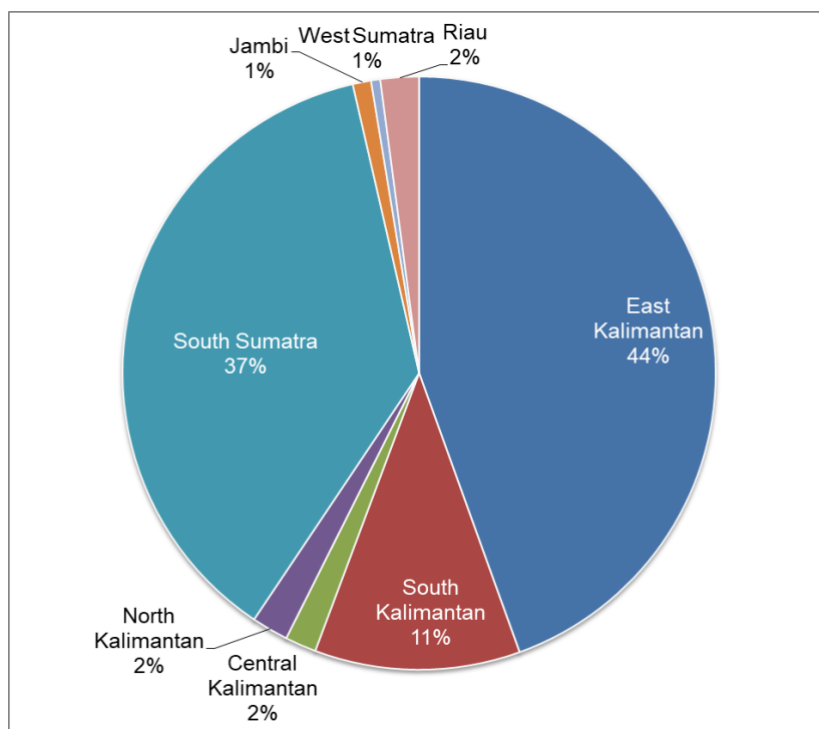
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<sup>1</sup> The paper also benefitted from comments from staff and program officers in the Climate and Land Use Alliance.

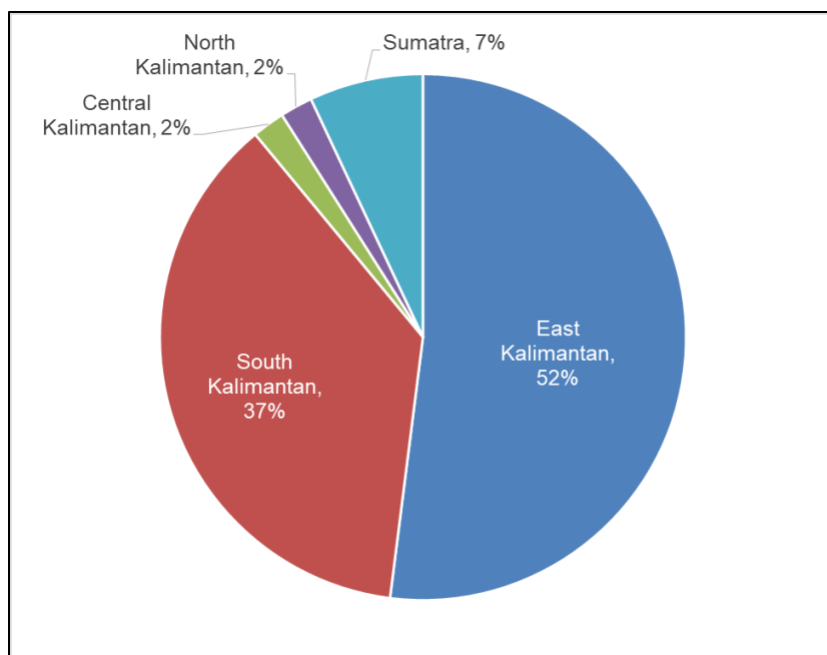


## Coal mining

According to the Ministry of Energy and Mineral Resources, there were an estimated 32.3 billion tons of proven coal reserves in Indonesia in 2014, about 3 percent of global coal reserves. Most of the reserves are located in East Kalimantan, South Kalimantan and South Sumatra, though smaller reserves are spread across other provinces in Kalimantan and Sumatra (Figure 2). The vast majority of coal is mined in East and South Kalimantan (Figure 3). The majority of these reserves are categorized as medium grade. The second largest class of reserves are low grade, most of which is found in South Sumatra and is not suitable for export. Therefore, the government's strategy for South Sumatra is to build large power plants at mine sites in order to produce electricity at the point where the coal comes out of the ground.

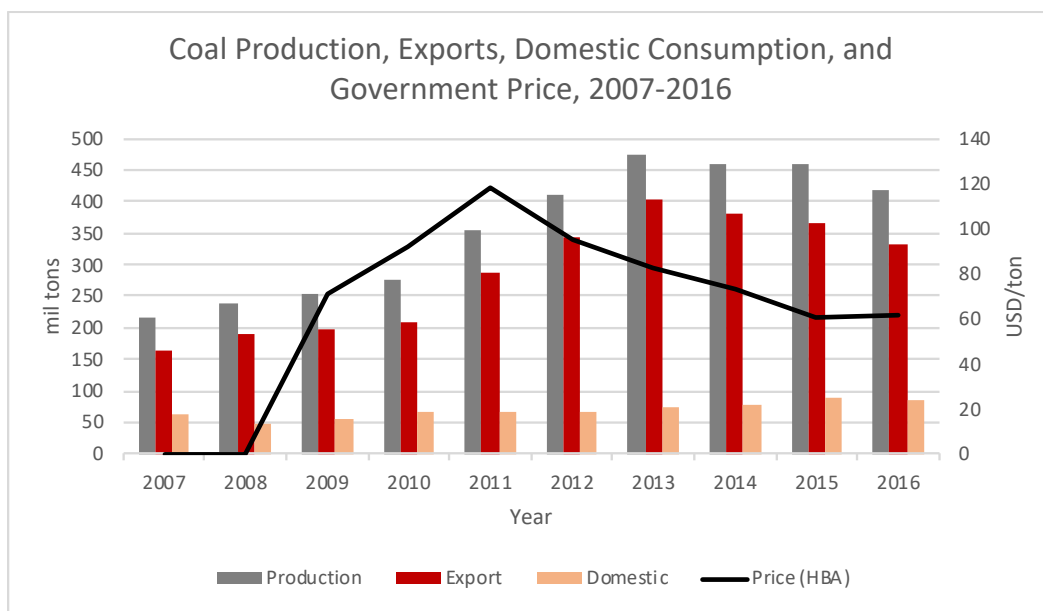


**Figure 2. Indonesian Coal Reserves by Province, 2014 (8).**



**Figure 3. Indonesian coal production by province, 2015.** *Source: PLN Data*

Indonesia is the world's largest exporter of thermal coal, and until 2013, increasing global demand for coal fueled substantial annual increases in production in Indonesia (Figure 4). In 2013, Indonesian coal production reached a high of 474 million tons, with 15 percent destined for domestic consumption and the remainder for export. Due to a downturn in the international coal market, Indonesian exports fell slightly after 2013, but remain above 300 million tons annually. Coal production in 2017 nearly reached 2013 levels, and in 2018, total production is expected to reach 485 million tons, its highest level ever, with 371 million tons destined for export (9, 10).



**Figure 4. Coal production, exports, domestic consumption, and government-set price index (HBA) from 2007-2016.** Peak production in 2013 hit 474 million tons. *Source: Indonesia Investments (11).*

By 2013, PricewaterhouseCoopers (PwC) reported that there were 106 major coal companies in production in Indonesia, and another 62 undertaking exploration and development – mostly in East Kalimantan, South Kalimantan, and South Sumatra (12). In addition, a multitude of small mining operators exist, often illegal and semi-legal operators, as well as communities and individuals mining for their own consumption (13). PT Bumi Resources is the biggest coal producer, with PT Adaro a close second. In all, just ten companies produce 80 percent of all Indonesian coal, most of which were some of the earliest to obtain Coal Contracts of Work (CCOW). These contracts were issued by the national government from the early 1980s onwards and were modeled on the contracts of work issued for Indonesia’s Freeport copper and gold mining project in Papua in the 1960s in order to provide regulatory certainty and incentivize investment. For decades, the CCOW served as the regulatory basis and impetus for Indonesia’s burgeoning global coal industry (14).

The security that CCOWs provided through the granting of “conjunctive title”<sup>2</sup> allowed companies to develop long-term strategies and make significant investments in infrastructure and equipment. The Government of Indonesia issued the first round of CCOWs between 1981 and 1990, and today eight of the original ten companies that signed one of these contracts are still among Indonesia’s most important coal producers. Second generation CCOWs (issued only in 1994) and third generation CCOWs (issued 1997 to 2000) provided slightly less favorable terms and often were issued for concession areas in less favorable zones, but have contributed an increasing share of total Indonesian production over time. As of 2009, 11 of the original 17

<sup>2</sup> Conjunctive title gives security of tenure to the investor, empowering the investor to proceed from survey and exploration stage through to mine development and production.

second generation CCOWs were still active, as were 55 of the original 114 third generation CCOWs (15). At the time of issuance, CCOWs were available to international and domestic companies and typically for larger areas; the Government issued *Kuasa Petambangan* (KP) licenses from 2000 to 2009 exclusively to domestic investors and for relatively small areas (5000 hectares). Companies with KP licenses have contributed relatively little to total production, about 4 percent as of 2009 (14).

CCOWs have covered almost two million hectares of land, with all of the largest producers operating on Kalimantan. First generation CCOWs generally chose Kalimantan for early investment as its reserves were higher quality and key sites in the provinces of South and East Kalimantan had good access to navigable rivers and coastal zones with high potential for the development of ports for sea-going vessels. Using barges to transport coal down the Barito and Mahakam Rivers has proven a relatively low-cost method when compared with the cost of truck or rail transport (15). Eleven of the 35 third generation companies still undertaking exploration activities are clustered in the Muarateweh area of Central Kalimantan, which is known to contain high-quality coking coals. The largest of these concessions is the IndoMet concession, which is discussed in section D2 of this report. Infrastructure constraints, such as draft limits on the northern branch of the Barito River and obstacles to the construction of railway lines from Muarateweh to Balikpapan, have constrained the development of these high-quality coking coal resources (15); however, recent government infrastructure plans are prioritizing connectivity and a Kalimantan railway is in the works (16).

The 2009 Mining Law created a new licensing system (*Izin Usaha Pertambangan*, or IUP) and included requirements for CCOWs to transition to IUP licenses within one year of the law's passage rather than extending the favorable terms that the contracts had provided<sup>3</sup> (13). A series of directives from the Ministry of Energy and Mineral Resources and the most recent administrations have also mandated foreign company divestment from the coal and minerals sectors, and large multinationals such as BHP Billiton and Rio Tinto have divested completely from Indonesian coal. These moves leave Indonesian coal production firmly in the hands of domestic companies, who have developed significant capacity over the past thirty years – as of 2009, five of the six largest coal producers in Indonesia were majority domestically owned and accounted for 75 percent of coal exports over the 2002 to 2009 period (17). Thus far, new companies entering production under IUPs have had little impact on the market, in part because of the small extent of concession areas (5000 ha) and undercapitalization. How companies that have enjoyed the benefits of CCOWs will fare when faced with IUP compliance requirements remains a subject of concern, although recently signed amendments will increase government revenues from several first and second generation CCOW companies by \$68 million (18).

Between 2014 and 2016, the coal sector went through a significant downturn driven by low coal prices on the international markets. The ten big companies maintained or slightly reduced production but according to a report by PricewaterhouseCoopers, the big miners managed to

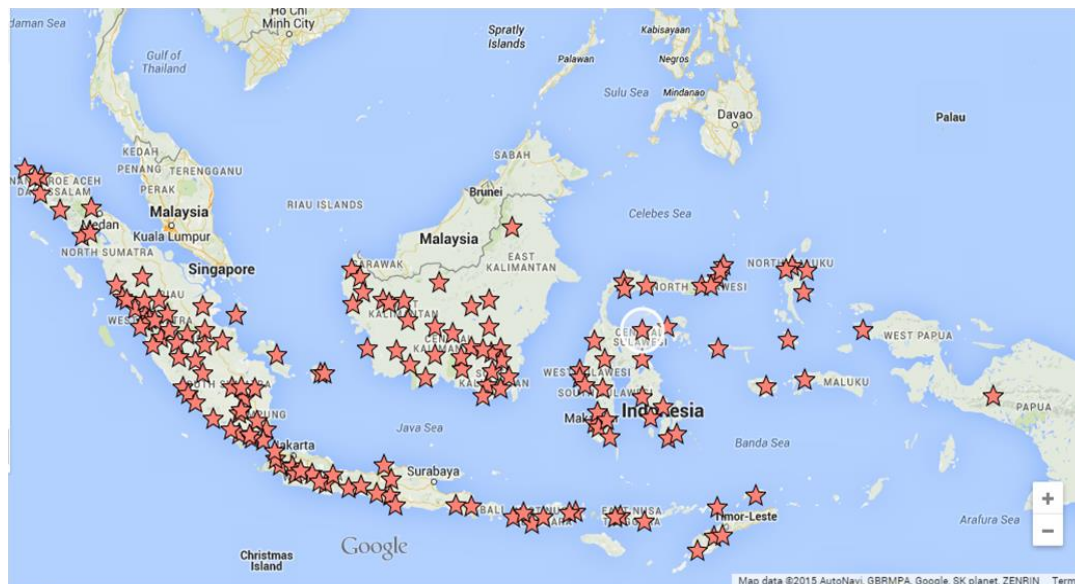
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<sup>3</sup> Mineral and Coal Mining Law (Law No. 4/2009), Article 169 states this transition must occur: 'within one year after the promulgation of this law'. As the Law was passed into law on 12 January 2009, this transition should then have occurred by 12 January 2010.

stay afloat through economies of scale and by mining only shallower seams, thereby impacting more land. Many small mining companies have gone out of business, unable to maintain profitability because of lower prices and lower demand. Ongoing regulatory uncertainty (especially around foreign ownership divestiture and license extensions), along with price volatility, have made Indonesian coal a less attractive investment for large foreign companies. Indeed, almost all coal companies are now Indonesian-owned or majority Indonesian owned – and these owners are clearly favored by resource nationalist policy. The Jokowi Administration’s continued dedication to resource nationalism and increased coal-based domestic power production suggests that coal production will continue to rise, even if the Government’s medium-term development plan calls for a slight decrease (14, 19).

### Artisanal and small-scale gold mining (ASGM)

In Indonesia, gold is the most significant commodity in the artisanal and small-scale mining (ASM) sector. According to Peluso, “Attempts to estimate the numbers of small-scale gold miners in Indonesia range from 66,000 (Ismawati 2014) (Adhari, 2014) to 109,000 (Devi & Prayogo, 2013) to 250,000 (Ismawati, 2014)” (21). The German Technical Cooperation Agency, GIZ, arrives at a similar estimate of some 250,000 ASGM miners operating at approximately 1,000 locations in the country (Figure 5), while the Blacksmith Institute estimates that 300,000 miners and some 1.5 million people live directly from ASGM. In the view of Peluso (21), “all estimates are low as a result of the quasi-legal status of small-scale gold mining and the associated deficiency of data on the sector”.



**Figure 5: Distribution of ASGM “hotspot” sites across Indonesia.** Source: Technical and Environmental Division, Directorate General of Minerals and Coal, the Ministry of Energy and Mineral Resources (22).



For the same reasons, analysts can only “guestimate” output volumes. Perhaps the best estimate to date is from Yuyun Ismawati of IPEN,<sup>4</sup> who points out that while Indonesia was the world’s seventh largest gold producer in 2009, with 140 tons of official production, gold production from ASGM in 2012 (from more than 800 hotspots across Indonesia) was probably between 65 and 130 tons, although there are no official records for this (20). The Director General of Coal and Minerals, R. Sukhyar, concurred with this estimate, claiming (during a mercury taskforce meeting on 28 September 2014) that the gold produced annually by ASGM activities has a value of 32 trillion rupiah, and costs the nation 1.2 trillion rupiah in unpaid royalties and 4.8 trillion in unpaid taxes. Others come to somewhat lower estimates of 30 tons of ASGM-produced gold per year (Adhari 2014, cited in Peluso 2018).

Even though artisanal and small-scale mining (ASM) is recognized within the mining legal framework, this sector has not been a priority in government policies, as large-scale mining is favored. Andiko (2006) states that artisanal and small-scale miners have faced uncertainties, particularly given that the government can give away areas where people already mine to larger companies. This has created conflict between ASGM miners and larger companies. In some cases, ASGM miners have been forced to vacate areas they previously utilized, but since many have no other alternative livelihood, they remain – and are recognized as *penambang tanpa ijin* or illegal miners. ASGM is usually a subsistence activity for marginalized and vulnerable people, but in some cases can involve the use of heavy machinery by better capitalized miners. ASGM miners are not always indigenous or native workers that have a historical attachment to the areas in which ASGM is conducted, and many operate far away from their place of birth in order to work where minerals are located and where regulations and enforcement are relaxed. This can create tensions between ASGM ‘insiders and outsiders’ which in many cases has led to serious community conflicts (23). In addition, ‘brokers’ are involved in ASGM to connect the ASGM miners with the market. This can have negative implications, such as the low price paid to the miners, loss of local revenues, and an increase in bribery of local authorities to ensure the sale of ‘illegal’ mine products. That said, Peluso (24) suggests that the ASGM economy is much more inclusive and mutually supportive than the large-scale oil palm economy: incomes are higher, resources are shared in times of need, and there is a greater sense of collectivity.

It is now the responsibility of provincial governments to formalize ASGM, working in tandem with the Ministries of Energy and Mineral Resources (MoEMR) and Environment and Forestry (MoEF).<sup>5</sup> However, only a tiny percentage of ASGM has been provided with mining licenses to date. In cases where ASGM involves hard rock mining, there is greater possibility of obtaining

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<sup>4</sup> IPEN is a global network of public interest NGOs working together for a world in which toxic chemicals are no longer produced or used in ways that harm human health and the environment.

<sup>5</sup> There is still little evidence of any form of licensed small-scale mining in Indonesia. The only current legal option is Wilayah Pertambangan Rakyat (WPR) in which the maximum license area (IPR) that can be granted is 25 hectares. WPR areas can consist of riverine tracts as well as upland areas. One criterion is that the area must have been explored by the local population for at least 15 years. Another is that it cannot overlap with other designated mining areas. This puts small-scale miners at a distinct disadvantage, as they lack the experience, resources and connections necessary to obtain permissions. Furthermore, prospective areas are often already covered by large-scale mining permits.

mining rights for small areas of land. However, where ASGM takes place in alluvial deposits (which is the case for the vast majority of ASGM), the level of environmental destruction involved makes legalization unrealistic. As most ASGM therefore becomes illegal, it is addressed as much through policing as any other instrument. The Indonesian government tends to treat alluvial ASGM as a security problem rather than a management issue and is currently trying to close down large ASGM sites. This leads to contentious interactions between security forces and ASGM miners that can involve the use of both force and extortion. Police actions have recently taken place in Poboaya, Palu, Dongi-Dongi, Buru, and elsewhere.

## 2. Infrastructure

The national governments of both Joko Widodo (“Jokowi”, 2014-19) and Susilo Bambang Yudhoyono (“SBY”, 2004-2014) have shown significant commitment to large-scale infrastructure investment, in particular as a means to facilitate extractive industry and other natural resource based economic development by linking resource extraction to commodity and energy markets. These commitments to infrastructure-resource extraction synergies are evident in the spatial planning frameworks that each government has issued.

### MP3EI

The Master Plan for the Acceleration and Expansion of Indonesia’s Economic Development (MP3EI), issued by the SBY government in May 2011, called for massive investment in infrastructure to support development in six corridors, three of which (Kalimantan, Sumatra, Papua-Maluku) focused especially on extractive industry. The overall plans for the six corridors were as follows: (i) Sumatra would be developed as an agricultural and national energy center; (ii) Kalimantan would focus on mining and energy; (iii) Sulawesi-North Maluku would focus on agriculture and fisheries; (iv) Bali-Nusa Tenggara would focus on tourism and food; (v) Papua-Maluku would focus on natural and human resources; and (vi) Java would focus on industry and services. To finance these proposals, the government would contribute around 10 percent of total investment cost in the form of basic infrastructure provision (roads, seaports, airport, railways, and power generation). Most financing was to be provided by state-owned enterprises (SOE), the private sector, and through public private partnerships (PPP). The total cost of the plan was estimated at \$306 billion.

In Kalimantan, the objective was to develop a center for ‘Production and Processing of National Mining and Energy Reserves’. The planned developments were based on extractive industries such as oil and gas, coal, iron-steel, and bauxite, as well as oil palm and timber. Envisaged connectivity projects included road extensions and upgrades (including bridges), power generation, water resource infrastructure (including dams), and ports. The Kalimantan MP3EI also aimed to add down-stream processing of raw resources in the future growth of the corridor. Serious threats to biodiversity from deforestation and coastal degradation were assessed for all

so-called Areas of Concern (AoCs)<sup>6</sup> and several other locations. Of these areas, Central Kalimantan AoC is one clear example of potential habitat destruction (including habitat fragmentation) and apparent planning conflicts with protected areas (25).

In Sumatra, the MP3EI emphasized oil and gas, coal, oil palm and road construction. In relation to ecosystem impacts, it was observed that large portions of conservation areas and protected habitats would be threatened by the implementation of MP3EI projects and the related oil palm and mining activities. This stems from planning conflicts where envisaged development projects result in deforestation and habitat loss due to the expansion of road development, oil palm and mining (25).

The economic development model for the Papua–Maluku Economic Corridors was to create a center for Development of Food, Fisheries, Energy, and National Mining. The plan included port development, new and upgraded roads, power plants, and water supply infrastructure. Here too, BAPPENAS, the National Development Planning Agency, noted likely impacts on terrestrial biodiversity in the Merauke AoC resulting from habitat destruction and fragmentation related to planned agroindustry developments (25).

## Special Economic and Strategic Development Areas

With the election of Jokowi, the President's Economic Stimulus Package I--XIII replaced the MP3EI's corridor-based framework with an area-based approach to development, with investments focusing on government identified special economic areas (*Kawasan Ekonomi Khusus*, KEK) and strategic development areas (*Wilayah Pembangunan Strategis*, WPS).<sup>7</sup> To a considerable extent, this approach still operationalizes the principles of MP3EI, with infrastructure, public-private investment partnerships, and natural resources central to a model of development that emphasizes spatial linkages.

The Jokowi government prioritizes industrialization and the export of commodities and manufactured consumer goods. The priority export commodities include minerals, coal, and the products of large-scale plantations. Infrastructure is considered an enabling condition for the achievement of economic growth targets. Most infrastructure development policy is intended for business acceleration and industrial expansion, which is further supported by urban development that requires a public-service oriented infrastructure, such as mass transportation, education, health, housing, and centers of economic activity.

The government has created a number of instruments to promote investment in infrastructure, in particular the Committee for Acceleration of Priority Infrastructure Delivery or *Komisi Percepatan Penyediaan Infrastruktur Prioritas* (KPPIP), established under Presidential Regulation No. 75 of 2014. KPPIP is intended to facilitate coordination of de-bottlenecking efforts for national

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<sup>6</sup> Area of Concern for Investments, or *Kawasan Perhatian Investasi* (KPI), is a technical term used by the Indonesia Investment Coordinating Board (BKPM).

<sup>7</sup> These areas can be viewed at: <http://bpiw.pu.go.id/wps/map>.

strategic projects and priority projects. Chaired by the Coordinating Minister for Economic Affairs, the committee consists of the Minister of Finance, Minister of National Development Planning (PPN) / Head of National Development Planning Agency (*BAPPENAS*), Minister of Agrarian Affairs and Spatial Planning, the Coordinating Minister for Maritime Affairs and the Minister of the Environment and Forestry. KPPIP provides support for priority projects in accordance with its own criteria, namely:

- KPPIP will ensure that projects are prepared in accordance with the quality standards it has established and will control the steps taken for problem resolution.
- KPPIP will apply incentive/disincentive schemes when following up on project monitoring results so that all relevant parties are encouraged to accelerate the delivery of priority projects.
- KPPIP has a duty to expand the capacity of Government Contracting Agencies (GCAs) to ensure their capability to deliver projects. It is also charged with coordinating the issuance of regulations and policies related to infrastructure.

The government has also created mechanisms to facilitate large-scale infrastructure. These include financing instruments – Viability Gap Funding (VGF) and an availability payment facility taken from APBN (the state budget) – and expanded scope for government investment guarantees so that SOEs can now also receive such guarantees. The government's Economic Stimulus Package I--XIII also includes the formulation of presidential regulations on national strategic projects and presidential regulations on the development and construction of domestic oil refineries. The provision of a direct lending facility for SOEs is intended to improve the feasibility of projects. To improve institutional coordination for accelerating priority infrastructure development, the government merged two SOEs, the infrastructure financing company (*PT Sarana Multi Infrastruktur*, PT SMI) and the Government Investment Center (*Pusat Investasi Pemerintah*). It also expanded the mandate of the Indonesia Infrastructure Guarantee Fund (*PT Penjaminan Infrastruktur Indonesia* or PT PII).

The Regional Infrastructure Development Agency or *Badan Pengembangan Infrastruktur Wilayah* (BPIW) is part of the Ministry of Public Works and Settlement. The focus of BPIW is basic infrastructure, such as roads, water provision, housing, settlements and supporting facilities. BPIW prepares directives for infrastructure development in accordance with the National Medium Term Development Plans (RPJMN), which are the vehicles for implementing the National Long Term Development Plan (RPJPN, 2015-2025). One of these directives deals with WPS, and as of 2017, BPIW had already mapped 35 such strategic development areas. These WPS were identified in order to stimulate the development of infrastructure that can simultaneously stimulate industrial clusters and urban development.

## C. Drivers of investment in extractive industry and infrastructure

Past and anticipated investments in extractive industry and infrastructure are driven by global, national and subnational factors. While the boundaries among these levels are to some degree artificial, it is helpful to distinguish the primary level at which a given driver operates. We first identify national drivers (which we consider the most important), followed by subnational and global drivers.

### 1. National drivers

#### Development models and national plans

While described above as part of the current status of investment in infrastructure and resource extraction in Indonesia, the MP3EI and Economic Stimulus Package I-XIII are also drivers of that investment. These plans and associated legislation orient public investment and flexibilize decision making, financing and approval processes with a view to pushing investment forward. Especially under the Jokowi government, they are also part of a broader set of reforms that aim to enhance Indonesia's Ease of Doing Business (EODB) index<sup>8</sup> and attract investment, particularly Foreign Direct Investment (FDI). This is motivated by a desire to kick start growth rates in order to achieve the 7 percent rate the country needs (at a minimum) to meet the goal of being considered a developed country by 2025 (recent growth rates fall well short of this aspiration).

Strategies to improve the EODB include: simplifying processes for permitting and licensing, accelerating and expanding urban development (through the New Town Program or *Program Kota Baru*), enhancing certainty around land use zoning, watering down the requirements for environmental permits for new industrial investments, controlling labor costs, granting tax subsidies for infrastructure and strategic industries, accelerating power/electricity provision, and so on. While these Economic Stimulus Packages have become the driving force for infrastructure provision, particularly those that support industrialization, they have paid little attention to social and ecological safeguards. The development of infrastructure in Indonesia does not yet have a safeguard mechanism at a strategic level, except for the project-level Environmental Impact Assessment (EIA/AMDAL). As a result, the adverse cumulative and interactive impacts of infrastructure development are still poorly addressed – specifically because infrastructure development only has the broad objective of being an enabling

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<sup>8</sup> This index is based on measures of ease in: Starting a business; Dealing with construction permits; Protecting minority investors; Getting electricity; Resolving insolvency; Enforcing contracts; Paying taxes; Trading across borders; Getting credit; Registering property.



requirement for the achievement of economic growth targets. However, for the purpose of improving the EODB index, these strategies have been successful and the index has improved for Indonesia since 2012; (Figure 6) (26).



**Figure 6: Ease of Doing Business Index, Indonesia.** Lower scores indicate a greater ease of doing business. Source: <https://tradingeconomics.com/indonesia/ease-of-doing-business> (Last accessed 18 May 2018).

Beyond the specifics of different instruments, Jokowi's policy framework is not a substantial change for Indonesia. A similar strategy to attract more FDI was applied during the Suharto administration, particularly in the early 1990s, through de-bureaucratization and deregulation. Also, as noted earlier, this is similar to the MP3EI economic stimulus plan developed under SBY. This continuity suggests that other, more deeply embedded drivers are at play. On the one hand, dominant ideas about development remain substantially unchanged, while on the other, there is, by implication, little change in underlying political settlements among national elites and their agreements about the forms of development that Indonesia should pursue.

### Energy policy and markets

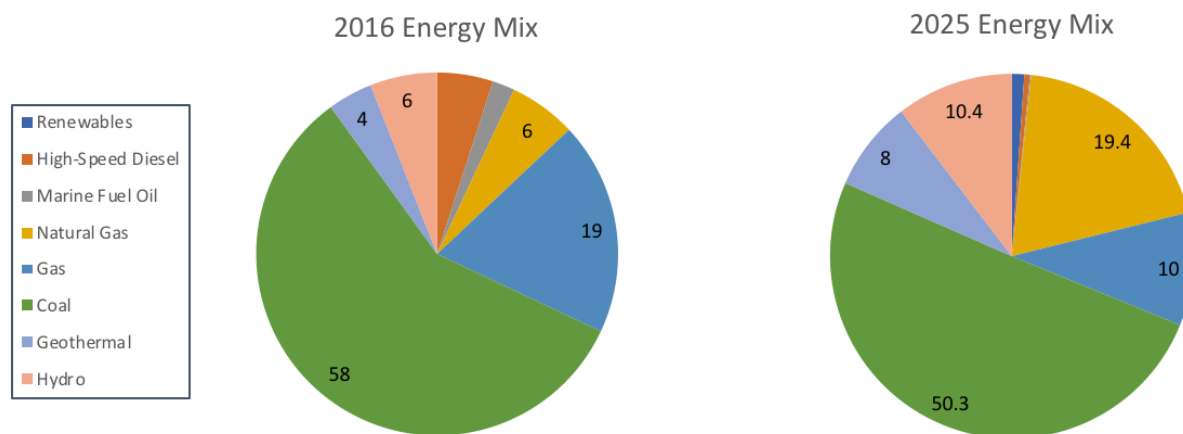
National policy commitments to energy security and increased energy availability are a second broad driver of expanded investment in extractive industry and infrastructure. We note three dimensions to this: the need to increase overall energy provision; a specific commitment to increase the role of domestically produced coal in the national energy mix; and the need to meet Java's energy demands. The first of these leads to increased investment in power plants and transmission lines; the second protects investments in coal mines by guaranteeing demand for coal; and the third is related to linking coal mining, mine-based thermal power plants and an underwater energy cable to transmit electricity from Sumatra to Java. While the cable was

anticipated in MP3EI and subsequent plans, it is on hold because over-investment in large coal plants in Java, coupled with lower than expected demand, means that Java does not need to import electricity from Sumatra at the moment. Given this, we focus below on the first and second dimensions.

As the international market for coal is changing, and global demand is set to decline as a result of climate change mitigation initiatives, Indonesia's coal mining sector is looking to the domestic market to secure future demand for their coal. They are encouraging the government to prioritize a suite of new coal plants that will guarantee future markets for their coal (Figure 7). President Jokowi in 2014 announced his plan to fast-track the addition of 35 gigawatts (GW) of new generating capacity to the grid by 2019, in addition to 8 GW of ongoing projects (8). Initial goals were for 60 percent of this capacity, or some 20 GW, to be in the form of new coal plants, though this has now been scaled back to 50 percent (some reports suggest that Indonesia will miss the 35 GW target, with only 19.7 GW of investment likely on track: Sundaryani (27). After 2019, the electricity utility PLN had plans to add at least another 15 GW of coal-based capacity by 2025 (28). Of the 38 GW of new coal plants under construction or in the pipeline between now and 2025 (though some are already delayed), 50 percent of the capacity is located on Java, 30 percent in Sumatra and 11 percent in Kalimantan, with the remainder in other smaller grid locations.

These energy policy commitments mean that domestic demand for coal is rising. In an evaluation of Indonesia's coal reserves, and taking into account projected growth in power generation, PwC (8) estimated that domestic demand for coal, which in 2016 was 87 million tons per annum, would reach 240 million tons by 2019 if all the coal plants envisioned under the 35 GW program were developed, and would continue to increase with the future construction of additional coal plants. By 2018, however, the program to build power plants had been significantly delayed, and PLN has admitted that it will need to postpone many of the projects due to sluggish demand growth (29). However, massive capital investment will be required to develop the electricity system. Total investment needed is estimated at \$73-80 billion by PwC (8). Most large coal-fired power plants are expected to be developed and financed by independent power producers (13).

In order to secure future markets for coal, several of the large coal companies are investing in new power plants, including Adaro, Bukit Asam, Bumi Resources, Indika and Sinar Mas. These companies are forming joint ventures with Asian equipment suppliers and utilities and securing financing from Japan, China and South Korea to develop large coal-based power plants in Java, Bali and Sumatra. The Sumatran coal plants are mine-based plants, designed to use the lowest grade of coal, not suitable for export. This low-grade coal is more polluting than other forms of coal in terms of greenhouse gas emissions and air pollutants, and also less efficient.



**Figure 7: Indonesia's projected energy mix (percentage by source), 2016-2025 (28).**

## Corruption and evasion

While it might be argued that corruption inhibits investment in resource extraction to the extent that it implies an insecure operating environment for industry, there is substantial evidence to suggest that corruption in Indonesia has played an important role in driving deforestation and investment in the expansion of coal mining (30). The Indonesian state itself recognizes serious problems of corruption and tax evasion that mean that operating costs for companies are reduced, and so mines are able to continue operating or even expand even though normal market forces would lead to their closure. R. Sukhyar, the minerals and coal director at Indonesia's Ministry of Energy, estimated in 2014 that illegal coal shipments totaled 50 to 60 million tons annually (31). Other estimates put annual illegal shipments as high as 90 million tons, worth some \$5 billion (58 trillion IDR<sup>9</sup>). The national Corruption Eradication Commission (KPK) estimates that 70 percent of all mining companies did not pay non-tax revenue, and that 65 companies holding coal contracts of work were suspected to be paying less than their fair share of non-tax revenues (32).

According to data from the Ministry of Energy and Mineral Resources (20 Sept 2016), 63 companies holding coal contracts of work are estimated to owe the state more than \$1.6 billion in unpaid non-tax revenues. Another \$296 million is owed by 3,145 IUP mining holders, many of which are IUPs for coal. Forcing companies to pay their fair share of royalties and tax would drive up the cost of coal mining, making it less lucrative.

Though illegal, mining without a permit or other legal permissions is commonplace in Indonesia. This frequently includes mining outside of designated concession areas, as well as encroachment into protected forest areas. In the case of both coal and nickel extraction, illegal mining operations are taking place at a considerable scale using the sort of heavy equipment and machinery that would normally be associated with the activity of a medium-sized company.

<sup>9</sup> IDR – Indonesian rupiah

In fact, in the coal and nickel sectors, there are often incentives for local governments and local companies to enter into ‘informal’ supply contracts for ore with small-scale miners.

For example, in the province of Gorontalo, Sulawesi, many informal mining operations use bulldozers to remove deep layers of soil overburden and excavators to extract the nickel ore that lies beneath the surface. This kind of illegal strip mining is widespread, despite existing environmental protection laws, and no reclamation is ever likely to be performed. The ore is loaded onto waiting ships in unofficial harbors and sent directly to China for further processing. It can be loaded at a production cost of \$4 per ton and is sold for \$40 per ton on arrival. The final product is worth \$500 per ton, but none of that added value will ever return to Indonesia. The nature of this type of informal mining means that the benefits provided generally serve elite interests in Jakarta and provincial capitals and there is no contribution to government revenues. Local service providers may gain some benefits but this is nothing compared to the damage done to the district’s resource base and environment (33).

### Resource nationalism and legal frameworks

Another national policy position, the turn toward resource nationalism, has served as a disincentive for investment in extractive industry. In 2014, a ban on the export of all unprocessed low-grade mineral ore came into effect, and regulations also stipulated a requirement for a 51 percent divestment of foreign ownership after 10 years. The Government of Indonesia has been in extended negotiations with the massive Freeport-McMoRan Grasberg mine under which Freeport (which as of December 2017 owned 91 percent of the mine) will pass 51 percent of mine ownership to the state-owned mining company, PT Inalum. As a result of such changes, mineral exploration in Indonesia has largely come to a halt, as it became uneconomical for even small Indonesian companies to develop new mineral deposits (34). In 2017, the ban was modified and ore exports are now allowed for companies that show progress in developing smelters that can process ore within Indonesia. Notwithstanding this modification, Indonesia remains one of the 10 least attractive countries for mining investment in the world, based on the Fraser Institute’s Policy Perception Index, a comparative index that measures the policy attractiveness of 104 countries to the global mining industry (35). The policy factors that most contribute to this low ranking are regulatory duplication and inconsistencies in Indonesia’s legal framework. Despite its mineral potential, Indonesia attracts less than 1 percent of global mineral exploration expenditure. While nationalist resource policy has held back international investment in mineral extraction, it has little impact on the coal industry because the ban on export of unprocessed ore does not apply to coal and also because the foreign companies that first developed the Indonesian coal industry have now largely been replaced by domestic competitors.

The legal framework governing the extractives sector lacks clarity regarding key aspects such as the role of SOEs and the issuance and renewal of licenses. The fiscal regimes that cover contractual arrangements and taxation are not coherent or have not been resolved, and Congress does not have a clear or unified position on these issues. These regulatory uncertainties have become a major source of concern among investors in the sector. According to the National Resource Governance Institute (NRGI), the quality of policies and the capacity of

institutions to enforce them are generally weak. Laws are characterized as lacking a unified vision and coherent long-term strategy, and are weakened by unclear, complex and frequently changing regulations. Policies along the extractive value chain are inadequate, insufficiently enforced and insufficiently monitored by central authorities and local governments (36).

## 2. Subnational drivers

### Unanticipated consequences of decentralization

One of the effects of *reformasi* in Indonesia was the steady decentralization of authority and decision making to subnational government. Among the unanticipated outcomes of this process was a rapid increase in the issuance of mining permits. The number of mining permits went from 750 in 2001 to more than 10,000 in 2010, of which 40 percent were for coal, a figure that does not include illegal mining operations (CIFOR 2012). The total area under IUP was 16.2 million hectares, whereas for CCOW it was 1.95 million hectares, and many of these licenses were overlapping with forests, plantations and other land uses (37).

Various factors drove this explosion in subnational mine licensing. Some licenses were issued as an honest element of a local economic development strategy. In other cases, the motivation was to stimulate investments that would contribute to district government revenue. Some licenses were issued in return for payments, either direct to the subnational governments or to authorities' own re-election campaigns (30). In some cases (e.g., South Kalimantan), authorities have issued licenses to illegal local miners operating within concessions of larger mining companies because these local miners contribute more revenue to the region than do the central state-licensed mining companies. Whatever the motivation, licenses were issued rapidly, and often unsystematically, overlapping with other natural resource concessions (e.g., for oil palm, logging, pulp/paper, etc.), protected areas and other mining licenses.

In response to this chaotic boom, in 2011 the Ministry of Energy and Mineral Resources froze the issuance of new IUPs and required existing IUPs to prove that they were clean and clear, meaning that they:

- did not overlap with other mining units (in some cases, unscrupulous district heads issued up to eight mining licenses on top of one another)
- had paid non-tax revenues (i.e., land rent and royalties)
- had performed Environmental and Social Impact Statements (AMDAL).

This clean and clear standard was still quite modest. For example:

- If a district head or governor established an IUP within or overlapping with a previously existing forestry concession, industrial timber plantation, or oil palm plantation, this would not stand in the way of its being considered clean and clear.



- While an IUP must have paid royalties and land tax to be considered clean and clear, it was not required to have paid income taxes; in fact, it was not even required to have registered with the tax authorities.

Even with this modest standard, the government found that 1,461 of 3,635 locally-issued coal mining permits were not clean and clear. Even though it designated these permit holders as non-clean and clear, the government did not act on that designation until 2014 when the KPK established a process called Mineral and Mining Coordination and Supervision, or *Korsup Minerba*. Working alongside sub-national authorities to assess mining permit legality, Korsup Minerba investigated issues including non-payment of taxes and royalties, lack of tax IDs and permits overlapping other land uses such as forestry and plantations. The process involved regional government leaders coordinating intensively with KPK and the Ministry of Energy and Mineral Resources to investigate overlapping licenses and reconcile them as part of the One Map initiative (see below). The investigations also resulted in the collection of a significant IDR 10 trillion (approximately \$750 million) in state revenues, in the form of taxes and royalties. Debts from permits decreased from IDR 6.65 trillion owed in December 2016 to IDR 5.07 trillion (38).

By November 2017, as a result of these investigations, 3,078 IUPs had been revoked and terminated by the Ministry of Energy and Mineral Resources (MoEMR) and KPK's Korsup Minerba. The most powerful criteria used for revocation was non-clean and clear status. When the Korsup Minerba began in February 2014, there were 10,992 mining permits in Indonesia of which 4,957 were not clean and clear; by April 2017, that number had declined considerably, to 2,522. By December 2016, 4,936 mining permits had expired and 1,356 permits had been cancelled by government for not complying with permitting regulations and environmental laws.

The Minister of Energy also announced that the government would block the permits (IUPs) of troubled mines. Based on the data of the Ministry of Energy and Human Resources (KESDM), as of 20 November 2017 there were at least 2,509 IUPs for non-clean and clear operations that will be blocked and 3,078 IUPs that had expired. All problematic IUPs will be blocked from receiving services from various government agencies as of 31 December 2017 and in advance of their licenses being withdrawn permanently (39). Despite the success of the Korsup, there are still 1,184 IUP that are listed as non-clean and clear and around 2,300 coal mining permits that remain open and valid.

Another central government response in this period was that the law allowing districts to grant licenses was changed and as of October 2014 only provincial governments have oversight of IUPs (Regional Governance Law, Law no. 23/2014). However, much of the damage is already done as notwithstanding the revocations noted above, most of the previously issued licenses still persist. In addition, there is now much disagreement over responsibilities for monitoring and post-mining reclamation, and some companies who have had their permits revoked are suing provincial governments in an effort to have their permits reinstated. Indeed, different studies have concluded that the decentralization process in Indonesia has often worked to the detriment of natural resources and the forest estate. Studies note problems of corruption, of giving districts

the power to generate local government revenues without enhancing their capacity to execute their new responsibilities (40, 41), and of insufficient financial or technical resources for the provinces to adequately address the challenges of environmental protection and development in conjunction with mining (42).

## Drivers of ASGM

Categorizing the drivers of ASGM as subnational is at best partially correct. However, it draws attention to the extent to which ASGM is driven not just by the high global price of gold, but also by the re-arrangement of local livelihood strategies in the face of structural changes in both the subnational and national economy. In a series of articles based on field research in West Kalimantan, Peluso (21, 24) has thrown light on these processes. Working in areas where ASGM has grown quickly, she notes that in some cases miners are migrants who returned to their regions of origin when various financial crises displaced them from urban economies. Given that these displacements happened at a time of rising gold prices, and given the widespread gold mineralization across Indonesia, a number of these migrants found their way into the ASGM economy (24). Though ASGM began to emerge in this region in the latter 1990s (following the quietening of ethnic violence), Peluso distinguishes two subsequent ASGM gold rushes:

Between January 2007 and January 2008, the world price of gold jumped from just over USD 600 to just over USD 1000 per ounce. It fell in January 2009 but recovered quickly; by January 2010 it had reached USD 1200 and by January 2012 it remained at the peak price reached two months earlier of almost USD 1900. A second, more profitable gold rush was on in West Kalimantan. Even when the price began to decline in January 2013, falling to USD 1300 in January 2015, it was still more than double the 2007 price. Miners and investors were motivated to continue digging for gold, even though supplies were thinning. The problems in the agricultural sector meant that gold crew bosses had no trouble finding crews. (24)

In other instances, ASGM miners are smallholders who have been displaced – often through less than transparent legal processes – by expanding oil palm plantations that have been able to absorb smallholder lands (pointing to an interesting intersection between oil palm and ASGM). Peluso (24) also notes that these miners find the ASGM economy much more inclusive and supportive than the oil palm plantations – and, of course, able to absorb much more labor. The result has been that “in regions containing gold and other valuable minerals, small-scale mining has become a major source of off-farm income for local and migrant miners and transformed agrarian, forested, and urban environments” (21).

Of course, other factors have also facilitated this expansion, not least support from authorities and the military (43). The Navy is involved in the extraction and distribution of the raw materials for mercury from some islands in the Northern Maluku (Halmahera, Tidore). The raw materials are processed through massive home industry in Sukabumi (West Java), which disregards worker safety as well as environmental risks due to contamination. These home industries are guarded by the police apparatus. Accounts also suggest that mercury for use in ASGM is flown

from the Maluku Islands in Air Force planes, and there are accounts of military involvement in gold marketing and the protection of mines. Some illegal gold mining cases in West Java, Bengkulu, Central Kalimantan, Central Sulawesi and North Sulawesi, concerning ASGM activities in Protected Forest areas, allegedly received protection from active and retired elite members of the Indonesian National Police.<sup>10</sup>

### 3. Global drivers

As is already clear from the above, global factors play an important role in driving the expansion or contraction of investment in resource extraction and infrastructure. This influence has been exercised primarily through commodity markets and financial flows.

#### Commodity markets

Investment in coal mining and ASGM has depended considerably on international prices and strong demand for coal and gold. The expansion of ASGM has occurred as global gold prices have increased substantially since 2000 (notwithstanding price declines since 2011). Coal prices show little net change since 2000, slowly increasing to 2011 and then falling until mid-2016, when they increased again.<sup>11</sup> Coal has been mined primarily for export to China, India and Southeast Asia – indeed, Indonesia is still the world’s largest steam coal exporter and supplies half of Asia’s steam coal imports. That said, miners have also developed strategies for dealing with price falls in ways that further expand the extractive frontier: whether by lobbying for growth in the domestic market for coal or by adapting production techniques to maintain margins (e.g., by mining only shallow, cheaper to extract coal).

Still, the fall in coal prices from 2014 lead quite quickly to a reduction in coal production, and placed some expansion projects and new greenfield<sup>12</sup> mine development on hold in Indonesia, as in the rest of the world. While the late 2016 recovery in coal prices (albeit not yet back to the highs of 2011) may change the situation, any increase will need to be sustained over a long period to justify investment in new mines. Upward pressures on production costs (whether from regulations, legal action, or protest) would further slow such investment. At times of high pressure in the international market, Indonesian producers have the ability to increase their production and small producers with higher costs will re-enter the market. The Indonesian mining sector is relying on growing domestic demand to fuel future growth in the market, but they take advantage of prices on the international market to boost production at times of high prices, such as is happening in 2017-2018. However, these price increases may well be temporary and prices could fall again after China increases domestic production (44, 45).

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<sup>10</sup> Interview with Merah Joahnsyah, 22 October 2016.

<sup>11</sup> For price trend data see: <http://www.infomine.com/investment/metal-prices/coal/all/>; <https://goldprice.org/30-year-gold-price-history.html>; and <https://tradingeconomics.com/commodity/coal> (Last Accessed 14 May 2018).

<sup>12</sup> A “greenfield” development refers to a mine in an area with no prior mining activity or history, as opposed to an expansion of existing operations, or the opening of a mine in a region which already has other active mines.

Generally, the speed with which China and India transition to cleaner energy sources will have much influence on investment in Indonesian coal, and the long-term outlook for the international thermal coal market is weak.

## Financial flows

The composition of financial flows to the extractive and infrastructural sectors in Indonesia has fluctuated over the last decade. Extractive industry has always been treated as a strategic investment in Indonesia due to its connection with long-term loan arrangements (both bilateral and multilateral) for the acceleration of industrialization and the expansion of urban development. It has also been associated with traditional international development cooperation flows, including military and defense assistance, with emphasis on the regions where related large-scale industrial investment takes place. Thus, the USA has provided aid in Papua and Kalimantan (gold mining and offshore oil exploitation), the UK in West Papua (natural gas exploitation), Canada in Sulawesi (various forms of mineral exploitation), and Australia in East Nusa Tenggara (offshore oil exploration). Flows from the World Bank focus less on direct investment and more on developing the strategic enabling environment for large-scale industrial and infrastructural investments. The Bank has long been a primary supporter of Indonesia's capacities in spatially explicit land use management, mapping, and land administration (*penataan ruang*), aiming primarily to improve the ease of doing business in Indonesia by fostering more certainty for investors around land use. Japan has had a different approach, with most of its development cooperation to Indonesia focused on expansion of infrastructure (including significant investment in coal power plants) through direct soft loan packages from the Japan Bank for International Cooperation or indirect loans through the Asian Development Bank, but with national involvement. Indeed, the planned (though currently shelved) undersea cable from Sumatra to Java to transport coal-fired electricity from Sumatra to the Java grid has funding approved from the Japan International Cooperation Agency (46).

While traditional financial flows remain relevant, flows from China and India have become increasingly important. In 2013, the Indonesian Minister of Industry and Trade announced that the government of China had agreed to invest \$1.6 billion in mineral exploration in Indonesia, to be undertaken in cooperation with PT Aneka Tambang. Although China has long imported mineral ores from Indonesia, this would appear to reflect a shift in procurement strategy in response to the Indonesian government's new nationalist resource policy of banning the export of raw mineral ores (as noted earlier, coal is exempted from this policy). Although there has been no official statement by the government to this effect (and has been denied by the Jokowi administration in response to questions from political opponents), it also appears that Chinese and Indian financial investment packages have been entering Indonesia through enterprises specifically established to work on industrial service infrastructures backed by China National Offshore Oil Corporation, Tata and others. Finally, of note, is that the coal shipping fleet in Indonesia is being funded by Japanese, Korean and Chinese export credit investment combined with loans from Asian commercial banks.

## D. Actual and potential impacts of extractive industry and infrastructure on forests and forest peoples

### 1. Overview

Here we discuss the impacts that extractive industry and infrastructure investment have had on forest cover and the rights of communities living in, near, or from these forests. As noted earlier, we limit discussion to the impacts of coal mining, ASGM and unlicensed small-scale mining, and of large-scale infrastructure. Oil production in Indonesia has had negligible direct impact on deforestation, though the oil and gas industries have been accompanied by the building of roads, bridges, and other infrastructure that *have* fostered forms of economic development that have enabled deforestation (47).<sup>13</sup> Something similar applies in the case of large-scale mineral extraction (i.e., nickel, gold, copper) which, though historically associated with serious human rights violations in Indonesia, has a limited overall footprint on forest cover and thus on the rights associated with traditional use, occupation and access to forest (48–50).

A 2015 study showed that 44.7 percent of all forest loss between 2000 and 2010 in Kalimantan, Sumatra, Papua, Sulawesi, and Maluku Islands occurred within industrial concessions, with fiber and logging concessions accounting for the losses of primary forest, and oil palm ranking third overall (though in Kalimantan most forest loss occurred in oil palm plantations: 22.8 percent of all loss). Much less deforestation occurred in coal mining concessions, and these concessions were estimated to account for only 3 to 6 percent of carbon dioxide emissions in Kalimantan and Sumatra (though these figures include only the emissions from forest clearing and not the burning of the coal).<sup>14</sup> These results suggest that mining has not, to date, been a particularly significant driver of forest loss and that the question is whether it is likely to be so in the future. Similarly, to the extent that the majority of 21<sup>st</sup> century cases regarding social conflict in natural resource concessions deal with palm oil or industrial timber, rather than extractive industry (51), our concern is more for potential impacts on rights.<sup>15</sup>

A second overarching comment is that while our discussion separates coal, ASGM, and infrastructure, overall impacts on forest and forest peoples' rights are to a considerable extent a consequence of a model of development that prioritizes the synergies between resource extraction (including oil palm and timber) and infrastructure as a primary driver of growth. In this sense, the Indonesian government's own Strategic Environmental Assessment (SEA) of the MP3EI is relevant (25). That SEA argued that the MP3EI mainly entailed an intensification of 'business as usual' development policy, and plans did not yet properly address the

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<sup>13</sup> Of course, oil extraction in particular is an important source of greenhouse gas emissions.

<sup>14</sup> All calculations given are approximate based on remote sensing of land use cover change.

<sup>15</sup> In a context in which the government recognizes only 0.025 percent of the land claimed by forest communities, this potential for conflict is real (52, 53).

environmental and social issues associated with rapid economic development. Based on estimates of MP3EI impacts on habitats of various types across the six Economic Corridors (EC), the value of Indonesia's national 'natural capital at risk' as a result of the Masterplan was calculated to be around \$490 billion annually, though actual impacts were deemed likely to be lower than this (25).<sup>16</sup> The total investment expected between 2011 and 2025 in the MP3EI was \$445 billion, with nearly half of that dedicated to infrastructure (40).

The SEA suggested that the largest impacts on natural resources in monetary terms may be in the Economic Corridors of Kalimantan, Sumatra, and Papua-Maluku. Thus, the MP3EI Policy and Economic Corridor Planning could easily exacerbate existing environmental problems, lead to high environmental and socio-economic costs, and pose a significant challenge for future governments and citizens in Indonesia to correct (25). Further, an external OECD review cited an ongoing lack of coordination between authorities – including between agencies at the national level and across sub-national and national levels – as cause for additional concern, given a lack of capacity to adequately regulate investments (40). To the extent that the Economic Stimulus Package I-XIII is mostly a reworking of MP3EI, these cautions and aggregate assessments remain relevant.

The Government of Indonesia is beginning preparation of the Indonesia National Development Plan, 2020-2024. It is intended that this plan will involve a low carbon component, be based on national capital accounting calculations and, in early conceptualizations, address the interactions between land cover change, emissions and sectoral development (54). The plan offers the potential to shift the emphasis from current development plans towards greener growth, though its effectiveness will require the endorsement of the next national president and the national private sector.

## 2. Coal mining

### Forest and land cover

In 2015, the NGO Fern overlaid all of the coal mining licenses (CCOWs and IUPs) currently issued in Indonesia with maps indicating remaining forest cover (55). They estimated that 8.6 million hectares (Mha) of forest is threatened by future coal mining permits, around 9 percent of Indonesia's remaining total forest cover. Almost half of these forests, or around 3.9 Mha, are located in Papua, with the vast majority of these licenses at the exploration phase. The logistical and transport infrastructure challenge of developing all these concessions in Papua suggest that many of these coal reserves will not be mined, though the threat remains. The majority of the

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<sup>16</sup> "The figure of about \$490 billion annually reflects the estimated economic value of natural resources which may be considered 'at risk' from MP3EI investments over the whole ~15-year plan period. The actual impact will likely be less (unless planned investments are increased in scale), because not all MP3EI infrastructure, economic and mining projects will result in the loss of all components of [Total Economic Value]. According to the SEA, "... actual economic losses in terms of natural resources value will not be total/catastrophic in all cases."



remaining threatened forests are located deep in the interior of Kalimantan, particularly Central Kalimantan and North Kalimantan, with a smaller amount located in Sumatra. Indeed, some 3.45 Mha of Kalimantan's forests are designated as coal mining concessions. Greenpeace (56) estimates that some 14 percent of all South Kalimantan forests lie in coal concessions, and that between 2009 and 2011, one-quarter of all deforestation in Kalimantan was due to the clearance of 0.13 Mha of forest within coal mining concessions.

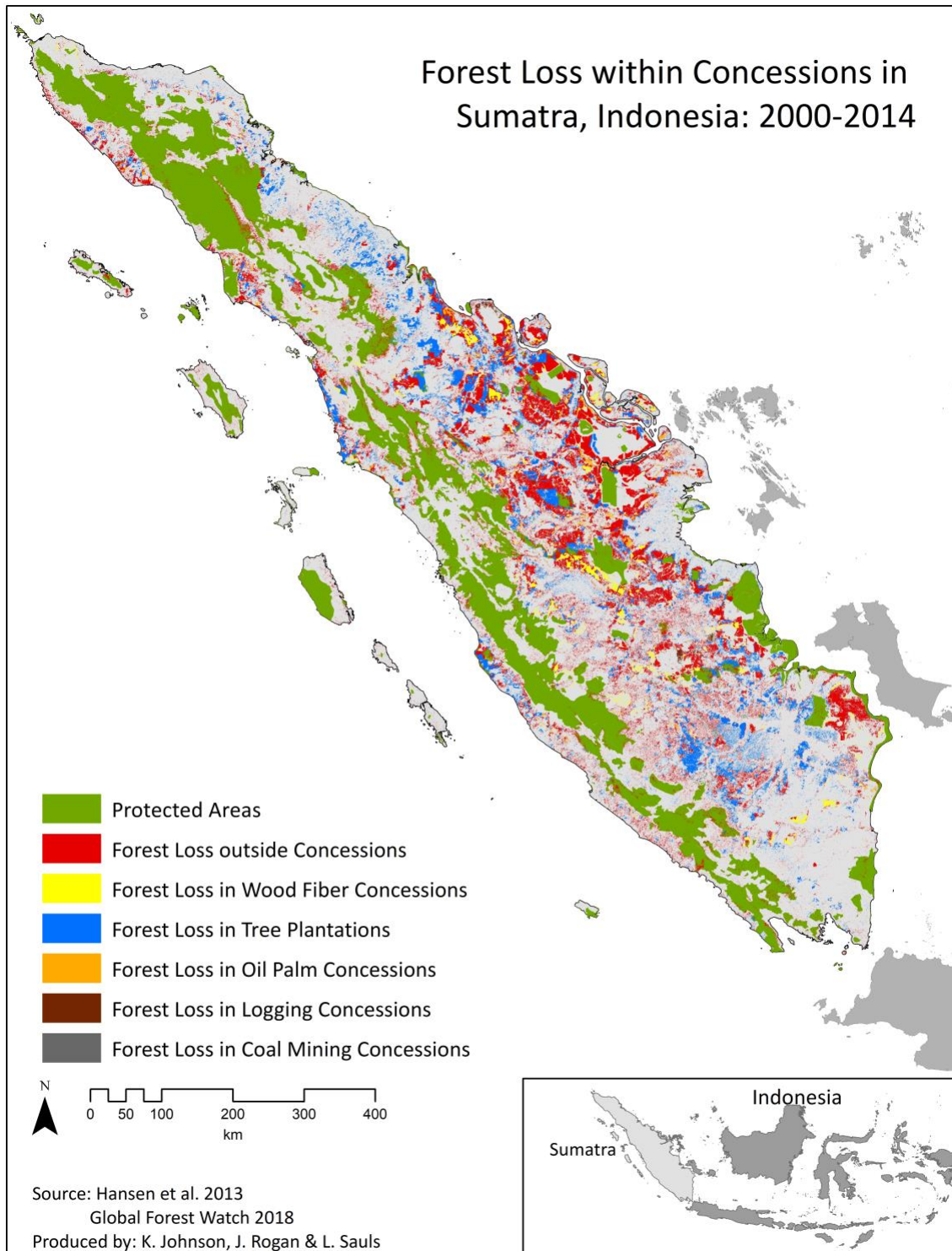
Of course, the forest area covered by current coal concessions exceeds that which is currently affected by coal mining, both because many concessions have not yet been mined, and within a concession being mined, only portions of the concession are affected. The NGO Auriga calculates that the total amount of forest land affected by coal mining currently in production is 1.74 Mha. Of this, around 49,000 hectares of conservation or protected forest has been affected by current coal mining operations. Analysis by Auriga also shows that over 1.1 Mha of designated "conservation" and "protection" forest is currently allocated to coal mining permits, in spite of laws that prohibit any mining in conservation forests and limit mining in protection forests to underground mining (which would essentially prohibit coal, as there is very little underground coal mining in Indonesia).

The potential impacts of actual and future coal mining are both direct (the forest cleared for the mine and associated infrastructure) and indirect. The indirect effects derive from the way that a concession, mine and infrastructure might interact with other land uses in ways that lead to forest loss. One such interaction, as reported by the World Wildlife Fund (WWF), is through the opening of access routes to remote areas for mining (57). These roads can enable illegal logging and forest degradation which can trigger further erosion both on and off the mine site. In less remote areas, economic activities surrounding mine sites might attract additional migrants to the area, increasing impacts on forest cover.

Recent research on the relationships between natural resource concessions and forest loss in Sumatra captures another apparent interaction (58). Johnson shows that total forest loss on Sumatra from 2000-2014 was 8.5 Mha, of which 3.4 Mha was lost within areas of different types of natural resource concession. Only 2 percent of the loss occurred within coal concessions while 75 percent was lost within tree plantations (Figure 8). However, the rate of forest loss within mining concessions (22 percent) was within the same range as the rate of loss in oil palm, wood fiber and plantation concessions (24 to 29 percent) (Table 1). The implication is that if the granting of coal concessions increases, or if currently idle concessions become active as Indonesia seeks coal based energy security, the resulting deforestation pressures could become similar to those of oil palm.

Moreover, in those cases where one type of concession overlapped with another (as already noted, a not infrequent state of affairs) other patterns emerged. Specifically, areas where coal concessions overlapped with another type of concession lost forest at a rate of 40 percent between 2000 and 2014, while when oil palm concessions overlapped with another concession type, forest loss was 34 percent.

While the causal mechanisms at play in these results are as yet unclear, one possible interpretation is that coal mining interacts with other land uses in ways that deepen forest loss, whether by facilitating human access to forest, through patterns of joint ownership between coal and other natural resource enterprises, or some other mechanism. Indeed, in research in East Kutai (East Kalimantan), Toumbourou has found that oil palm companies are well aware that their permits overlap with mining permits and has observed that mining exploration was taking place in oil palm plantations, indicating that oil palm and mining companies are working together to transition from one land use to another. Indeed, East Kalimantan program officers for JATAM (a mining advocacy network), suggest that the overlaps between mining and oil palm concessions is a conscious strategy for transitioning land use from one industrial use to another. Further evidence from Papua and West Papua supports these trends in concession overlaps, and forest loss in coal, oil palm, wood fiber, or tree plantation concessions made up more than 70% of deforestation detected within the concessions (Figure 9).

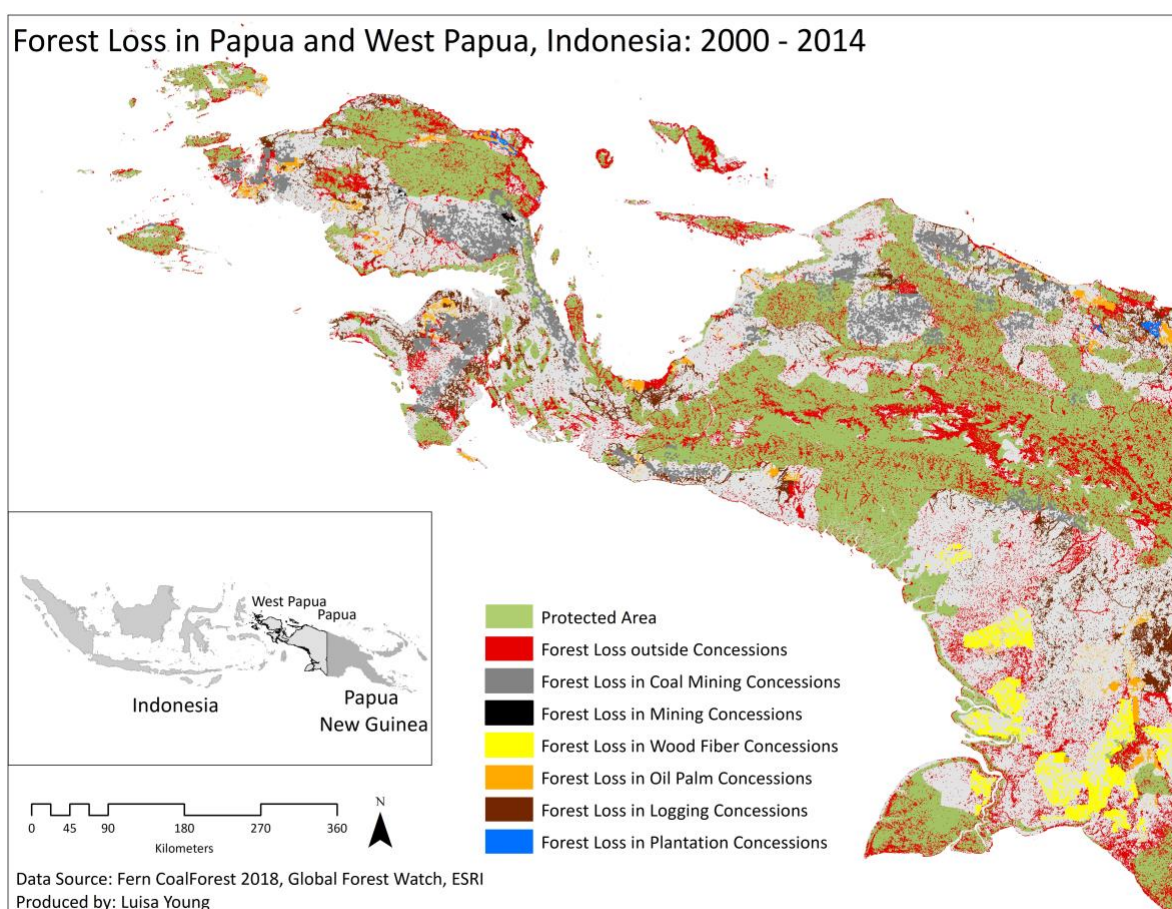


**Figure 8: Map of forest loss within natural resource concessions: Sumatra, 2000-2014.** Protected areas include all legislated conservation categories. *Source: Johnson (58).*

**Table 1. Forest Loss by Concession Type: Sumatra Case Study**

Concession Type	Hectares of Forest Lost	% Forest Loss by Type	% Forest Loss in concessions with no overlaps	% Forest Loss in concessions with overlaps
Coal	76,561	2%	22%	40%
Logging	80,843	3%	6%	56%
Oil Palm	236,932	7%	29%	34%
Wood Fiber	450,901	13%	24%	70%
Tree Plantations	2,568,220	75%	28%	52%

Source: Johnson (58).



**Figure 9: Map of tree cover loss within natural resource concessions: Papua and West Papua, 2000-2014.** Protected areas include all legislated conservation categories.

Future impacts of coal mining on forests will depend entirely on future markets for coal, as noted earlier. A 2016 analysis by PwC for the Indonesian Coal Mining Association is instructive in this regard. PwC analyzed the current reserves and stripping ratios of the large coal miners to determine whether, in their view, there were sufficient reserves to guarantee a supply of coal for domestic needs well into the future (8, 59). The analysis showed that because of the then low prices for coal, miners were mining shallower seams and not digging up the deeper coal because it was too expensive to recover at current prices. Through this process, they essentially block future access to deeper seams by placing overburden on top of them, thereby making them too expensive to mine at a later date. Such practices amplify the impact of coal mining on forests and land cover, increasing the area being impacted as the mining concession expands horizontally to mine the shallow seams, rather than vertically to mine deeper seams.<sup>17</sup>

### *The IndoMet concessions: a particular threat to forest*

The IndoMet concessions in Central Kalimantan are of particular concern. This packet of concessions spans an area of 350,000 hectares, more than twice the size of Greater London. The concessions contain more than 1.2 billion tons of mostly metallurgical coal that would be shipped to Asian markets if the projects were developed (60).

The seven IndoMet concessions were granted to BHP Billiton during the Suharto era and lie within the remote and largely undisturbed forests of central Borneo. According to WWF, which has been closely involved in managing the Heart of Borneo initiative, the area is home to 6 percent of the world's biodiversity, contains the headwaters for 14 of Kalimantan's 20 major rivers, and provides food, water and livelihoods to 11 million people (57). An estimated 75,000 hectares of primary forest remains in the concessions owned by IndoMet, and many of these forests have not been independently surveyed. The forests inside the concession areas provide a refuge for large numbers of orangutans who are critically endangered, and have already been displaced by land-clearing in the more accessible lowland regions (61, 62).

In 2016, BHP Billiton sold the whole concession to its minority partner, the Indonesian company Adaro, for a bargain price of \$120 million (in 2010 Adaro had bought a 25 percent share of the project for \$335 million). Currently, only one small mine in the concession, the Haju mine, has been producing one million tons of coal per year since 2015. It is not known when Adaro might look at expanding into its other concessions in the IndoMet area, and it is thought that the expansion is dependent on securing the construction of the MP3EI-outlined Central Kalimantan Railway (see below). It is possible that if current coking coal prices remain high, Adaro might seek to exploit its other concession areas soon, including ensuring that a rail link is built.

### *Coal, forests and greenhouse gas emissions*

Coal mining in Indonesia contributes to greenhouse gas (GHG) emissions in three main ways – through the loss of forest and other vegetative cover standing above the concession, through the burning of coal itself, and through the emissions generated by extraction and shipping

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<sup>17</sup> As the Indonesian coal reference price has increased since 2016 this could make the mining of deeper seams more viable.

processes – with Indonesian coal making particular contributions because of its low quality and thus the need to burn more coal per megawatt of electricity generated. To date, the clearing of forest due to coal mining has played only a modest role in Indonesian gross emissions, with Abood et al. (1) finding that, in and of itself, mining contributes only 4 percent of carbon dioxide emissions from forest conversion within the country's natural resource concessions.

Abood et al.'s results are important, though they do not include emissions from forest loss from extra-legal mining occurring outside concessions, nor emissions due to the burning of the coal itself (1). The importance of including the carbon stock accounted for by burning coal itself in such calculations is made clear by the calculation that the 38 GW of new coal plants planned or under construction in Indonesia by 2025 would emit around 145 million tons of CO<sub>2</sub> per year, and almost 6 gigatons of CO<sub>2</sub> over a 40 year lifespan, in addition to the fugitive emissions from methane and carbon dioxide embedded in coal seams (63). The significance of these figures is clear when compared with calculations from Indonesia's First Nationally Determined Contribution that national GHG emissions were 1.453 GtCO<sub>2</sub>e<sup>18</sup> in 2012 which represents an increase of 0.452 GtCO<sub>2</sub>e from the year 2000 (2).

## Community rights

While coal mining and the coal value chain can generate livelihood opportunities for some, and coal based electricity generation can enhance energy access, mining is also associated with the violation of community and community members' rights in areas located near or downstream of mine sites. These include violations of rights to land and security, FPIC (free, prior and informed consent), self-determination, life and physical integrity, and healthy environment, in particular water (56, 64, 65).

### Land

Land rights issues emerge when coal mines involve the transfer of rights from communities to companies. Where new concessions with some financial backing come into being, the potential for conflict may be high in many forested areas with traditional or Indigenous Peoples (52). The worst rights violations occur when land is acquired through force or trickery, of which there are reports. Likewise, there are reports of criminal violence around coal mining areas, where intimidation is used to prevent community members from accessing their actual or former lands, or to force them to sell lands. In such instances, FPIC and rights to land, livelihood and security are all violated.

That said, unlike oil palm and timber concessions, compensation from coal mining tends to be relatively high in Indonesia, and some communities have historically been more inclined to accept mining company offers, assuming some level of previous consultation (41, 66). Competition between communities over land eligible for compensation from mining activity may be as much of a challenge in some cases as conflict with companies, especially in areas already connected to roads and the larger market (67). More generally, experience suggests

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<sup>18</sup> CO<sub>2</sub>e is carbon dioxide equivalent



that some communities seek to retain their forests and co-manage them with government support, while others have shorter-term visions and opt to sell their forests and lands to extractive industries or ASGM. Governing land and forests in these contexts straddles social and environmental challenges at sub-national levels. Balancing common interests between the Forestry Ministry and community groups can be advanced through participatory village land use planning. This process usually considers key national forestry programs and priorities, which local and indigenous community groups can use in the village, to overlay with their own priorities and plans. Many also use their customary area maps. This plan becomes the basis for local budgeting, and those with Social Forestry or Customary Forests instruments are eligible for BUPSHA financial support.<sup>19</sup>

### Consultation

In recent years, Free, Prior and Informed Consent (FPIC) principles have been incorporated in guidance documents of both the International Finance Corporation (IFC) and the International Council on Mining and Metals (ICMM). The ICMM's Indigenous Peoples and Mining Position Statement draws on IFC Performance Standard 7 to outline the principles and commitments that ICMM member companies commit to when engaging with indigenous communities. This detail and clarity is missing in the Government of Indonesia's Law 31, and particularly in regard to the mining sector. Although there are provisions for recognizing the unique cultural practices of Indigenous Peoples (IPs), and there are elements of FPIC within the Environmental Impact Assessment and Environmental License process (AMDAL), there is no provision for IPs to have the right of 'consent' for extractive or other resource development projects. This creates a legal terrain in which internationally recognized rights to consent will not be recognized in Indonesia.

In such a context, the question is whether increased corporate social responsibility places adequate pressure on companies to change the way they operate with IPs in forest landscapes. The cost of complying with various stringent sustainability standards coupled with Indonesia's complex mining regulations can be a barrier to companies. In contexts where law enforcement is lax and other factors such as corruption play an important role in business deals, permitting and land access procedures can be quicker if official rules (such as they are) are not followed. Also, companies can gain access to land by transferring a significant amount of cash to local elites, politicians or landholders, rather than trying to build long-term sustainable collaborative agreements with communities – and often it is community land or individual lands without land titles that get stolen through illegal permit issuance by local governments. While larger companies that seek international trade relationships or financing from Europe or North America, or are otherwise internationally exposed to investors, might be more inclined to follow guidelines for consultation, companies operating in the Indonesian coal sector are mostly nationally owned or involved in financial flows that do not demand such commitment to consultation (47).

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<sup>19</sup> BUPSHA is the Social Forestry and Customary Forest Enterprise Support Unit (*Direktorat Bina Usaha Perhutanan Sosial dan Hutan Adat*), Based under the Social Forestry Directorate, it handles the general support fund BLU for Social Forestry and Customary Forest based enterprises. Its current estimated funding from government is \$40 million (Interview, BUPSHA).

### *Life and physical integrity*

In 2016, the National Human Rights Commission (Komnas Ham) concluded that 27 deaths occurred at former coal mining sites between 2011 and 2016 in East Kalimantan, and each constituted violations of human rights (68–70). These deaths most frequently involved children falling into and drowning in water-filled, unfenced mine pits, typically close to where people lived. By law such pits should have been reclaimed and rehabilitated, but were abandoned by companies when coal prices fell. Komnas HAM, together with JATAM, found at least 632 abandoned mining pits in East Kalimantan alone (65). While the 2016 case referred only to East Kalimantan, similar situations occur elsewhere in Indonesia. In Bengkulu, Sumatra, where 10 out of 16 coal mining companies have ceased operations, many of these operators have simply left the area, leaving deep pits with no signage or fencing, resulting in serious hazards for local residents.

The creation of such abandoned, hazardous landscapes – typically in areas that had also once been forested – is a result of mining companies in Indonesia failing to pay reclamation bonds that would cover the cost of clean-up post-mining or post-bankruptcy. By law, all mining companies are required to develop a mine closure plan and submit this to the government for approval (see Law 4 / 2009 on Mineral and Coal Mining and Government regulation 78 / 2010 on Reclamation and Mine Closure). There are, however, very few mine closures in Indonesia that have not had a shocking impact on the livelihood of the local people and that have not caused environmental degradation in the affected areas (66). According to JATAM, 85 percent of the 10,688 IUP permits for mineral and coal mining enterprises in Indonesia have not posted reclamation bonds. This leaves the state unable to hold companies liable if they go bankrupt and flee and leave polluted, degraded and hazardous mine sites in their wake.

### *Healthy environments and water*

Poorly managed and regulated coal mining also compromises community rights to a healthy environment and water. This can occur as a result of acid mine drainage, the release of heavy metals, drainage from mine waste, and changes in runoff patterns because of landscape transformation. How far and whether this occurs depends on local geology and hydrology and the quality of mine site governance. Studies across Indonesia have identified instances of community loss of access to healthy water. Here we note several cases, reported primarily by the nongovernmental sector.

Waterkeeper Alliance has been testing water bodies in coal mining areas in Indonesia and has found high aluminum, iron, and manganese levels which can retard fish growth and affect plant growth (64). Studies elsewhere suggest that this could have serious impacts on downstream forest and peatland ecosystems (71). The impacts on forest ecosystems in Indonesia are largely untested; however, a Greenpeace study in 2014 found that almost half of all water bodies in South Kalimantan are at risk of being contaminated by coal mining waste (56). It showed that hazardous waste from intensive, largely unregulated coal mining activities is contaminating the province's streams and rivers, in many cases violating national standards for mine wastewater. Discharges containing iron, manganese, and aluminum, among others, were found reaching South Kalimantan's water bodies and surrounding environment. Around 3,000 km of South

Kalimantan's rivers – almost 45 percent of the total – are downstream from coal mines. While this does not mean that they are or will be polluted, it suggests the extent of environmental and social vulnerability.

Other reports from the Waterkeeper Alliance, WWF, and others have also documented the effects of runoff from mine-affected areas on urban and farming populations. In East Kalimantan, coal mining has resulted in an increase in the number and severity of floods, with the city of Samarinda being flooded 150 times between 2009 and 2014 (72). WWF estimated the total cost of these floods at \$9 million and also reported that increased flooding caused by coal mining is the likely cause of dramatic sedimentation in three lakes in the local Mahakam River Basin, a floodplain that is home to 147 indigenous species of freshwater fish: “Thirty years ago, these lakes were 15 m deep and clear; today, they are only 2m in depth and their water is murky” (57).

Villages in Samarinda have also seen adverse impacts on crop production and fisheries because of the impacts of mining on water quantity and quality (73). With falling groundwater levels, ostensibly due to mine-induced lowering of the water table, local farmers use water from flooded mine pits to irrigate crops such as rice that had traditionally been grown using groundwater. Local farmers are now forced to grow less sensitive crops, such as chili, that can cope with being irrigated with toxic mine water. The presence of mine pits filled with groundwater also makes it difficult to rehabilitate or revegetate mine sites. Similar experiences of falling groundwater levels forcing farmers to deepen their wells substantially have been documented elsewhere as well (74).

### 3. ASGM and unlicensed mining

#### Forest and land cover

The most significant consequences of ASGM include mercury emissions into the atmosphere and surface waters, as well as deforestation, the loss of organic soil and aquatic habitat, and hydrologic regime changes associated with river siltation and land degradation. Landscape changes involved in ASGM mining are often dramatic, and can be monitored with various kinds of satellite imagery (75).

ASGM techniques employed in Indonesia include river-dredge, land-based alluvial mining using open pit methods (requiring that forest is clear-cut and burned), and hard-rock mining using underground tunnels. Whereas primary gold mining (hard-rock) has relatively low impact on forest, secondary gold mining (alluvial) has high impact on both forests and rivers as it involves dredging and the permanent removal of forest cover by migratory strip mining over the land surface. In recent years, heavy equipment, such as bulldozers and excavators, has been introduced to some alluvial gold mining sites in Kalimantan. Due to the tremendous mobility of dredging operations, the impact of alluvial mining on forests is far more widespread than from hard-rock mining. In a study of intensely degraded landscapes in Central Kalimantan in 2007, Telmer and Stapper (76) found that the total area impacted by ASGM was already greater than

400km<sup>2</sup>, even when not including smaller river courses. They estimated that in Central Kalimantan only, between five and ten thousand dredges may be active during the dry season, and between one and three thousand may be active all year long. The local NGO Yayasan Tambuhak Sinta (YTS) estimates this figure to be greater. The extent of dredging in other provinces of Kalimantan remains unknown although there is clear evidence that it is extensive in some areas – particularly in West Kalimantan.

McCarthy (77) points out that the tenuous hold of environmental law over actual practice, especially by large companies, has eroded community faith in the law and its implementers, leading them to engage in activities that the state deems ‘illegal’, including unlicensed mining. For this and other reasons, ASGM is also more likely to occupy protection forest and conservation areas known to have gold deposits (75) – precisely because operating in such areas is not possible (or at least not easy) for formal, legal, and larger scale companies. That said, when ASGM miners *do* have formal licenses, these have often been given by local authorities through patronage or corrupt relations, and in ways that are not subject to local planning. Many such concessions therefore overlap with administratively prohibited areas of land. One protection forest in South Kalimantan province is completely covered by 250 locally-issued mining concessions. A Supreme Audit Agency (BPK) report in January 2012 found that at least 115 companies had carried out mining activities in 471,714 hectares of productive and protected forests without licenses and that the activities resulted in damage to forests that will potentially cost the state. BPK recommended that the Ministry of Environment and Forestry sort out companies that are operating without proper licenses. In response, the Ministry said it had also uncovered illegal mining practices in forested areas, but had yet to take clear follow-up measures (78). Overall, there is little data to assess the national impact of ASGM on forest (though Forest Watch Indonesia’s research does have data on mining and mining permits in conservation and protection forests). However, as shown in Figure 5, the impact is nation-wide. Although it is known as small-scale mining, the enormous numbers of people involved elevates the scale of impacts significantly.

In addition to the deforestation that takes place at the site of extraction, the use of mercury may have significant downstream effects on forests, biodiversity, and human health and well-being – and Indonesia is the world’s second largest mercury emitter from ASGM (79). Usher (80) suggests that heavily polluted sites of small-scale extraction leave deforested land that cannot regrow naturally, further impacting long-term forest cover. Addressing these issues is complicated by: the illegal nature of ASGM in many of the areas where it operates; the remote and sometimes transient nature of ASGM communities; the different mining types and gold purifying methods used in different regions; and the general lack of communication between artisanal miners and government authorities (76).

## Community rights

As noted earlier, ASGM provides significant employment opportunities in communities (24). In this sense, and to the extent that workers are community members (which is sometimes, but not necessarily the case), ASGM attends to some community rights for some community members. However, ASGM also brings risks to community rights, especially related to health and well-

being. The transformation of mercury into methyl-mercury, and its subsequent bioaccumulation in the food chain, poses a significant risk to the 500,000 people currently living in and around ASGM mining communities involved in gold processing. The available information shows that at least 21 provinces experience severe mercury pollution due to ASGM, including across key forested areas in Kalimantan, Aceh, Sulawesi, Papua, and Sumatra.

Community rights are also relatively vulnerable vis-à-vis ASGM in so far as its illegality or informality limits community mechanisms to hold such mining accountable (81). ASGM enterprises walk away when their operations are finished, without undertaking any remediation practices and leaving pock-marked, treeless, and degraded landscapes that offer few or no livelihood options to remaining community members. Local ASGM enterprises may also sometimes engage in ore smuggling, evade payment of revenues owed to the government, and even operate protection rackets, such as in South Kalimantan, where well-organized local mafia figures extort money from coal trucks passing on public roads (82).

The government has tried to address the potential for conflict between small-scale mining and customary landholders by requiring miners to acquire a license for exploration and making actual extraction contingent on agreement from the landholder (83). However, the practices employed in this type of mining mean that ecological and social impacts go under-addressed and often landholders do not receive sufficient profit-sharing to warrant accepting the risks involved (80).

## 4. Infrastructure

The physical footprint of infrastructural projects is, in absolute terms, small and so the direct impacts on forest cover are always limited. Much more significant are the indirect impacts of infrastructure due to synergies with oil palm cultivation, mining, smallholder agriculture, logging and other activities catalyzed by infrastructure. Here we note several infrastructure-resource extraction synergies that have significant, potential implications for forest cover and the rights of communities living within and from those forests. We discuss the synergies by the scale at which they operate.

### National infrastructure-resource industry synergies

MP3EI and KEK/WPS are national development plans based explicitly on the idea that economic growth in all of Indonesia (if much less so in Java) shall be achieved by through large scale synergies between infrastructure and natural resource extraction (including oil palm). The plans and associated policy reforms are designed to promote investment in access and energy infrastructure in order to expand the frontier of natural resource based industries. MP3EI's corridors and the WPS clusters are spatial expressions of these synergies.

The national planning agency BAPPENAS recognizes that this will have severe implications for national forest cover and biodiversity. As already noted, the strategic environmental assessment concluded that at a national scale, MP3EI would put \$490 billion worth of Indonesia's natural

capital at risk, every year – primarily in forested areas. The implication is that as long as development models in Indonesia hinge around synergies between infrastructure and resource extraction, national forests, and the cultures and biodiversity they house, will face significant threats.

### Provincial infrastructure-resource industry synergies

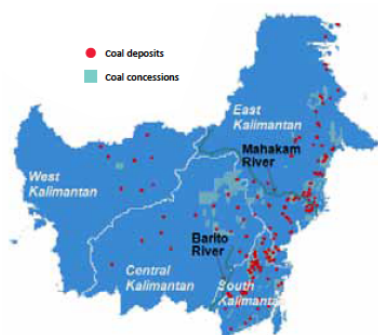
The component parts of MP3EI are a series of island-wide and provincial infrastructure-resource industry synergies, and even though KEK and WPS now focus planning at a slightly reduced spatial scale, a number of these provincial level synergies still guide investment and planning.

Planned investments in thermal power plants in different provinces bring the point of demand closer to the coal mine, and so facilitate mine expansion. The undersea cable to take electricity from southern Sumatra to Java was conceived to complement large-scale coal mining expansion in South Sumatra by providing a distribution channel for electricity produced from that coal and thus facilitating the further expansion of coal mining. As noted in section C1, the cable is now on hold as are a number of the large coal plants in Sumatra because of overcapacity in both Java and Sumatra (itself a result of the rapid uptick of investment in coal plants plus lower than anticipated national growth rates).

In a similar vein, the Central Kalimantan Railway, also anticipated in MP3EI, would transport coal to ports where it could be shipped for export or to power plants on Java. The 425 km railway would open up significant portions of new forest to coal mining and other extractive industries in a heavily forested region. The project has been proposed since 2011 and would allow up to 50 million tons of coal to be shipped out of Central Kalimantan's rainforests every year. A consortium led by China National Railway won the tender to develop the project in April 2014, but it has been on hold due to coal prices, the high cost of construction, and issues around government regulations and financing. However, a coalition of groups in Central Kalimantan, led by the environmental NGO WALHI Central Kalimantan, are closely monitoring the project and also investigating a legal challenge to the Provincial government's regulation approving the project. If this project were to move forward, it would facilitate significant expansion of coal mining (presuming prices do not collapse), which will threaten forest areas deep in the interior of Central Kalimantan and along the Barito River. The graphics below (Figure 10), taken from the MP3EI document, provide a simple representation of this effect: given the inland location of coal deposits (Map) the railway reduces unit transport costs dramatically (first graph) and would allow coal production to increase dramatically (second graph). The Central Kalimantan is one of four major rail lines intended to open up coal mining areas, two of which are already under construction.



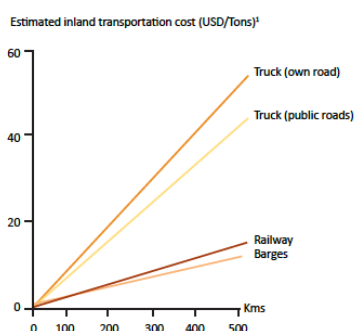
Inland mines are challenging to develop



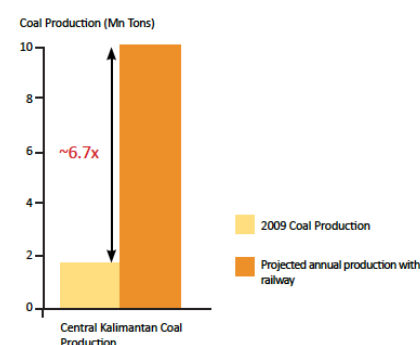
<sup>1</sup> Based on cost per tonne-km estimates from expert interviews  
Source: Expert interviews; Indonesian Coal Book 2008/2009; Team analysis

Figure 3.D.8  
Coal Mining in Inland Area of Kalimantan

Transportation cost significantly higher for inland mines



Addition of Infrastructure likely to boost production



**Figure 10: Synergies between coal mining and railways in Kalimantan.** Source: *Masterplan for Acceleration and Expansion of Indonesia's Development* (84).

## Local infrastructure-resource industry synergies

Decentralization laws have given greater authority to sub-national governments to formulate, develop, and manage their own infrastructure development policies (85). A significant part of this development is oriented toward road construction. Roads are clearly critical for human welfare, facilitating mobility, access to markets, and social services and investment. However, by extending the frontier of potentially profitable investment, roads also put increased pressure on forests as they make smallholder farming, logging, ASGM, and other activities more viable within those forests. As one example, a predictive model of deforestation (86) suggests that new roads may be an important future driver of deforestation in Aceh province. Forest areas located near roads and near the forest edge were found to be highly vulnerable to deforestation. These results mirror previous and ample research on land cover change and the role of roads in driving deforestation. There is no reason to think that this synergy is unique to Central Kalimantan, and likely exists across most of the locations of ASGM identified by the Ministry of Energy and Natural Resources across most of Indonesia (Figure 5).

## Community rights

Land rights are often contested and unclear within forested areas of Indonesia; legal protections that are in place can easily be circumvented, while mass immigration from other parts of Indonesia and ongoing marginalization of indigenous communities result inexorably and irreversibly in the transfer of ownership over resources (87). Land acquisition for infrastructure development operates through Law No 2/2012 concerning Land Procurement for Development in the Public Interest. Even though a compensation mechanism has been established, there are often irregularities at the implementation stage related to gratuities, land price markups, and land-banking, among other practices. The two ministries that play a role in land acquisition are

the MoEF (KLHK) and the Ministry of Agrarian and Spatial Affairs (KATR). KLHK is the only ministry that has jurisdiction over forest areas, which are largely cross-jurisdictional administrative areas (provinces, districts / municipalities). Sub-national governments consider KLHK's authority as a constraining factor that slows down the process of local spatial planning. The National Land Agency (BPN) has jurisdiction over the registration and control of use of non-forest land, including infrastructure development on such land.

Recent historical experience is that infrastructure projects have been a significant driver of displacement, and weaken community rights over resources. The Internal Displacement Monitoring Centre notes that

[b]etween 2004 and 2013, the World Bank financed 21 projects with confirmed or potential displacement in Indonesia, and an estimated 11,400 people were displaced. The three projects that displaced the most people were a hydroelectric power project (8,213 people), a road infrastructure project (1,590 people) and a gas market development project (941 people). Other cases of displacement caused by development include the 1985 Kendung Ombo reservoir in central Java, which displaced 24,000 people.<sup>20</sup>

Current government plans to intensify investment in infrastructure (with some 245 national strategic infrastructure projects to be completed by 2019) suggest that many more thousands of people will be displaced, and that in the face of infrastructure development, under current regulations, they will have little recourse to object, negotiate, or propose alternate compensation (88).

## E. Public and private responses

While there have been many responses to the problem of forest loss and degradation in Indonesia, relatively few responses address the specific roles of extractive industry and infrastructure in these processes. Furthermore, responses have not always been articulated within or between different policy domains. In the following sections, we identify five types of responses, noting some of the public and private bodies doing work in these areas. These include:

- promotion of public information and debate on the past and potential impacts of resource extraction and infrastructure on Indonesia's forests and forest peoples
- using information to enhance accountability and transparency
- pursuit of more coordinated forms of national regulation
- litigation as a means of contesting regulations
- issue-specific interventions.

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<sup>20</sup> Continually updated information on displacement may be found here: [http://internal-displacement.org/countries/indonesia#link\\_causes](http://internal-displacement.org/countries/indonesia#link_causes) (last accessed: 18 March 2018).

## 1. Public information and debate

A number of organizations dedicate significant effort to generating and providing public information on the issues discussed in this report. These interventions seek to influence national and international debate and thinking on development models being pursued in Indonesia. The most sustained contributions have been those of Mongabay, a web-based conservation news service.<sup>21</sup> NGOs specialized in mapping and GIS capacity, such as Auriga and Fern, have played an important role in providing visualizations of the extent of mining concessions and showing how they overlap with other forms of land use and property claims. Again, this material is produced as an input to public debate and policy advocacy.

Other organizations generate information for public discussion as part of broader suites of activities. WWF's Heart of Borneo project has produced publications and reports on the impacts of coal mining on forests and community rights in Kalimantan (the Asian Development Bank has served as the lead agency to mobilize financial resources for this project). Meanwhile, JATAM Mining Advocacy Network (*Jaringan Advokasi Tambang Nasional*),<sup>22</sup> a network of civil society groups working on human rights, gender, environmental, Indigenous People, and social justice issues related to mining, provides information for public debate as part of its advocacy around equitable and sustainable management of Indonesia's mineral and energy resources. JATAM has conducted investigations and campaigns with local NGOs addressing energy (coal, oil, gas, geothermal) and mineral resources (gold, tin, cement, etc.), advocates for the rights of communities affected by mining, and carries out public information campaigns prior to subnational elections in mining areas. JATAM focuses on corruption and political financing behind political parties in regional headship elections, which involve candidate pledges related to oil palm and coal mining concessions.

Other organizations that combine information generation, public debate and advocacy on mining and forests include WALHI (*Wahana Lingkungan Hidup Indonesia*, or Friends of the Earth Indonesia)<sup>23</sup> and Telapak.<sup>24</sup> WALHI is the largest and oldest environmental advocacy coalition with more than 470 NGO members throughout Indonesia. It works on conflict over access to natural resources, Indigenous People, coastal and marine issues, and deforestation as well as cross-cutting issues of climate change, gender, and disaster risk management. In collaboration with Milieudefensie and Ecosystem Alliance, WALHI investigated the negative impacts of tin mining in Bangka Belitung Islands (2014), as one example. Telapak is an association of activists, business practitioners, academics, media affiliates and leaders of Indigenous Peoples, fishers, and farmers. The organization's main objective is to influence public policy on conservation issues, establish community-driven natural resource management and stop environmental degradation. The organization uses reports or documentary audio-visuals for

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<sup>21</sup> [www.mongabay.com](http://www.mongabay.com)

<sup>22</sup> [www.english.jatam.org](http://www.english.jatam.org)

<sup>23</sup> [www.walhi.or.id](http://www.walhi.or.id)

<sup>24</sup> [www.telapak.org](http://www.telapak.org)

public debate; it has also written a confidential report to Apple (in 2015) on tin mining and the supply chain from Bangka-Belitung Island.

## 2. Information, accountability and transparency

Civil society organizations (CSOs) have also sought out and generated information that seeks to increase accountability and transparency in the sector. For instance, CSOs are using the 2010 Freedom of Information (Fol) Act to access information about mining permits and operations. CSOs see the Act as an important government achievement, indicating its willingness to improve accountability. The law mandates the formation of Provincial Information Commissions (PIC), the designation of local government information officers to respond to information requests, the establishment of standard operating procedures (SOP) for handling information requests, and procedures for handling grievances. CSOs have been using the law to push regional governments to establish PICs with ‘clean’ commissioners (which from NGO reports in various provinces is remarkably difficult and has required the development of a thorough background checking process). Once commissions have been established, CSOs then use the law to request information about mining, for instance to access AMDAL and other documents to review mining permits. But implementation is slow, and governments are reluctant to hand over data, and even when there is no resistance, data are often incomplete or poor.

Once obtained, public information has been used by Publish What You Pay (PWYP) and other CSOs to support the KPK’s Korsup Minerba, and to review mining permits in different provinces. The following are examples of how public mining information has been used by CSOs and NGOs:

- In Aceh, Anti-Corruption Movement Aceh (*Gerakan Anti Korupsi, GeRAK*) used the Fol Act to access information about mining permits issued across the province. Analysis of permit documentation revealed serious issues with mining governance in Aceh. For example, 84 of the 138 mining permits issued for Aceh did not comply with clean and clear standards (as described earlier); 69 mining permits had been issued for 431,275 hectares of protected and conservation forest in Aceh; and mining companies owed the government IDR 24.7 billion (\$1.8 million) in unpaid land rents and royalties. These findings were published on an open data platform ([data.gerakaceh.id](http://data.gerakaceh.id)) to enhance and inform public debate around mining governance in the province.
- SAMPAN, an environmental NGO in West Kalimantan, found that 104 mining permits (IUP) did not comply with clean and clear standards and submitted this information to government who had the permits revoked. The permits covered 1,252,031 hectares of land, including areas of forest zone. The review also revealed an estimated IDR 676 billion (\$49.3 million) of reclamation funds (*dana reklamasi*) had not been paid by companies, and these have since been retrieved by the provincial government. The provincial government has released two gubernatorial decrees related to post mining clean up requirements, including a guarantee that funds allocated are spent on reclamation activities.

- GeRAK and LBH Aceh campaigned for a moratorium on mining permits. On 25 October 2016, Aceh governor Zaini Abdullah extended a moratorium indefinitely on all new mines (INGUB no. 9 of 2016). This instruction prevents the issuance of permits to new mining companies in Aceh until a review of all permit operations is complete.
- The Sulawesi Community Foundation (SCF) launched an open data platform (datakita.id) that offers a database of information accessed through FoI Act relating to mining, forestry, and oil palm plantations in Central Sulawesi.
- Prakarsa Borneo (Center for Law, Environment and Governance Studies) partnered with the UKP4<sup>25</sup> to review mining permits in two districts in East Kalimantan (Kutai Kartenegara and Berau)
- National NGOs have also led permit review processes across Indonesia: Indonesia Corruption Watch (ICW), Indonesia Centre for Environmental Law (ICEL) and Indonesian Forum for Budget Transparency (*Seknas Fitra*) have played important roles in increasing demand for improved mining governance. These demands were important in driving the movement that ultimately led to the establishment of the Korsup Minerba anti-corruption unit.

Finally, some NGOs (e.g., Publish What You Pay Indonesia), the World Bank and parts of government have focused attention on increasing transparency and accountability in the mining, oil and gas sectors in Indonesia through the Extractive Industries Transparency Initiative (EITI). These efforts have focused mostly on transparency related to tax payments. CSOs have attempted to persuade EITI to address transparency about environmental impacts and resource concessions, but there has been considerable resistance – so the extent to which this will be a viable avenue to address forest loss or community rights issues is unclear.

### 3. Regulation and coordination

As noted in earlier sections, the relationships between extractive industry development, infrastructure, forests and community rights are regulated not just by ‘big picture’ national plans such as MP3EI and KEK/WPS, but also by many activities pursued by different agencies and at different levels of government, sometimes working alone and occasionally with civil society organizations (89).<sup>26</sup> The lack of coordination among these activities (which can be driven by capacity constraints, corruption or patronage) is reflected in overlapping natural resource concessions and confused property rights. These problems have elicited responses from various central government agencies and the executive office, each seeking to introduce more coordination through regulatory measures. In addition, the World Bank and a number of NGOs have also focused effort on more coordinated forms of natural resource policy and regulation,

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<sup>25</sup> UKP4: a Presidential Delivery Unit for Development Monitoring and Oversight (*Unit Kerja Presiden Bidang Pengawasan dan Pengendalian Pembangunan*).

<sup>26</sup> Sahide and Giessen (2015) provide a detailed breakdown of the range of ministries and bureaucracies that have some responsibility over forests as well as some of the key contradictions inherent in the system.

often by supporting government efforts (although the World Bank has, at other times, played a role in facilitating expanded extractive industry investment).<sup>27</sup>

One example of an effort at regulation that involved government-NGO collaboration was KPK's crack down on the mining sector, discussed earlier. This involved the commission (a state agency) and CSOs in a review process across 12 provinces selected for analysis (later expanded to 19 provinces). Indeed, it was under pressure from the civil society sector, and perhaps to address revenue leakage, that the state introduced clean and clear regulations in 2014. Building on such initiatives, Publish What You Pay Indonesia (PWYP) played a key role in recent efforts to improve mining governance, including pushing government to improve policy around mining permit oversight. For instance, PWYP played a role in the development of Ministry of Energy and Mineral Resources decree no. 43 of 2015 – which sets out the procedure for the evaluation of how permits are issued for mineral and coal mining.

Another response to the problem of overlapping and unclear licenses, and problems of smog from forest fires, came in April 2016 when President Jokowi announced a moratorium on the issuance of new mining permits and new oil palm permits (30, 90), though few details were given about the mining permit moratorium (27). As existing licenses contain far more potential for mining than current demand requires, if the moratorium only applies to new licenses then the impacts will be very small, as evidenced by the reaction of the Indonesian Coal Mining Association, which said at the time that “In the situation of prolonged low prices of mining products due to significant oversupply, presumably a lot of (our) members will agree with the policy” (91). However, if the moratorium applies to existing licenses as well, it could have a positive effect on restricting additional deforestation from coal mining. Regulations had been expected in June 2016 to clarify the extent of the moratorium, but by February 2018 neither regulations nor the requisite Presidential decree to stop new concessions had been issued, meaning that the moratorium does not yet exist in any legal sense (30). This is a concern ahead of 2018 local elections in which the absence of the moratorium will facilitate candidates trading natural resource rights for financial support for their campaigns (30). Moreover, not only is there still no moratorium, but the government is also auctioning off a number of mining permits this year (92, 93).

While not related only to resource extraction and infrastructure, the central government has also pointed to the need to strengthen community and indigenous rights in the context of forest loss. Jokowi has issued strong statements that communities, not conglomerates, should manage Indonesia's forests, and that his administration's aim to promote social forestry as part of a broader land reform agenda is reflected in the national medium-term development plan for 2015-2019. In the plan, MoEF is assigned responsibility to increase community access to forests through a mix of social forestry governance arrangements, including community forests,

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<sup>27</sup> See the World Bank Group's 'Natural Resources for Development' (NR4D) project, a Canadian Department of Foreign Affairs and Trade (DFAT)-funded effort to address the weak policy environment and poor governance in the management of mining in Indonesia: <http://projects.worldbank.org/P157761/?lang=en&tab=overview> (Last Accessed 14 May 2018).



village forests, and customary forests. The Ministry aims for 12.7 Mha of forests to be formally managed by communities by 2019, with at least 2.54 Mha allocated to communities in 2015. Furthermore, Minister Siti Nurbaya asked MoEF to focus on three priority issues from 2015, one of which is the resolution of conflicts surrounding customary community claims to forest areas (which would include mining areas), and she has expressed strong support for the establishment of customary forests and participatory mapping processes lead by the Indigenous Peoples' organization, AMAN (*Aliansi Masyarakat Adat Nusantara*, or the Indigenous Peoples Alliance of the Archipelago), together with JKPP, the Network for Participatory Mapping. The Ministry of Law and Human Rights' Roadmap for Legal Reform on Natural Resources and Environment, signed in February 2015 by relevant Ministers, made recommendations for legal reform to improve the effectiveness and equity of natural resource management, one of which concerned the rights and responsibilities of communities. Though it took more than two years from Jokowi's initial statements in 2014 before he made any formal recognition of indigenous land and forest rights, there has been some recent progress, though observers still view the process as slow and piecemeal (94).

In a context of REDD+<sup>28</sup> and the problem of overlapping concessions and claims on land, and the fact that the Indonesia government had maps with conflicting information about ownership, access and use rights to natural resources, the central government launched the "One Map Initiative" intended to produce a single map and database of claims on natural resources (Mulyani and Jepson 2017; see Box 1).<sup>29</sup> Although One Map was motivated by concerns that went beyond mining concessions, forest loss, and community rights, these were part of the context in which the initiative emerged. While a geographic database cannot resolve the power differences that lead to different claims on the same forest, and while the initiative still faces important challenges, One Map constitutes another effort to foster more coordinated forms of natural resource regulation as a step towards reducing forest loss and social conflict (96). One Map is supported by USAID, the central government, NGOs and others, and many interviewees consider it a sign of 'hope' for more effective management of relationships among resource extraction, forests, and communities. The anti-corruption commission (KPK) has assisted with the development of One Map and in the mediation of conflicts over concessions, and has played a role in revoking concessions when permit holders are not compliant with clean and clear standards (97).

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<sup>28</sup> REDD+ is an acronym for Reducing Emissions from Deforestation and Forest Degradation, as well as conservation, sustainable management of forests and enhancement of forest carbon stocks.

<sup>29</sup> In a related initiative, MoEF launched an online map (Peta Indikatif Arahan Perhutanan Sosial, PIAPS) indicating areas that are a priority for formalizing forest tenure in the form of social forestry. The PIAPS online map, released as a trial in 2017, overlays areas of remaining forest with forest areas already permitted for land use. It aimed to work towards achieving 12.7 million ha of land as social forestry.

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### **Box 1, One Map overview**

In Indonesia, each government agency traditionally held the authority to make their own sectorial maps, resulting in vastly different land cover maps – each using their own criteria for defining forest cover, scale and mapping methodologies (Shahab 2015). The One Map Policy was introduced by the Susilo Bambang Yudhoyono (SBY) government in December 2010, requiring that relevant ministries work together to create a single authoritative state land-cover map, that maps are made available to the public, and that indigenous customary lands are integrated into the state map (98).

The One Map Policy was developed in the context of Indonesia's commitments in 2009 to reduce greenhouse gas emissions from deforestation by 26 percent, or by 40 percent with international support by 2020. This resulted in a \$1 billion commitment from the government of Norway to assist Indonesia to reduce greenhouse gas emissions. A Letter of Intent was signed between Norway and Indonesia, setting milestones which include a moratorium on new land-based permits for areas of forest and peatlands. From this commitment came momentum for the development of a single, standardized map for all Indonesia. President Yudhoyono assigned the task of implementing the One Map Policy to the Presidential Delivery Unit for Development Monitoring and Oversight (*UKP4*) (and within the *UKP4* a Task Force on REDD+), a working unit responsible and reporting directly to the President. Allocating the role of creating One Map to *UKP4* was viewed with optimism by CSOs, indicative of a new willingness to address underlying issues with forest governance (Mulyani and Jepson 2017).

President Joko Widodo replaced President SBY in 2014. Widodo dismantled the *UKP4*, and the REDD+ Agency. In February 2016, Widodo signed a Presidential Regulation to accelerate the process of synchronizing all maps to produce One Map by June 2019 (99). The task of producing the base maps for the One Map was moved to the National Geospatial Information Agency (*Badan Indormasi Geospasial, BIG*), under the authority of the National Development Planning Agency (*BAPPENAS*). This shift to *BIG* was praised as 'critical in setting the development of map-making on a new path' (95), and 'suggests a positive sign that its grounded implementation is viable' (95). By early 2017, an online database had been created and several maps uploaded for public access. It remains to be seen whether One Map can be completed by June 2019.

Since it was first proposed a decade ago, development and implementation of the One Map Policy has been slow and problematic. Resistance to the creation of the One Map has been strong, coming from both within and across government and from the private sector, indicating that One Map is more a political issue than it is a technical one. Government agencies, particularly those with the authority to issue land-based industry permits, are reluctant to collaborate and tensions arise between agencies (100). This is because government agencies, including for mining, have long benefitted from unclear, contradictory and inconsistent regulations. The lack of a clear, national map and lack of transparency has enabled district governments to issue licenses without pursuing procedures or fulfilling environmental laws, and One Map threatens to reveal inappropriate and overlapping land-based permits, including for mining.

The One Map Policy is facing serious challenges in compiling accurate and up-to-date information about land-based permits issued over Indonesia's land. An example comes from Forest Watch Indonesia (FWI), who worked for many years to access and compile a comprehensive map of

land-based concession maps issued by the Indonesian government. Drawing on the mechanisms set out in the Freedom of Information Act, FWI requested maps from all palm oil concessions for the island of Kalimantan from the Ministry of Agrarian and Spatial Planning (MoASP). When the information requested was not forthcoming, FWI pursued a lengthy information grievance to the Central Information Commission, which ruled in FWI's favor – a decision which was upheld in the Supreme Court, even after MoASP attempted a series of appeals (101). The Supreme Court required that the ministry release maps of oil palm companies' concessions for all of Kalimantan. Yet despite the Supreme Court decision, MoASP has refused to release these documents to FWI. MoASP has also refused to provide maps to BIG for the One Map Policy (102).

Another major concern surrounding the One Map Policy is that there are no current national maps for customary land, or village borders (102). Should the One Map ignore or erase indigenous communities' land tenure claims, it is likely to pose more social problems than it solves. CSOs – including the Network for Participatory Mapping (JKPP) and the Alliance of Indigenous Peoples of the Archipelago (AMAN) – are pushing to ensure that the One Map contains maps of customary land. Efforts to integrate customary maps into the One Map have faced resistance from BIG, which has questioned the standards of participatory mapping processes (103).

## 4. Litigation

CSOs, government agencies and private sector organizations have used litigation as a means of resolving issues concerning mining and forests. Various court cases have been pursued by civil society organizations. For example, LBH Padang in West Sumatra filed a lawsuit against the governor through the Padang administrative court in 2017 regarding the number of non-clean and clear mining permits active in West Sumatra. It won the case, with the court ruling that the governor must revoke non-clean and clear permits. Twenty-one non-clear and clean mining permits were subsequently revoked in November 2017; the five remaining permits are still under review.

Another example that illustrates both the influence and the limits of litigation as a strategy for influencing change within sub-national mining governance is a case brought by the Samarinda Lawsuit Movement (*Gerakan Samarinda Menggugat*), a citizen coalition. This court case was led by JATAM East Kalimantan. After a series of 26 court sessions, on 16 July 2014 the judges ruled in favor of GSM's charges that the government had been negligent in fulfilling its obligations under the 2009 Environmental Law (104). However, there is little evidence of substantial change since the 2014 ruling. Part of the problem appears to be the difficulty of translating judicial decisions into policy action. Another dimension is challenges facing mining CSOs: they are threatened (JATAM's office has been visited several times by mafia linked to mining companies), their work remains largely donor driven, and they lack good legal support to sustain litigation and follow up on post-trial implementation.

At the same time, mining companies use litigation to sue governments for enforcing mining laws. As governors have been using their new authority over mining (following Regional Governance Law no. 23/2014) to enforce mining laws by revoking or cancelling non-compliant

mining permits, companies have pushed back, testing the ability of local governments to stamp out illegalities in the mining sector. To date, ten mining companies have sued local governments in an effort to have their permits reinstated in the provinces of South Sumatra, Central Sulawesi, Aceh and West Kalimantan. Provincial governments were successful in four cases brought by mining companies, but in four cases mining companies' won their lawsuits in provincial courts and had their permits reinstated. This highlights new challenges that sub-national governments face in enforcing the law in the mining sector.

## 5. Issue-specific responses

### ASGM

A number of organizations address environmental, social and health issues surrounding ASGM, reflecting increasing recognition of the scope and scale of ASGM in Indonesia. By and large, these responses are at the sub-national level and seek to address ASGM in particular locations – one exception being Canada's support to a five-year project entitled 'Sustainable Development of Small-Scale Gold Mining in Indonesia (2016-2021)', which aims to improve incomes, health, and the environment of vulnerable and marginalized men and women who are dependent on the ASGM economy in Central Kalimantan, South Kalimantan, Java, and Sulawesi.<sup>30</sup> The Artisanal Gold Council and Yayasan Tambuhak Sinta (YTS) are implementing the project. Since 2006, YTS has focused on Central Kalimantan and has worked on improving mining and processing methods to reduce the mercury emissions from ASGM and on health campaigns to raise awareness about the impacts of mercury on the environment and human populations.

Another NGO focused especially on ASGM is Yayasan Balifokus, a small, Bali-based NGO working to improve the capacity and quality of life of communities and advocating a toxics-free environment.<sup>31</sup> It works closely on the socio-economic and health dimensions of artisanal gold mining. Its founder, Yuyun Ismawati, has a strong international network around management of hazardous chemicals and human exposure to lead, mercury, and toxic waste. In the last five years, Balifokus has exposed and monitored the human health impact of mercury poisoning from ASGM activities. It has continuously pushed the relevant ministries to develop better policy and strategies in dealing with the mercury and lead poisoning health crisis.

Other organizations engaging with ASGM in Indonesia include Pure Earth (formerly the Blacksmith Institute), an international non-profit organization with a small office near Jakarta. While its main objective is to identify and address industrial pollution (especially from mining) that has negatively impacted human health, it has also collaborated with and provided support to Indonesian NGOs to work with artisanal gold mining communities in Java, Lombok, Nusa Tenggara Timur, Kalimantan, Sumatra, and Sulawesi. The NGO is also actively engaged with

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<sup>30</sup> See <http://www.artisanalgold.org/our-projects/asia> and <http://tambuhaksinta.com/> (Last Accessed 14 May 2018).

<sup>31</sup> See [www.balifokus.asia/](http://www.balifokus.asia/) (Last Accessed 14 May 2018).

the technical staff of the Ministry of Energy and Mineral Resources and MoFE in developing a strategy to implement the Minamata Convention, dedicated to reducing and eliminating the use of mercury from all human sources, especially ASGM. As one final example, *Asosiasi Penambang Rakyat Indonesia* (APRI) aims to develop Collective Responsible Mining (CRM) and is pushing for the legalization of community mining, promoting ASGM as a viable livelihood to benefit rural communities.

While ASGM is clearly now a national issue, with clear challenges for Indonesia's forest estate, there is not yet a significant national level response to address the problem.

### Indigenous peoples' rights

Although Indigenous Peoples' rights are recognized in Indonesia's 1945 Constitution and ensuing legal framework, practical recognition of such rights has been weak. When the Constitutional Court released Decision 35 in 2013, ruling that customary forest is private forest, outside of the state forest zone, many scholars and NGO activists viewed this as a significant starting point for the state and government officials to acknowledge the rights of indigenous and local communities in forest and land management, and eventually for contributing to resolving land conflicts connected to forest status (105). With such decisions, the central government (i.e., the MoEF) may no longer have total control, since customary forests (*adat*) can be outside state forests in areas called Private Rights Forest (*Hutan Hak*). Slow but consistent progress that combines State Forest Social Forestry options with Private Forest has been made on this front. The latter is least preferred by the Ministry of Forestry, whilst Social Forestry now has up to 1.3 million hectares recognized. In addition, the registry of the Ministry of Forestry, Social Forestry Directorate, lists seven clusters of community forest management applications as being actively processed – together these total approximately 4.8 million hectares.<sup>32</sup> There are still many challenges related to transforming legal decisions into practical technical regulations to guide the process of acknowledging Indigenous Peoples in Indonesia's legal system and development programs, and to deliver on the registration of territories of Indigenous Peoples, a scheme for the resolution of land and resource conflicts, and improved local regulations on Indigenous People (85). Implementing legislation to enact the 2013 ruling has only recently been approved, under Presidential Decree No. 2/2018 for systematic fast-tracking of the land registration system in Indonesia.

The executive branch has also responded to indigenous rights issues related to resource conflicts. The future position of the Government of Indonesia on Indigenous Peoples Rights is initially rooted in the fifth item in Joko Widodo's Nine Priorities Development Agenda (*Nawacita*), which includes a commitment to land reform and land ownership by 2019 (106). It is elaborated in the six main priorities on the protection and promotion of Indigenous Peoples rights presented in the National Medium Term Development Plan (RPJMN) 2015 -- 2019. The first priority refers to implementing the mission of the new Ministry of Agrarian Affairs and Spatial Planning, including: (i) issuing land certificates to customary communities; (ii) allocating 9 Mha to small

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<sup>32</sup> See <https://huma.or.id/en/tentang-huma>. HuMa is the Association for Community and Ecology-Based Law Reform.

farmers; (iii) identifying at least 4.1 Mha of the Forest Zone to reclassify as non-forest land; (iv) creating a centralized land registration system; (v) expanding the national base map; (vi) expediting the gazetting<sup>33</sup> (legal protection) of Forest Zone boundaries; and (vii) accelerating delineation of customary land boundaries. The One Map Policy will be a key support tool for achieving this and at least five ministries are expected to use One Map, including the Ministry of Energy and Mineral Resources. Ideally, this will enhance licensing and environmental monitoring and enforcement activities.

Within civil society, many NGOs deal with indigenous rights, but the organization that works wholly on these issues is the Alliance of Indigenous Peoples of the Archipelago (AMAN), a representative organization that prioritizes land, natural resource and resource tenure rights for Indigenous Peoples. Its work addresses all rights conflicts, not just those related to mining and infrastructure. AMAN has also initiated a Community Green Gold Mining (CGGM) initiative that aims to develop a gold mining management system that benefits all members of an indigenous community and protects indigenous territories from the threat of land conversion by outsiders. CGGM has 2,244 members from indigenous communities, 21 regional branches and 103 management teams all over Indonesia, and promotes implementation of CGGM in customary title areas.

## Climate change and energy transition

Indonesia's Nationally Determined Contribution allows for significant increase in CO<sub>2</sub> emissions from the energy sector by 2030. The conditional mitigation scenario, which aims to reduce CO<sub>2</sub> emissions by 41 percent from a business as usual scenario, allows for an increase in energy-related emissions from 2010 levels of 453 million tons of CO<sub>2</sub>-e to 1271 million tons of CO<sub>2</sub>-e in 2030. Much of this increase would be from coal. Concern about these figures has led some organizations to work on accelerating transitions to clean energy in the country. While only 11.4 percent of total electricity was generated by renewables in 2012, almost entirely from hydro (6.5 percent) and geothermal (4.8 percent), the Indonesian government has a stated goal of producing 23 percent of the country's energy from renewables by 2025, which would require about 46 GW of new renewables capacity to be developed by 2025, primarily on Java-Bali-Sumatra. The International Renewable Energy Agency (IRENA) finds that the share of renewable energy in Indonesian power generation could increase to 38 percent by 2030, including 47 GW of solar (108).

In addition to government efforts to foster transition to cleaner energy sources, a number of civil society and philanthropic organizations are also involved in strategic efforts to facilitate transitions. This work combines both pull and push interventions: engaging with the private sector to facilitate investment in low carbon energy, and at the same time working to reduce the financial viability of carbon intensive electricity options.

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<sup>33</sup> Gazetting (pengukuhan) is the first step for defining the status of an area of forest zone, to clarify all rights that are claimed over any one piece of forest (107).



## 6. Civil society sector challenges looking forward

Civil society organizations have played and continue to play an active role in efforts to reform mining governance in Indonesia, but face many complex challenges.

### Monitoring and reporting violations

Clean and clear standards have been difficult enough to assess through desk-based analysis of mining permit documents. Field checks and independently-produced maps are necessary to ensure that maps of current mining operations reflect the reality of mining companies' practice. Monitoring of the mining sector is very weak, hampered by lack of budget allocations for trained investigators at the local level, lack of budget for monitoring activities, and ineffective mechanisms for handling complaints. Funding for review and monitoring activities is often under-budgeted in the local budget (APBD), which limits the monitoring activities that can be conducted. Complaint mechanisms tend to be unknown to the public and the government lacks the budget to follow up on complaints.

NGOs working on mining, such as JATAM and WALHI, are based in regional capital cities, and their ability to address mining governance issues is significantly limited by budgets, internal management capabilities and community organizing skills. Mining operations take place in regions far from capital cities, while mining company offices are often located in Jakarta. Civil society monitoring of mining operations is expensive, requiring travel and field research costs. Increasingly NGOs such as SAMPAN in Pontianak, West Kalimantan, are exploring the use of unmanned aerial vehicles (UAVs) to monitor mining operations. SAMPAN has been established as a UAV hub to provide training and support for other NGOs to monitor mining operations.

### Overcoming barriers to reform: disrupting patronage relationships

Disrupting patronage relationships will require significant civil society demand for mining reform. It is well documented that mining companies can gain access to land primarily through patronage-based relationships with politicians and bureaucrats, rather than through a competitive market-based system (30, 109–111). Disrupting these relationships requires enhanced public scrutiny and civil society pressure to address systemic corruption. Aside from technical reasons, government monitoring of mining operations is also made ineffective due to patronage-related reasons. Scrutiny of informal agreements between political parties and the mining sector will be particularly important in the lead up to the 2019 Presidential elections and in regional elections. District heads and Governors rack up significant debts in their campaigns for office and mining companies provide campaign funds to political candidates in exchange for necessary land permits (30, 111).<sup>34, 35</sup> Greater media scrutiny, increased use of social media,

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<sup>34</sup> Research by the NGO Auriga Nusantara shows that “[o]f the more than 13,000 mining permits issued by local governments from 2004 to 2016, three-quarters were issued within a period two years prior to and two years after local elections” (30).

<sup>35</sup> A recent Transparency International report (2017, p. 31) identified that in Indonesia, “where provincial governments are responsible for mining approvals and there is poor control and oversight of campaign

and increased accessibility of public information are all means to increase public pressure for reform, as are building strong coalitions to demand reform.

## Strategies to increase demand for mining reform

**Building coalitions to increase demand for mining reform:** Anti-mining campaigns have been successful where CSOs have been able to build strong coalitions across environment groups and with other industries impacted by proposed mining. The Bangka Island anti-mining campaign in Northern Sulawesi is an example of a recent successful campaign, led by a coalition across various sectors, which linked the local and international community. An alliance was formed between villagers, activists, tourism operators and divers, who were all impacted by an iron ore mine permitted to operate on Bangka Island's tropical reef, a popular tourism destination. The alliance used social media to link the local community with the international community, and gained traction with popular Indonesian music group Slank, who increased the campaign's visibility in Indonesia (112). The alliance brought a case against the district head of North Minahasa, who had issued the mining permit without consultation. After a series of hearings in various courts, the alliance won in 2017 when the Supreme Court ruled the mine illegal (Grossman 2018).

**Examining mining finance to understand international financial flows:** Improved networks between international and Indonesian focused NGOs and advocacy initiatives is an important way to demonstrate international support for Indonesian mining reform campaigns and can be particularly helpful in tracing the nature of international financial flows into Indonesia. Tracing investments to their financiers/investors, and lobbying the banking sector is a strategy that has been taken up in the palm oil sector by Transformation for Justice (TuK Indonesia), an Indonesian community rights group that partnered with Netherlands-based NGO Profundo to analyze international land investors' financing (113). NGOs focused on mining have yet to make much progress in pursuing the same approach to scrutinize mining sector investments. Banking sector safeguards relevant to mining sector investments include the Equator Principles, yet Indonesian NGOs have not yet focused their advocacy efforts at the level of investment.

**Supporting reform champions:** Identifying key reform minded champions in parliament, the bureaucracy and at the village government level, and supporting them to have greater reach is another strategy that has worked well for NGOs in other sectors. Similarly, religious leaders and organizations provide significant potential for increasing public demand for mining reform. The moderate Islamic organization Muhammadiyah (Indonesia's second largest Muslim organization) has a long-standing relationship with the Ministry of Economy and Finance (114). The Indonesian Franciscan Congregation Commission on Justice, Peace and the Integrity of Creation Commission (JPIC-OFM) have recently supported local communities to prevent mining land grabs, such as in Manggarai (115). Churches and Islamic groups are often the closest to communities in regional areas, where there is little other NGO or state presence, and have

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funds, mining companies have reported that political contestants in provincial elections have demanded donations to support their campaigns in exchange for preferential treatment in the license process should they be elected".

significant influence. Working through national offices of religious organizations to build curriculum to communicate to congregations may have major influence.

### Linking NGOs and local media

NGOs often have limited reach, and in regional areas rely on traditional advocacy strategies with more limited use of media. Supporting NGOs to link more closely with the media and to develop linkages with academia can enhance their reach and influence. The Asia Foundation's initial funding to Mongabay Indonesia included establishing a network (through a series of trainings, workshops and ongoing discussions) to link journalists and local NGOs to collaborate on investigations of mining and environmental issues. This led to a significant increase in coverage of environmental issues in Indonesia on the Mongabay website, and many issues were picked up in the English press. This funding has finished, but the network has been lasting, with NGOs continuing their relationships with local journalists to report issues. Further funding and enhancing these networks is key to enhanced coverage of mining issues to build civil society demand for reform. Journalists involved in this initiative reported that local NGO data was often difficult to publish, requiring further analysis to tell a clear story, indicating where local NGOs need further capacity assistance in communicating to media.

Media can play a greater role in exposing land use infractions, but traditional Indonesian print media is constrained by a couple of factors. First, companies often make it very difficult for journalists to obtain a statement confirming or denying their findings or to even contact them (by not having an office in the province of work, or indeed not having an office in Indonesia at all). This can leave newspapers vulnerable to libel charges if they publish their findings. Media outlets are limited in their ability to critique the private sector, as private sector actors have far-reaching linkages with political actors and vast investments that make up much of the advertising content for newspapers (personal communication with Mongabay editors, 2014). Second, accessing mining sites is expensive and journalists lack the budget necessary to investigate mining operations in remote locations. Gaining access to mining operations as an independent party is difficult and can be dangerous. Journalists also lack investigative skills, especially at the district level, and are often co-opted by payments to avoid negative stories about companies. Third, intimidation tactics are sometimes used, with journalists receiving threatening text messages. These factors limit press coverage of land use infractions.

**Reaching rural communities:** Newspapers don't reach communities outside urban areas, particularly in the outer islands. In rural Kalimantan for example, newspapers are rarely sold in villages, as delivery often takes weeks and the cost of newspapers is prohibitive for the poorest households. Internet access is also very limited. The only news to reach the community is through television, in the hours of electricity at night. Other information sources are networks of family and friends and religious leaders' communication with their congregations (see discussion of religious leaders above). RuaiTV, a television station in Pontianak focused on indigenous Dayak communities, reaches across Kalimantan and provides an important source of information for local communities across the region –it could provide information to impacted communities on monitoring mining. SMS phone trees are also providing important information. For example, the RuaiSMS program was established by Jakarta-based journalist Harry Surjadi

and supported by WWF West Kalimantan to monitor and report infractions in the palm oil sector (116). Similar initiatives could be developed or scaled up to monitor mining operations.

### Legal aid for environmental issues

Indonesia's nationally-funded formal legal aid system was launched in mid-2013, and is reliant on accredited civil society legal aid providers funded through the national government budget, in accordance with the Legal Aid Law 2011. Prior to the establishment of the formal system, legal aid was provided by CSOs, and the shift to a government funded system remains slow and requires donor support (117). Legal aid offices exist in all capital cities, however, due to funding and capacity limitations, their ability to enforce environmental laws and support communities impacted by mining infractions remains weak. This was evident for example in a civil lawsuit against the government by Samarinda Lawsuit Movement (*Gerakan Samarinda Menggugat, GSM*) – a citizen coalition. ICEL provided support to JATAM and plaintiffs as there were no sufficiently experienced environmental-focused lawyers in East Kalimantan. Providing increased funding and capacity building through legal aid offices has proved successful in West Kalimantan, where the Asia Foundation supported the establishment of a community legal aid network to respond to the lack of legal aid and lawyers with environmental expertise in the province. The network provides legal support for forest and land governance issues, particularly cases that involve conflict between communities and extractive and land-based industries. Such initiatives could be scaled up in other provinces and expanded to reach communities impacted by mining.

Supporting local communities to play an increased role in the monitoring of mining companies operations will involve ensuring the public are aware of the regulations surrounding mining. This training could come from legal aid providers, who could also play an increased role in reporting infractions on behalf of communities to the state.

## F. Summary of Findings

The impacts of extractive industry and infrastructure on forest loss and community rights in Indonesia have been less significant than the impacts of other forms of land use, in particular fiber/paper industries, forestry and oil palm plantations. Future impacts may, however, be far more significant. Economic policy as laid out in the National Medium Term Development Plan (RPJMN) 2015-2019 and targeting 5-8 percent economic growth, together with energy policy commitments to substantial increases in coal-based electricity generation, could lead to expansion in the footprint of coal mining in Kalimantan and Sumatra. These policies will also increase the impact of other natural resource based activities made feasible by new infrastructure and government commitments to improve the Ease of Doing Business index in Indonesia. Coal based electricity generation will increase greenhouse gas emissions far beyond the level of emissions emanating from forest clearance due to mines. Government assessments show the potential environmental and social impacts of such policy commitments. The emissions from burning coal will reduce Indonesia's ability to meet its NDC targets.

Artisanal and small-scale gold mining also present an increasing threat to forest cover as former smallholders displaced by plantation agriculture, together with returning urban migrants, have sought out alternative livelihoods. ASGM generates livelihoods for many, but also sterilizes forest land and creates serious health hazards for nearby and downstream communities. Much ASGM operates outside the formal economy, and is difficult to regulate for this reason and because of ties to powerful interests, including in the security services.

The scale and speed of future impacts will depend on international commodity prices, the availability of investment capital, and in the case of coal, domestic demand driven by new coal-fired power plants. However, new investments in mineral exploration have been severely hampered by the rise of resource nationalism and governance problems associated with overlapping concessions and claims on resources, especially related to past decentralization.

The government has prepared environmental and social safeguards to prevent over-exploitation of resources and negative socio-environmental impacts from the activities of the extractive industries and infrastructure investments. The safeguards are based on Law No. 32 of 2009 on the Protection of the Environment, and include Strategic Environment Assessments, Environmental Permits, Environmental Economic Instruments and Essential Ecosystem Protection. However, enforcement of such safeguards and other controls is patchy at best under conditions in which, in the words of Warburton, “regulations are implemented only loosely and with high levels of discretion, court cases can be bought and sold, and the bureaucrats tasked with monitoring Indonesia’s mines are grossly under-resourced” (118). In addition, many natural resource concessions, in particular small-scale coal licenses (IUPs) issued by district heads, have been allocated in ways that exist at the margin of legality and that have by-passed these safeguards.

While some public and private organizations have responded to the actual and potential impact of extractive industry and large-scale infrastructure on forests and forest communities, these responses are much more limited than are initiatives around forest governance in general. Rarely do responses address the extractive-infrastructure-forest-rights relationship as an integrated problem, with some organizations working on extractive industries, some (though fewer) on infrastructure, and very few indeed on the ways in which synergies between these two sectors operate and affect forests and community rights. Responses have paid more attention to mining than to infrastructural development and, in general, literature and capacities seeking to understand the broader socio-environmental implications of expanded investment in large-scale infrastructure are limited.

# References

1. Abood SA, Lee JSH, Burivalova Z, Garcia-Ulloa J, Koh LP (2015) Relative Contributions of the Logging, Fiber, Oil Palm, and Mining Industries to Forest Loss in Indonesia: Deforestation among Indonesia's industries. *Conservation Letters* 8(1):58–67.
2. Republic of Indonesia (2016) First Nationally Determined Contribution.
3. Ash Center for Democratic Governance and Innovation (2011) *From Reformasi to Institutional Transformation: A Strategic Assessment of Indonesia's Prospects for Growth, Equity, and Democratic Governance* (Harvard Kennedy School Indonesia Program, Cambridge, MA).
4. Margono BA, Potapov PV, Turubanova S, Stolle F, Hansen MC (2014) Primary forest cover loss in Indonesia over 2000–2012. *Nature Climate Change* 4(8):730–735.
5. Gaveau DLA, et al. (2016) Rapid conversions and avoided deforestation: examining four decades of industrial plantation expansion in Borneo. *Scientific Reports* 6:32017.
6. Austin KG, et al. (2017) Shifting patterns of oil palm driven deforestation in Indonesia and implications for zero-deforestation commitments. *Land Use Policy* 69:41–48.
7. Agustina CD, Ahmad E, Nugroho D, Siagian H (2012) *Political economy of natural resource revenue sharing in Indonesia* (London School of Economics & Political Science Asia Research Centre, London).
8. PwC (2016) *Supplying and Financing Coal- Fired Power Plants in the 35 GW Programme* (PwC Indonesia, Jakarta).
9. Kannan D, Aureus MC (2018) Indonesian cap on domestic utility coal prices may lead to hike in exports - Coal | Platts News Article & Story. *S&P Global Platts*. Available at: <https://www.platts.com/latest-news/coal/singapore/indonesian-cap-on-domestic-utility-coal-prices-26907597> [Accessed March 16, 2018].
10. Nugraha A (2018) Indonesia sees 2018 coal exports rising 7% to 371 mil mt: official. *S&P Global Platts*. Available at: <https://www.platts.com/latest-news/coal/jakarta/indonesia-sees-2018-coal-exports-rising-7-to-27905246> [Accessed March 17, 2018].
11. Indonesia Investments (2018) Coal Mining in Indonesia - Indonesian Coal Industry. *Indonesia Investments*. Available at: <https://www.indonesia-investments.com/business/commodities/coal/item236?> [Accessed March 12, 2018].
12. PwC (2013) *mineIndonesia 2013: 11th annual review of trends in the Indonesian mining industry* (Jakarta).



13. Cornot-Gandolphe S (2017) *Indonesia's Electricity Demand and the Coal Sector: Export or meet domestic demand?* (Oxford Institute for Energy Studies, Oxford, UK) Available at: <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2017/03/Indonesias-Electricity-Demand-and-the-Coal-Sector-Export-or-meet-domestic-demand-CL-5.pdf> [Accessed February 26, 2018].
14. Lucarelli B (2015) Government as creator and destroyer: Indonesia's rapid rise and possible decline as steam coal supplier to Asia. *The Global Coal Market*, eds Thurber MC, Morse RK (Cambridge University Press, Cambridge), pp 294–374.
15. Lucarelli B (2010) *The History and Future of Indonesia's Coal Industry: Impact of Politics and Regulatory Framework on Industry Structure and Performance*. (Program on Energy and Sustainable Development, Stanford University, Stanford, CA) Available at: [https://pesd.fsi.stanford.edu/sites/default/files/WP\\_93\\_Lucarelli\\_revised\\_Oct\\_2010.pdf](https://pesd.fsi.stanford.edu/sites/default/files/WP_93_Lucarelli_revised_Oct_2010.pdf).
16. Handayani O (2017) Jokowi to Get Kalimantan On track With Rail Plan. *Indonesia Expat*. Available at: <http://indonesiaexpat.biz/news/government-improve-kalimantan-infrastructure/> [Accessed March 15, 2018].
17. Warburton E (2017) *Resource nationalism in post-boom Indonesia: The new normal?* (Lowy Institute for International Policy, Sydney, Australia) Available at: [https://www.think-asia.org/bitstream/handle/11540/7088/Warburton\\_Indonesia\\_FINAL%20WEB.pdf?sequence=1](https://www.think-asia.org/bitstream/handle/11540/7088/Warburton_Indonesia_FINAL%20WEB.pdf?sequence=1) [Accessed March 16, 2018].
18. Asmarini W (2017) Indonesia amends contracts with 13 coal mining companies. *Reuters*. Available at: <https://www.reuters.com/article/us-indonesia-coal/indonesia-amends-contracts-with-13-coal-miners-including-bumi-berau-idUSKBN1DE1C0> [Accessed March 16, 2018].
19. Prakoso R (2017) Indonesia Will Exceed Coal Production Cap Again Next Year. *Jakarta Globe*. Available at: <http://jakartaglobe.id/business/indonesia-will-exceed-coal-production-cap-next-year/> [Accessed March 17, 2018].
20. Ismawati Y (2014) Gold, mercury and the next Minamata. *Strategic Review* April-June. Available at: [http://www.sr-indonesia.com/in\\_the\\_journal/view/gold-mercury-and-the-next-minamata?pg=all](http://www.sr-indonesia.com/in_the_journal/view/gold-mercury-and-the-next-minamata?pg=all) [Accessed March 18, 2018].
21. Peluso NL (2018) Entangled Territories in Small-Scale Gold Mining Frontiers: Labor Practices, Property, and Secrets in Indonesian Gold Country. *World Development* 101:400–416.
22. Technical and Environmental Division, Directorate General of Minerals and Coal, The Ministry of Energy and Mineral Resources (2017) Ministry of Energy and Mineral Resources Program Concerning Small Scale Gold Mining and the National Action Plan for the Elimination of Mercury in Gold Mining and Processing for the Period 2017-2021.

23. Devi B, Prayogo D (2013) *Mining and Development in Indonesia: An Overview of the Regulatory Framework and Policies* (IM4DC, Brisbane, Australia) Available at: <http://im4dc.org/wp-content/uploads/2013/09/Mining-and-Development-in-Indonesia.pdf> [Accessed March 7, 2018].
24. Peluso NL (2017) Plantations and mines: resource frontiers and the politics of the smallholder slot. *The Journal of Peasant Studies* 44(4):834–869.
25. DHI Water & Environment (2014) *Strategic Environmental Assessment (SEA) for Indonesian Master Plan for Acceleration & Expansion of Economic Development (MP3EI): Evaluation of the MP3EI Policy, Final Report* (BAPPENAS, Jakarta).
26. Amianti G, Gorbiano I (2017) Indonesia jumps 19 places in EODB 2018: WB. *The Jakarta Post*. Available at: <http://www.thejakartapost.com/news/2017/11/01/indonesia-jumps-19-places-in-eodb-2018-wb.html> [Accessed March 17, 2018].
27. Sundaryani FS (2016) Moratorium expected to salvage mining business. *The Jakarta Post*. Available at: <http://www.thejakartapost.com/news/2016/05/11/moratorium-expected-salvage-mining-business.html> [Accessed March 6, 2018].
28. PLN (2016) *RUPTL PLN 2016-2025* (Jakarta) Available at: <http://www.djk.esdm.go.id/pdf/RUPTL/RUPTL%20PLN%202016-2025.pdf> [Accessed May 13, 2018].
29. Singgih VP (2018) Jokowi's 35,000 MW program only reaches 3.8 percent progress. *The Jakarta Post*. Available at: <http://www.thejakartapost.com/news/2018/03/04/jokowis-35000-mw-program-only-reaches-3-8-percent-progress.html> [Accessed March 17, 2018].
30. de Jong HN (2018) As Indonesia gears up for elections, activists brace for an environmental sell-off. *Mongabay*. Available at: <https://news.mongabay.com/2018/02/as-indonesia-gears-up-for-elections-activists-brace-for-an-environmental-sell-off/> [Accessed March 7, 2018].
31. Quiambao C, Narayanasamy G (2014) Indonesia's plan for dedicated coal ports will face funding issues, may hit exports: analysts. *S&P Global Platts*. Available at: <https://www.platts.com/latest-news/coal/manila/indonesias-plan-for-dedicated-coal-ports-will-26827449> [Accessed February 26, 2018].
32. KPK (2015) 6.095 Perusahaan Tambang Kurang Bayar PNBP. *Komisi Pemberantasan Korupsi*. Available at: <https://www.kpk.go.id/id/berita/79-berita/berita-media/2931-6-095-perusahaan-tambang-kurang-bayar-pnbp> [Accessed May 15, 2018].
33. Ministry of Environment and Forestry (2018) Directorate General of Control of Pollution and Environmental Destruction.

34. McBeth J (2017) Has mining giant Freeport had enough with Indonesia? *This Week in Asia*. Available at: <http://www.scmp.com/week-asia/business/article/2073860/has-mining-giant-freeport-had-enough-indonesia> [Accessed March 7, 2018].
35. Stedman A, Green KP (2018) *Fraser Institute Annual Survey of Mining Companies 2017* (Fraser Institute, Toronto).
36. NRGi (2015) *Country Strategy Note: Indonesia* (Natural Resource Governance Institute, Jakarta).
37. Budiono A, Wulan Sapta Rini RA, Abdullah M (2017) *Administration of Coal Permit under Coordination and Supervision of KPK* (Publish What You Pay Indonesia, Jakarta)  
Available at: <https://pwyp-indonesia.org/en/314967/administration-of-coal-permit-under-coordination-and-supervision-of-kpk/> [Accessed March 18, 2018].
38. Mongabay (2017) Coal miners owe the Indonesian government hundreds of millions of dollars. *Mongabay*. Available at: <https://news.mongabay.com/2017/05/coal-miners-owe-the-indonesian-government-hundreds-of-millions-of-dollars/> [Accessed March 18, 2018].
39. Nugraha I (2017) Pemerintah akan Blokir Ribuan Izin Tambang Bermasalah. *Mongabay*. Available at: <http://www.mongabay.co.id/2017/12/09/pemerintah-akan-blokir-ribuan-izin-tambang-bermasalah/> [Accessed March 18, 2018].
40. OECD (2012) *Indonesia 2012: Strengthening Co-ordination and Connecting Markets* (OECD Publishing, Paris).
41. Moeliono MMM, Wollenberg E, Limberg G (2012) *The Decentralization of Forest Governance: Politics, Economics and the Fight for Control of Forests in Indonesian Borneo* (Earthscan).
42. Gandataruna K, Haymon K (2011) A dream denied? Mining legislation and the Constitution in Indonesia. *Bulletin of Indonesian Economic Studies* 47(2):221.
43. Spiegel SJ, et al. (2018) Phasing Out Mercury? Ecological Economics and Indonesia's Small-Scale Gold Mining Sector. *Ecological Economics* 144:1–11.
44. Tabeta S (2016) Reversing course, Beijing orders boost in coal output. *Nikkei Asian Review*. Available at: <https://asia.nikkei.com/Politics-Economy/Policy-Politics/Reversing-course-Beijing-orders-boost-in-coal-output> [Accessed February 26, 2018].
45. Kannan D, Tang I (2016) Thermal coal prices losing steam as China output rises: Citi. *S&P Global Platts*. Available at: <https://www.platts.com/latest-news/coal/singapore/thermal-coal-prices-losing-steam-as-china-output-27710872> [Accessed February 26, 2018].

46. JICA (2015) Press Release - Signing of Japanese ODA Loan with the Indonesia: Addressing the rapidly growing power demand. Available at: [https://www.jica.go.jp/english/news/press/2015/151218\\_01.html](https://www.jica.go.jp/english/news/press/2015/151218_01.html) [Accessed February 26, 2018].
47. Meijaard E, Wich S (2013) *Extractive industries and orangutans* (Arcus Foundation, New York) Available at: <https://www.stateoftheapes.com/reports/>.
48. Leith D (2002) *The Politics of Power: Freeport in Suharto's Indonesia* (University of Hawaii Press, Honolulu).
49. Ballard C (2002) *Human Rights and the Mining Sector in Indonesia: A Baseline Study* (IIED and WBCSD, London) Available at: <http://pubs.iied.org/pdfs/G00929.pdf> [Accessed March 18, 2018].
50. O'Brien P (2010) The Politics of Mines and Indigenous Rights: A Case Study of the Grasberg Mine in Indonesia's Papua Province. *Georgetown Journal of International Affairs* 11(1):47–56.
51. Yasmi Y, Kelley LC, Murdiyarso D, Patel T (2012) The struggle over Asia's forests: An overview of forest conflict and potential implications for REDD+. *International Forestry Review* 14(1):99–109.
52. Alforte A, et al. (2014) *Communities as Counterparties: Preliminary Review of Concessions and Conflict in Emerging and Frontier Market Concessions* (RRI, Washington DC) Available at: [http://rightsandresources.org/wp-content/uploads/Communities-as-Counterparties-FINAL\\_Oct-21.pdf](http://rightsandresources.org/wp-content/uploads/Communities-as-Counterparties-FINAL_Oct-21.pdf) [Accessed November 25, 2016].
53. Rights and Resources Initiative (2015) *Who Owns the Land in Asia? Formal recognition of community-based land rights* (RRI, Washington DC) Available at: <http://rightsandresources.org/en/publication/who-owns-the-land-in-asia-formal-recognition-of-community-based-land-rights-in-asia/#.WDe6Q6IrLV0> [Accessed November 25, 2016].
54. Medrilzam, Helmy PF (2017) Linking Natural Capital Accounting (NCA) into Indonesia National Development Plan 2020-2024.
55. FERN (2015) Indonesia's coal mines and forests. *CoalForest.org*. Available at: <http://www.coalforest.org/maps.php?id=indonesia> [Accessed February 26, 2018].
56. Greenpeace South East Asia-Indonesia (2014) *Coal mines polluting South Kalimantan's water* (Greenpeace, Jakarta).
57. Van Paddenburg A, Bassi A, Butler E, Cosslett C, Dean A (2012) *Heart of Borneo: Investing in Nature for a Green Economy* (WWF Heart of Borneo Global Initiative,

- Jakarta) Available at:  
[http://d2ouvy59p0dg6k.cloudfront.net/downloads/heart\\_of\\_borneo\\_green\\_economy\\_main\\_report\\_2012.pdf](http://d2ouvy59p0dg6k.cloudfront.net/downloads/heart_of_borneo_green_economy_main_report_2012.pdf) [Accessed February 26, 2018].
58. Johnson K (2017) Characterizing the Impacts of Coal Mining on Forest Loss and Protected Areas in Sumatra, Indonesia (2000-2014). MSc (Clark University, Worcester, MA).
  59. Indonesia could deplete coal reserves by 2033 - PwC (2016) *Reuters*. Available at: <https://www.reuters.com/article/indonesia-coal/indonesia-could-deplete-coal-reserves-by-2033-pwc-idUSL4N16F4C4> [Accessed March 18, 2018].
  60. EJ Atlas IndoMet project, coal mining in East and Central Kalimantan, Indonesia | EJAtlas. *Environmental Justice Atlas*. Available at: <https://ejatlas.org/conflict/the-indomet-project-coal-mining-in-east-and-central-kalimantan-indonesia> [Accessed March 18, 2018].
  61. Voigt M, et al. (2018) Global Demand for Natural Resources Eliminated More Than 100,000 Bornean Orangutans. *Current Biology* 0(0). doi:10.1016/j.cub.2018.01.053.
  62. Gill V (2018) “100,000 orangutans” killed in 16 years. *BBC News*. Available at: <http://www.bbc.com/news/science-environment-42994630> [Accessed February 26, 2018].
  63. CoalSwarm (2018) Coal Plants by Country: Annual CO2 (Million Tons). *Global Coal Plant Tracker*. Available at: [https://docs.google.com/spreadsheets/d/1I8GeKEfxPpwwkQ\\_t0GQZx1GQm6MASclEtEtrQX3Y1nNc/edit?usp=embed\\_facebook](https://docs.google.com/spreadsheets/d/1I8GeKEfxPpwwkQ_t0GQZx1GQm6MASclEtEtrQX3Y1nNc/edit?usp=embed_facebook) [Accessed March 18, 2018].
  64. JATAM, Waterkeeper Alliance (2017) *Hungry Coal: Coal Mining and Food Security in Indonesia* (Waterkeeper Alliance, New York, NY) Available at: <http://waterkeeper.org/wp-content/uploads/2017/05/Hungry-Coal-English-Web.pdf> [Accessed March 15, 2018].
  65. Apriando T (2017) Who Owns Indonesia’s Deadly Abandoned Coal Mines? *The Wire*. Available at: <http://thewire.in/143079/owns-indonesias-deadly-abandoned-coal-mines/> [Accessed March 18, 2018].
  66. Resosudarmo BP, Resosudarmo IAP, Sarosa W, Subiman NL (2009) Socioeconomic Conflicts in Indonesia’s Mining Industry. *Exploiting Natural Resources Growth, Instability, and Conflict in the Middle East and Asia*, eds Cronin R, Pandya A (The Henry L. Stimson Center, Washington, DC), pp 33–46.
  67. Sudana M (2009) Winners take all: Understanding forest conflict in the era of decentralization in Indonesia. *The Decentralization of Forest Governance: Politics, Economics and the Fight for Control of Forests in Indonesian Borneo*, eds Moeliono MMM, Wollenberg E, Limberg G (Earthscan, London), pp 207–220.

68. Burton B (2016) Indonesian Human Rights Commission finds coal mining pit deaths were human rights abuses. *EndCoal.org*. Available at: <https://endcoal.org/2016/12/indonesian-human-rights-commission-finds-coal-mining-pit-deaths-were-human-rights-abuses/> [Accessed February 26, 2018].
69. Toumbourou T (2016) Samarinda's deadly mining pits. *Inside Indonesia* 124. Available at: <http://www.insideindonesia.org/samarinda-s-deadly-mining-pits> [Accessed February 26, 2018].
70. National Commission on Human Rights, JATAM, Coalition for Advocating Against Mining Pit Cases (2016) *Indonesia National Human Rights Commission: Report of Human Rights Abuses on Abandoned Coal Pit Mining Cases in East Kalimantan* (Komnas HAM, Jakarta) Available at: <http://www.jatam.org/wp-content/uploads/2015/02/Indonesia-National-Human-Rights-Commission-report-of-Human-Rights-Abuses-on-Abandoned-Coal-Pit-Mining-Cases-in-East-Kalimantan-2.pdf> [Accessed February 26, 2018].
71. Menon M, Hermle S, Günthardt-Goerg MS, Schulin R (2007) Effects of heavy metal soil pollution and acid rain on growth and water use efficiency of a young model forest ecosystem. *Plant Soil* 297(1–2):171–183.
72. Winn P (2016) Deadly Coal Pits of Samarinda. *Waterkeeper Alliance*. Available at: <https://waterkeeper.org/death-pits-of-samarinda/> [Accessed February 26, 2018].
73. Bell L (2014) Coal mine has heavy impact in Indonesian Borneo. *Conservation news*. Available at: <https://news.mongabay.com/2014/09/coal-mine-has-heavy-impact-in-indonesian-borneo/> [Accessed February 26, 2018].
74. Greenpeace South East Asia-Indonesia (2016) *The Dirty Work of Banpu: What Thai Investment is Doing in Indonesia* (Greenpeace Southeast Asia, Jakarta) Available at: <http://www.greenpeace.org/seasia/th/PageFiles/730007/The-Dirty-Work-of-Banpu.pdf> [Accessed February 26, 2018].
75. UNITAR (2016) *Satellite Mapping of Artisanal and Small Scale Gold Mining in Central Kalimantan, Indonesia* (UNITAR, Geneva) Available at: <http://www.unitar.org/unosat/map/2368> [Accessed March 7, 2018].
76. Telmer K, Stapper D (2007) *Evaluating and monitoring small scale gold mining and mercury use: Building a knowledge-base with satellite imagery and field work* (University of Victoria, Victoria, BC).
77. McCarthy JF (2011) *The Limits of Legality: State, Governance and Resource Control in Indonesia* (Social Science Research Network, Rochester, NY) Available at: <https://papers.ssrn.com/abstract=2281591> [Accessed November 29, 2016].



78. Mongabay (2012) 115 mining companies operating illegally in forest areas in Indonesia. *Mongabay*. Available at: <https://news.mongabay.com/2012/05/115-mining-companies-operating-illegally-in-forest-areas-in-indonesia/> [Accessed May 14, 2018].
79. Arifin YI, Sakakibara M, Sera K (2015) Impacts of Artisanal and Small-Scale Gold Mining (ASGM) on Environment and Human Health of Gorontalo Utara Regency, Gorontalo Province, Indonesia. *Geosciences* 5(2):160–176.
80. Usher A (2013) Mining in Indonesia taking a heavy social, environmental toll. *Mongabay*. Available at: <https://news.mongabay.com/2013/06/mining-in-indonesia-taking-a-heavy-social-environmental-toll/> [Accessed October 31, 2016].
81. Spiegel SJ (2012) Governance Institutions, Resource Rights Regimes, and the Informal Mining Sector: Regulatory Complexities in Indonesia. *World Development* 40(1):189–205.
82. Hardjapamekas ER (2013) Strategic Review. *Strategic Review* April-June. Available at: <http://www.sr-indonesia.com/in-the-journal/view/bringing-revenue-transparency-to-indonesia-s-extractive-industries> [Accessed February 27, 2018].
83. Robinson K (2016) Mining, land and community rights in Indonesia. *Land and Development in Indonesia: Searching for the People's Sovereignty*, eds McCarthy JF, Robinson K (ISEAS, Singapore), pp 141–166.
84. Coordinating Ministry for Economic Affairs ed. (2011) *Masterplan: Acceleration and Expansion of Indonesia Economic Development, 2011-2025* (Ministry of National Development Planning/ National Development Planning Agency, Jakarta).
85. Ardiansyah F, Marthen AA, Amalia N (2015) *Forest and land-use governance in a decentralized Indonesia: A legal and policy review* (CIFOR, Bogor, Indonesia) doi:10.17528/cifor/005695.
86. Gaveau DLA, et al. (2009) The future of forests and orangutans ( *Pongo abelii* ) in Sumatra: predicting impacts of oil palm plantations, road construction, and mechanisms for reducing carbon emissions from deforestation. *Environmental Research Letters* 4(3):034013.
87. Le Meur P-Y, Ballard C, Banks G, Sourisseau J-M (2013) Two islands, four states: Comparing resource governance regimes in the Southwest Pacific. *Proceedings of the 2nd International Conference on Social Responsibility in Mining* (University of Queensland, Santiago Chile), pp 191–199.
88. Aziz MF (2017) Indonesia should make land acquisitions more transparent and participatory. *The Conversation*. Available at: <http://theconversation.com/indonesia-should-make-land-acquisitions-more-transparent-and-participatory-67565> [Accessed March 18, 2018].

89. Sahide MAK, Giessen L (2015) The fragmented land use administration in Indonesia – Analysing bureaucratic responsibilities influencing tropical rainforest transformation systems. *Land Use Policy* 43:96–110.
90. Mongabay.com (2016) Indonesia's forestry ministry follows through on palm oil permit freeze. *Mongabay*. Available at: <https://news.mongabay.com/2016/05/indonesias-forestry-ministry-follows-palm-oil-permit-freeze/> [Accessed March 7, 2018].
91. de Haan J (2016) Jokowi Announces Indonesian Palm Oil and Mining Moratorium. *Future Directions International*. Available at: <http://www.futuredirections.org.au/publication/jokowi-announces-indonesian-palm-oil-mining-moratorium/> [Accessed March 6, 2018].
92. Nur Mekah M, Tambang M (2018) 16 Mining Concession Areas (WKPs) To Be Auctioned. *SNC Technologies Industry News*. Available at: <http://satnetcom.com/industry-news/666-16-mining-concession-areas-wkps-to-be-auctioned> [Accessed March 18, 2018].
93. Singgih VP (2018) Foreign investors allowed to bid for big mining concessions. *The Jakarta Post*. Available at: <http://www.thejakartapost.com/news/2018/03/05/foreign-investors-allowed-to-bid-for-big-mining-concessions.html> [Accessed March 18, 2018].
94. Gokkon B (2017) Recognition of Mentawai tribes marks Indonesia's latest piecemeal concession to indigenous groups. *Mongabay*. Available at: <https://news.mongabay.com/2017/12/recognition-of-mentawai-tribes-marks-indonesias-latest-piecemeal-concession-to-indigenous-groups/> [Accessed March 18, 2018].
95. Mulyani M, Jepson P (2017) Does the 'One Map Initiative' Represent a New Path for Forest Mapping in Indonesia? Assessing the Contribution of the REDD+ Initiative in Effecting Forest Governance Reform. *Forests* 8(1):14.
96. MacDonald L (2017) Can "One Map" Solve Indonesia's Land Tenure Woes? Available at: <http://www.wri.org/blog/2017/06/can-one-map-solve-indonesias-land-tenure-woes>.
97. Satriastanti FE (2016) Indonesia's antigraft agency strives to rein in the mining sector. *Mongabay*. Available at: <https://news.mongabay.com/2016/02/indonesias-antigraft-agency-strives-to-rein-in-the-mining-sector/> [Accessed November 2, 2016].
98. Lang C (2012) Interview with Kuntoro Mangkusubroto, head of Indonesia's REDD+ Task Force. *REDD-Monitor*. Available at: <http://www.redd-monitor.org/2012/09/20/interview-with-kuntoro-mangkusubroto/> [Accessed May 14, 2018].
99. Humas (2016) Perpres No. 9/2016: Pemerintah Bentuk Tim Percepatan Kebijakan Satu Peta. *Sekretariat Kabinet Republik Indonesia*. Available at: <http://setkab.go.id/perpres-no-92016-pemerintah-bentuk-tim-percepatan-kebijakan-satu-peta/> [Accessed April 30, 2018].

100. Wibowo A, Giessen L (2015) Absolute and relative power gains among state agencies in forest-related land use politics: The Ministry of Forestry and its competitors in the REDD+ Programme and the One Map Policy in Indonesia. *Land Use Policy* 49:131–141.
101. Jacobson P (2017) Indonesian Supreme Court orders Jokowi administration to hand over palm oil permit data. *Mongabay*. Available at: <https://news.mongabay.com/2017/03/indonesian-supreme-court-orders-jokowi-administration-to-hand-over-palm-oil-permit-data/> [Accessed April 30, 2018].
102. de Jong HN (2018) Unified land-use map for Indonesia nears launch, but concerns over access remain. *Mongabay*. Available at: <https://news.mongabay.com/2018/04/unified-land-use-map-for-indonesia-nears-launch-but-concerns-over-access-remain/> [Accessed May 14, 2018].
103. Rye SA, Kurniawan NI (2017) Claiming indigenous rights through participatory mapping and the making of citizenship. *Political Geography* 61:148–159.
104. Toumbourou T (2014) Indonesian Lawsuit Pushes Local Government to Regulate Massive Coal Mining Industry. *The Asia Foundation*. Available at: <https://asiafoundation.org/2014/10/15/indonesian-lawsuit-pushes-local-government-to-regulate-massive-coal-mining-industry/> [Accessed May 14, 2018].
105. Lang C (2013) Indigenous peoples' rights and the status of forest land in Indonesia | REDD-Monitor. *REDD-Monitor*. Available at: <http://www.redd-monitor.org/2013/10/09/indigenous-peoples-rights-and-the-status-of-forest-land-in-indonesia/> [Accessed March 7, 2018].
106. Sari PPN (2017) Land reform dos and don'ts. *The Jakarta Post*. Available at: <http://www.thejakartapost.com/news/2017/12/09/land-reform-dos-and-don-ts.html> [Accessed March 7, 2018].
107. Contreras-Hermosilla A, Fay C (2005) *Strengthening forest management in Indonesia through land tenure reform: issues and framework for action* (Forest Trends, Washington, DC).
108. Gielen D, Saygin D, Rigter J (2017) *Renewable energy prospects: Indonesia, a REMap analysis* (International Renewable Energy Agency (IRENA), Abu Dhabi) Available at: [www.irena.org/remap](http://www.irena.org/remap) [Accessed March 18, 2018].
109. Berenschot W (2018) The Political Economy of Clientelism: A Comparative Study of Indonesia's Patronage Democracy ,  
The Political Economy of Clientelism: A Comparative Study of Indonesia's Patronage Democracy. *Comparative Political Studies*:0010414018758756.
110. As'ad M U (2017) Mining Exploitation Policy and Poverty of Local Communities. *Journal of Political Sciences & Public Affairs* 05(04). doi:10.4172/2332-0761.1000297.

111. Caripis L (2017) *Combatting corruption in mining approvals: assessing the risks in 18 resource-rich countries* (Transparency International, Sydney, Australia) Available at: [https://transparency.org.au/tia/wp-content/uploads/2017/11/M4SD\\_CombattingCorruption.pdf](https://transparency.org.au/tia/wp-content/uploads/2017/11/M4SD_CombattingCorruption.pdf) [Accessed July 3, 2018].
112. Toumbourou T (2014) Mining paradise. *Inside Indonesia*. Available at: <http://www.insideindonesia.org/mining-paradise> [Accessed April 30, 2018].
113. Winarni RR, van Gelder JW (2015) *Executive Summary: Tycoon-controlled oil palm groups in Indonesia* (TuK Indonesia & Profundo, Jakarta) Available at: <http://tinyurl.com/mvj86wx> [Accessed May 14, 2018].
114. Hamsina (2018) National Coordination Meeting of Environmental Assembly of PP Muhammadiyah in Unismuh Makassar. *Unismuh Makassar*. Available at: <http://www.unismuh.ac.id/en/news/2018/04/21/national-coordination-meeting-of-environmental-assembly-of-pp-muhammadiyah-in-unismuh-makassar/> [Accessed May 14, 2018].
115. Regus M (2017) Church-based resistance to mining in Manggarai. *Inside Indonesia* 130(Oct-Dec). Available at: <http://www.insideindonesia.org/church-based-resistance-to-mining-in-manggarai> [Accessed May 14, 2018].
116. Loy I (2016) Texting the news. *Irwin Loy*. Available at: <http://www.irwinloy.com/stories/indonesia-texting-the-news> [Accessed April 30, 2018].
117. Irwan A, Hearn S (2016) *Formalising legal aid in Indonesia* (Overseas Development Institute, London).
118. Diaz-Bastin R (2017) Will changes to Indonesia's mining law hurt or help the environment? *Mongabay*. Available at: <https://news.mongabay.com/2017/03/will-changes-to-indonesias-mining-law-hurt-or-help-the-environment/> [Accessed March 7, 2018].

