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Indonesia's Palm Oil Expansion & Further Contribution to Economic Fragility

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Indonesia's Palm Oil Expansion &
Further Contribution to Economic Fragility



Senior Project Submitted to
The Division of Economics
of Bard College

by
Kathryn Devon Dixon

Advisor: Professor Felkerson

Annandale-on-Hudson, New
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Acknowledgements

To the individuals who seek the realities of the world by exposing human flaws and pursue beyond necessary limits to expose the world of any illegitimate function that contributions to conflicts of interest and lead to a growing chaotic state.

PLAGIARISM STATEMENT

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-Kathryn Devon Dixon

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Introduction: A Changing Landscape & Political Atmosphere

Indonesia since the Asian Economic Crisis has created high plans for infrastructure development and widespread national connectivity among its 17,000 islands covering 5,150 kilometers. Although the current president of Indonesia, Joko Widodo, also referred to as Jokowi, is determined to fund its economy to 7 percent annual growth of GDP by 2020, the economy through increased foreign investments by liberalization of its financial sector and heightened exports, shows a fragility and a high dependence on external, global markets demands. These demands are specific to Indonesia's natural resources sector for exports, and foreign savings, which in recent past have led to the country's massive economic crisis in 1997. Concurrently, the increase in Indonesia's exports of natural resources have produced external impacts on the environment and the social relations in Indonesia, and show a prime dependence on the rate of resource extraction for economic stability. Recently in semester one of 2015, Indonesia's economic fragility was exposed, displaying similar flaws that were evident in the crisis of 1997.

Adding to the financial fragility, Indonesia has relied heavily on its natural resources in to add to its GDP and growth. Indonesia's exports in palm oil, natural gas, coal, rubber, and other raw resources, which are shipped to East Asia and Asia Pacific and mainly composed of demands from Japan and China, show Indonesia's dependence on its natural resources and land, to supply global demands necessary for its continual growth. Primarily, Indonesia's high dependence on its palm oil production, the highest export in 2014, contributes more conflict to Indonesia's already delicate story. Indonesia's natural ecosystem holds some of the world's greatest terrestrial and marine biodiversity and possesses the last 80 percent of Southeast Asia's total rainforest. On over its 17,000 islands stretching across 5,150 kilometers, around 70 percent

of its landmass or 134 million hectares is defined as forestland making it the third most forest dense nation in the world with the majority of these forests located in Sumatra, Kalimantan and Papua totaling a sum of 944, 320 km² worth of forests. Indonesia's specific landscape, climate, and isolate dense land have given Indonesia the ample characteristics to produce palm oil.

Indonesia externalities have provided it the ability to surpassed Malaysia in 2007 to become the world's largest producer of palm oil it. The lack of government regulations, law enforcement of existing regulations, and high level of corruption have allowed the majority of companies and smallholders in oil palm production to use slash-and-burn techniques, which have extensively contributed to greenhouse gas emissions, to both legally and illegal, to meet global demand for palm oil. In addition to the absence of infrastructure and roads on the numerous islands and regions where palm oil is produced such as Kalimantan, Sumatra, Riau, and Sulawesi, Indonesia's illegal practices have increased rapidly and with little acknowledgment. Figure 1 displays Indonesia's placement in Southeast Asia and its widespread islands and regions that have little connectivity. The amount of forest coverage has drastically decreased since 2000s or in retrospect since the end of the Asian Economic Crisis. In 2000 the tree coverage in



Figure 1: Map of Indonesia and its Regions (Google Maps).

Indonesia was estimated to be 161 million hectares with 86 percent tree cover. Since 2001 the total tree loss cover has amounted to 18,507,771 hectares with 12 million hectares disappearing in the last decade in addition to the 70 million ha of severely degraded forest and land (*Country Partnership Framework for the Republic of Indonesia 90*). Based upon tree canopy type above 50 percent, indicating a higher density of forest, between 2001 and 2014 the amount of canopy loss in hectares proves to be significant and has been centered in the regions of Kalimantan, Riau, and Sumatera, as seen in Figure 2 (“Global Forest Watch Commodities”).

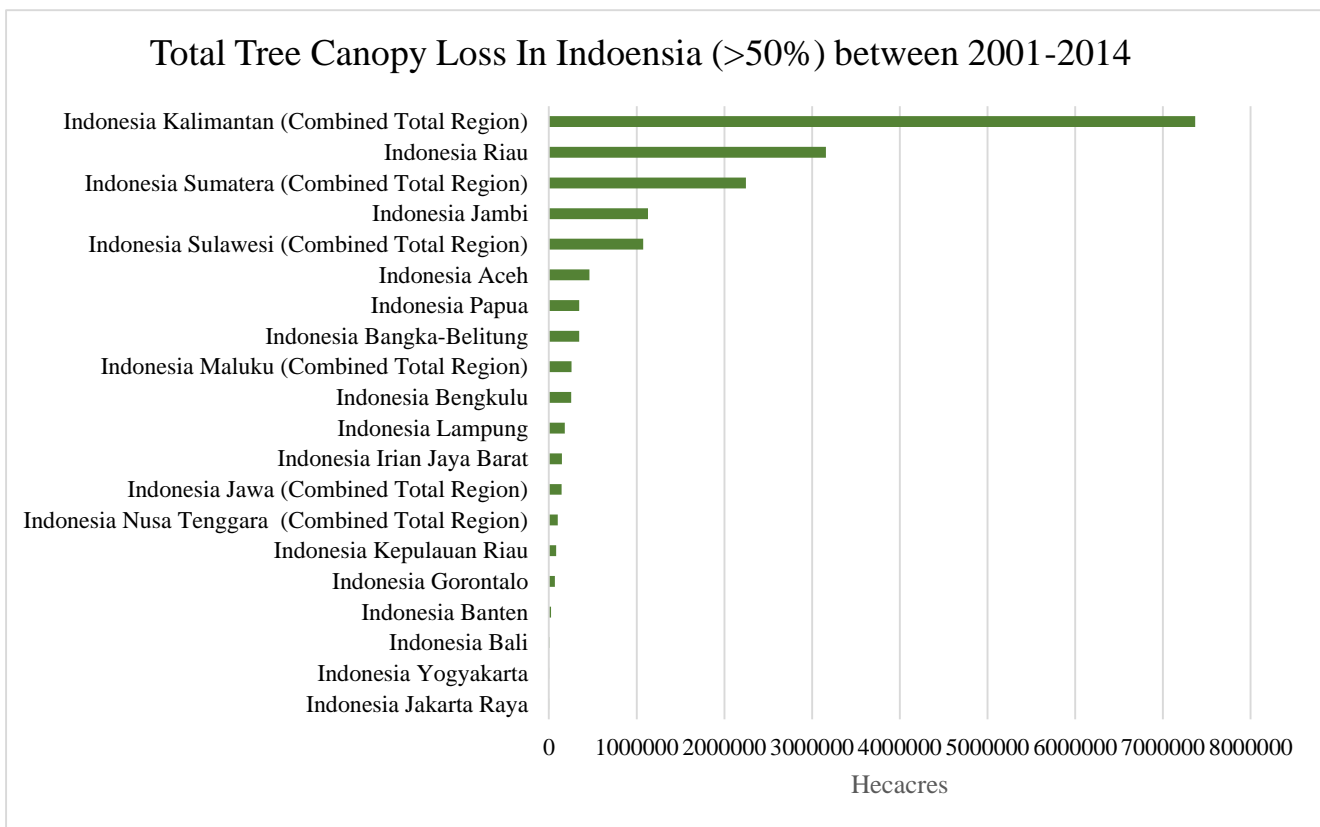


Figure 2: Total Tree Canopy Loss in Indonesia Greater than 50 percent canopy (Global Forest Mapper).

Globally, Indonesia’s tropical deforestation rate is the 2nd largest in the world and estimates show around 498,000 hectares per year of tropical rain forest are cut down (Project POTICO). In the region of Sumatra, around half of the forest decreased from 1985 to 2008 from 50 percent forest cover to palm oil expansion. Deforestation has occurred mainly from the increasing agriculture demand for Indonesia, specifically palm oil demands from China, Europe,

and India, who represent the major importers of palm oil from Indonesia. In Kalimantan, specifically for the harvesting of oil palm, almost 90% of the crop between 1990 and 2010 was at the expense of the forest (Project POTICO). In order to increase the amount of palm oil, of which consumption has increased from 4.5 million tons to 45 million tons in the last 30 years, Indonesian palm oil companies have sought out to increase the plantation size using illegal measures to increase supply to the growing industry (*The Economic Benefit of Palm 9*). Since the palm oil sector is the most rapidly increasing and the largest produced oil due to its intrinsic physical characteristics and its low labor costs, the oil continues to be demanded, increasing by 12 percent annually. The landmass expansion specifically in Indonesia and Malaysia continue to be demanded because their combined markets comprise 80 percent of the global market for palm oil, however, this is problematic since these Indonesian forests hold 80 percent of Southeast Asia's existing natural forests and the majority of Indonesia's population, who live in the rural areas rely on not only the natural forest for necessary resources, but also rely on the agricultural sector for their income.

Indonesia high reliance on palm oil expansion for further growth and profit contribute to its economic fragility. The growth of the palm oil sector is expected to increase by 32 percent by 2020 to 60 million tons, but with growing demands by nations such as Norway, to impose more restrictions and regulate deforestation due to the oil palm, Indonesia faces a quandary: either decrease the amount of land legally and illegally used for palm oil, or allow illegal measures to occur thus expanding Indonesia's palm oil land use and increasing production to meet global demands (*The Economic Benefit of Palm 16*). As said by World Growth on report on the palm oil sector in Indonesia, "The successful growth of the Indonesian palm oil industry will be impacted greatly by any restrictions on land conversion as well as negative campaigns targeting the

industry” (*The Economic Benefit of Palm 19*). Although external demands for change in the palm oil sector will greatly impact Indonesia’s industry, the larger, but invisible problem to Indonesian companies, is how long Indonesia will be able to continue to convert its natural forest into plantations without incurring high levels of externalities and exposed risk to financial fragility.

The lack of accurate figures support that Indonesia’s forests are deteriorating at a more rapid rate than expected. The unknown rate of deforestation and reliance on Indonesia’s economy on palm oil export or rather the rate (both of legal and illegal) deforestation place Indonesia in a conflicting situation that adds to the already fragile financial state, which requires exports to further itself from the constraints of foreign savings and high inflows of investor money into its financial sector. Indonesia falls under a situation that either calls for either expansion of its palm oil sector, as well as other exports to lift itself out of the global economic dependence for short-term financial stability, or it demands that Indonesia look beyond its current desire for high economic growth and expansion and look for alternative exports to shift away from its high dependence on land use for palm oil expansion. In either situation financial or environmental there are both negative aspects, resulting not in a beneficial trade-off situation, but one where Indonesia does not win: either way Indonesia still experiences an economic fragility that places it at risk for economic crisis, similar to what occurred in 1997.

Chapter I: Palm Oil's Extensive History and Current Markets

Resource extraction in Indonesia began to function on a large industrial scale around 1973 with a specific focus on mineral, oil and timber. These industries would occur on the outlying islands of Sumatra and Kalimantan that were mainly untouched land, beside for the natural indigenous population, which had a small population but resided in the dense forest regions among Indonesia's islands. From the fall of President Soekarno, which was driven by General Suharto's coup and led to Suharto's rise to president in 1967, among many other changes, the agricultural sector experienced a significant shift. Before 1961 and Suharto's power, the state forestry controlled forest management. With the rise of power of General Suharto, Indonesia's forest management became militarized as corporations and organizations that were connected with the national military began to control expansive areas of forest and senior military officials began profiting off of this by buying the majority of these corporations shares. This led to a high level of corruption in the government and the corporations' relations (Leonald and Rowland 96). The imposed law in the Indonesia Constitution, Basic Forestry Law, which was enacted in 1967, gave power to the central government over the forest use and the relations of the people to the land they were residing on ("History of Forest Control"). In addition, Article 5 of this provision states, "All forests within the territory of Indonesia, including the natural resources contained therein are controlled by the state", which also comprised of private land ("History of Forest Control"). Since the government had its desires on the high output from the agricultural sector, the law enabled Suharto to increase his plans for development.

Suharto's main political focus was the agricultural sector, which was driven by the imposed transmigration, which was a personal interest for Suharto's¹. Before the plan's plateau and decrease in 1998 during Suharto's fall, around 4 million Indonesia's were moved from the more highly populated islands of Java, Bali and Madura to less dense islands including Sumatra, Kalimantan, Sulawesi, Maluku and West Papua, with the help of World Bank Financing (Gunness). The transmigration also led to the semi-nomadic loss of tens of thousands of acres of forest due to the resettling of millions on Indonesians on tribal land. The transmigration in addition to the imposed laws allowed for the rapid expansion of the agricultural sector, but focused on a few types of vegetation, specifically including palm oil.

Oil palm expansion and industrialization, which officially began in 1983 was only possible due to the government and their enforced transmigration that occurred during the 1970s to 1990s that was backed by General Suharto. In 1983, General Suharto transferred control of the development of oil palm plantations and its industrialization to the Ministry of Transmigration (Leonard and Rowland 96). With this new found power, the office of transmigration incentivized the urban populations of Java, Bali, and Madura to migrate to the outlying islands, specifically Kalimantan, Sumatra, and Papua. It is only due to the policies and incentives of transmigration that allowed for the expansion of oil palm, since the workers and infrastructure provided for the expansion all originated from the transmigration plans. The government incentivized the expansion of oil palm during the 1980s by provided palm oil companies, financed with state loans, free availability to land, which allowed them to clear large amount of

¹ It has been speculated that the Suharto Clan, mostly members of his family, are the "main driving force" in the palm oil business. The Suharto Clan have a vast amount of control over the industry from marketing to revenues and everyone from Suharto's brother and cousin to Suharto's grandson are involved in the trade. Currently, there are twelve oil palm companies linked to Suharto: Salim, Sinar Mas, Barito Pacific, Astra, Raja Garuda Mas, Surya Damai, Kalimanis, Danitama, Mercuri Buana, Citra Lamtorogung Persada, Teknik Umum, and Maharani Groups.

forest area, plant oil palm plantations, and set up the mills and capital required for palm oil processing (Leonald and Rowland 97). In return, the government required that the company develop an equal area for smallholder plantations, however, the 1980s the government stopped providing the companies with free land and instead adopted the Members' Primary Credit Cooperative or the *Koperasi Kredit Primer Anggota*. This policy enabled local individuals and landowners, who were either transmigrates or indigenous people, to give their land to palm oil companies with the return of a land area between one tenth and one third of the provided land and a share of the profits after the cost of developing the land (Leonald and Rowland 98). Although these policies in the 1980s would help the expansion of oil palm plantations for the next 10 years, they rarely occur now. This is due to the yield difference between smallholder production and plantation production by agribusiness companies. While the smallholder can only produce less than 2 tons per hectare the agribusiness companies can produce 3.5-4 tons per hectare (Brack, Duncan, and Glover 9). The smallholder production accounts for 40 percent of the market in Indonesia, but is also reliant on larger palm companies to buy the fruit. Due to the difference in productivity, there are many cases of larger companies replacing the smallholder production.

The switch from smallholder to large agribusiness companies enabled the wider expansion of the plantations due to the agribusiness' access to capital and technology. Figure 3 below visualizes the distinct deforestation that occurred in Kalimantan from 1950 to 2010 and the prediction for 2020. From Figure 3 it can be seen that between 1950 and 1985 deforestation appeared at a larger scale specifically around the edges of the island showing that in Kalimantan low development did not allow for large-scale exploration of the island and further deforestation. Starting in 1980s with further development in the 1990s and 2000s, government investment in

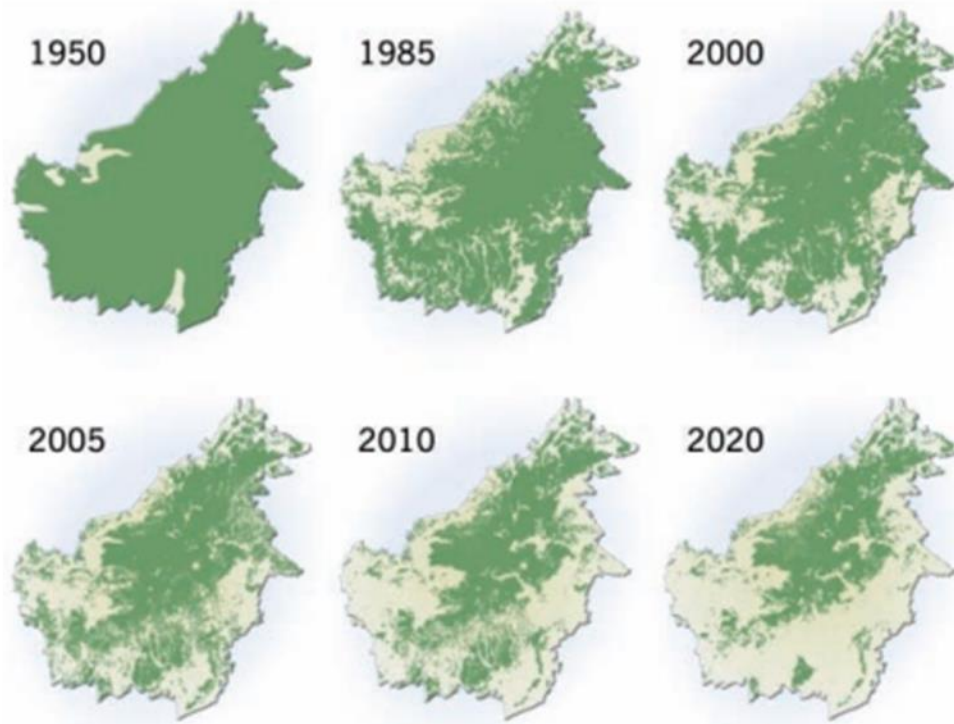


Figure I-3: Visual Perspective and Prediction of Deforestation in Kalimantan, Borneo between 1950 and 2020 (Ahlenius).

infrastructure helped to improve and further expand the development of oil palm in addition to the capital and technology of larger agribusiness companies.

The specific development of the road to Singtang in the 1980s with the government backed investment not only connected the region of Kapuas Hulu to West Kalimantan, a region that had not been explored in Kalimantan, but also connected Kapuas Hulu to the port of Pontianak. The region of Kapuas Hulu can be seen on map below and highlighted in red. Comparing this region to the deforestation pictures of Kalimantan from 1950 to 2020 show that since the development of this specific Singtang road and other infrastructure backed by the government, there is a further increase of deforestation in the isolated center of Kalimantan. The amount of deforestation that is in direct correlation to oil palm expansion can be seen in Figure 4, which shows the amount of harvested area in Indonesia between 1990 and 2013. According to

the FAO’s definition, a harvested land area refers to the area where a crop is gathered. Harvested area does not include any areas with crops that were harvested. Area harvested does not repeat the frequency of the crop harvested throughout the year. From the figure it can be seen that from 1990 to 2013 the amount of land area where oil palm has been collected has risen by almost 80 percent. Provided this, it shows that deforestation in Indonesia has occurred specifically from the expansion of the oil palm crop on land and correlates to the estimates that show today the production of oil palm has the largest impact on deforestation in Indonesia (“Is Harvesting Palm Oil Destroying”). In 2013, the European Commission conducted a study on the effect that the EU demand had upon deforestation in importing countries. Their results indicated that the in the agricultural sector, palm oil had the fourth largest impact on deforestation in the world with 8 percent of the global deforestation occurring between the years 1990 and 2008. By the palm oil harvested area increase of 79.7 percent between 1990 and 2013, it shows that palm oil expansion in Indonesia increased rapidly to meet the demand for consumers such as the EU (Brack, Glover

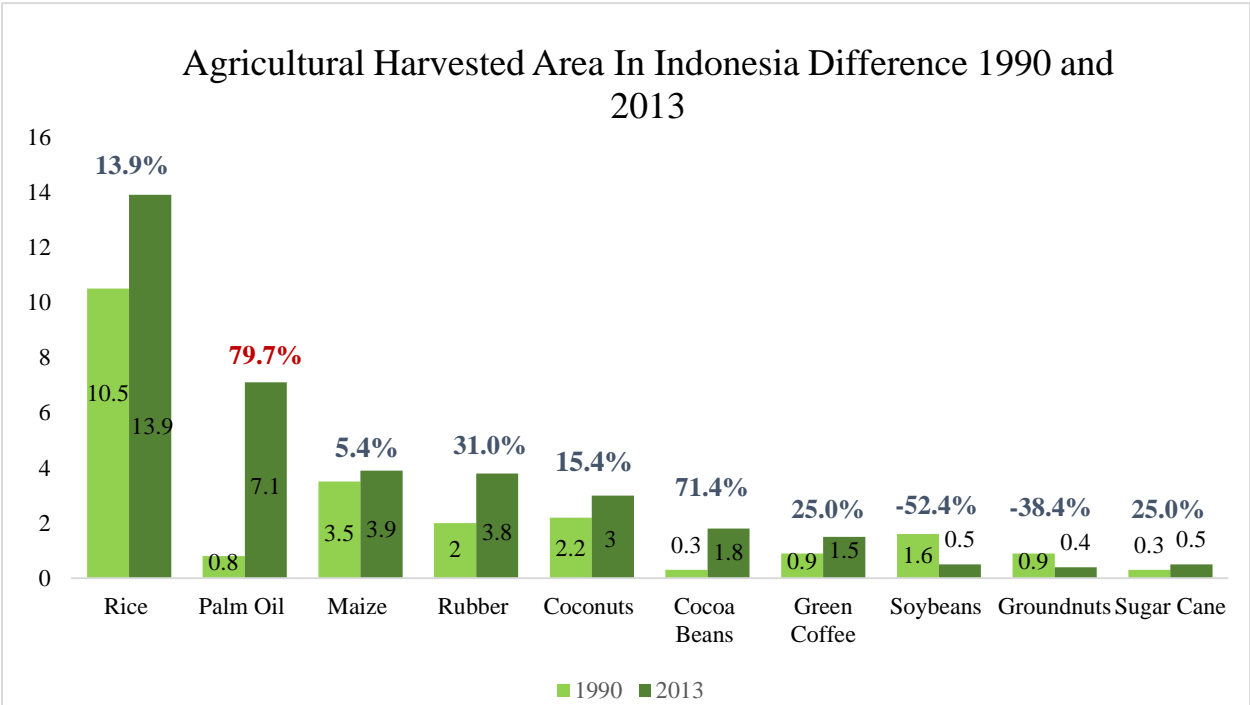


Figure I-4: Agricultural Harvested Area in Indonesia change from 1990 to 2013 (“FaoStat”)

and Wellesley 7). Figure 6 of Global trade in Palm oil 2000 to 2014 there shows a significant increase in importers of palm oil. Whereas in 2000, Indonesia mainly exported palm oil only to the EU and India, in 2014 the EU and India remain high consumers and show a large increase in demand, but Indonesia's export of palm oil now includes China, and Sub-Sahara Africa. Over the last decade, China's consumption alone accounted for a 20 percent increase demand in palm oil (Brack, Glover and Wellesley 9). The average consumption of palm oil and its annual growth per consumer can be seen in Figure 7 with the top consumer to be China with a 15 percent share of global demand for palm oil in 2010 and an average annual growth of consumption at 17 percent between 2000 and 2010 (Lee et al. 19). Due to the majority of these consumers, the demand for palm oil is growing significantly. Since 2000 the average growth of oil palm has been around 12 percent annually, however, the government has separate plans for oil palm and is pushing for the production of 40 million tons of crude oil palm each year by 2020 (Lee et al. 13). This demands that the cultivated area of palm oil expand from around 8 million of hectares in 2010 to 15 million ha by 2020, as seen in Figure 5 the areas of land where palm oil plantations and production occur will likely increase density compared to the 2010 areas seen in the figure (Lee et al 20).

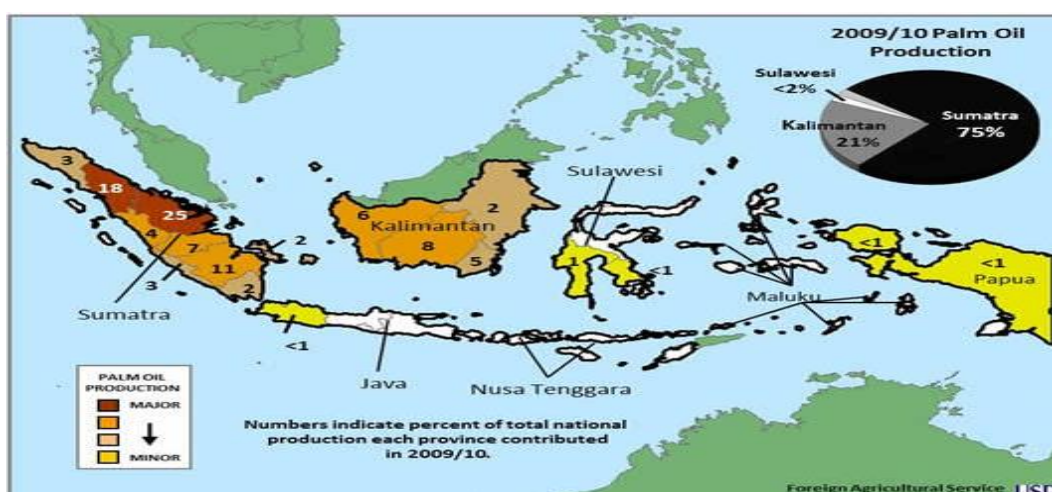


Figure I-5: Islands density of palm oil production and plantations (“Indonesia: Palm Oil Expansion”).

Global trade in palm oil 2000 in 2000 and 2014

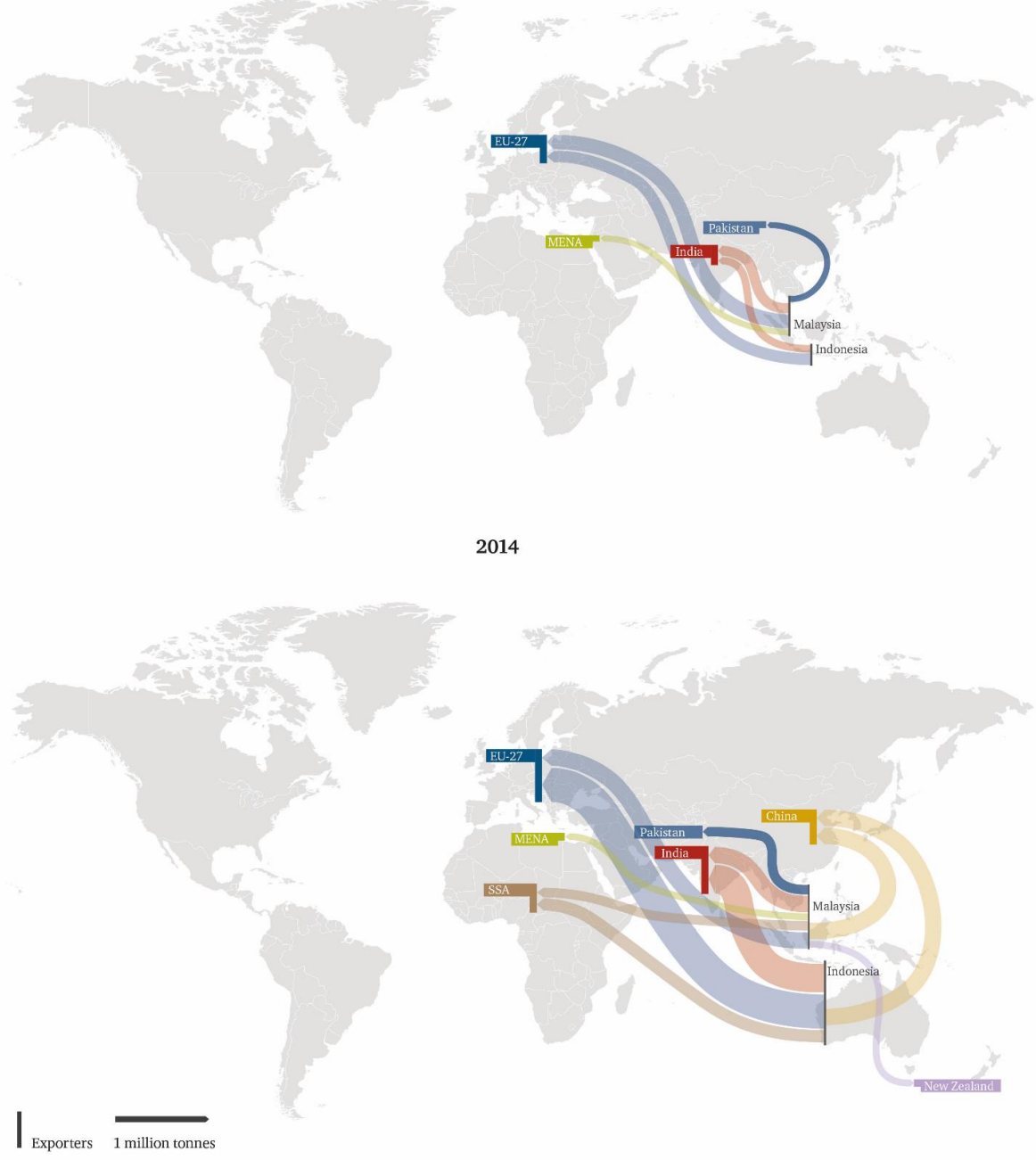


Figure I-6: Global Trade in Palm Oil Map 2000 to 2014 (Brack, Glover, and Wellesley 17).

Palm Oil Existing Resource Consumers

Major Consumer	Share of Global Consumption, 2010 (%)	Annual Growth 2000-10 (%)
China	15	17
India	14	8
EU	13	11
Malaysia	11	9
Indonesia	8	3
Nigeria	5	8

Figure I-7: Palm Oil Consumers 2010 (Lee et al. 19).

Palm Oil Emerging Resource Consumers

Emerging Consumer	Share of Global Consumption, 2010 (%)	Annual Growth 2000-10 (%)
Pakistan	4	6
Thailand	3	9
Bangladesh	3	28
Iran	1	25
Russia	1	17
Vietnam	1	19
South Africa	1	36
UAE	1	45

Figure I-8: Palm Oil Emerging Consumers (Lee et al. 19).

In the oil market, palm oil dominates as the most consumed oil available. This is due to its long life, which can produce fruit for more than 30 years and its yield which produces more oil per hectare compared to any other oilseed crop. As Michael Shean, a global crop analyst in the U.S. Department of Agriculture states, “palm oil has become the edible oil of choice, if you will, for much of the world. More land will have to come into line to meet that demand” (“Global Palm Oil Demand”). When related with other oils, such as soy, rapeseed, and sunflower seed, oil palm yields much more oil volume per hectare of land per year than all other oils. Specifically, palm oil yields five times more oil than that of soy (Brack, Glover, and Wellesley 7). Oil palm’s physical properties distinguish it from other oils. Palm oil can be made into a solid (stearin) and a liquid (olein) to produce hard products for example soaps and margarines, or its liquid form can be put into oils and lubricants. It is widely used in margarine due to its high saturated fat content which replaces the hydrogenated fats also known as ‘trans-fatty acids’ and its high smoke point and high level of stability, making it unable to oxidize, enable it to be used as a cooking oil as well as, other processed foods. When estimating its wide-spread use in processed foods, cosmetics, detergents, and other commodities, it is estimated that around half of all packaged products available in developed countries’ stores have remnants of palm oil or of palm oil derivatives (Brack, Glover, and Wellesley 7). Even with the fluctuations of oil palm prices, its versatile nature and physical properties have made it the leading commodity in the oil market to become the highly demanded oil in the last few decades. Figure 9 compares the different types of vegetable oils available on the market and shows how between 2000 and 2009 the consumption of palm oil drastically increased and replaced soybean as the highest consumed oil (Brack, Glover, and Wellesley 9). Between these years palm oil’s quantity demanded rose by 23.2 million tons and became the leading consumed oil with 34 percent composition of the market.

Type of Vegetable Oil	1980 Quantity	1980 % Composition in Market	1990 Quantity	1990 % Composition in Market	2000 Quantity	2000 % Composition in Market	2009 Quantity	2009 % Composition in Market
Palm	4.5	11.3	11.0	18.1	21.9	23.7	45.1	34.0
Soybean	13.4	33.7	16.1	26.5	25.6	27.7	35.9	27.0
Rapeseed	3.5	8.8	8.2	13.5	14.5	15.7	21.5	16.2
Sunflower	5.0	12.6	7.9	12.9	9.7	10.5	13.0	9.8
Palm Kernel	.6	1.5	1.5	2.5	2.7	2.9	5.2	3.9
Other Vegetable Oil	12.8	32.1	16.1	26.5	18.1	19.6	12.0	9.0
Total Vegetable Oil	39.2		60.8		92.5		132.8	

Figure I-9: Competition of Vegetable Oils and History of Demand in Million Tons (Brack, Glover, and Wellesley 9).

From 2000 to 2013, the aggregate output of palm oil more than doubled, although the 2007-08 global economic downturn did have slight negative impacts upon the market (Brack, Glover, and Wellesley 9). In the market of 2011 to 2015, over-production due to high prices and years of high yield, there resulted in a decrease in prices of crude palm oil by around 50 percent (Brack, Glover, and Wellesley 9). This fall of prices, however, did not necessarily have a complete impact on palm oil, as the majority of other oils such as rape, sunflower, and cottonseed, also fell, which helped palm oil to continue expansion and growth. Over production derived mainly from an increased planted area since innovations to the yields of palm oil have advanced little (Brack, Glover, and Wellesley 13). As seen in Figure 10, the the exported value of palm oil between 1989 to 2014, as reported by the Indonesian government, shows that palm oil exports continued to increase besides between 2008 and 2009 when the global crisis decreased the exported amount of palm oil (“Indonesia at a Glance”). The exported revenue from palm oil dropped during during the global crisis, which also effected the price of palm oil.

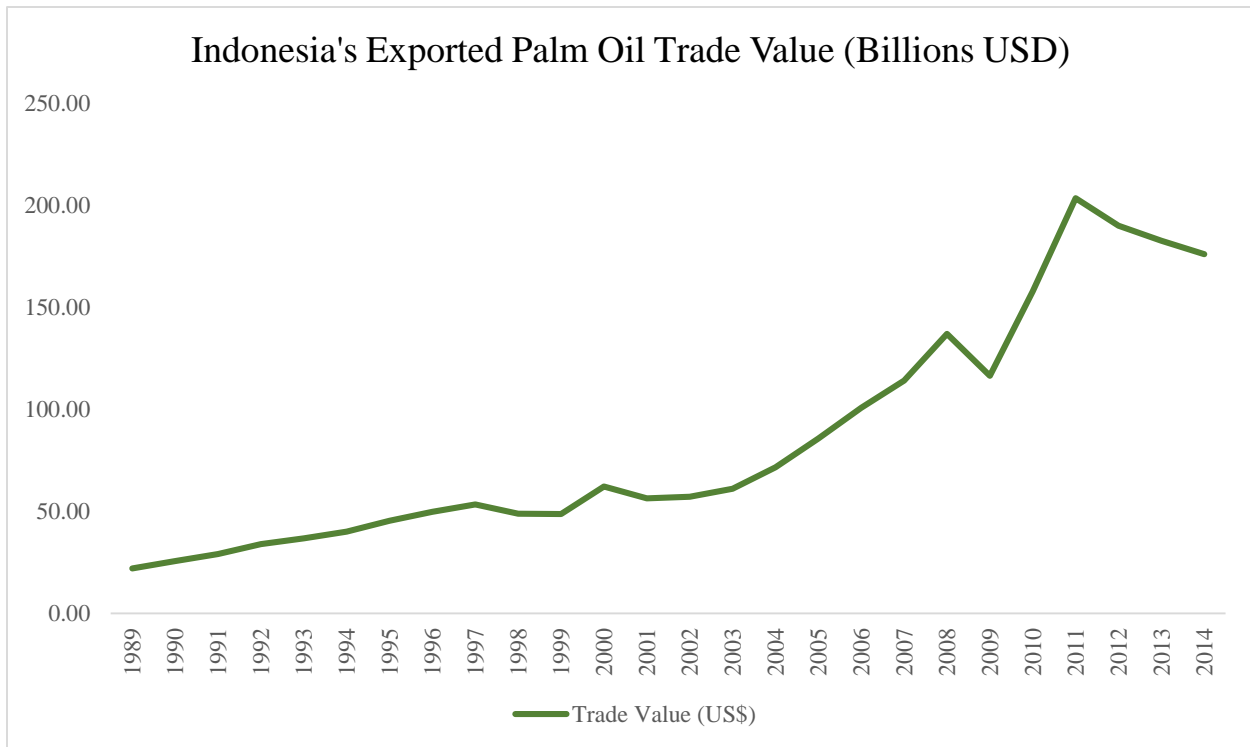


Figure I-10: Indonesia Exported Palm Oil Trade (Billion USD) (“Indonesia at a Glance”).

During spring of 2008, the price per ton settled around US \$1,000 during spring of 2008, dropped by 56 percent by the end of 2008, and finally arrived at US \$555 per ton in March 2009 (“Global Palm Oil Demand Fueling Deforestation”). However, as predicted, after 2009, the demand still continued to grow and export revenue increased from US \$116.51 billion to US \$157.78 billion which shows a 15 percent increase in export to the global community.

The global demand for palm oil has been mainly supplied by Indonesia. Between 2000 to 2009, Indonesia provided more than 50 percent of the global availability of palm oil and since 2007 became the majority supplier of palm oil surpassing Malaysia’s supply (“Global Palm Oil Demand”). Overall Indonesia profitted from foresst and commodity-based exports and added \$21 billion to the Indonesia GDP of which in 2008 palm oil created \$12.4 billion in foreign exchange and \$1 billion in export taxes (Stolle and Payne). The expectation that the global demand for palm oil will increase by 32 percent or 60 MMT of palm oil by 2020 has influenced Indonesia’s

goals for the industry. Due to these predications Indonesia, already the world's top producer and exporter of palm oil accounting for more than 50 percent of the market, plans to produce 40 million tonnes of crude palm oil by 2020 (*Project POTICO*). Indonesia's current and future palm oil production and its high profits are due to Indonesia's specific environment as well as its government's lack of regulationa and moreso its lack of enforcemnet of regulations that have allowed palm oil expansion to reach an ultimate high, which is expected to continue as the demand for palm oil is predicted to increase rapidly over the next few decades.

Chapter II: Forest Area Availability & Environmental Conditions

Indonesia's ecosystem, high abundance of rain forest, and the fertility of the rain forest's soil, have made Indonesia the perfect environment for growing palm oil. Specifically, oil palm grows in regions close to the equator, which has restricted the opportunity for oil palm use to a few nations, including Indonesia, Malaysia, Thailand, Colombia, Nigeria, Papua New Guinea, Ecuador, and other nations that have similar ecosystems. As seen on Figure 11 below the exporters of crude palm oil are all countries with similar climates and ecosystems such as Malaysia, Papua New Guinea, Guatemala, Honduras, etc. This comparison only shows the exportation of crude palm oil, which only includes exporting the raw fruit of the palm tree. Figure 12 shows the exportation of refined palm oil which includes the process of converting the palm oil fruit.

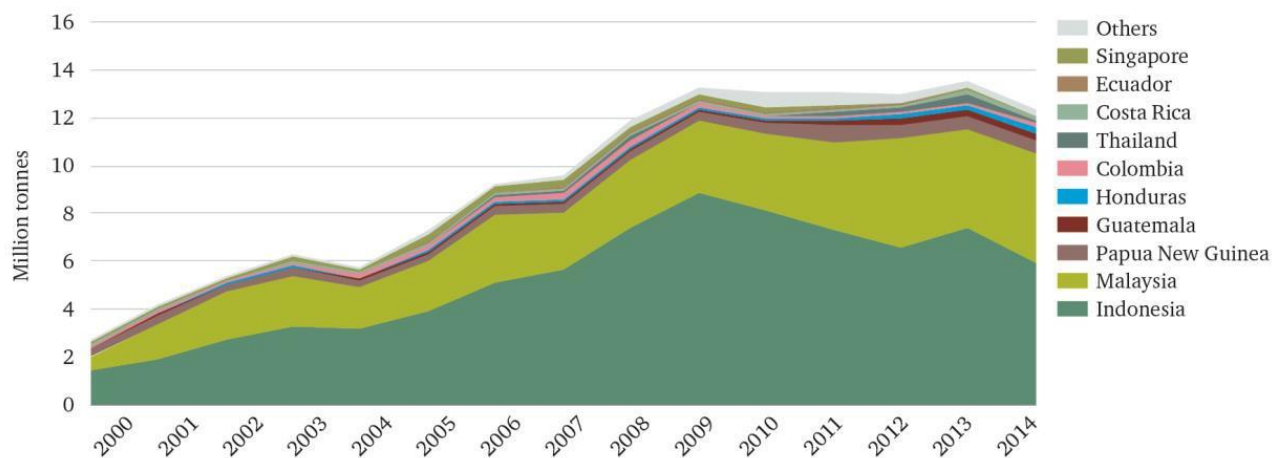


Figure II-11: Exporters of Crude Palm Oil 2000 to 2010 (Brack, Glover, and Wellesley 12).

As seen in the figure, the industry of refined palm oil is centered in Indonesia and Malaysia, who have the major capacity to refine palm oil due to their specific climate of year round temperatures of 25 to 33 degrees Celsius and an average rainfall of 2000 mm/year (Ludwig et al. 10). Due to Indonesia's strategic geographic placement it has been able increase

production to surpass and become the main specialized nation for palm oil, first crude oil then refined palm oil, which it competes with Malaysia for the main exporter of refined palm oil (Brack, Glover, and Welleley 12).

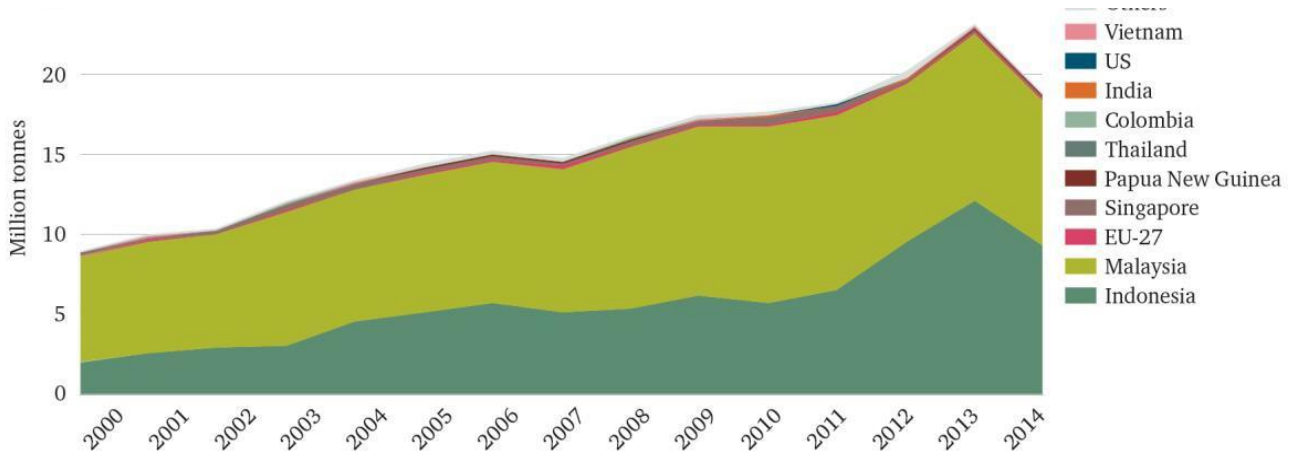


Figure II-12: Exporters of Refined Palm Oil 2000 to 2010 (Brack, Glover, and Wellesley 12).

Indonesia since 2007 has become a hot-spot for oil palm due to its isolated and wide land availability (*Country Partnership Framework for the Republic 37*). Indonesia's natural ecosystem holds some of the world's greatest terrestrial and marine biodiversity. Indonesia's vast rainforests and isolated islands have enabled Indonesia to continuously expand its oil palm plantations for accelerated growth making it the second nation in the world in tropical deforestation with around (reinforced before) 498,000 hectares a year lost to deforestation. Indonesia has only been able to produce and export the amount of palm oil that has returned the country with \$12.4 billion in foreign exchange and \$1 billion in export taxes by the vast amount of dense rain forest and isolated landmass located in Indonesia, which account for 80 percent of Southeast Asia's existing natural forests and of which companies and some smallholder cultivators have used for their private advantage and profit (Stolle and Payne). Specifically, the legal deforestation in Indonesia is known since record is taken with the Indonesian government, but this is only an estimate, as the extent of deforestation of the natural forest is unknown due to

Indonesia's poor laws enforcement, which has enabled companies to expand rapidly without legal concession.

Illegal Logging & Deforestation

Indonesia's dense and isolated rainforests also allow companies and other cultivators of palm oil to illegally use and exploit the land with either no government repercussions or government reinforcement. Illegal logging is common because of the lack of transparency in the industry. The true extent of palm oil plantations on land and the rate of deforestation is unknown, although scientists and environmentalists agree that the main cause of deforestation in Indonesia is due to palm oil, which is estimated to account for the deforestation equivalent to 300 football fields of rainforest every hour (Good).

In many cases, the supply chain which may consist of three or four suppliers removed makes implication and tracking the origins of the fruit difficult. As Tomoyuki Uno, Asia manager of the UN Development Program's green commodities program, states "Palm oil might be coming from the national parks but as long as you don't know about it, or they are three or four different supply chains removed from you, you might not be implicated," (Lamb). A report conducted by the Environmental Investigation Agency states estimates that a conservative estimate of 52 million cubic meters of forest were destroyed for the cultivation of oil palm plantations in the province of Kalimantan between the years 2000 and 2010 alone (Chua). This differs dramatically from the official report by the Forest Ministry of Indonesia which reported only 39 million cubic meters of land lost (Chua). Although the Indonesian president Joko Widodo states on a visit to Sumatra, "If they are indeed destroying the ecosystem because of their monoculture plantations, they will have to be terminated...It must be stopped, we mustn't allow our tropical rainforest to disappear because of monoculture plantations like oil palm" the

change in illegal deforestation has not altered due to corruption and a lack of law enforcement in the dense plantation areas (Chua). Tomasz Johnson of the Environmental Investigation Agency reinforces, “Illegal logging in oil palm concessions is out of control and Indonesia's revamped timber laws have completely failed to rein it in” (Chua). The distinct estimate of 13 million cubic meters between the Ministry of Forestry and the EIA’s calculations show a distinct gap between numbers, which occur for a few reasons. The Ministry of Forestry of Indonesia does not track the data on the forest and timber from the origin, but rather they collect the data from sawmills, which give sawmills the ability to alter data (*Permitting Crime: How Palm* 4). In addition to this, prior to 2010, the Ministry of Forestry only collected the amount of data relating to deforestation from large sawmills, neglecting to include smaller companies that processed less than 6,000 cubic meters of forest each year (*Permitting Crime: How Palm* 4). In 2011, Hanif Budi Nugroho, the head of the Forest Agency in Kotawaringin Timur, a province in Kalteng, reported that of the total of 52 oil palm companies he investigated did none had a IPK permit for the cultivated land, showing acts of illegal logging for oil palm (*Permitting Crime: How Palm* 4). Figures and numbers vary vastly due to the changes in relevant definitions, lack of government monitoring, and poor ‘information on the subnational patterns and causes of land-cover change’. By combining two national studies of illegality and including a few specific assessments, it is derived that the rate of illegal deforestation due to palm oil concessions is 80 percent and specifically in the region of Kalteng, the illegal deforestation due to palm oil is 89 percent (*Permitting Crime: How Palm* 8). Among the types of illegal deforestation, it was found that the most frequent crime was companies clearing land along their borders which due to lack of government information on property borders in these regions, allows companies to expand with little government interference.

In the region of Kapuas Hulu due to its location in an isolated part in the middle of the region of Kalimantan, companies have been able to use illegal measures to expand their palm oil plantations further than legally allowed. In the region, two main companies control the oil palm in the area: SMART Group and First Borneo International. SMART dominated 159,500 ha of palm oil plantations (Leonald and Rowland 107). Figure 13 outlines the legal palm oil plantation areas by each company in Kapuas Hulu. The figure outlines the majority of the forest area that is legally obtained for the use of palm oil, but does not represent any land that may be obtained illegally. Greenpeace, as with many other organizations and communities, have accused SMART of destroying land without legal permits and environmental impact assessments (Leonald and Rowland 108). Even though there are many attempts for the government, communities, and individuals to end the problem of deforestation, the problem has not ceased and continues to be a ‘classic issue for Indonesia’ (Rianto 5). This is due to the longevity and lack of enforcement of

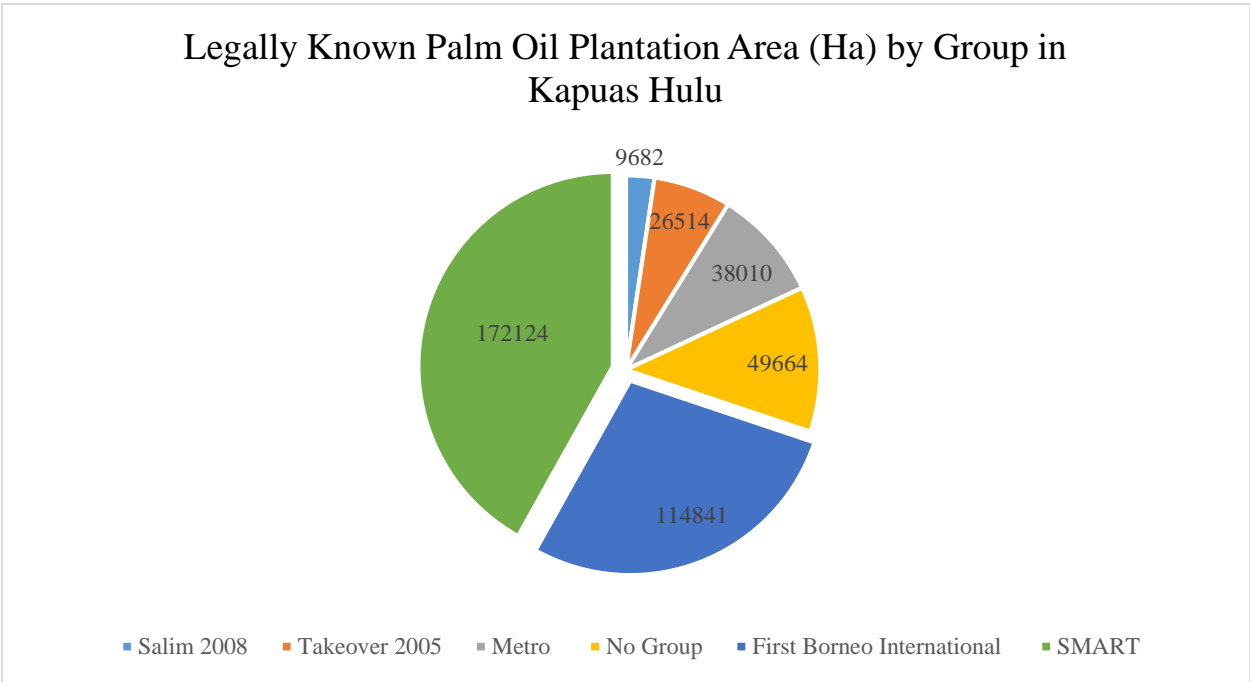


Figure II-13: Legally Known Palm Oil Plantations (Hectares) in Kapuas Hulu by Group (Leonald and Rowland 108).

laws in the regions, in addition to the little resources the local governmental agencies have to protect these regions.

Government Enforcement of Laws and Corruption

Indonesia's process of starting a business, requires extensive procedures, which has influenced certain markets, including the oil palm market, to take alternative routes to conducting business. In the World Bank's 2010 report on Doing Business, Indonesia was ranked 122 out of 183 countries on ease of doing business (Rianto 6). In Indonesia entrepreneurs seeking to start a business have to go through nine procedures, which extend around 60 days on average each (Rianto 6). Specifically in the oil palm industry, the licensing process also involves many requirements such as permits, licenses, and approvals which need to be signed off by numerous government officials who are associated with the company's official status, land ownership, and the plantations licensing and functions (Rianto 6). There are extensive procedures to ensure that the land acquired is in fact legal, and specific regulations when referring to the region of Papua. The Ministry of Agriculture in Indonesia states in Article 12 of its Regulation No. 26/Permentan/ OT. 140/2/2007 relating to the Guidance on Licensing Plantation Business, that a plantation company at maximum can own 100,000 hectares of land or in the region of Papua the plantation size can be twice that amount¹ (Rianto 5). When first creating a new plantation company the National Land Agency specifies that a Location License be issued before purchasing the land and that the area of land controlled or owned by the company can only be up to 20,000 hectares in one province or specifically when referring to Papua, twice that amount (Rianto 6). With this regulation issued by the State Minister of

¹ Currently, in Indonesia the control that Indonesia has over Papua New Guinea has created some controversy. Indonesia has abused several human rights and the majority of wealth generated by Papua's natural resources has been sent to Indonesia rather than Papua ("Indonesia Warns other countries").

Agriculture/ National Land Agency, No. 2/1999 throughout all of Indonesia the maximum that can be owned by one company is 100,000 hectares.

The government has extensive power as well to control the land use in Indonesia. Since the 1960s during Suharto's reign many laws were enforced for the government's complete control of the land. As stated before in this report, Basic Forestry of 1967 allows for the central government to control all of Indonesia's forests including private land. This has also allowed for the government to progressively take away indigenous tribes and local population's rights to the land, and to use this land for timber production. A more recent law enacted in 1990 states that private companies and other types of firms are "allowed a tenure" of 35 years, which gave ample time for the growth and rotation of the foreign crops and increase plantations in forest areas ("History of Forest Control").

The total stages in the supply chain of using land in Indonesia can be seen in Figures 14 and 15, which describe all documents and procedures to secure a land permit. With all of these regulations and in addition the process of obtaining and issuing the land, the total time to legally obtain and start an oil palm plantation takes months or up to a year, in addition to actually planting the palm oil trees as well. This lengthy duration of time to issue permits and other requirements and the lack of government knowledge of land use in isolate islands and deep forest troves, have make it very easy for companies to abuse and ignore public law and simply use the land illegally for palm oil use. This illegal activity has produced many social conflicts between the native population and oil palm companies. As it is shown in Indonesia, what is enforced and actually occurs differs tremendously. As seen in Figure 14, the Indonesia's laws for enforcing land permits for plantations, as stated before, require a long-process, which incentives companies to use illegal activities instead of following the legal procedure below. Although these laws and

Stage in Supply Chain	Lacey Act Component	Applicable Laws	Documents to Check	Notes to Remember
Forest	Legal Right to Harvest	All Forest managers and harvesting companies including community owned operations	<p>Confirm that the company is able to demonstrate it holds:</p> <ul style="list-style-type: none"> • Authorization permit • SK PKH (forest area quotation decree) • HPH and IUPHHK-HA, for natural forest; • HPHTI and IUPHHK-HT, for plantations forest. • Private land owners shall hold a valid Sertifikasi Tanah (land certificate) 	<p>There should be clear, documented and unchallenged legal registration of the forest management unit with authorization for specific activities. HP: Hutan Produksi (Permanent Production Forest)</p> <p>HPHTI: Hak Pengusahaan Hutan Tanaman Industri (Industrial Forest Plantation Permit)</p> <p>HPH: Hak Pengusahaan Hutan (Natural Forest Management Permit) HT: Hutan Tanaman (planted forest) HTI: Hutan Tanaman Industri (Industrial Plantation Forest)</p> <p>IUPHHK: Izin Usaha Pemanfaatan Hasil Hutan Kayu (Forest Timber Product Exploitation Permit)</p>
Forest	Legal Right to Harvest	All privately owned or State owned Forest managers and harvesting companies, including timber from forest conversion areas	<p>Confirm that the company holds a valid permit, license or similar instrument.</p> <p>The company should hold one of the following harvesting permits (as applicable):</p> <p>For natural forest management and plantations an Annual Work Plan (RKT/work chart) has been legally approved by relevant authorized official and demonstrated on the ground and a LHC (pre-harvest inventory) and tree map has been authorized by the Forest Service. Where wood is harvested on private land the owner shall hold a valid IPK.</p>	<p>The company must have authorization to harvest in the forest management unit.</p> <p>RKT: Rencana Kerja Tahunan (Annual Work Plan)</p> <p>IPK: Izin Pemanfaatan Kayu (Land Conversion Permit)</p>
Forest	Legal Right to Harvest	Forest management company / harvesting company	<p>Confirm that in cases of community forest operations:</p> <ul style="list-style-type: none"> • Business license document for community-based forest management on state forests. • Payment evidence of Land and Building tax (PBB) • Document of community's agreement regarding forest management by community institution (including traditional law community institution). 	<p>In the case of community forest operations managing state forest land the company (community) must possess a license to manage state forest.</p>
Forest	Legal Right to Harvest	Community owned forests	<p>Confirm that the company's / community's harvesting activities correspond to the legal land use classification for the forest management unit.</p>	<p>Evidence shall exist that the forest management area is legally classified for the type of land-use or commercial activities conducted.</p>

Figure III-14: Complete Laws for Private Land Use in Indonesia (Guide to Legal Documentation).

Stage in Supply Chain	Lacey Act Component	Applicable Laws	Documents to Check	Notes
Forest	Legal Right to Harvest	All privately owned or State owned Forest managers and harvesting companies	Confirm that the company' holds: <ul style="list-style-type: none"> An approved forest management plan. A current, approved operating or harvest plan shall exist. Annual Work Plan (RKT) that has been formally approved by the appropriate government authority. Authorized Buku Ukur (BU) and LHP Permission to harvest a CIIES- listed species shall be documented. The management unit has obtained the AMDAL documents which have been approved legally according to applicable regulations, covering all work area. The harvested volume is within the limits authorized in the annual production target (JPT) 	A forest management plan must be approved by the relevant authorities with annual authorizations and associated documentation. LHP: Laporan Hasil Produksi (production report) AMDAL Analisis Mengenai Dampak Lingkungan (ELA and mitigation plan) JPT: Jatah Produksi Tahunan (annual production target)
Forest	Payment of Taxes and Royalties	All Forest managers and harvesting companies including community owned operations	Confirm that the company holds the following: <ul style="list-style-type: none"> Valid business license Tax registration documents 	The company must have a tax registration number / forms and valid business license to operate within the jurisdiction.
Forest	Payment of Taxes and Royalties	All Forest managers and harvesting companies including community owned operations	Confirm that the company has proof of full payments of: <ul style="list-style-type: none"> Reforestation Fund (DR) Forest Resource Royalties (PSDH). 	The forest management enterprise must regularly fulfill all obligatory tax; fee and/or royalty payments associated with maintaining the legal right to harvest and permitted harvesting volumes. DR: Dana Reboisasi (Reforestation Fund) PSDH: Pajak Sumber Daya Hutan (Forest Resource Royalties)

Figure III-14: Complete Laws for Private Land Use in Indonesia (Guide to Legal Documentation).

practices seem very clear, Indonesia process of doing business proves to be difficult and was ranked by the World Bank 120 in 2014 and 209 in 2015 for ease-of-doing-business, with one being the most business friendly and 189 as the most difficult. This along with the poor governance, inaccurate maps, transferring responsibilities to local agencies with little training, low levels of equipment, and small budgets, and unclear land tenure, make risk of illegal activity

much higher than it should be. The World Bank examined the percentage of ‘suspicious’ logging or logging by illegal practices to be 60 percent in Indonesia whereas in the United States the percentage of suspicious activity was around 3 percent (*Country Partnership Framework for the Republic 55*). This lack of enforcement removes the potential profit and development benefits specifically from the loss of income, employment opportunities, royalties, taxes and environmental services (*Improving Land Governance Indonesia*). It is specifically due to the lack of connectivity between islands and in the regions on the islands, the longevity of the method to issue permits, and the lack of government enforcement in combination with the corruption of the local authorities that have provided Indonesia with the ability to rapidly expand their palm oil production to match global demand. Through these problems, there comes a social conflict of interest as the transmigration during Suharto’s reign in addition to the indigenous population located in the regions using palm oil production, have become susceptible to the demands of large companies and the corrupt local officials. With the expansion of palm oil, many rural communities are placed at risk with little recognition for the actions that have been imposed against them.

The Social Environment of Palm Oil Plantations

One the main conflicts that has arisen due to the illegal or legal expansion of palm oil plantations is the social dynamics between the local population and the companies running the plantations. Specifically, the World Bank has inadvertently further worsened the conditions for the indigenous populations living on the lands with palm oil contact. Jocelyn Zucherman reported with the International Consortium of Investigative Journalists on the social environment impacts the palm oil plantations have been conducting, with funding specifically from the World Bank, who has loaned more than a billion dollars to the government and Indonesian companies for the

expansion of palm oil plantations (Zuckerman). Foundations such as the Forest Peoples Programme, a UK based foundation, in 2007 filed against the International Financial Corporation (IFC) , an organization of the World Bank, and Wilmar Trading, a top four trader of palm oil which obtains palm oil by purchase on the open market by companies which are partially and wholly-owned subsidiary companies by Wilmar. The Forest Peoples Programme states “We are writing to express our concerns about the IFC’s financing of the palm oil trading company Wilmar Trading/ Wilmar International through a series of three investment projects and a GEF grant. Detailed field assessments show that through the operations of its wholly owned subsidiaries, Wilmar is party to serious and long term social and environmental impacts which are at odds with IFC’s standards” (“Procedural Irregularities and Standards” 1). The series of investment transactions between IFC and Wilmar occurred between the years April 2003 and December 2006. In April of 2003 the IFC guaranteed the investment (Project Number 20348) of a loan of US \$33.3 million and US \$17.5 million (Project Number 24644) to Delta-Wilmar CIS with a further agreement upon US\$50 million in December of 2006 (Project Number 25532) (“Procedural Irregularities and Standards” 2). Further investment transactions occurred with the IFC contribution of US \$375,000 in April of 2007 to the Wilmar Group through the IFC’s GEF-Funded Biodiversity and Agricultural Commodities Project. The foundation’s field investigations conclude that Wilmar through the funding by the World Bank’s IFC discovered numerous social and environmental implications including the following: illegal use of fire to clear land, clearance of primary forests, clearance of areas of high conservation value, take over of indigenous peoples’ customary lands without due process, failure to carry out free, prior and informed consultations with indigenous peoples leading to broad community support, failure to carry out free, prior and informed consultations with indigenous peoples leading to broad

community support, failure to negotiate with communities or abide by negotiated agreements, failure to establish agreed areas of smallholdings, social conflicts triggering repressive actions by companies and security forces, failure to carry out or wait for approval of legally required environmental impact assessments, and clearance of tropical peat and forests without legally required permits ("Procedural Irregularities and Standards" 2). This is not the first filing of complaint to the organization. Through previous letters to the IFC it has been made public that Wilmar's operations were under speculation in 2004 and 2007, and also through publications in 2004, 2006, and 2007, including media and court proceedings ("Procedural Irregularities and Standards" 2).

Since then Wilmar has received more complaints through the Forest Peoples Programme. In November of 2011, Meg Taylor, the Compliance Advisory Ombudsman, at the International Finance Corporation, received the 3rd complaint about Wilmar International by the Forest Peoples Programme. Through Wilmar International's subsidiary company, PT Asiatic Persada (PT AP), and the money funded financially through the IFC, PT AP expansion of plantations has imposed upon the local community resulting in many negative impacts. Between the 9th and 16th of August 2011, BRIMOB and PT AP employees "systematically evicted some 83 families from their homes and demolished their dwellings in the south of the concession. According to testimonies gathered in the investigation, BRIMOB entered the communities without warning, firing guns, and chasing men, women, and children from their settlements, while company staff under the directions of estate managers proceeded to bulldoze and smash the houses, even to the extent of using caterpillar tractors to tear up concrete floors and shove them into the nearby creeks. While some persons were injured, many have become destitute and most have been seriously upset by these events ("3rd Complaint about Wilmar" 1). It has also been noted that the

company illegal took control of 20,000 ha of customary lands without consent and used it for plantations without payment to the people for loss of land and property. These situations that occur are known to be a 'classic issue for Indonesia' as land property. Since the 1970s around 2.5 million Indonesians have been internally displaced in the area of Borneo and in March of 2014, a conflict between PT Asiatic Persada, the Indonesian Army, and the local villagers of Batin Sembilan resulted in the torture and death of a villager ("Indonesia: Palm Oil Company"). In 2013, the National Land Use and Planning Agency received more than 8,000 land conflict complaints, none of which have been officially resolved (Maclean). This combination of longevity of company processes, poor implementation of laws by the government, and level of corruption in Indonesia has allowed companies with the means and capital to illegally use lands for their own profit and benefit.

Indonesia's specific environment, both physical features of its ecosystem and its isolated landmass spread across thousands of islands, have allowed the extent of palm oil expansion (both legal and illegal) to up until recently, go unnoticed. In 2014, Indonesia's largest export was palm oil, and future predictions of palm oil demands suggest that Indonesia will continue this expansion of land use and continue to extensively increase in production. The lack of government enforcements of illegal activity have supported the nation's productivity as a means of further revenue to increase growth. Although palm oil has added further value to Indonesia, the unknown rate of deforestation that occurs on account of the palm oil expansion suggests that palm oil expansion is approaching its maximum as the land availability for palm oil expansion are already used or highly degraded.

Chapter III: Environmental Repercussions From Palm Oil Expansion

The extensive deforestation that companies deem necessary for expansion of palm oil plantations and production has drastically reduced the amount of forest coverage in Indonesia. Although it is difficult to determine the extent of deforestation, specifically from oil palm, there are four ways in which the increase in oil palm production adds to deforestation: by clearing existing natural forest; clearing using land that was once cleared by logging or fire; as a jointed economic enterprise like timber, plywood or paper pulp whose profits would be used to counter set the costs of a plantation establishment; and finally, although indirectly, by the development of roads to improve access to more isolated areas of forest (Maclean). Starting in the 1980s when oil palm expansion began commercially, the clearing of existing natural forest and the clearing of land once previously used for other resource extraction, were the now exposed to palm oil.

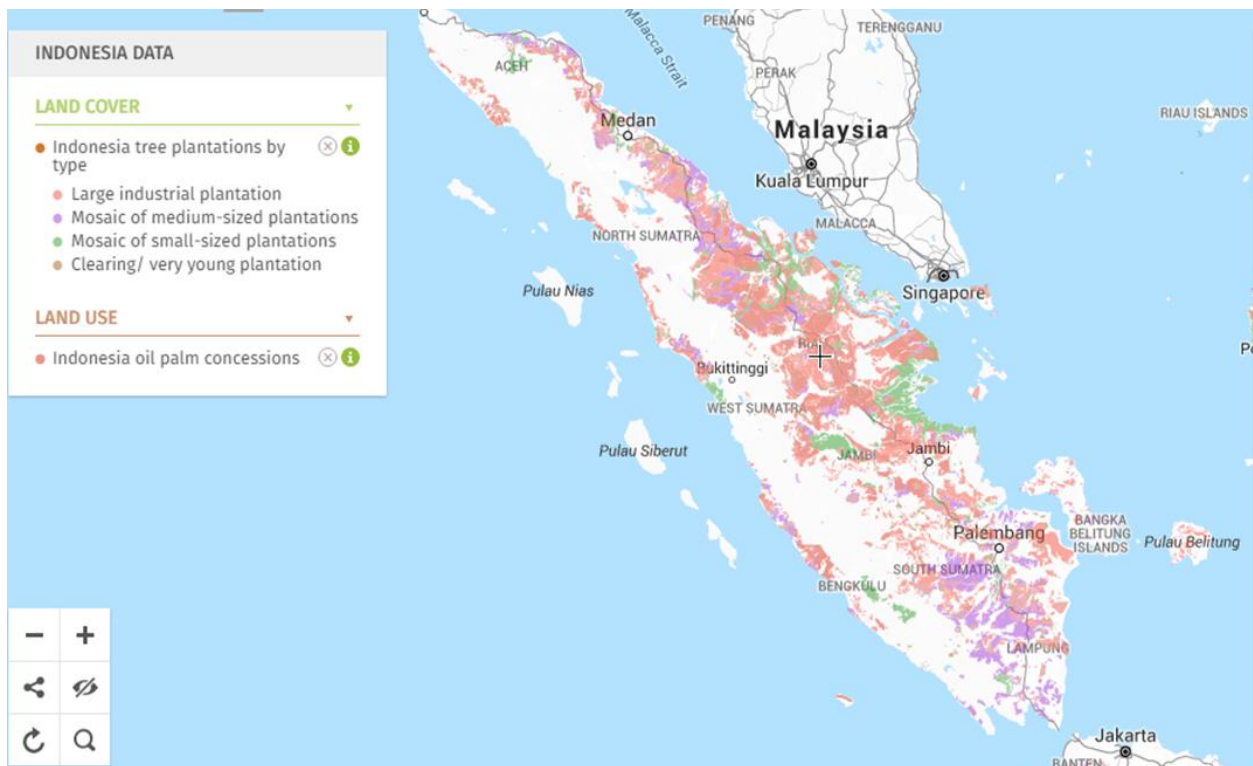


Figure III-15: The Island of Sumatra Land Cover Change due to Palm Oil (“Global Forest Watch Mapper”).

Figure 15 describes the current Indonesian tree plantations on the main island Sumatra, which is a major region of palm oil production. Colors, which are seen on Figure below, are broken up to represent the type of plantation: large industrial plantations; mosaic of medium-sized plantations; mosaics of small-sized plantations; and clearing of very young plantations (“Global Forest Watch Mapper”). The figure does not represent the existing forest cover, but is only specific to palm oil coverage and concessions. Figure 16 represents the same information for the island Borneo, representing the regions of Kalimantan.

The map contains data between 2013 and 2014 only and does not account for any illegal or unknown deforestation that occurs in Indonesia for palm oil expansion. It also includes Indonesia’s oil palm concessions defined as “the boundaries of current or planned oil palm plantations in Indonesia” (“Global Forest Watch Mapper”). The data supplied comes from

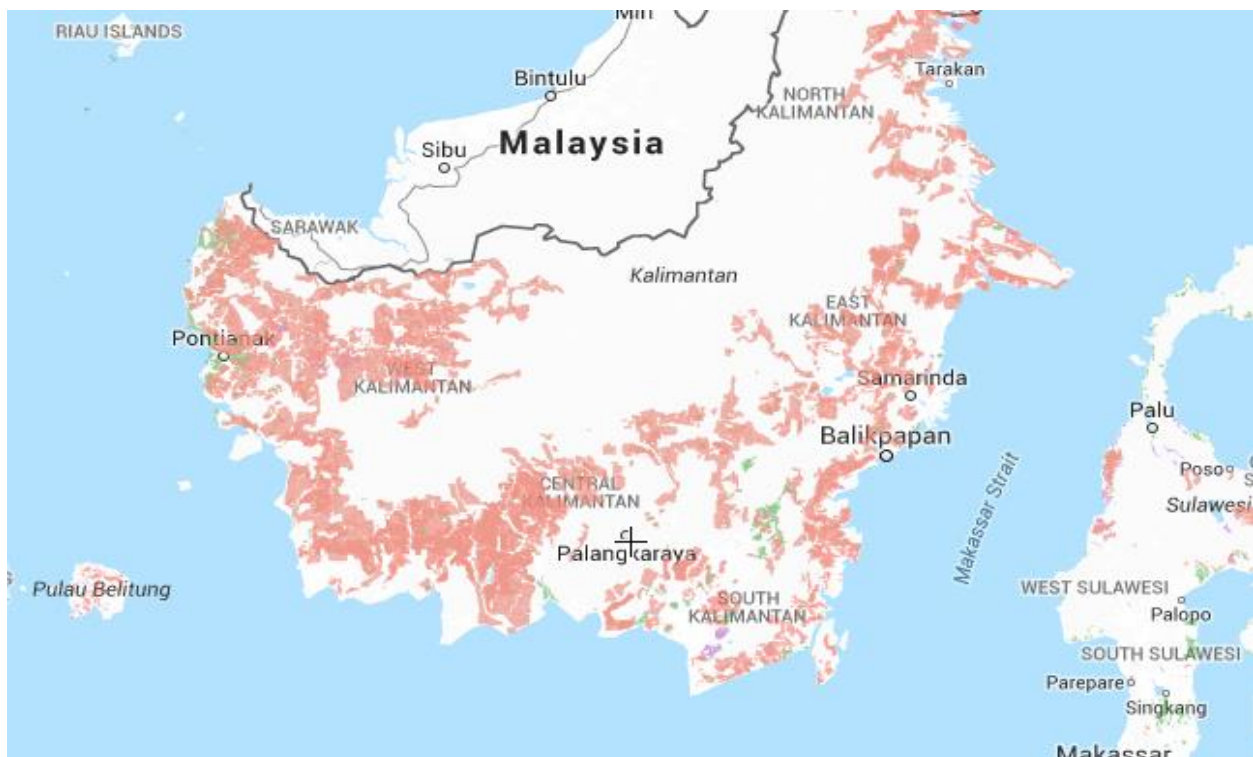


Figure III-16: The Island of Sumatra Land Cover Change due to Palm Oil (“Global Forest Watch Mapper”).

Indonesia’s Ministry of Forestry, therefore, caution should be noted that the data is known to be incomplete, but currently the best available data set.

To gain a more comprehensive insight into the current or planned oil palm concessions recorded, Figure 17 provides the sum of the current and planned total area commissioned by all companies in Indonesia for the specific use of palm oil. The total commissioned area sums to 15,200,080 ha with a total of 1195 total companies that commissioned this land. These groups are simply the owners of the 1195 companies who commissioned the land for oil palm use. The

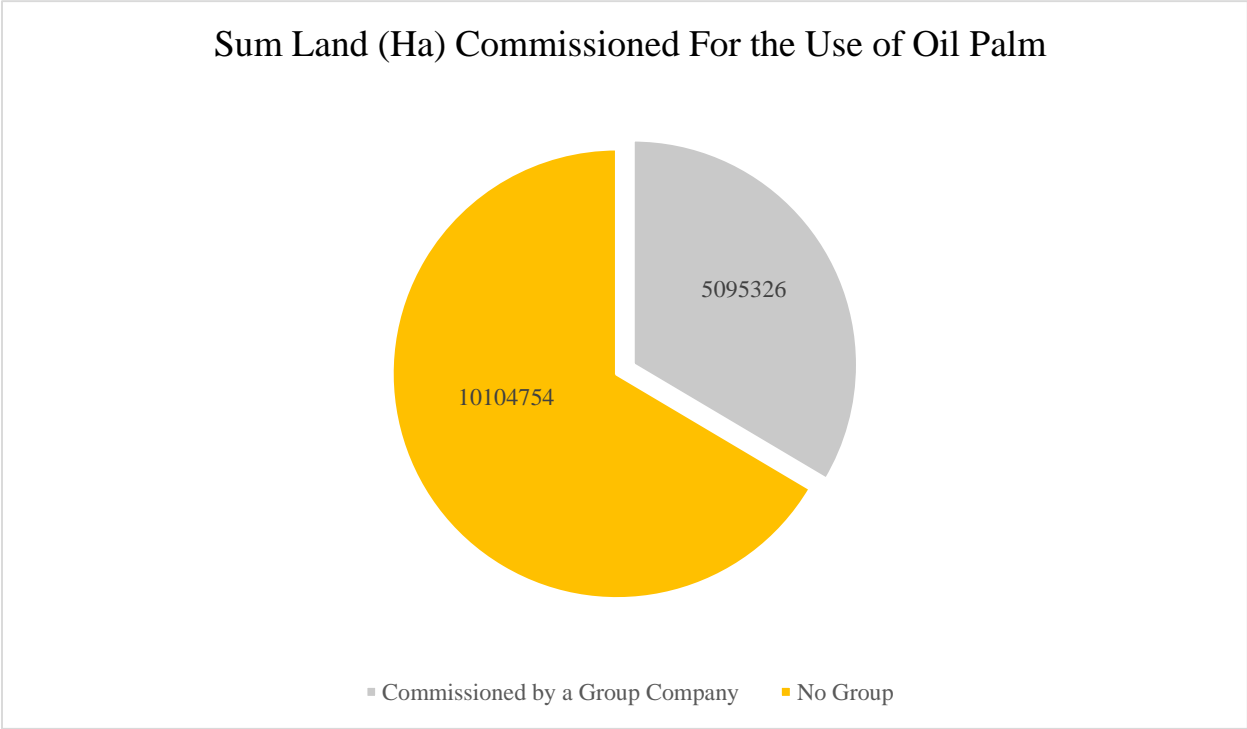


Figure III-17: Commissioned Land in Hectares for the use of palm oil (“Global Forest Watch Mapper”).

majority of the land commissioned were not commissioned by larger groups but by companies. In many cases, these smallholders who represent a good fraction of palm oil producers will sell their palm fruit to oil palm groups or larger companies who refine the fruit to palm oil. Figure 17 describes the current and future area of land that is designated for palm oil use, but does not represent the fluctuations of the total tree loss that Indonesia has experienced. There are a large amount of factors that contribute to Indonesia’s total tree loss including individual and corporate

logging and timber, which occur for the production of palm oil expansion, and mining. Specifically in Indonesia, as well as other areas of the world with high jungles and forests, it is necessary to examine the type of canopy and its deforestation. Since Indonesia holds 80 percent of Southeast Asia’s remaining jungles, the type and extent of deforestation that occurs has a general influence on the natural biodiversity. Figure 18 describes the extent of which deforestation occurs in Indonesia based on the type of trees that are lost. The higher the percentage, the increased density in of the forest. Other natural resource extraction and the regrowth of some forest can account for the deforestation of lower percentage density of canopy.

As seen in Figure 18 which maps the legally-known, tree cover loss based upon canopy

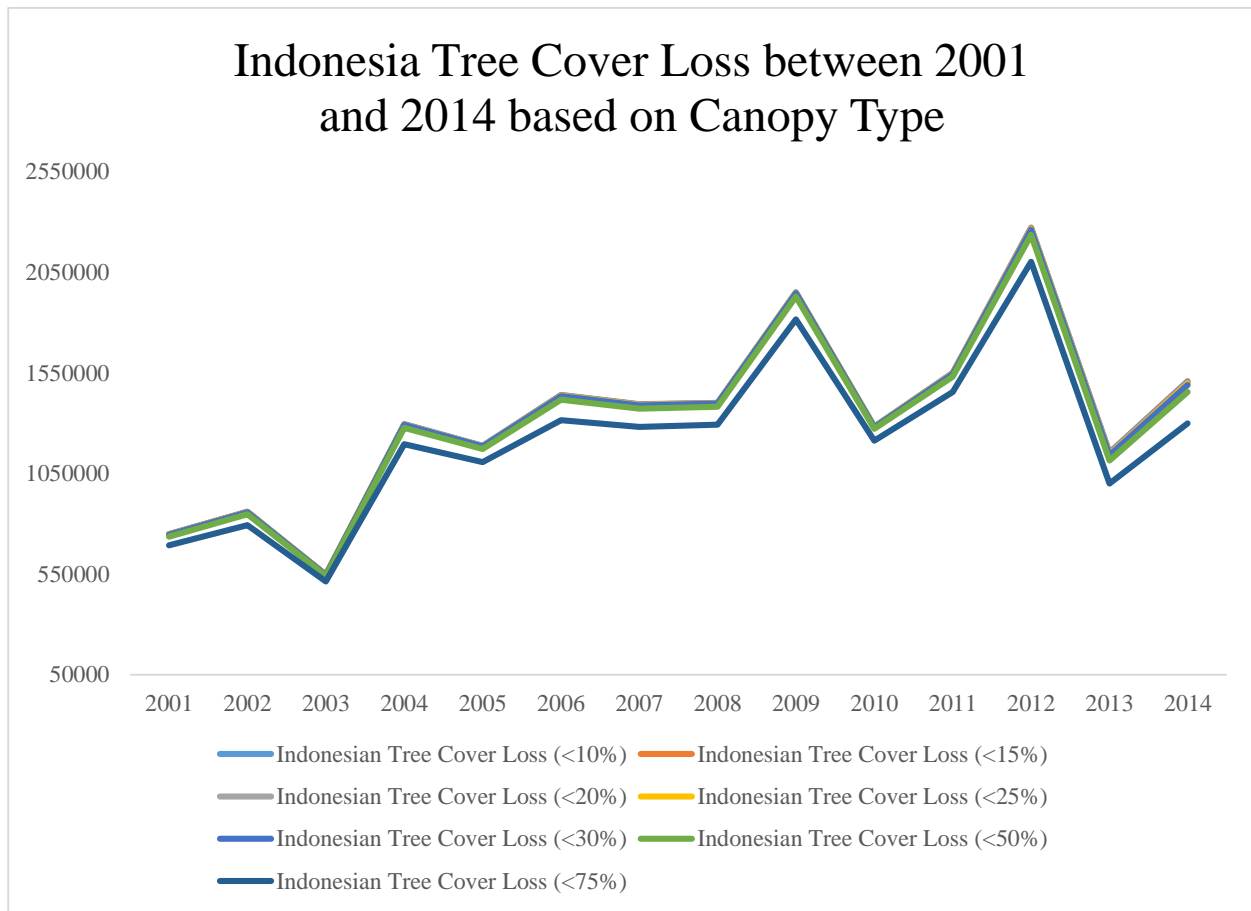


Figure III-18: Indonesia Tree Cover Loss Between 2001 and 2014 based on Canopy Type (“Global Forest Watch Mapper”).

density, there is an apparent fluctuation of deforestation between 2001 and 2014, but with time

there is a steady increase in the extent of tree loss between all types of canopy. Although 30 and 50 percent canopy loss are slightly higher than all other types of canopy, specifically 75 percent canopy forests, there is a general trend of deforestation through all canopy types (“Global Forest Watch”). The 75 percent density of forests usually exist in the in depth areas of the forests, indicating that the deforestation in the more dense areas of the regions occur only in the outer, less dense regions. By combining the current and planned commissioned areas for oil palm use and these two graphs we can see a general increase in the amount of legally known land reserved for oil palm use and also overall deforestation in Indonesia.

Since Malaysia and Indonesia represent around 80 percent of the supply of palm oil, in order to determine the future supply both countries will be able to produce by the current availability of palm oil and the available expansion, there should be an analysis of their deforestation to see the difference between their expansions. As seen in Figure 19, Indonesia in percent difference succeeds Malaysia’s tree loss coverage by around 120 percent throughout all of its canopy types. This shows that Malaysia, legally, has decreased its amount of deforestation pertaining to palm oil expansion among other reasons. Malaysia’s deforestation is also significant to Indonesia’s deforestation history. While Indonesia now is oil palm’s largest producer and exporter, Malaysia first began palm oil production slightly ahead of Indonesia until 2007 when Indonesia took over the as largest producer of palm oil. There is much speculation that Malaysia has reached its limit to palm oil expansion and growth. The Malaysian government has since made commitments to preserve 50 percent of forest, and statistics show that around 58 percent of the land remain forested, showing a margin of only 8 percent of forest land than can be used for concession (“Malaysia: Obstacles May Reduce”). Since the two are the largest producers of palm oil, we can use the difference in their deforestation to see a larger extent of

their past production transferring over to Indonesia. As the extent of deforestation in Malaysia slows, Malaysia will either need to increase their productivity of oil palm production to keep with the growing demands or Indonesia will need to increase their deforestation to meet the projections for growing global demands.

The Malaysia government shows that national palm oil area by 2020 will reach its limit

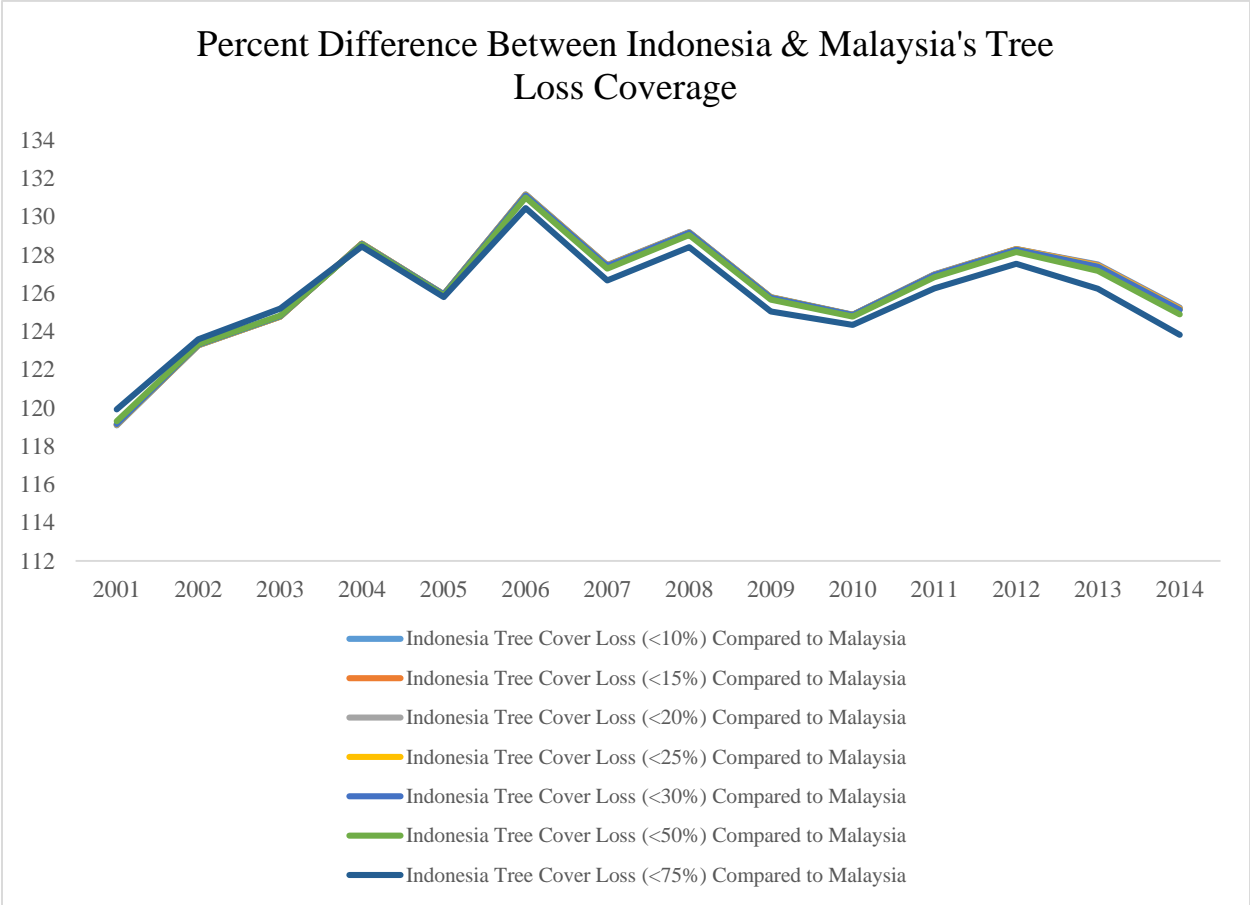


Figure III-19: Indonesia vs. Malaysia Tree Cover Loss Between 2001 and 2014 (in percent) based on Canopy Type (“Global Forest Watch Mapper”).

of 5.6 million hectares. Based upon Malaysia’s plans to keep half of its existing forest this shows that only 750,00 hectares is left for current or future use (“Malaysia: Obstacles May Reduce”).

For Indonesia, this means that this is an opportunity to increase production by expansion of palm oil production. Although this means more profit from exporting oil palm, this also shows a large

perspective that at some point in the near future Indonesia will too reach its peak of palm oil expansion, leading to an eventual decline in expansion and therefore production or high productivity. This expansion though only occurs through the degradation of forest land and communities for the extent of profit. If Indonesia means to create higher profit through palm oil expansion this means that externalities, both social and environmental, will continue to accumulate adding to the already present environmental conflict that Indonesia has currently.

Peat Land Deforestation

One of the main problems with the wide expansion of oil palm in Indonesia is the slash-and-burn technique used to destroy forests for oil palm plantations. Recently in 2015, Indonesia's emissions from fires increased to 1.62 billion metric tons of carbon dioxide, which sprung Indonesia up the greenhouse gas emitter ranking from sixth to fourth-largest in simply six weeks. In 2015 alone there were 127,000 fires along Indonesia: the most fires since 1997 (Maclean). Indonesia's forests hold the world's largest amount of peat land, which is estimated to 20.6 million ha Indonesia's land and around 35 percent of this peat land is located in Sumatra (Johnston, et al.). Peat land is significant to the natural function of the land as it preserves water resources, absorbs excess water preventing floods, preserving biodiversity among other significant qualities. The destruction of peat land in Indonesia represents 42 percent of its total emissions (Johnston, et al.). The total greenhouse gas emittance when burning tropical peat land trumps most forest fire emissions. Peat land holds some of the highest quantities of carbon and when burned will emit more than 10 times more methane than forest which occur on regular landmass. The burning of peat land has 200 times more impact on global warming than all other fires on other landmass ("Global Forest Watch"). Figure 20 below shows October 14, 2015, which has the most fires in 2015. The total fires up until October 14 summed to 4,719. As seen

in Figure 21 below, between October 4 and October 14, 52 percent of Indonesia’s fires occurred on peat land. The forest fires contribute large amounts of smoke that affect not only the local population and in many cases call for a state of emergency in the region.

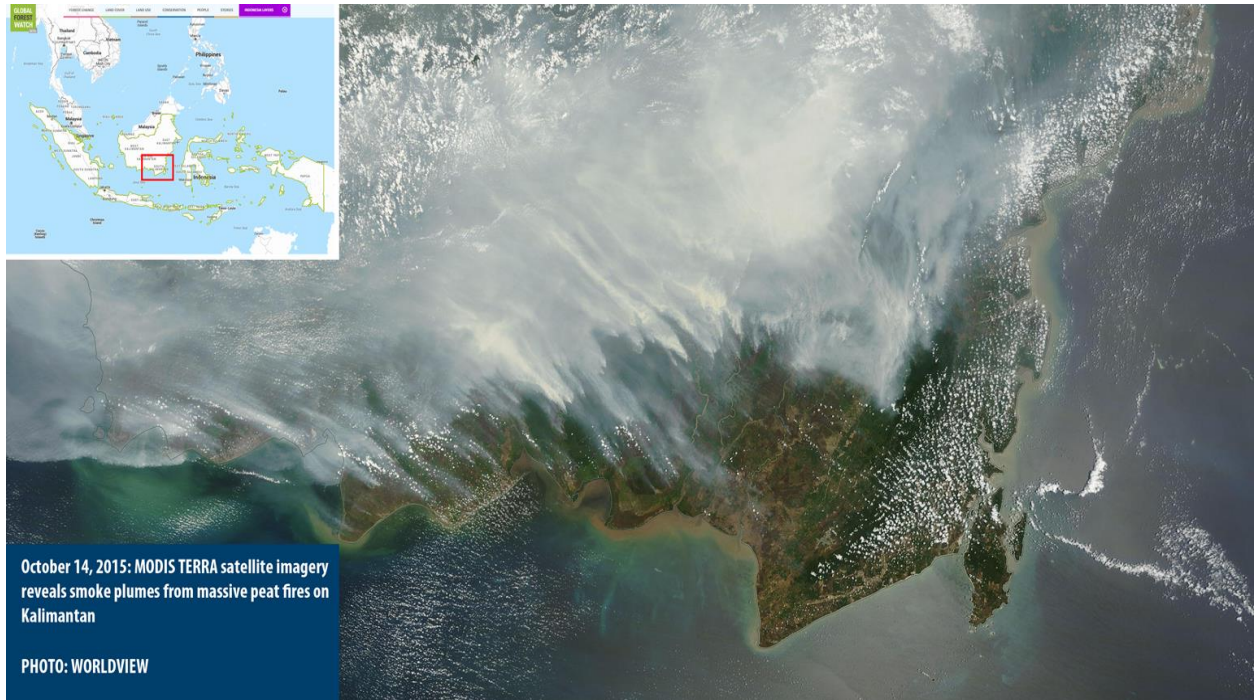
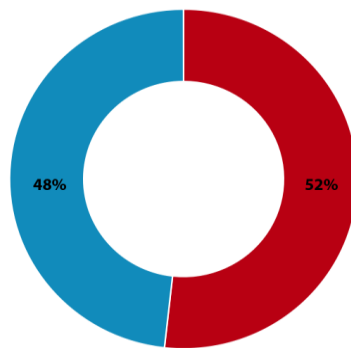


Figure IV-20: South Kalimantan Fires on October 14, 2015 (Harris et al).

MORE THAN HALF OF INDONESIA’S FIRES OCCUR ON PEATLAND
OCT 7-14, 2015



■ Peat
■ Non-peat

fires.globalforestwatch.org

 WORLD RESOURCES INSTITUTE

Figure IV-21: South Kalimantan Fires Peat land October 7-14, 2015 (Harris et al).

As these fires may add to Indonesia's regional well being, the high amounts of fumes effect international interests. Although President Joko Widodo after visiting the Riau region, announced that he would end the annual forest fires that affect the majority of regions in Indonesia (Chilkoti). Although new plans demanded by Joko for plantation owners to stop planting on peat land and instead revert to planting on burnt land, the recent fires that have occurred in 2016 do not indicate that those implementations are taking place. As the head of Greenpeaces's forest campaign in Indonesia states, "These fires are very much linked to deforestation, which means that if you want to stop fires in the longer term we need to resolve this deforestation issue" (Chilkoti). Indonesia's high deforestation rate alongside the slash-and-burn technique used to clear peat land and jungle are the largest source of emissions from Indonesia's total emissions, which represent 6 percent of global greenhouse gas emissions (World Bank 89). The World Bank in its Country Partnership Framework for the Republic of Indonesia noted, "Severe and annual forest fires, connected with the largely illegal clearing of forests and draining of peat lands, have immensely negative economic, health, and environmental impacts on Indonesia and neighboring countries. Insufficient investment in institutional capacity, corruption, and inconsistent policies and practices, are contributors to these problems" (89). As seen in Figure 22, with Indonesia's land-use change and forestry (LUCF) emissions built-in to its emission profile, the total greenhouse gas emissions increase significantly. Indonesia ranks the 5th largest emitter of greenhouse gas emissions rather than 8th largest without including LUCF (Chilkoti). In total Indonesia's LUCF in 2015 account for 62 percent of its overall emissions, which have increased 65 percent in absolute terms since 1995 specifically due to "deforestation and peat most recently associated with the expansion of palm oil" (*Country Partnership Framework For the Republic* 90). A combination of deforestation

that occurs in Indonesia coupled with deforestation on peat land adds numerous more externalities than simple deforestation. Due to damage caused by fires, effects on health, the ecosystem, and the decrease in tourism to affected areas, the total costs to the region sum to around \$14 billion, with the addition of 110,000 deaths that occur directly from pollution-related causes.

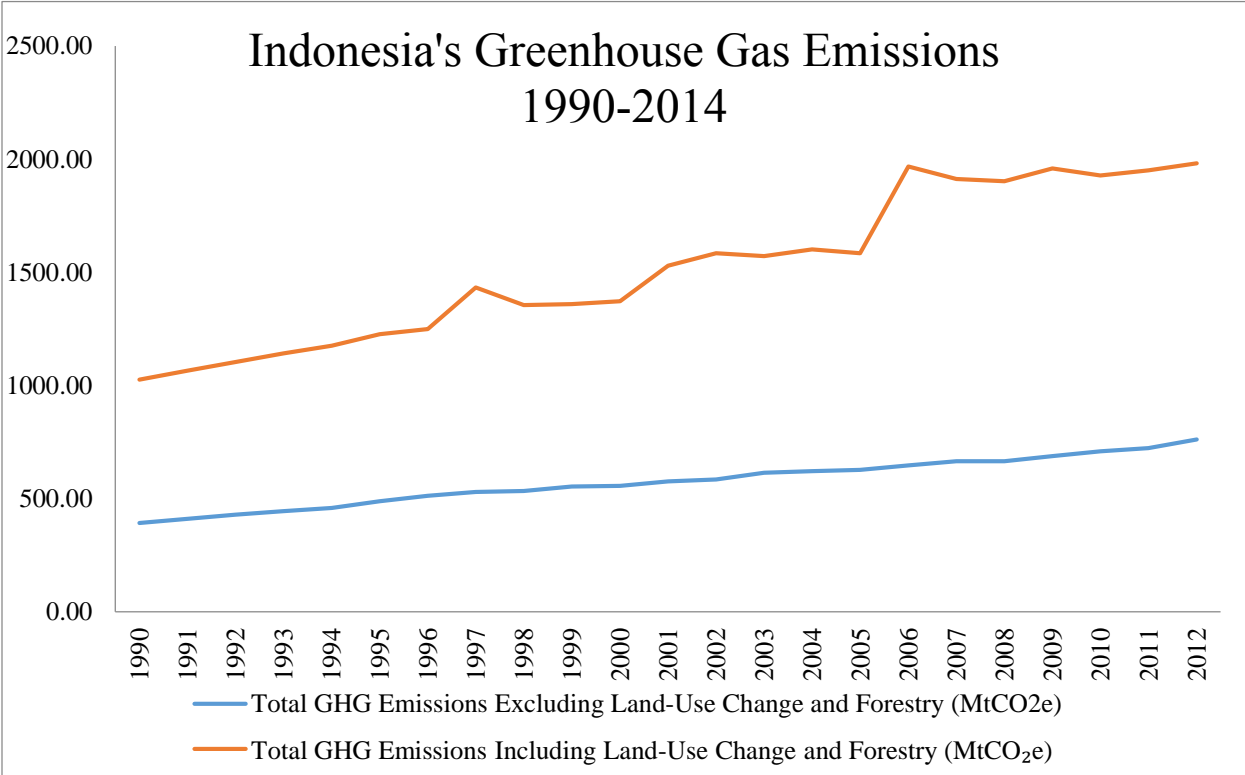


Figure III-22: Indonesia's Greenhouse Gas Emissions 1990 to 2014 ("Global Forest Watch Mapper").

International pressures by Singapore and Malaysia have made Indonesia's forest fires a global component of emissions and health, rather than simply a national one. Since Indonesia has rejected many proposals by Singapore to aid with the preventing the occurrence of illegal fires, Singapore has resulted to issuing notices to Indonesian companies involved in the paper and palm industries and specify that actions need to be taken to end the continuation of forest fires

(Chikoti). Although global pressure have added to the already pressing issue, it takes more than simply a policy to prevent these occurrences. On the supply side, slash-and-burn techniques estimate to be significantly cheaper than methods using machinery, and in many situations fires provide benefit to businessmen, farmers, and local officials. On the government side it requires authority, control of deforestation, accessibility to dense forest regions, and resources. Although Indonesia is the origin of these problems, there are many external forces that have contributed to deforestation and peat land fires. Global demanders of palm oil including China, India, and Europe, along with Malaysia and Singapore who are involved with oil palm production in Indonesia, have added to the problem simply by their involvement in the supply chain and even demand. Between the demand and the supply sides, Indonesia has the decision either to begin to enforce regulations and control the fires and also deforestation and to highly implement the regulations the Joko has set forth, or it can simply use the regulations as 'guide-lines' as most Indonesian companies have been doing.

Chapter IV: Indonesia's Reaping Benefits off of the Environmental and Social Costs

One of the main conflicts occurring in Indonesia reflects past behavior by developing countries trying to reap benefits from natural resources for economic development and growth. Although for developing countries, natural resources, in addition to physical capital, and labor contribute to overall financial stability for the nation, specifically for Indonesia the increased exports of natural resources derived from deforestation, including peat land burning, have not led to financial stability but have proven a financial dependence on the degradation of the land for economic growth and profit. Indonesia's environmental condition is simply unsustainable and cannot carry out Indonesia's desired, future economic growth.

In Indonesia, as it shows from the past 30 years, the state nor the market is able to use preventative measures to sustain long-term use of natural resources and prevent against the exploitation of the land availability. This exploitation can be seen in Garrett Hardin's theory *tragedy of the commons* which illustrates the how a herder (individual) through self-interest will continue to reap benefits in a world that is finite of these resources. As Hardin explains, "Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons" (Ostrom 2). Although one herder has a slight impact on the environment through extensive use of the resources, the compounded effect of each herder using the resources for their benefit, then over time leads to a larger more extensive problem that infiltrates many sectors. Indonesia's *tragedy of the commons* involves the extensive actions of smallholders, large corporations, and the government to use their forest dense land for their own benefit and profit. This tragedy impacted on Indonesia is seemingly not the fault of the market,

but of governmental policy, which has failed consistently to enforce and control private interest which exploits natural resources and human rights.

One explicit difference where the government failed to aid with the on-going problem, is in the market where the prices place on oil palm does not match their social value, which is seen in accounting terms as *shadow price* (Kiessling and Landberg xvii). The Indonesia difference between the market and accounting price is especially high, specifically due to the lack of private property rights or the lack of enforcement of these rights, which have allowed price corporations to take advantage of the situation. Specifically the *shadow price* for Indonesia includes the peat land loss and its added functions to forest restoration, the greenhouse gas emissions by peat land burning, detoxification of wastes, water equilibrium etc.

The deforestation of Indonesia's natural flora for the production and expansion of palm oil diminishes not only amount of natural forest flora and its quality, but in addition the natural ecosystem loses its resilience, which enables the environment to withstand shocks and environmental changes (Levin et al. 26). With resilience of an ecosystem allows the system to be influenced by an event which the ecosystem can absorb without changing dramatically and altering the environment and its functions. Without resilience, an ecosystem or an area of region faces large impacts, which damage and effect the state (Levin et al.26). Although the resilience of an ecosystem is hard to calculate or observe, ecosystems only have limited amounts of resilience which through extreme degradation of the land can be observed. This can be seen in the Southeast Asia El Nino, which is a large increase in sea surface temperatures around the eastern and central equatorial Pacific and has the possibility of quickly changing weather patterns, especially in the case of Indonesia, who is likely to experience "one of the most predictable consequences of a strong El Nino is a change in rainfall" (Jenner). As seen in Figure

23 below, there was an abundance of rainfall in northern Sumatra, but a drastic decrease in the amount of rainfall in southern Sumatra, as well as Borneo, and Central and South Kalimantan (Jenner). This dryness increased the amount of seasonal fires, which intensified due to the slash-and-burn techniques which burned without control throughout September and October due to the already dry land in the regions and covered Indonesia is high levels of smoke for weeks (Jenner). The influence that irregular weather patterns have on Indonesia can be correlated to the lack of resilience of the ecosystem to absorb the rapid changes.

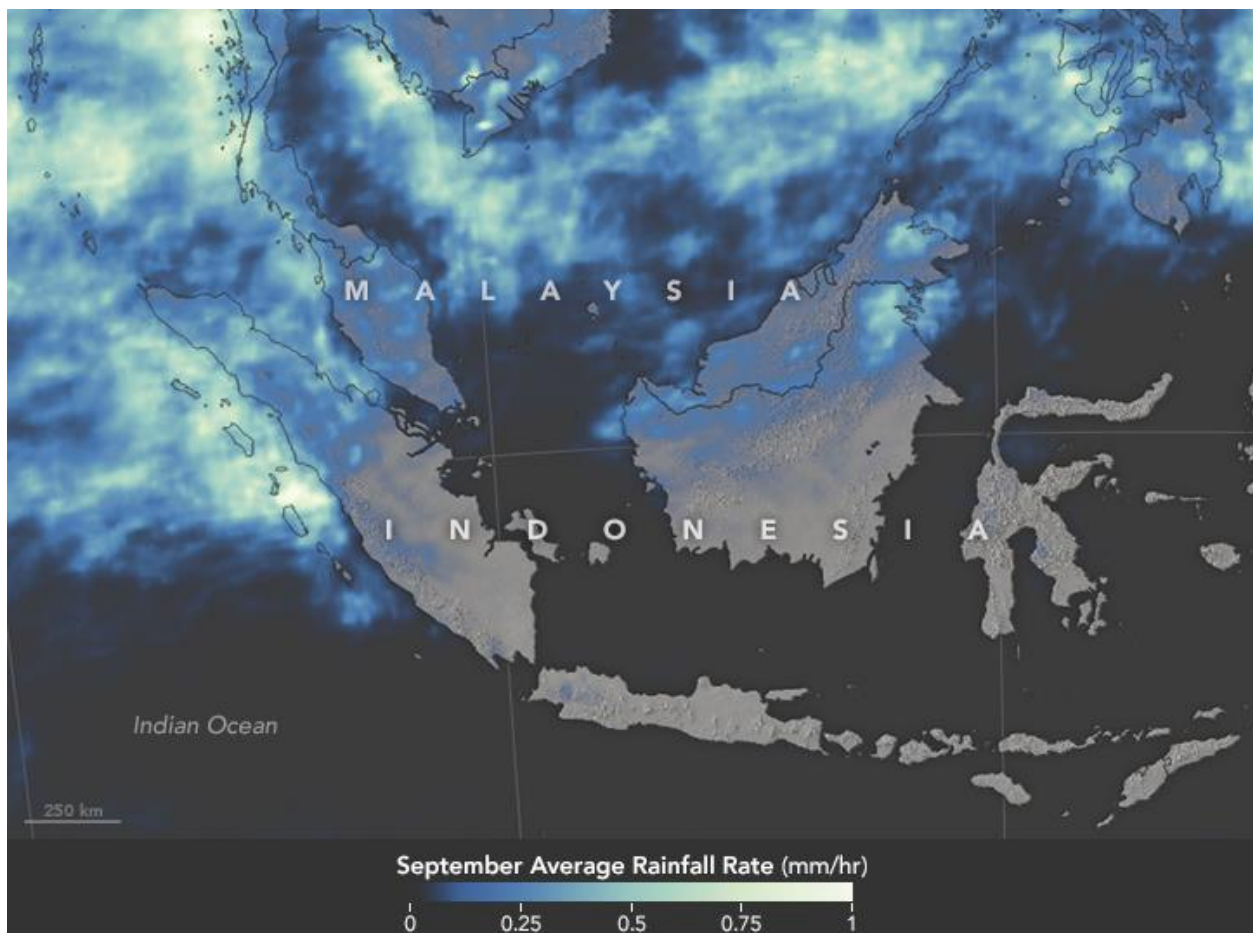


Figure IV-23: Effect of El Nino on Rainfall in Indonesia (Jenner).

The same event occurred in 1997-98 El Nino occurrence, which was a “result of social, economic, and political decisions to encourage the conversion of forests into tree-crop estates and rice-fields” (Bryon and Shepherd 1). The increase in the fires during this time was extreme in the regions of Sumatra and Kalimantan, and the government of Indonesia during the time states these fires led to the burning of 170,000 hectares of forest, which differs from environmental NGO’s which state that these estimates should be around 10 times the government’s estimated amount (Bryon and Shepherd 2). The influences of El Nino during 1997-98 indicate that the natural resilience of the Indonesian ecosystem around the areas of Kalimantan and Sumatra is diminishing, leading to the current 2016 El Nino indicating a further decrease in resilience. The total externalities that originate with the growth of the palm oil industry and the expansion of their plantations both legal and illegal add to the lack of resilience that the ecosystem possesses in Indonesia. The affects only worsen as Indonesia uses its land, and using slash and burn techniques on peat land for the conversion of the natural flora to palm oil plantations.

In the market, palm oil is a pure private good which is both excludable, indicating that without purchase of palm oil the commodity cannot be used, and rivalrous, meaning that the consumption of palm oil prevents others from its use as well. However, the effects of palm oil expansion impact social and environmental well-being that is considered a common-pool-resource (Ostrom 412). Elinor Ostrom defines the common-pool-resource as a good or service that “shares the attribute of subtractibility with private goods and difficulty of exclusion with public goods” (Ostrom 412). Subtractibility replaces *rivalry of consumption*, and shows the degree that an individual’s consumption of a resource decreases the availability of another individuals use (Ostrom 412). In Indonesia’s case the forest, water resources, and clean air are all

common-pool resources. When these resources are abused and over-exploited, as in the case of Indonesia's deforestation, fire emissions, and peat land destruction there is a creation of a social dynamic among private companies, government officials, and local individuals, who all have separate opinions about whom is to blame for the over-exploitation. However, in order to manage the ecosystem and allow for usage which does not over exacerbate the resources available and prevent against social imbalances between groups Elinor Ostrom states the 8 main principles for managing commons, and will be used to analyze Indonesia's current distribution of the land use and ecosystem health. (Walljasper).

1. "Define clear group boundaries."

Indonesia currently has a legal systems designed to regulate the land use and the extent of deforestation as stipulated in the governemnt laws section of this paper; however, as stated before, the lack of government enforcement and the lack of accessibility due to little infastructure and development have allowed illegal activity to take place. This illegal activity involves expansion of mining, palm oil production etc. to extend beyond limits and boundaries resulting in conflicts with the indigenous population, local communities, and has added to extensive deforesation of these natural forests without legal limits or authorization. Following Ostrom's principle, in Indonesia there needs to be set boundaries. This means not only the implimentation of politically-clean local authorities, but also perhaps the use of new drone technology to regulate the land use and enforce laws when necessary against smallholders and companies that have extended beyond their borders. This use of technology or the increase in development leads to better government authority access. In order to keep boundaries of what is preserved forest and what is private property there needs to be further amplification of laws and government interference for this to occur.

2. “Match rules governing use of common goods to local needs and conditions.”

The natural forest provides an abundant source of natural resources of which the local population survives. Although private interest is shown as a higher interest, the local population survives off of the natural resources provided by the existing ecosystem. As investigative journalist, Jocelyn Zuckerman describes, “the indigenous people who are most affected don’t just source food from the land; they source their medicines and their building materials. They lose everything when these plantations come in (“Zuckerman”). In order to properly ensure that everyone has equal access to the commons or the forest, it is necessary to ensure that the local and indigenous populations of the forest and region are protected, meaning the right to use the land’s natural resources for their survival.

3. “Ensure that those affected by the rules can participate in modifying the rules.”

Through institutions such as the Forest Peoples Programme, a non-governmental human rights organization, the Rainforest Alliance and other similar groups, indigenous people’s who are affected by land changes are able to defend themselves against larger illegal or improper activity that negatively impacts the local community. Although this step to defend the land provides a good foundation for change, without organizations such as the Forest Peoples Programme and the Rain Forest Alliance, the rights of indigenous and local communities, who are isolated in the depths of palm oil plantations and the dense jungle, would not be heard nor properly justified in a court action. There is an obvious deficiency of participation of local communities in governmental policies and regulations that needs to be taken into consideration to properly recognize their situation.

4. “Make sure that rule-making rights of community members are respected by outside authorities.”

In Indonesia the local communities on the islands and regions that are highly affected by palm oil there is little sense of respect from outside authorities on the rights of community members. The event of forced evacuation of Reven, an 8 year-old boy, is shown though Zuckerman’s documentation as she describes, “He was at home when he heard the crack of gunfire. Soon after, as many as two dozen police officers and 20 employees of the palm oil company PT Asiatic Persada pulled up in heavy vehicles.... The men fired shots in the air, called the people in Revan’s hamlet “pigs” and “animals” and ordered them to “run,” residents later claimed” (Zuckerman and Hudson). At the conclusion of this event, 35 homes including Revan’s had been destroyed for the use of their land for palm oil expansion, which was originally sourced by the World Bank, which supplied \$145 million in loans, which assisted in PT Asiatic Persada’s expansion of palm oil. This event shows one story of a series where local authorities work with companies for the companies illegal, private benefit. In many cases the illegal eviction of communities from their land has turned workers in the area into forced laborers, specific to Malaysia, and child labor in the case of Indonesia (Zuckerman and Hudson). Director of the environmental organizations Friends of the Earth’s international forests program described “Subsistence forest dwellers are turned into wage slaves. Rather than subsisting off the land, they work for very minimal wages” (Zuckerman and Hudson). These events go directly against the intergration and respect of authorities with the local population, and creates a distinct tension. For Indonesia to move beyond this, there must be stronger consequences for corruption and illegal activity. This cannot be achieved through a few policies, but rather what is needed is a wide-spread movement.

5. “Develop a system, carried out by community members, for monitoring members’ behaviors.”

Although communities are wide-spread there are many organizations that are developing that resist the illegal activity that leads to the degregation of the ecosystem, a misuse of land, and the dissappropriation of communities. Activist, Rudi Putra, as well as the other members on his team, are documenting illegal forest use, suing plantation owners for illegal use of land, and taking down any illegal palm plantations himself (Kuhn). The land that he collects back will go directly to the community that resides in the area. Although the land that he has retrieved back and more imporantly the activist group he has created, has contributed to the local movement against illegal activity, the land he has retrieved back only represents around 1 percent of the 1 million acres of palm oil plantations that he plans for reclaiming for the local community and also for the ecosystem.

6. “Use graduated sanctions for rule violators.”

Even in the situation of the Wilmar Group, as described in the Government Enforcement of Laws and Corruption in Chapter IV, there are little to no sanctions for violators of policies stipulated by the Indonesian government. In many cases the most that has been done against these crimes is simply the increased global awarness of what is occurring. In order to show Indonesian companies and smallholders that illegal actions cannot be used, there must be laws stating the reprucssions of these illegal methods as well as implication of these show to display their severity.

7. “Provide accessible, low-cost means for dispute resolution.”

Processes and trials in Indonesia, such as their ease-of-business take much longer than usual cases; therefore, trial is not the most time nor cost-efficient process available for the indigenous population or the local community, who is effected the most due to expansion of palm oil and deforestation of the regions they reside in. The least expensive method is through organizations such as the Forest People's Programme and the Rain Forest Alliance that provides support without costs. Without means of raising awareness and showing the government the illegal measures being taken there would be no knowledge or whereabouts of the illegal activity taking place. The isolation and poverty that these local community dwellers live in, do not provide them with access to the main islands to tell their stories and/or file lawsuits.

8. "Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system."

Although President Joko has in the recent year recognized the environmental impact involving deforestation and peat land burning, there is little connectivity or recognition between all groups and communities from Rudi Putra's group, to local agencies, large companies, and finally the government. Every group or tier has its own individual interest, which rarely overlaps with those of the other groups. This final step would seem the most pertinent to setting a foundation and improving the current conditions. Although it might be the hardest, the certain externalities created by each sector from deforestation and palm oil expansion should be recognition across all groups in order to pull together the laws and regulations that properly ensure the lives of individuals and their access and choice of sustainability to the land.

These steps, analyzed for the case of Indonesia's forest recognition, provide a map to possible alliance between groups and also a development to the fragmented conflict. There are obvious blockades to the current plan, which reoccur throughout many of the principles that

Ostrom sets forth. One of the main barriers that has prevented the majority of these principles from taking place is the corruption in the local government authority, which has compromised respect to local communities, indigenous tribes, and has increased the deforestation that occurs. A first step to changing the current situation in Indonesia would be to create a more solid authority that has access to resources for proper and legal implementation of laws.

Although Ostrom's main argument for the proper use of a *common-pool resource* includes many social aspects, which do not seem to relate to the field of economics or the proper function of the ecosystem, it holds that the main reasons for palm oil expansion and illegal activity have been through social activities for personal benefit rather than group consensus. It shows that although there are increased externalities within the palm oil industry, the main problem occurs with the social relations among groups that are affected by the land-use change of the forest for palm oil expansion. The main group that needs to recognize this dynamic is the government, who shows a lack of true effort to combat the rapid deforestation that is occurring. This is primarily due to the increased profit that Indonesia gains from the illegal expansion and rapid increase in production of the palm oil, which is necessary for the development projects placed forth by the government to grow from financial instability and reliance on global foreign demands and economic fluctuations. Although the current market depends on palm oil, expansion can only continue for so long as soon either high social and/or environmental externalities will grow to a point of a collapse of the market.

Chapter V: Indonesia's Current Economic Conditions & Economic Developments Plans

Since the Asian Economic Crisis that affected Indonesia during between 1997 and 1998, the country has developed and expanded significantly, as seen in the Figure 24. Indonesia's lowering of trade barriers and global integration during the 1980s onwards has aided the country in its expansion plans. Today it has developed to be the largest economy in the Association of

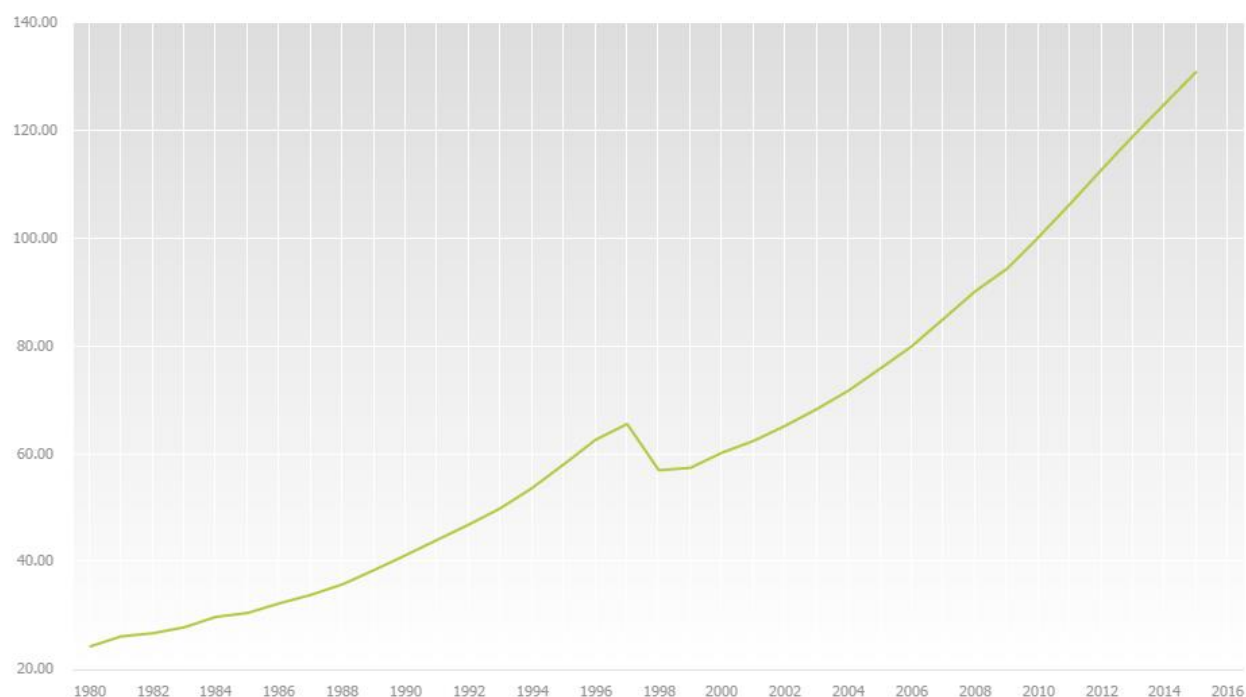


Figure V-24: Indonesia-Real GDP Index (“Real GDP Index Indonesia”).

Southeast Asian Nations and 16th largest economy in the world (*Country Partnership Framework for the Republic 1*). It is the fifth most populous nation in the world with a 254.5 million people, and 141 of those individuals live on the island of Java only one of the 17,508 Indonesian Islands that in total stretch to 1,811,569 sq. km. The population is composed of relatively young individuals with 26.2 percent of the population between the ages of 0-14 and 42.3 percent of the population between the years 25-54 years with the total population growing at

around .95 percent, 124 in the world (“Indonesia World Factbook”). The median age is 28.7 years for males and 29.8 for females or on average for all 29.2 years, which is the fourth highest in Asia countries including North Korea and Australia. These population characteristics as well as the low dependency ratio (the amount of children and elderly in the population compared to the able-working population) and the high increase in working age population in the past have helped Indonesia to generate a high GDP growth in the last decade. As the 26.2 percent of the population in the age group of 0 to 14 grow older, this bracket can be expected to generate continued growth as well.

The last few years of growth have been relatively steady and has been coupled with relatively stable high inflation. As seen in Figure 25, in 2006 the country had relatively high inflation around 13.1 percent, which halved by the following year to 6.4 percent. Between the years 2006 and 2009 there is instability in inflation and fluctuations until it settles at 4.8 percent in 2009. Relative to the current state, inflation in 1990 averaged to 7.8 percent. During the



economic crisis, Indonesia experienced extremely high inflation around 75.3 percent in GDP
Figure V-25: Indonesia Inflation-Consumer Price Inflation (“World Bank Data”).

deflator, or 58.4 percent in terms of consumer prices. Right after the Asian Economic Crisis in 2000 inflation dropped significantly to 3.7 percent.

Similar to the majority of Southeast Asian countries, Indonesia’s economy occurred transformations of industrialization and urbanization over the last 50 years. After 1967, manufacturing became a significant part of GDP and increased by 19 percentage points by 2009; however, although this part of the economy has increased its importance in the economy, agriculture, a long-present sector in Indonesia, has continued to share a significant part of the economy. As seen in Figure 26 agriculture in the last decade agriculture has represented around 14 percent of GDP.

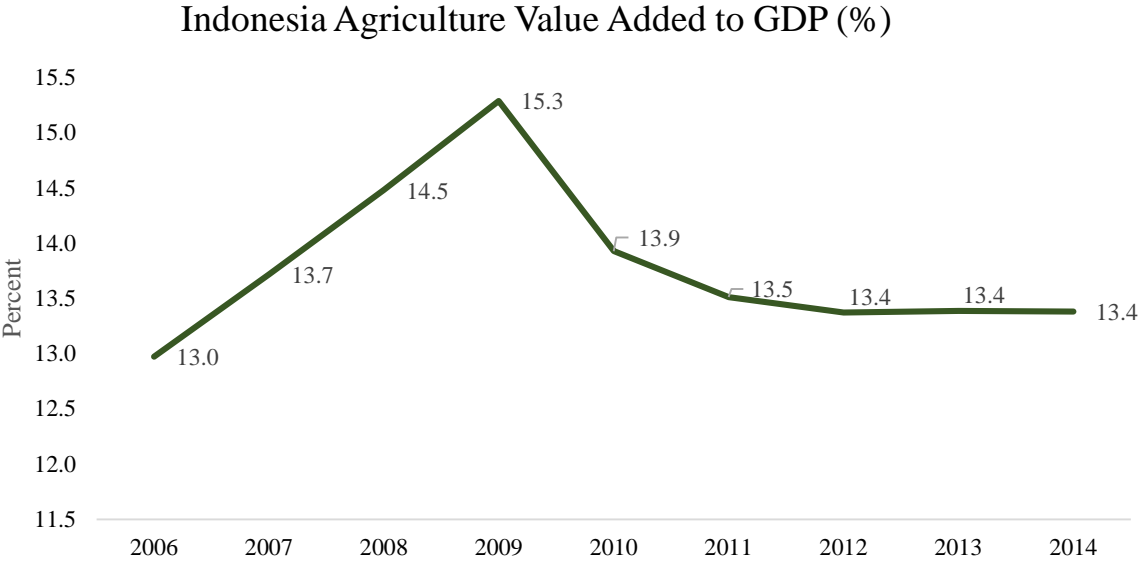


Figure V-26: Indonesia Agriculture Value Added to GDP ("World Bank Data").

In 1980 the percent that agriculture added to the economy was 24, and continuously shrank to 19.4 in 1990 and 15.4 in 2000 right after the Asian Economic Crisis. Just as after the crisis of 1998, the crisis of 2007 seemed to spark a change in dependence on agriculture as agriculture became more prominent in 2009. Indonesia population is also highly dependent on

agriculture. As seen in the graph titled “Indonesia’s Male Employment in Agriculture” in 1985 around 54.7 of the Indonesian male population were recorded to be employed in agriculture.

Since then there has been a slow decline away from agriculture, but even in 2014 around



Figure V-27: Indonesia Male Employment in Agriculture (“World Bank Data”).

34.3 percent is employed in the sector or close to 41 million people. Agriculture is one of the main sources of employment and income in rural areas where poverty exists. In developing countries, agriculture plays a high role in alleviating poverty, in the majority of countries increases in agricultural productivity directly alleviate poverty by the following: Farmer’s incomes and the rural employment are improved with productivity; there is more availability of cheaper food in both the urban and rural areas; the improvements in the farming sector influence other sectors and have a multiplier effect on the non-farming sector; and agriculture improvements eventually lead to shifts into the manufacturing sector (“Economic Analysis of Agricultural”). As seen in Figure 28 the top largest exported goods was palm oil at 13.4 million US dollars. As it shows in Indonesia’s top 5 exports in 2014 lead with palm oil exports valuing

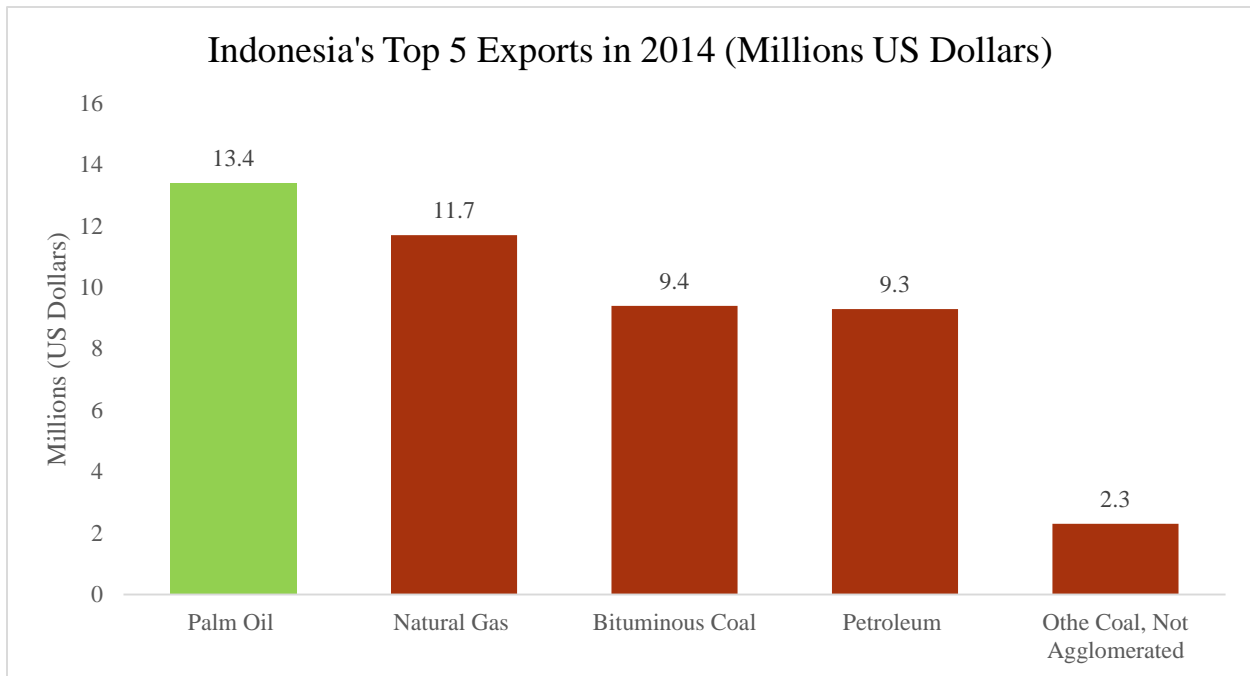


Figure V-28: Indonesia's Top 5 Exports in 2014 (Million USD) ("Indonesia at a Glance").

close to 13.4 million U.S. Dollars. However, this increase in palm oil causes a cost-benefit situation for Indonesia.

In the next 20-25 years Indonesia could increase production of their agricultural output and increase yields to 310 million tons in 2030 (Oberman et al. 44). This would be from producing high-value horticulture and oil palm crops and their total yields would signify 8,000 kilocalories of food per person per day, which 2,000 of that kcal would derive from cereal crops. The 8,000 kcal is more than enough for one individual's consumption, and could possibly yield a surplus of more than 130 million tons of exportable food per year (Oberman et al. 44). By shifting to high-revenue crops rather than the constant crop mixture the revenue would increase revenue from \$70 billion in 2010 to \$250 billion in 2030 (Oberman et al. 45). By switching to fruit, vegetables, and oil palm there would be \$5,000 more per hectare in 2030, or 10 times the revenue that would be earned from producing cereal crops such as rice, corn, or estate crops such as, coffee, tea, cocoa, and tobacco. Although this increase in revenue provides cash flows into

the country, in terms of calorie count, as seen in the Top 5 exports, the majority of palm oil is exported to the United States and Europe for their foods and commodities, whereas rice and other cereal crops are internally used daily use in Indonesia. This shift in agriculture would boost revenue but without proper precaution it would take away calories from the Indonesian rather than provide them with more. As stated in the World bank Framework Development Plan for Indonesia there is a direct link between land-use and poverty as they describe, “Insecure access to land and over-exploitation and degradation of natural resources constitute major risks to Indonesia’s sustainable development as they have direct links to poverty in Indonesia as well as global impact in terms of climate change” (55). High revenue crops, specifically palm oil production, include large land plantations to produce the amount of crops necessary to generate large amounts of revenue. This forecasts and plans seen in the McKinsey report are documented further in Indonesia’s development plans as Indonesia tries to transform its economy.

Development Plans 2005-2025

Indonesia’s goal to become a developed nation by the year 2025 requires significant transformation of its state and economy. To lead this development they have made a new plan in conjunction with two other already existent plans to develop the nation thoroughly, by quickly. The already established Long-term Development Plan 2005-2025 (RPJMN) and past Medium-Term Development Plan 2004-2009 will work in affect with the new The Master plan for The Acceleration and Expansion of Economic Development of Indonesia (MP3EI); however, in order for Indonesia to achieve this plan, economic growth needs to be between 7-9 percent annually (Republic of Indonesia 5). The combination of these plans is to catalyst Indonesia to become one of the top 10 best performing economies in the world and was in direct reaction to the Asian

Economic Crisis that occurred. As seen in the quote below, Indonesia is producing these three plans as barriers to crises similar to the Asian Economic Crisis:

“A decade ago, the economy experienced a crisis with economic growth contracting by over 13%, the rupiah exchange rate collapsed, the inflation rate reached 70%, government debt skyrocket above 100% of GDP, and poverty and unemployment rose significantly. All economic activities had slumped and stalled. Social disturbances and physical conflicts had been rampant. The political system had been fundamentally transformed by the implementation of democracy, decentralization, and amendment of the constitution. Social life had been drastically changed. Some of the public institutions had no longer become functional.” (*Regulation of the President 3*).

As seen below in the Table titled “Long-term Development Plan 2005-2025” the development plan is broken down into 4 sections each spanning 5 years. Overall the plan focuses on four main goals: development and self-reliance; democratic and fairness; and connectivity and peace. The government’s goals show that they want to respect the law of the country, which speaks for the individual and public, strengthen equality by human resource improvement and infrastructure, and unite all throughout the country to maintain peace. These fairness and equality speeches do not change the present fact that on a scale of relative corruptness Indonesia scores a 36 (relative to Malaysia that scored a 50) from 0 being the highly corrupt to the 100 being extremely clean (“World Bank Data”). Indonesia strives for more detailed and significant goals

such as a strong agricultural, mining and manufacturing industry, an income per capita of USD 6000, and near total food self-sufficiency. In the current RPJMN 2015-2019 the main goal is on the modernization of irrigation infrastructure, reconstructing 3 million hectares of irrigation channels and building 1 million new hectares of irrigation channels (*Country Partnership Framework for the Republic 56*).

This is in addition to the new The Master plan for The Acceleration and Expansion of Economic Development of Indonesia (MP3EI), which aims to modernize and energize the Indonesian economy by similar methods but requires prerequisites to achieve this success. The governmental method goal is broken down in three sections. The operation MP3EI's focus will

Indonesia's Long-term Development Plan (2005-2025) Structure

First Plan RPJMN (2005-2009)	<ul style="list-style-type: none"> - Reform <ul style="list-style-type: none"> - World Economic crisis did not allow Indonesia to perform as well as hoped - Goals for poverty eradication and unemployment were unsuccessful.
Second Plan RPJMN (2010-2014)	<ul style="list-style-type: none"> - Reform across All Fields <ul style="list-style-type: none"> - Stronger Economic Competiveness - Education and healthcare improvements - Infrastructure developments - Science and Technology Improvements
Third Plan RPJMN (2015-2019)	<ul style="list-style-type: none"> - Development <ul style="list-style-type: none"> - Competiveness of natural resources - Competiveness on human resources - Master the science and technology
Fourth Plan RPJMN (2020-2025)	<ul style="list-style-type: none"> - Economic Independence and Self-Reliance <ul style="list-style-type: none"> - Acceleration of previously expanded fields - Solid economic structure

Figure V-29: Indonesia's Long-term Development Plans (Republic of Indonesia).

be three parts:

1. Expanding each region's economy in the 6 Indonesian Economic Corridors: Sumatra, Java, Kalimantan, Sulawesi, Bali-Busa Tenggara, and Papua-Kepulauan.
2. "Strengthening national connectivity locally and internationally".
3. "Strengthening human resource capacity and national science & technology to support the development of main programs in every economy corridor". (*Republic of Indonesia*).

By following this method they choose to focus on the development of the fundamental necessities. The Indonesia government states the prerequisites include the transformation of the perspective and behavior of the nation such as "productivity, innovation and creativity; driven by science and technology; enhancing entrepreneurship; and a campaign for the change in mindset to improve prosperity has to be carried out extensively by all stakeholders of the nation" (*Regulation of the President 28*). Other necessary prerequisites include state financial policy reform, bureaucracy reform, connectivity between regions in Indonesia, food, water and energy policies, and finally, social security and poverty reduction. The latter two prerequisites will be the hardest to implement in the short-term due to their extensive properties. Food security will include covering consumption and production and insuring a food supply for the entire Indonesian population; however, the government wishes to produce this by also switching the main food staples which they say will occur proportionally to the increase in the Indonesian's income level. This will occur in tandem with social security and poverty reduction, which the set the framework for poverty alleviation. The Indonesian government states in their briefing on the program that this will be achieved through,

- Social insurance through the combination of private and community funding;

- Accessibility and access to education and skill training for the scale of national productivity;
- Business integration to assist with poverty reduction by the operation of corporate social responsibility programs;
- Creation and integration of formal employment opportunities where national workers would be protected. (*Regulation of the President 45*).

Although these prerequisites are known and not completed, the enacted program will continue while addressing these issues. According to the Indonesian government the main program chooses to “Improve Regional Economic Potential through the Development of Six Economic Corridors” (*Regulation of the President*). This section of the program can be on Figure 30 showing the six main areas of development including, supporting infrastructure, suggested SEZ connectors, main economic activities, supporting connectivity, economic growth center, and main connectivity. By economically improving regions and connecting all across it will help to improve the overall economic situation and facilitate acceleration and expansion across the country. Through business incentives the government will support the development of these centers to provide an ‘integrated and sustainable economic base’ (*Regulation of the President 32*).

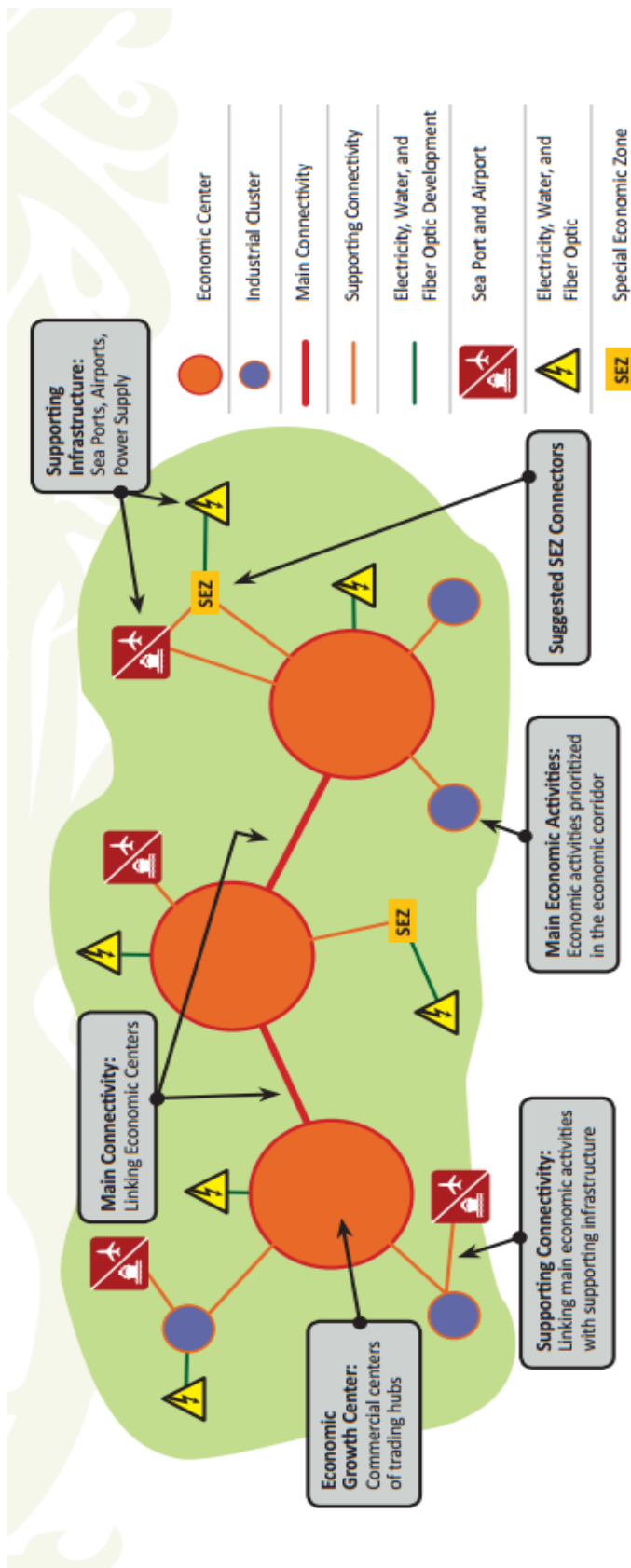


Figure VI-30: Improvements by Six Regional Developments (Regulation of the President 32).

Following this step, the government plans on Strengthening National Connectivity. This is composed of four national policy elements: National Logistic System, National Transportation System, Regional Development, and Information and Communication Technology (*Regulation of the President 33*). Due to Indonesia's extensive islands and length, the Indonesian government feels it is necessary to connect the country nationally in order to connect the country on a global level. The breakdown of this program can be seen on the Figure 31 (*Regulation of the President 38*).

<p>INTRA ECONOMIC CORRIDOR CONNECTIVITY</p>	<ul style="list-style-type: none"> • Improve and build roads and shipping lanes on the corridor • Improve & developed infrastructure facilities and railways passenger and goods • Improve local access road connecting the centers of growths with support facilities (port, energy) and with the hinterland as well as with non economic corridor areas • Revitalize the ferry transport, local port, and optimizing shipping pioneer and PSO mechanism • Improve air transportation and pioneer aviation • Develop backbone extension network that covers into growth centers and main activities centers • Equitable infrastructure access which covers growth centers and main activity centers, and also strengthen backhaul network • Adequate radio spectrum frequency allocation • Infrastructure sharing implementation including passive infrastructure (towers, pipes, poles, right of way) as well as non telecommunication operator • Improvement in power supply and utilization of green technology equipment to support electricity provision in non commercial areas • Development of national internet exchange at growth centers
<p>INTER ECONOMIC CORRIDOR CONNECTIVITY</p>	<ul style="list-style-type: none"> • Encourage the efficient and effective flow of goods and services inter-economic corridor to enhance regional and global competitiveness • Reduce logistical and economic cost for inter-economic corridor delivery of goods and services • Appoint several sea ports and airports as collection and distribution centers and also enhance its capacity by implementing integrated logistic port management • Developed interconnection between primary ports (collection and distribution centers) and local ports and also between primary ports and international hub ports • Integrate multi-backbone mode (optical fiber, satellite, microwave) • Strengthen optical fiber backbone infrastructure: development in Kalimantan Economic Corridor, Sulawesi Economic Corridor, Papua – Kepulauan Maluku Economic Corridor, and also integration with services at western economic corridor • Utilize information and communication technology to facilitate trading activities as inaportnet system development applied at regional ports
<p>INTERNATIONAL TRADE LOGISTIC</p>	<ul style="list-style-type: none"> • Prepare and assign sea ports and airports in western and eastern Indonesia as international hubs • Optimization the operation of National Single Window (NSW) system at international hubs ports and airports through the improvement of Information and Communication Technology service. This strategy was set up in order to implement Customs Advance Trade System (CATS) and NSW and also make connection between national supply chain with ASEAN and global supply chain at international ports. • Enhance efficient and productive operation of international ports and airports through the implementation of integrated management logistic system • Open the new international gateways (links) to foreign countries as an alternative to existing links • Develop international exchange at growth centers • Improve regional and global connectivity infrastructure to achieve ASEAN logistic integration on 2013, ASEAN market integration on 2015, and global market integration on 2020.

Figure V-31: Connectivity throughout Indonesia through Intra, Inter, and International Areas (Regulation of the President 38).

The Indonesian government looks at connectivity as a main focal point to facilitate growth in what they call ‘growth centers’. By creating a stronger bond both on three levels, local, national, and global, there is a basis for international trade and foreign tourists. For this to occur they describe the need to (1) enhance the flow of goods, services, and information, (2) reduce logistics

costs, (3) reduce cost inefficiencies, (4) realize equitable access across the region, and (5) realize the synergy between growth centers (*Regulation of the President 38*). This will be achieved through improved infrastructure, which can be seen on tile 1 titled “Intra Economic Corridor Connectivity” which focuses on local infrastructure to facilitate economic growth including ferry transport, local port, improvement in road and shipping routes etc. This area strengthens the local community’s access to the national scale improving exportation, which leads to the “Inter Economic Corridor Connectivity” which through these smaller improvements will boost the flow of goods and services which will lead to global connectivity and “open the new international gateway (links) to foreign countries as an alternative to existing links (*Regulation of the President 38*).

Finally the Indonesia government outlines the final large goal of the MP3EI program as the Strengthening Human Resources and National Science and Technology Capabilities, which they give to be a significant pillar to ensure continuous economic growth and expansion stating “productive human resources is the driving force of economic growth” (*Regulation of the President 39*). By producing more programs with higher education that allow the shift to studies that adds to the value added chain in each commodity and sector in each economic corridor. This includes the science and technology sector, which will lead the country to improve through innovation. With the desire to shift the economy beyond the realm of the natural resource based economy, the Indonesian government states a need to shift from labor intensive to skilled labor intensive and eventually to the human capital intensive (*Regulation of the President 41*). This can be seen in the diagram titled “Increased Productivity to Competitive Excellence”. In this diagram they show that increased productivity will come directly from the switch from natural resources or labor intensive practices to the capital and technology with skilled labor intensive to

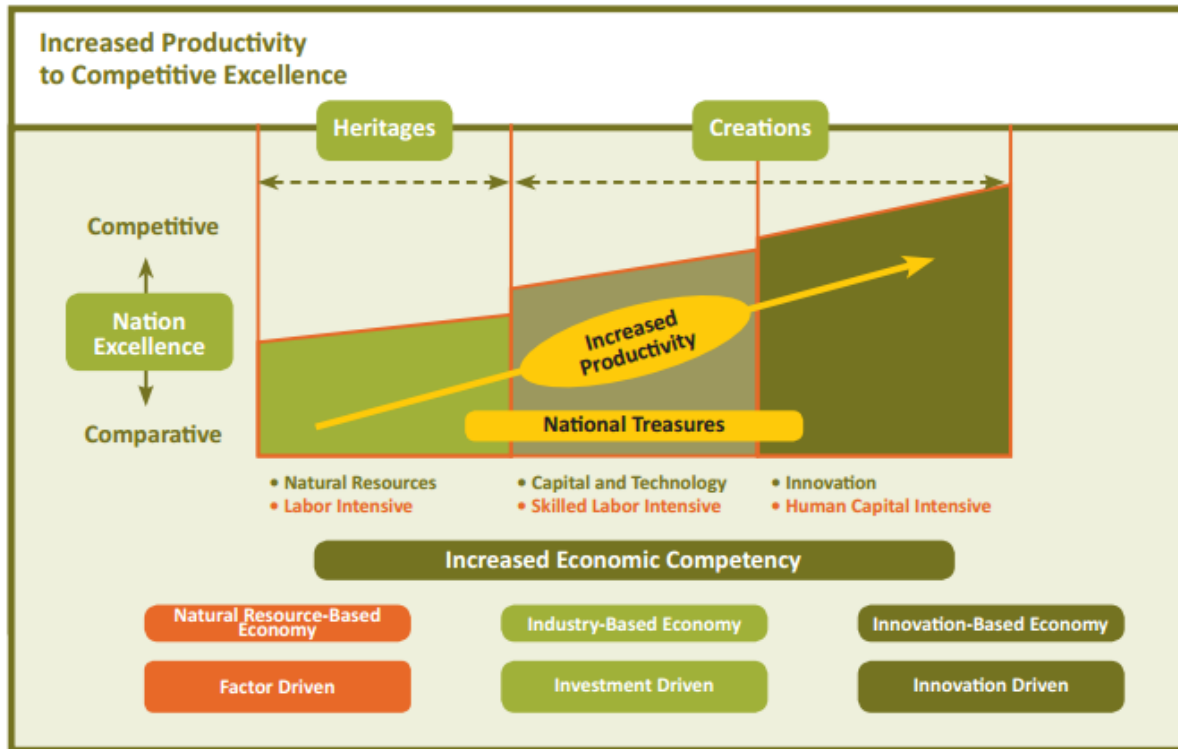


Figure V-32: Increased Productivity Trend during the MP3EI Program (Regulation of the President 41).

finally the highest productivity deriving from the innovation or human capital intensive goods. They plan to achieve this transformation by the President’s Initiative I-747 as seen in the diagram titled “President’s Initiative I-747” (Regulation of the President 41). By using 1 percent of GDP to fund research and development and further goals to contribute 3 percent of GDP by 2025, the government plans to use the 7 steps of improvement and using the growth acceleration of industries such as food, medicine, energy, water, defense and transportation, to by 2025 increase the intellectual property rights that direct impact economic growth, achieve self-sufficiency for food, medicine, energy, and clean water, as well as the other 7 objectives. In the 7 Steps of Innovation System Improvement in the process section point 4 indicates develop regional innovation clusters. They define these clusters as communities, business entities, and local government that have the potential of economic growth with the following established programs: the Agroindustry Innovation Zone Development Model in North Gresik, East Java



Figure V-33: President's Initiative for the MP3EI Program (Regulation of the President 41).

Province, the Integrated Downstream Innovation Program Development Model to expand palm oil, cocoa, and fisheries; and the Non Renewable and Renewable Energy Based Innovation Zone Development Model in the East Kalimantan Region (*Regulation of the President 42*). These economic clusters will increase economic growth and add to total growth in Indonesia aiding the program to further develop. As seen Figure 34 for regional analysis, the Indonesia government has assigned a specific specialization to each region to facilitate this economic growth, which with the applied MP3EI program GDP growth is expected to be 12.7 percent nationally, 12.9 percent inside the economic corridors, and 12.1 percent outside the corridors as a result of a spillover effect of economic development (*Regulation of the President 48*). These figures can be seen in Figure 35. However, with Sumatra, Kalimantan, and Sulawesi, one of their top reliance on growth is on the palm oil industry and the sectors expansion. With the main goal of the MP3EI program to make Indonesia the 9th largest economy in the world with a National GDP of USD 4-4.5 Trillion by 2025, these GDP figures for growth are high goals. Although the prospects are high and Indonesia's goals are significant to development. Their recent contributions to education are weary and Indonesia's pattern of economic growth does not reflect

that of their plans.

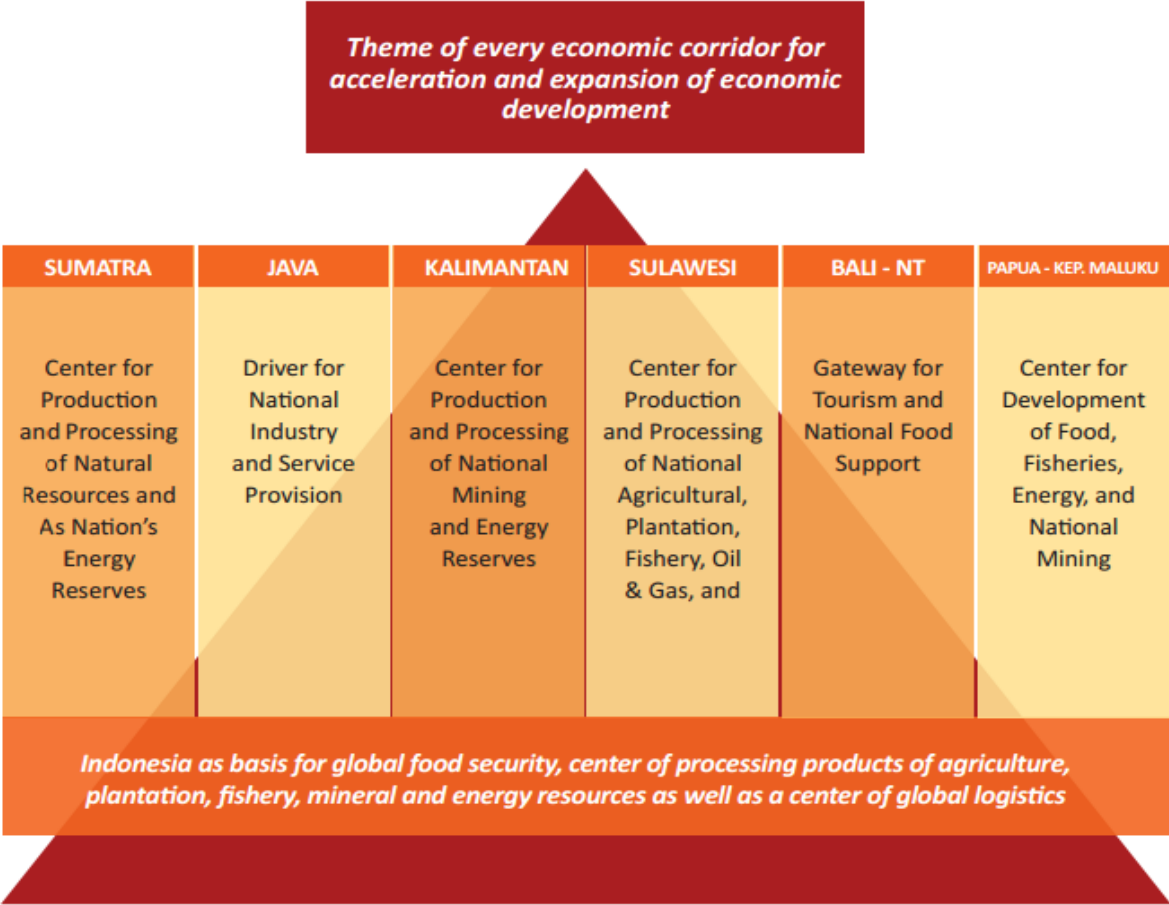


Figure V-34: Regional Plans to Achieve Regional and National Economic Growth (Regulation of the President 47).

The quality of education, a prime focus of all the programs, is weak even though the government uses 20 percent of public spending in the total budget to utilize towards the sector (Country Partnership with the Republic 86). Education in Indonesia is not even throughout all regions and not accessible to most, and the quality of the education in each region differs producing further inequality (Country Partnership with the Republic 86). Indonesia’s current economy prospects are weary. From 2000 until 2012 it experienced an annual growth of about 6 percent, but in the last few years this GDP growth has since plateaued, as seen in Figure 35, and in 2015 it has dropped to around 4.8 percent. The projected average growth rate from 2016 to

2020 is around 5.4 percent on the basis that slight improvements in the business sector and the government’s infrastructure plans with the three policies will provide more investments.

Although it reduced poverty between the Asian Financial Crisis and 2014 significantly, halving the poverty rate from 24 to 11 percent since 2014 poverty reduction has plateaued.

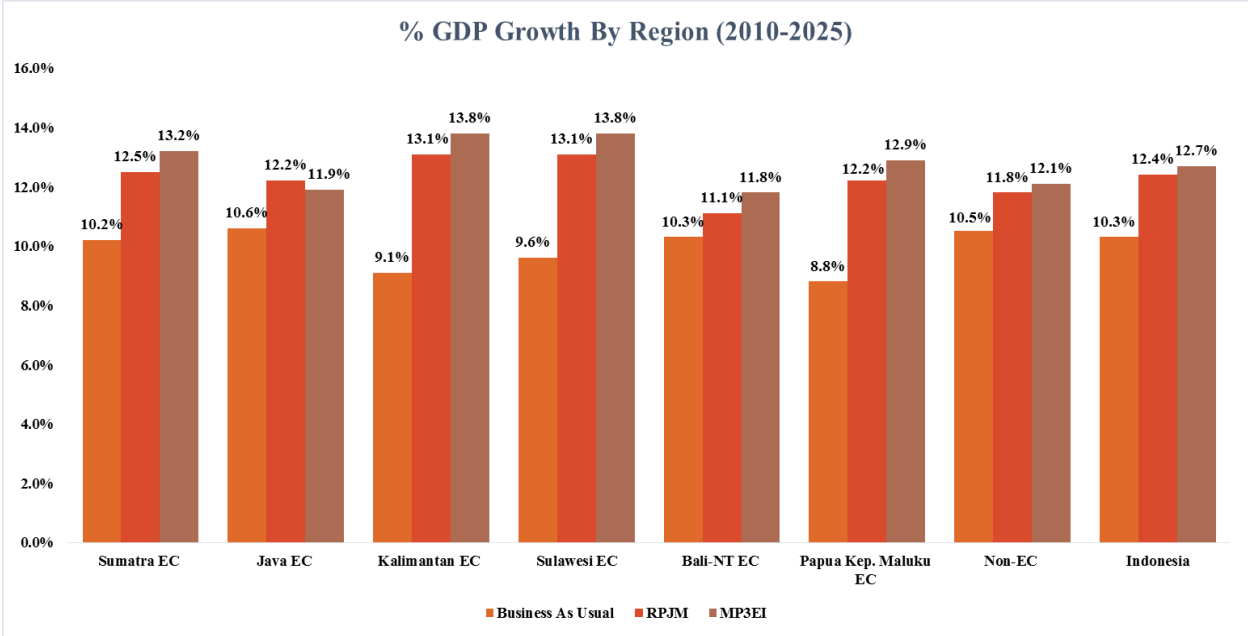


Figure V-35: Desired GDP Growth by Region between 2010 and 2015 (Regulation of the President 48).

In 2014 poverty reduction has stagnated with around zero percent decrease which still leaves Indonesia with around 28 million people in poverty (Country Partnership Framework for the Republic 89). This proves to be a larger problem with the addition of inequality, which when analyzed between 2003 and 2010 shows consumption of the bottom 40 percent of the population rising by 1-2 percent each year, whereas the two richest quintiles increasing consumption by 6 percent annually (Country Partnership Framework for the Republic 44). Although there was significant progress to lift the impoverished population out of poverty, Indonesia’s effort’s to rid the country of ‘hard-core poverty’ will need to advance. 28.6 million Indonesia’s live below the

poverty line out of a total population of 252 million, and it is estimated that 40 percent of Indonesia's entire population live around the poverty line, which is 330,776 rupiah or \$22.60 (*Country Partnership Framework for the Republic* 110). Since the Asian Economic Crisis, destitution still holds a major problem. The highest poverty rates are in eastern Indonesia, and the lowest in Kalimantan, but these together do not make the hold the highest density of the population, which is located in Java and Bali where half of Indonesia's impoverished reside. In the main MP3EI program guide, there is no direct analysis of the poverty in Indonesia or a plan to reduce poverty in Indonesia. The main plans include designs for improved infrastructure for the industries in each regional area. One of the main difficulties that occurs with developing nations, and can be expected to occur with Indonesia, is when moving the population out of poverty there needs to be an insurance they stay out of poverty. Only one-fourth of Indonesia's poor were able to leave the poverty bracket within two years beginning in 2008, however, the risk for these 25 percent to collapse back into poverty remains high. In 2009, 15 percent who were able to exit the poverty area fell back into poverty in 2010. This is mainly due to economic shocks which influence the impoverished population from taking certain risks or actions that may be highly profitable.

Currently, the dependence on Indonesia on its current natural resources sector, including its palm oil sector, to achieve its development plans seem valid, but environmentally are not stable. Although wide-spread expansion of palm oil can aid with GDP growth, for Indonesia's long-term plans for development, palm oil expansion cannot continue to be a long-term insurance of revenue. The dependence on the raw resources sector, and the externalities that occur with this industry, give Indonesia further conflicts both socially and environmentally, rather than provide it with the financial support it desires.

Chapter VI: Indonesia's Fragility- Dependence on its Raw Resource & Foreign Investors

Indonesia's high goals for economic growth and development plans across its entire nation are in attempt to produce a stable nation that is independent of global markets. Against Indonesia's hope, the country still shows evidence that it is still reliant on external demands and global markets. This is evident through in the first semester of 2015, as the lack of stability and predictability of the global financial markets created a fluctuation in Indonesia's economy. Indonesia high desire to be independent from external forces traces back to the Asian Economic Crisis which vastly influenced Indonesia and many other Asian countries' economies. The high global impact on Indonesia and the subsequent economic disaster, during 1997, has provoked Indonesia today to place high demands on its growth and development to limit its dependence on the global economy and foreign sway.

During the 1997 Asian Economic Crisis, Indonesia experienced a widening economic crisis and in attempt to prevent against a collapse in its economy tried many measures to stabilize its economy. To prevent the rupiah from depreciation, Indonesia allowed the rupiah to float freely, and contradictory to the desired result, led to a collapse in its value. After two months, Indonesia's rupiah value decreased by more than 30 percent even though Indonesia's central bank attempted with all means to create a stronger currency and inflate its value (***) . . Although the specific crisis varied by each nation, the origins of the problem lie in the appreciation of the U.S. dollar which led to the pegging of the currencies of the effected countries. The result was wide spread currency depreciation, insolvency, and capital outflows, which led to pessimistic investor relations who lost trust in the countries' credit-worthiness, and eventually to the wide-spread bankruptcy.

The Asian Economic Crisis in addition to the political instability, which marked the period up until the fall of President Suharto in May 1998, resulted in global loss of confidence in Indonesia's market, and a large decrease in output, all of which highly affected the poor (*Recovery From the Asian*). Between January 8-9 1998, food became scarce and eventually led to the increase in prices of basic food staples up to 80 percent by January 14 along with the rupiah's rapid decrease in relation of 12,000 to the dollar which further exacerbated buying in Indonesia ("The Crash: Timeline of the Panic"). Food security was temporary secured through emergency imports and aid, some by the US government which sent \$70 million in food and medical aid, and implementation of temporary food subsidies until a decrease in interest rates by policy implementation brought inflation down and stabilized the rupiah, lowering the cost of rice (*Recovery from the Asian*). Through many back-and-forth debates between the IMF and Suharto that postponed financial aid, and led to political riots, Indonesia received packages from the IMF of \$4 billion to \$6 billion for basic necessities in June of 1998 and finally an increase of \$1 billion to its emergency loan package (*Recovery from the Asian*).

The Asian Economic Crisis originally began from the push by institutions such as the IMF and World Trade Organization (WTO) to modernize and liberalize their financial systems which involved lifting limits on lending. This involved deregulating their banking and financial systems, which was the "weakest link in the Asian economies" (Kregel 48 & 50). In Indonesia, the first private bank failure in 1992 (the first bank failure in 20 years) signaled the already invisible weakened economic state of Indonesia (Kregel 50). The Asian crisis occurred not from the large fiscal and trade imbalances that eventually lead to high inflation, or the pegged exchanged rates, but rather the crisis resembled a Minsky-Fisher debt-deflation (Kregel 2). As the risk premium on investments decreased over time, there was an accumulation of loans by

commercial banks with interest rate differentials, which drastically changed when predictions of the market changed and reversed the change of flows away from these developing countries in Asia, such as Indonesia (Kregel 2). These sums of loans were mainly foreign funds and as the capital inflows from these funds were the link to the stability of the Asian nation's currency value. In 1996, private capital flows summed to \$190 billion, four times the amount in 1990 (Lopez). The increased interest of foreign investors in emerging nations led to huge inflows of capital to these countries due to the emerging countries characteristics such as creditworthiness improvements when the countries changed their external debt structures, signs of strong productivity with the changes in structure leading to increased confidence in the macroeconomic area, and the establishment of a fixed exchange rate (Lopez). Concurrently, the amplified interest of investors increasing the flows, led to the fragility of the nation's economy drastically and was truly only exposed as the reversal of these flows began, and resulted in a decrease in exchange rates, of Asian countries including Indonesia.

As the crisis took off, the institutions such as the IMF contributed to the overall conflict. The policy pushed by the IMF called for setting interest rates at a level that would be enough to produce a demand for domestic currency (Kregel 58). Asian countries gave up exchange rates that now fluctuated against their benefit, and saw this as an opportunity to show promising returns to investors. A heightened exchange rate would protect the currency, but drive investors away; however, the decision failed against them as in the next few weeks the fluctuations in the exchange rates drastically decreased the margins of safety necessary for domestic banks and domestic debtors (Kregel 11). The acceptance of high interest rates worsened the already horrid situation of the Indonesia and even though Asian government's pushed for lower interest rates that would aid firms and banks to pay off their loans, the IMF would not accept that higher

interest rates would exacerbate conditions. As investment money flew out of the country, due to global interest rate changes, many corporate and financial borrowers were placed in a position with present value reversals. The “make-position-by-selling-position” on a grand scale occurred as it was necessary for these corporations and financial firms to pay off their debts by selling assets, inventory, current output, or any liquid commodity that will allow the firm to stay operating without going bankrupt (Kregel 2). As they sell off assets, the supply increases dramatically, thus prompting a decrease in the price of their assets and the exchange rate. In the Asian Economic Crisis situation, the increased sales led to the decrease in domestic prices, and resulted in a decreased trade and a lowered currency, which only worsened with the high interest rates proposed by the IMF (Kregel 58). The reversal of the capital account produced the Asian Economic Crisis instead of the current account imbalance, as financial institutions abruptly decreased lending to corporate firms and eradicated credit in the economy (Kregel 2). Indonesia, as a developing nation, was highly influenced by the recommendations by the IMF and the proposed heightened profit from deregulation and modernization of their banking and financial system. The direct result from excessive lending and irresponsible banking practices produced a highly exaggerated crisis that affected numerous nations for a long period. As a result, this financial transformation within Indonesia, as well as throughout Asia increased the risk across the region to the fluctuations of external forces such as the appreciation of the dollar. More than a decade later, Indonesia shows signs of high goals for development and infrastructure build up that they believe will decrease their risk for external influence.

The Asian Economic Crisis continues to loom in Indonesia as the nation and its policies are reinforced by the past. Indonesia’s goal for development and high economic growth are to prevent economic crises like the Asian Economic Crisis from highly influencing their economy

and reliance on foreign and institutional aid for bailouts. Indonesia's reliance on foreign aid reinforces its status as a developing country. It was calculated that since the beginning of the crisis, 80 million Indonesians or 40 percent of the population fell below the poverty line and poverty rates increased to 24.2 percent in 1998 compared to 17.7 percent in 1996 (*Recovery from the Asian*). These staggering impacts have led Indonesia in the last decade to grow substantially to prepare and protect against similar and unexpected external crisis. The Asian Economic Crisis was a highly unique event that was not expected since most countries had surplus values on their trade balance, were in control of their fiscal deficit, had high foreign exchange rates throughout the 1990s, and stable exchange rates (Kregel 46). Although there was internal stabilization in these influenced countries, the crisis still occurred "rather by changes in the external environment, over which [these countries] had little control and there were few policy response available" (Kregel 46). As Kregel explains, the Asian Economic Crisis demonstrates the characteristics of the heightened economic interdependence and 'free global capital flows' (Kregel 46). Though Indonesia still uses the Asian Economic Crisis of 1997 as a motivator for its economic development and growth, recent events show signs that Indonesia is still influenced by external threats and global economic fluctuations. During the slight economic uncertainty in quarter one of 2015, the Indonesia government showed their efforts to protect against economic fluctuation, but against their desires, the occurrence of slight economic fluctuation shows the country still remains to be an emerging nation dependent on the global economy as seen in the Bank Indonesia's Financial Stability Review of 2015.

Specifically, the origin of the global instability in early 2015 was a result the unpredictable monetary policy in the United States. Global uncertainty in financial markets occurred due to lower than expected US growth and the decrease in commodity prices as the

ambiguous proposition of the FFR hike by the Federal Reserve created further global hesitation. Through a reconsideration of the normalization policy, the US performance provided the foundation for an increase in investments, which in return brought about a high US dollar appreciation, which went against the majority of global currencies. Concurrently, economic growth fluctuated globally as China and Japan showed stagnate economic growth, and presented expansive monetary policy (Banking 3). The combination of these economic events transferred global liquidity towards stable, profit-sustainable nations, and decreased the liquidity from emerging markets, such as Indonesia (Banking 3). This economic change influenced emerging nations by divulging their susceptibilities, especially their dependence on the GDP of the global community, specifically the United States, China, and Europe (Banking xiii). During this time of uncertainty, the President of Indonesia, Joko Widodo, described Indonesia's dependence on developed nations such as the United States, and stated, "the heavy reliance on the U.S. dollar has led to global distortions that are now threatening global economic progress" ("Jokowi: Dependence on US Dollar"). Today, Indonesia shows signs of global and regional financial market risks including external threats, domestic economic slowdown, and rupiah depreciation with national risks including weak investment and consumption. Although stability was preserved, the external influences on Indonesia's economy show Indonesia larger flaw: the influence of external forces, resembling those of the Asian Economic Crisis, on its economic well-being.

The rise of China and India in the recent decade have sparked investors to seek out a new emerging market that will supply resources to rapidly developing countries such as China and India that they will need for their infrastructure and population. The "hot money" of foreign investors into emerging nations, such as Indonesia, has and will continue to directly contribute to

a growing financial fragility and instability in the emerging nations. This, in combination with the lack of policy since the Asian Economic Crisis in 1997 that is necessary for Indonesia to control these large amounts of investment, make Indonesia prone higher risks than they were exposed to in the 1990s (Hermansyah). Chairman of the Financial Services Authority, Muliawan D. Hadad states, “Currently, there are no specific policies to handle hot money. The flow [of hot money] is on the off in Indonesia. On the other hand, we need to inflow too,” and in early 2016 Indonesia’s foreign exchange reserves equaled around \$104.5 billion with a 2.3 percent by month increase (Hermansyah). The properties of the growing bubble that has been inflating in emerging markets since 2008 shows distinct, similar characteristics of the Asian Economic Crisis of 1997 that resulted in complete chaos in developing countries in Asia. With capital flows into emerging markets totaling to \$825 billion by the last semester of 2010, 60 percent of which goes into Asian economies, there is more worry about inflation, and overwhelming asset bubbles (Compolo).

Indonesia fragility is dependent on China’s market and development plans for infrastructure build-up and economic stimulus. In 2009, China, as a means of protecting its economic state, created a stimulus plan consisting of \$586 billion, which increased its demand for commodities, specifically raw materials to supply its plans for extensive infrastructure development (Colombo). China’s imports of goods and services can be seen in Figure 36 showing the increase from imports of goods and services from \$1.3 trillion in 2009 to \$1.8 trillion in 2010, indicating a pivot point from decrease in imports to an increase in imports in correlation to their policy plans. Indonesia exports of goods and services show correlation to China’s imports of goods and services as between 2008 and 2009 exports dropped by \$21.7 billion and then rose by \$53.1 billion between 2009 and 2010 as seen in Figure 36.

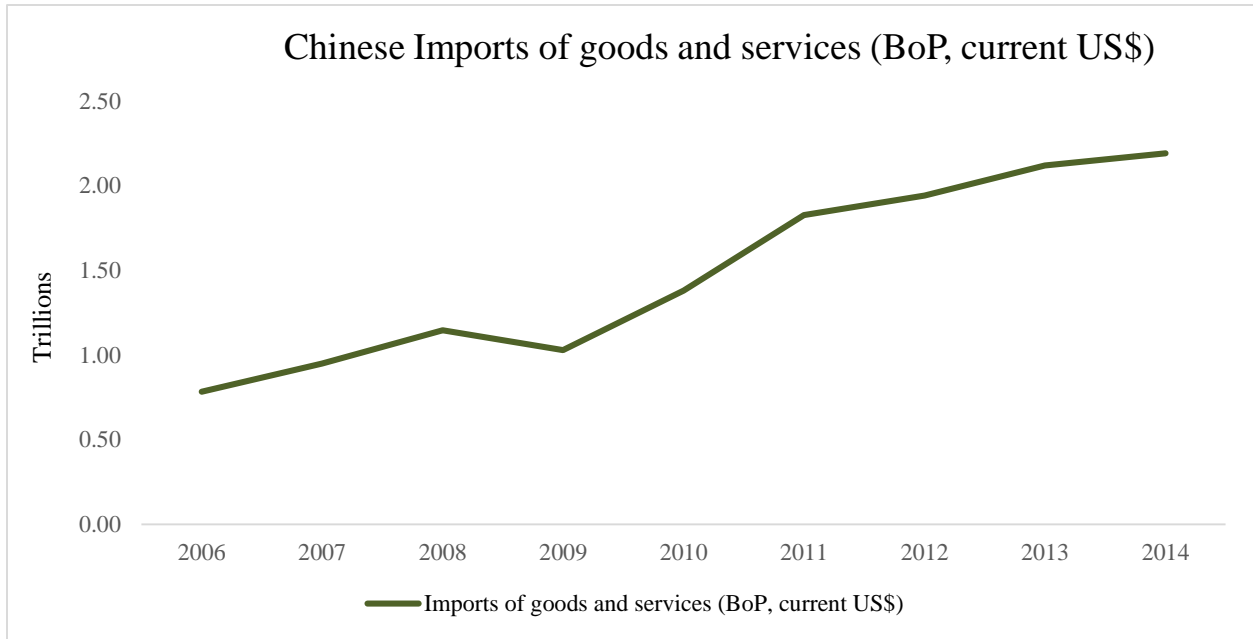


Figure VI-36: China's Imports of Goods and Services (Current USD) ("World Bank Data").

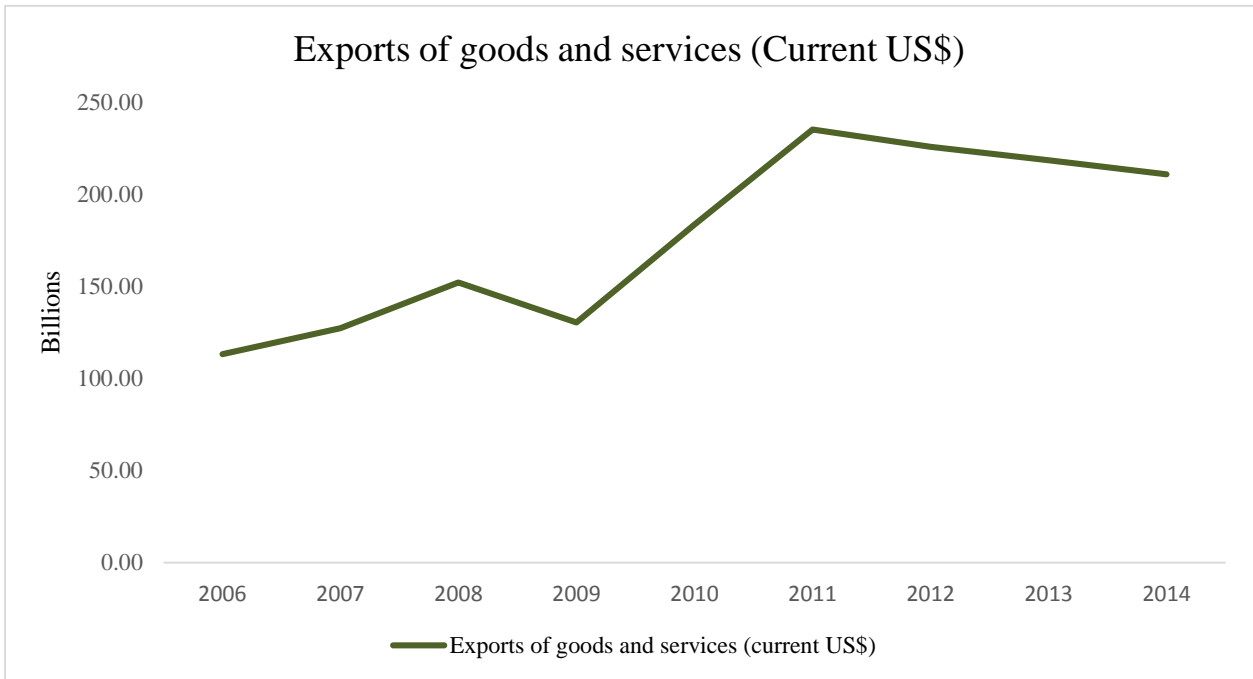


Figure VI-37: Indonesia's Exports of Goods and Services ("World Bank Data").

The increase in demand for commodities from China is shown in Indonesia total annual export value as a negative 5.37 percent decrease in Chinese imports between 2008 and 2009 reflected in a -7.69 percent decrease in Indonesian exports, and between 2009 to 2010 a 14.57 percent increase in China's imports lead to an increase in Indonesian exports by 16.93 percent.

Indonesia’s prime export destinations are Japan, China, and Singapore, who represent 13, 10, and 9.5 percent of Indonesia’s export demanders (“OEC Destinations”). Indonesia’s raw materials exports represent 25.25 percent share (\$44,449 million U.S. dollar) and is the largest type of export for Indonesia (“Indonesia at a Glance”). As seen in Figure 38, Indonesia’s large raw exports go primarily to the region Asia Pacific (Including Japan and China), followed by Japan and China.

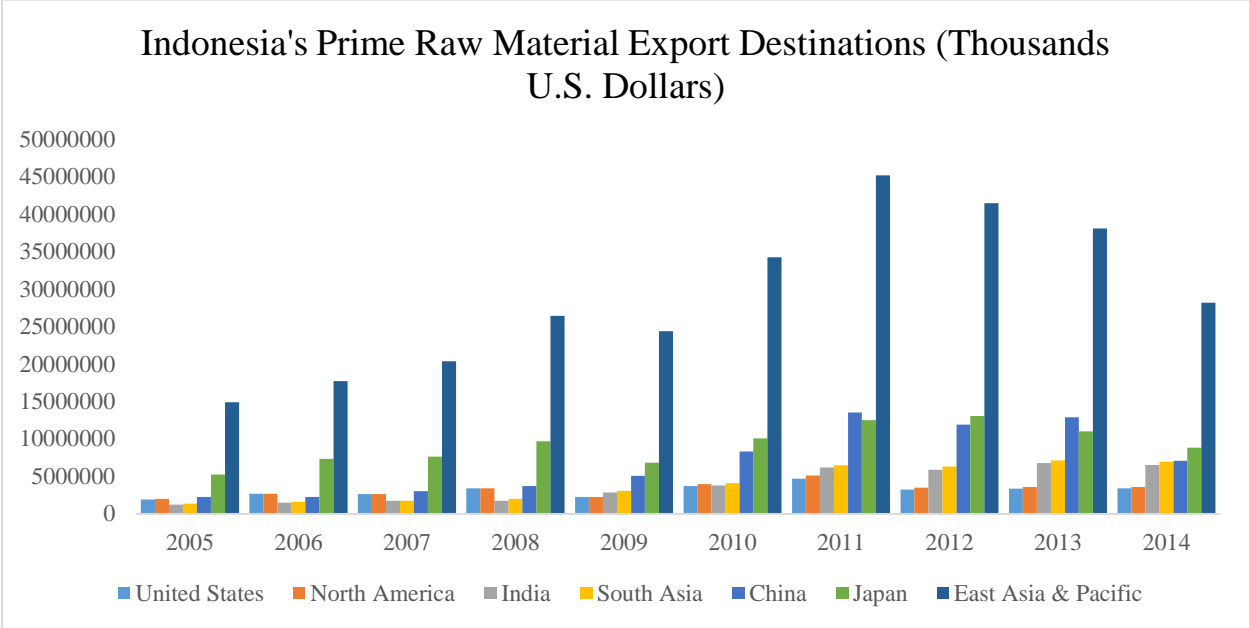


Figure VI-38: Raw Materials Export Destinations (Thousands USD) (“Indonesia at a Glance”).

Although the emerging markets were slightly affected by the 2008 economic crisis, they were less effected compared to developed countries due to high commodity demands, which occurred from China’s stimulus plan demands. The demand for raw materials and natural resources and the higher commodity prices helped to prevent resource abundant countries from the global economic crisis. Figure 38 shows that China still maintained high demand for raw materials exported from Indonesia between 2007 through 2009, when there was a 38.69 percent increase in demand for Indonesia’s raw materials. Compared to Japan that decreased their raw materials demand during the crisis, China’s stimulus plan provided a continuous and positive

demand for Indonesia’s raw materials, preventing excess instability for Indonesia’s economy. In the quarter one financial instability that affected the Indonesia markets, the major indicators of possible financial volatility included commodity prices. Specifically, the US appreciation decreased demand for commodities in Indonesia due to relative increases of commodity prices in countries in nations of non-U.S. currency. Commodities affected in Indonesia were specific to coal, crude palm oil (CPO), and crude oil (Financial Stability Review xiii). These indicators can be seen in Figures 39, 40, 41, and 42 (Financial Stability Review i).

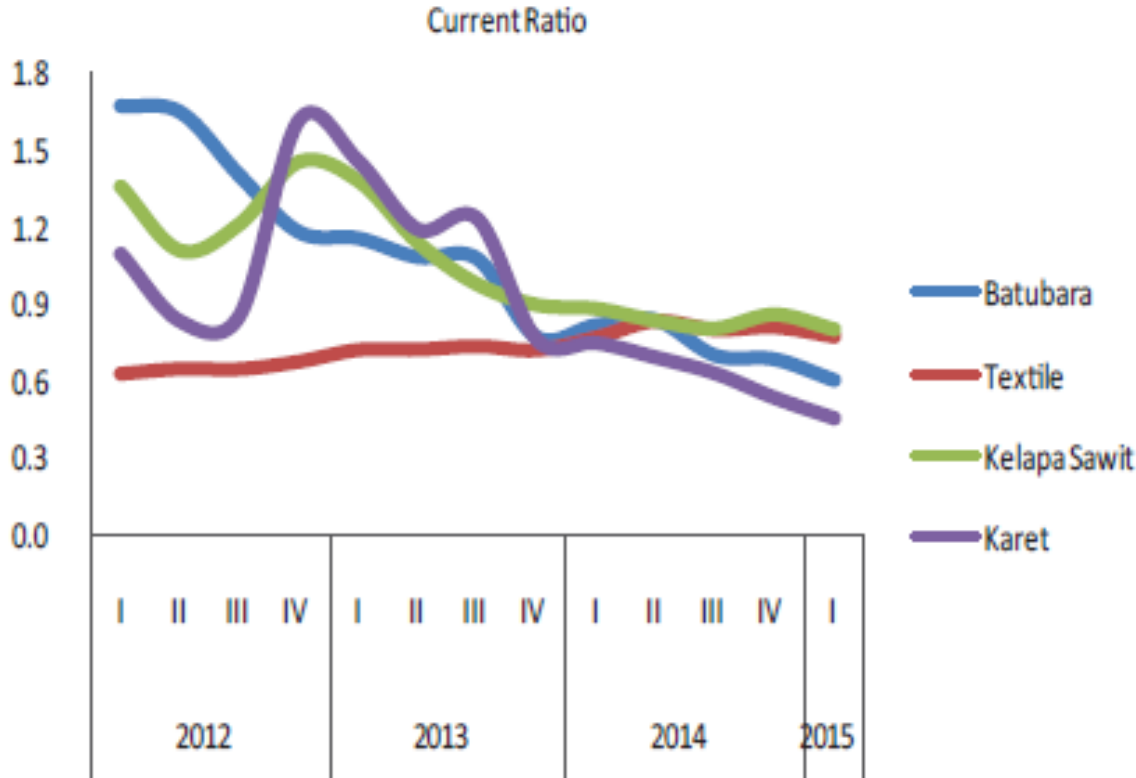


Figure VI-39: Current Ratio Indicator for Indonesia 2012-2015 (Financial Stability Review i).

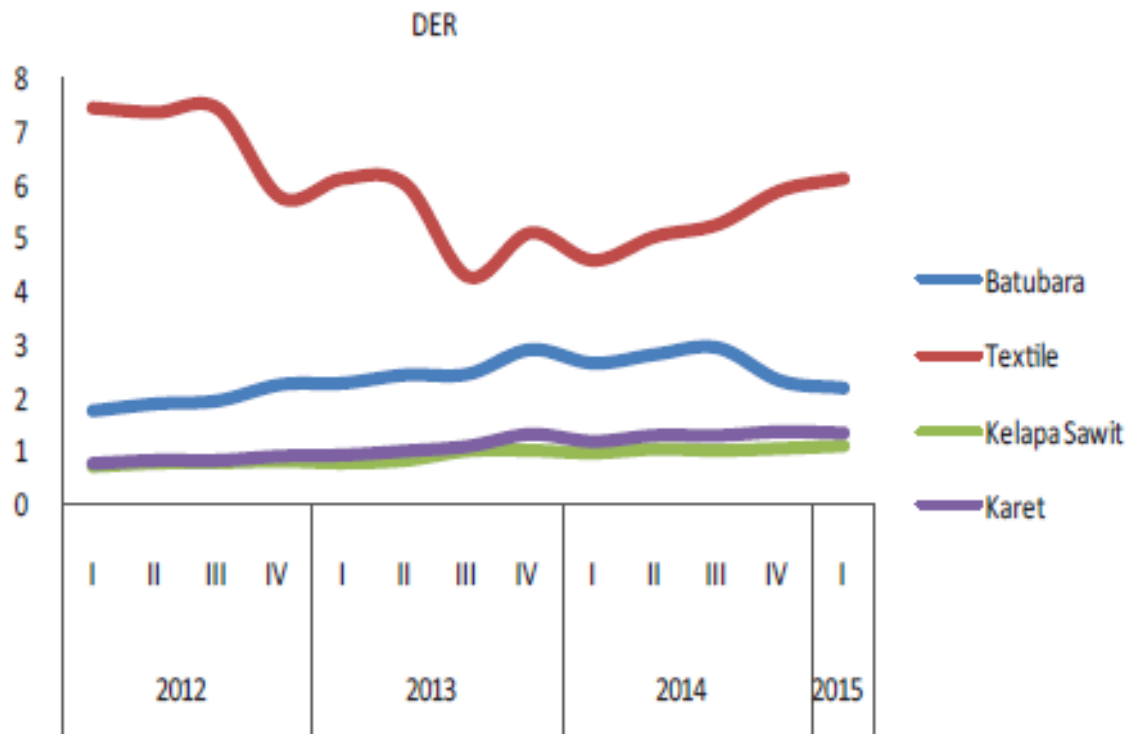


Figure VI-40: Debt to Equity Ratio (Financial Stability Review i).

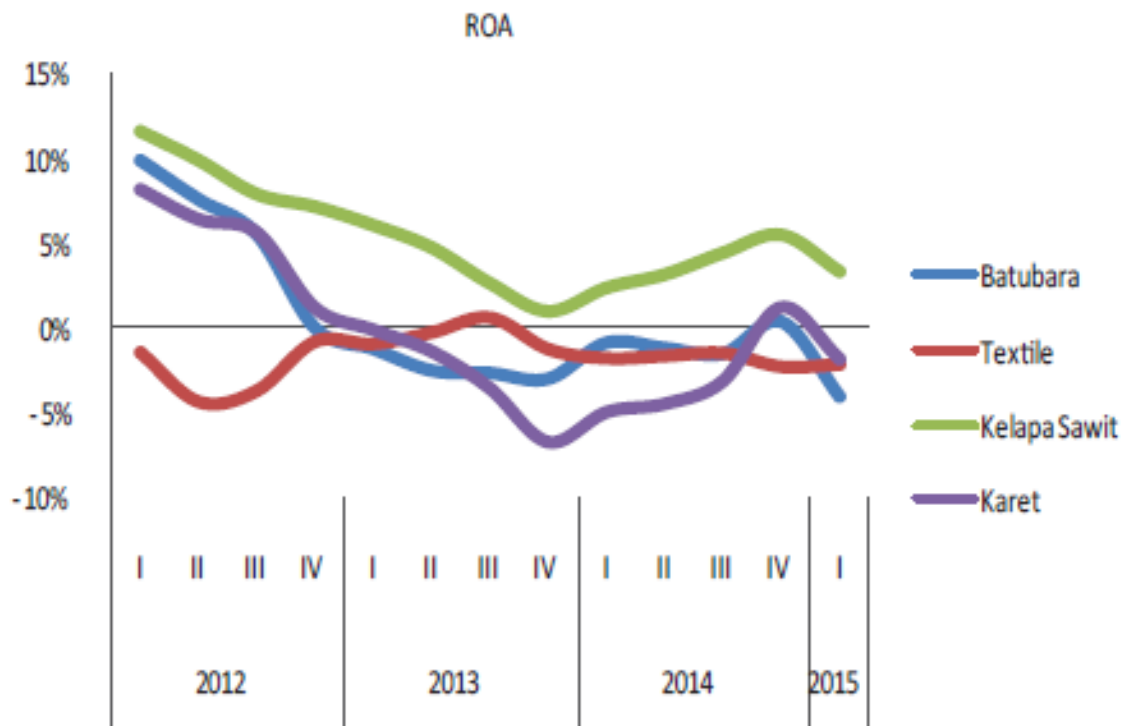


Figure VI-41: Return on Assets Ratio (Financial Stability Review i).

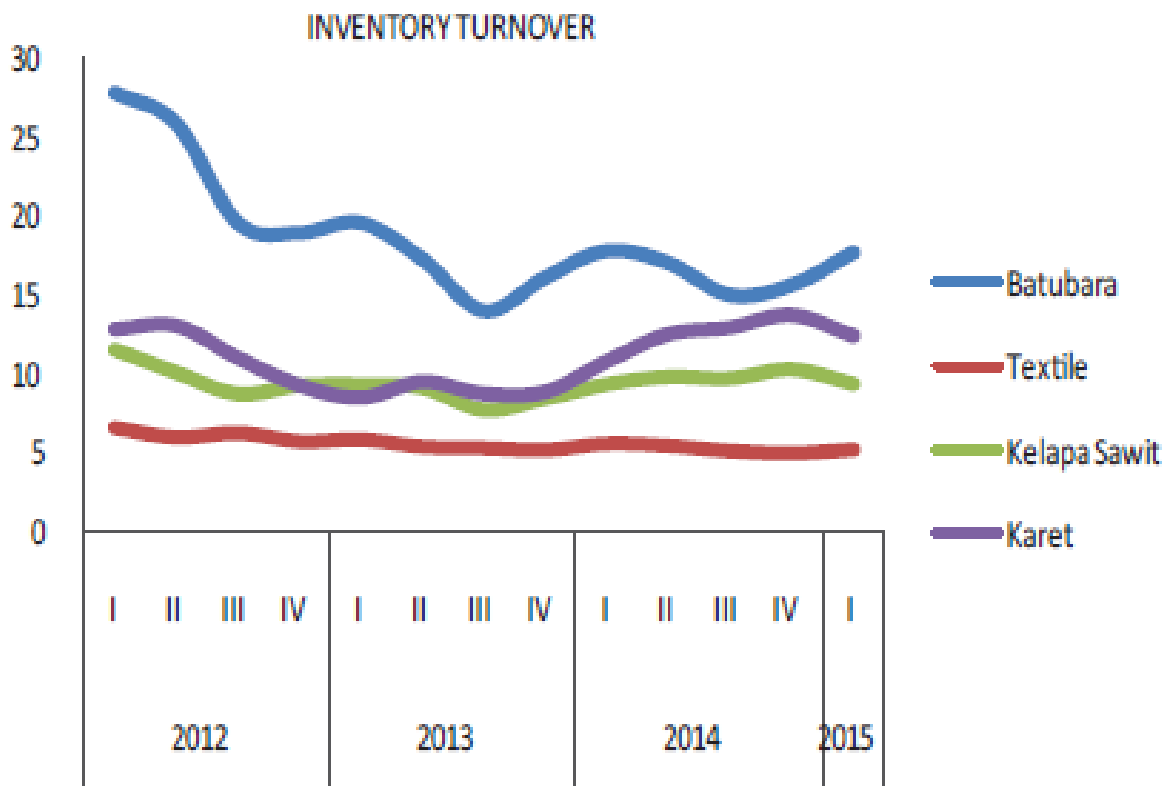


Figure VI-42: Inventory Turnover Ratio (Financial Stability Review i).

Translated from Bahasa the terms mean the following: Batubara (Coal); Textile (Textile); Kelapa Sawit (Palm Oil); and Karet (Rubber). The current ratio shows that for all the commodities across there is increased risk to sell these assets showing signs of risky liquidity. This is a problem that was seen during the Asian Economic Crisis. For palm oil the Return on assets ratio shows that during the increased fragility in semester 1 of 2015 there was a decreased return with money invested. As seen in all the indicators, palm oil was generally affected by the fragility of semester 1 of 2015. However, after this period, the crisis was passed, momentarily, but financial fragility in Indonesia in its commodities sector, indicates an overall problem in the financial sector with increased foreign interest in Indonesia.

This increase in commodity demand in emerging nations including Indonesia attracted investors who were seeking to diversify their portfolios away from crisis affected countries in 2008. One method in which companies have diversified their portfolios is by carrying trade. Carrying trade occurs when investors borrow at very low rates of advanced nations' economies, such as the U.S. and Japan, and then change these investments into local currencies of emerging countries that have higher interest rates, which create a larger profit from the difference between the interest rates and the depreciation of the currency that is borrowed (Boesler). One of the main determinants to creating these investments is the capital account. A firm that wishes to create high levels of profit will place money into an emerging market who's difference with local interest rates is the highest, thus creating a higher return; however, doing this creates a lower debt for the local currency of the advanced economy, whereas in emerging nations there is a higher level of debt (Bruno and Shin 22). The increase of flows into emerging markets helps the emerging market to expand and develop, but also comes with a high risk. Emerging markets can benefit from this increase in carry trades, but there is a substantial risk for the emerging nations when one of them is not able to pay the interest on their debt. As a result, billions of dollars flow out of the country, which produces a dwindling economy and economic crash (highly similar to the 1997 Asian Economic Crisis). For emerging markets the increase in credit powered by financial risk-taking, in addition to the appreciation of the currency results in a financial fragility and then financial crisis. For advanced and emerging markets this instability can be predicted by a heightened increase in domestic credit and a real appreciation of the currency (Bruno and Shin 22). Currently, the carry trade of 2016 have reached their highest point since December of 2015,

as seen in Figure 43 (Hall). The carrying trade opens the vulnerability of the emerging market to external forces of advanced countries.



Figure VI-43: Carry Trade Return Climb (Boesler).

The central bank’s decisions play a vital role since the decision that leads to low interest rates in the advanced economies leads to the carry trade of capital to economies with higher interest rates, specifically emerging nations. The capital, which accumulates rapidly, has characteristics which increase inflation, resulting with central banks in emerging economies to continue to increase interest rates, which further the fragile economic situation of the state (Burnside 1). As it is seen in Figure 44, since December 2003, there is substantial increase in foreign holdings of government bonds in Indonesia (“World Bank Data”). This rapid increase in liquidity in foreign bond holdings overtime could produce a bond bubble, which has made loan

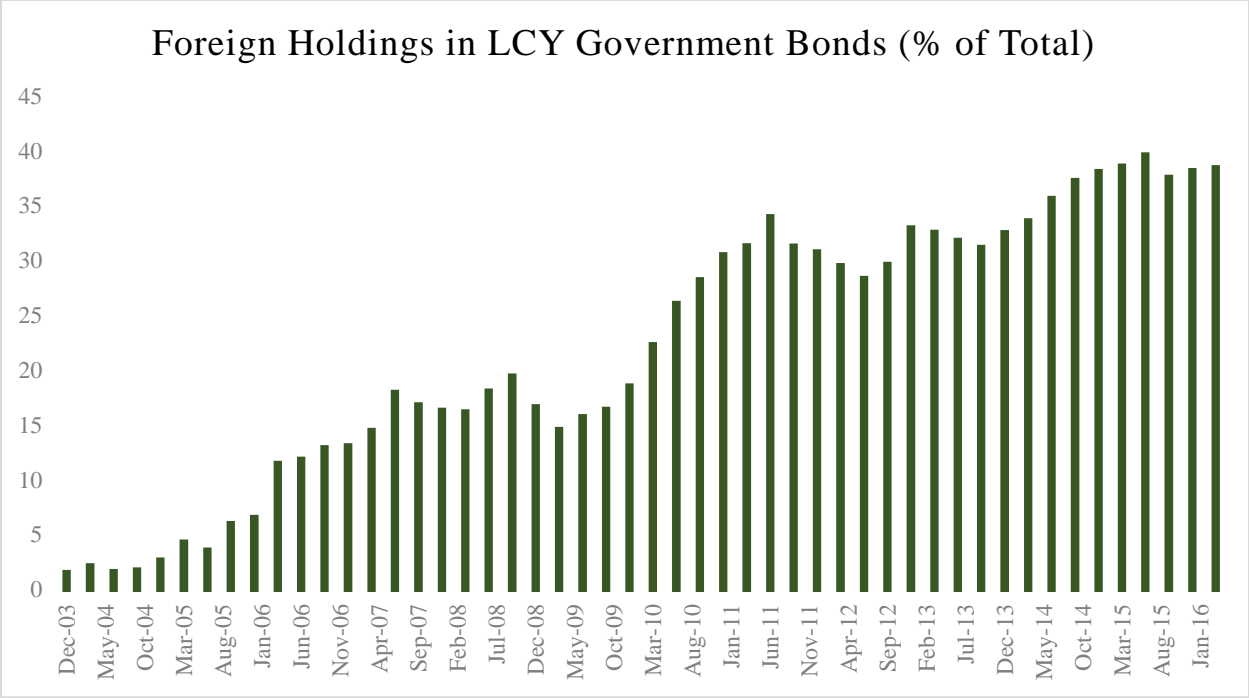


Figure VI-44: Foreign Holdings in Government Bonds (% of Total) (“Foreign Holdings in LCY Government”).

costs extremely low, allowing for development and high levels of infrastructure spending (Colombo).

Although Indonesia may desire these inflows to assist with financing for their development projects that Indonesia hopes will free it from its dependence on external forces and global economic fluctuations, the increase in “hot money”, a rise in carry trade, and a demand on for their natural resources produced the opposite effect. For economic development to occur there requires a supply for natural resources and a labor to produce these commodities or harvest the natural resources, and from the demand side it required a capital accumulation, consumption and exports, which concordantly increase together for stability; however, in many emerging economies, this balance does not occur since usually the supply succeeds demand (Bresser-Pereira and Gala 315). The proposed solution to these problems is directly associated with the recommendation by advanced economies and global institutions to transfer capital from advanced to developing nations and increase foreign in order to achieve economic stability, but

when accepted by developing nations actually, leads to exchange rate appreciations, international financial instability, and balance-of-payment crisis (316). The advice from advanced economies to increase foreign savings leads to large current account deficits in the developing nation. Although, development can occur in emerging and developing nations through foreign savings, historically it has been shown that all countries have achieved growth instead by domestic savings (317). For Indonesia, this relates back to the Asian Economic Crisis which showed high levels of current account deficit before the crisis as seen in Figure 45 and after the crisis, Figure

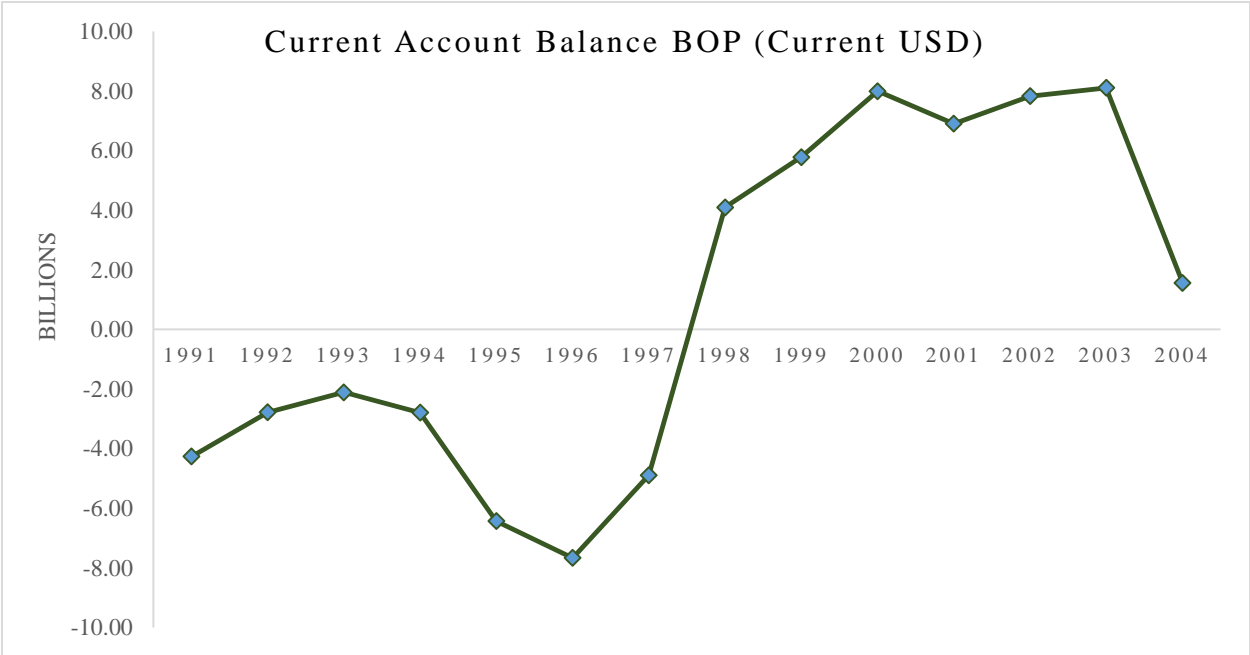


Figure VI-45: Current Account Balance 1991 to 2004 (“World Bank Data”).

46. As stated before, and restated by Bresser-Pereira and Gala, the indebtedness occurred in the 1990s due to foreign advice for emerging markets to become more open and increase the inflow of capital, which would increase the financial or patrimonial indebtedness (317).

A main result of an increase in foreign savings to finance the current account deficit is exchange rate appreciation, which substitutes of foreign rather than domestic savings, and leads to little gain for the emerging nation. The inflow that attributes to the increase in exchange rate

appreciation, in reality, restricts the investments that are meant for exports, because the demand side rejects exports and any investment for exports, and what occurs is a heightened foreign savings rather than domestic savings (Bresser-Pereira and Gala 317 & 332). The foreign savings transform into financial and/or patrimonial indebtedness of the country and an increase in debt and growth rate and therefore a high level of dependence on the foreign sector for financial stability (Bresser-Pereira and Gala 334).

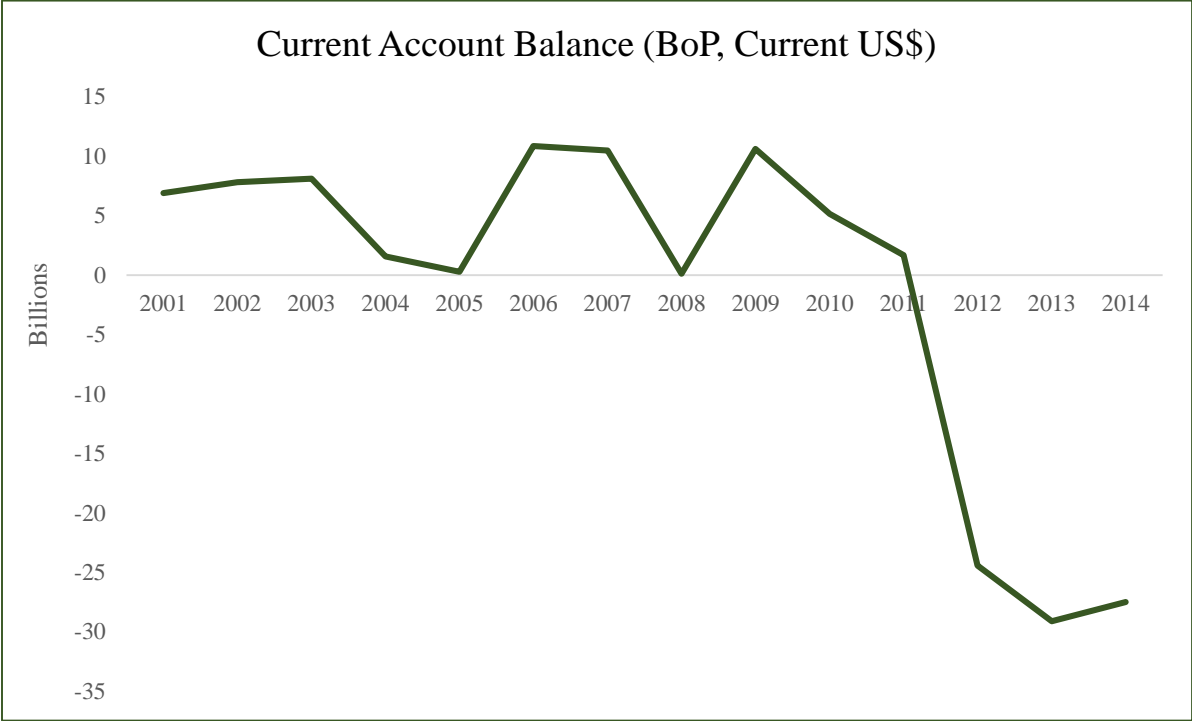


Figure VI-46: Current Account Balance (BOP USD) (“World Bank Data”).

Although annual growth of at least 7 percent, has not been achieved since before the Asian Economic Crisis of 1997, President Jokowi’s plans for high expansive growth are excessive, but an annual growth of 7 percent by 2018 years is something that is not highly unlikely to occur. In the first quarter of 2015 GDP growth percent was 4.7 percent and seen in Figure 47, growth expectations for 2016-2025 settle around 5.4.

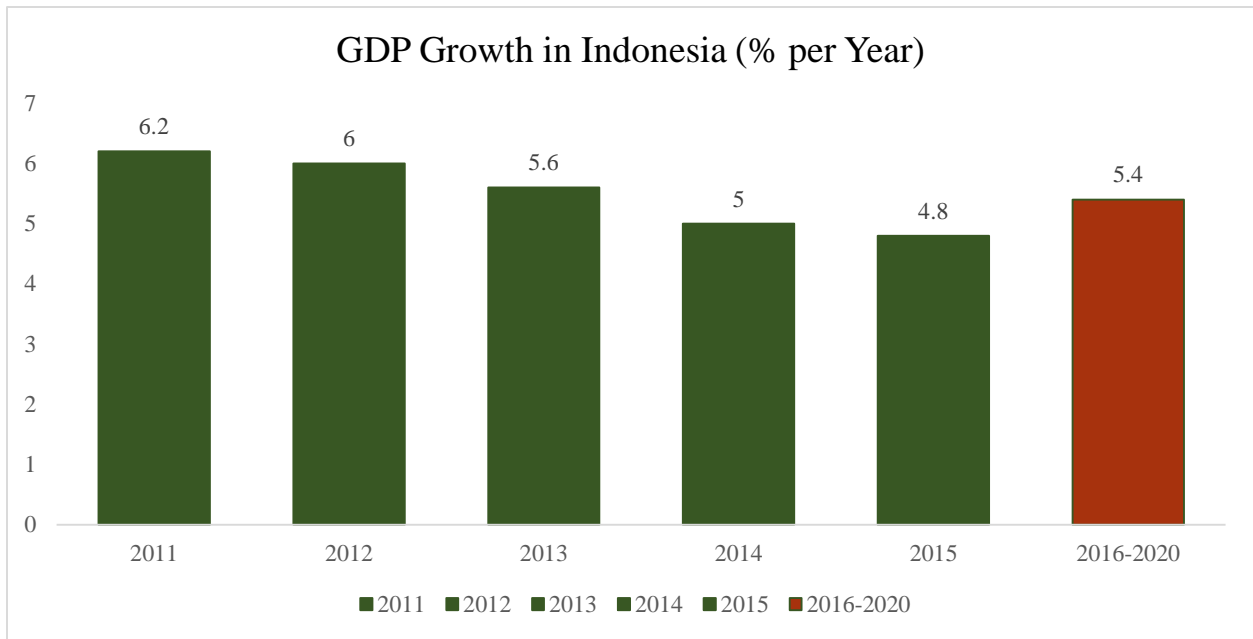


Figure VI-47: GDP Growth in Indonesia (% GDP) (“World Bank Data”) (“Bloomberg Terminal”).

When examining the GDP growth on a quarterly scale, it has been decreasing for the past six months. Expectations show that lack of government ability to prompt reforms such as getting rid of protectionist rules with respect to the trade and foreign investment will make economic growth less than the desired rate (Bloomberg). In addition to this average level of growth, the rupiah depreciation of 11.4 percent beside the USD show a weakness, which is expected to continue throughout 2016 with the central bank of Indonesia slow lessening of monetary policy. This has the probability of being stabilized through the ending semester of 2016 as the US monetary policy will produce an effect that will take the exchange rate to 8.1 percent against the US dollar during 2016. Despite the rupiah’s slight decrease in exchange rate, the currency will inflate by 1.2 percent annually during 2017 to 2020, and will show further dependence on the current account and fiscal accounts, which will continue to grow during this period. As Bresser-Pereira and Gala show, as the current account grows the investor interest in Indonesia’s economy will continue to develop leading to further fragility on foreign debt for growth rather than demand and export production.

In the situation that Indonesia's exports fail to produce enough revenue to balance out trade, Indonesia will have to look to its current account and the extension of loans in order to maintain financial stability. With the growth in foreign savings in the country, in the form of carry trades or hot money, or other loans, Indonesia will become reliant on its dependence on debt to maintain its economic stability. Therefore, the stability and increased demand for the highest exported commodity in Indonesia in 2014, palm oil, will remain a significant component to Indonesia's stability, and in even more detail, Indonesia's dependence on its illegal practices and high levels of deforestation, peat land burning, and destruction of local community property will add lead to a decrease its stability as proposed by Bresser-Pereira and Gala. The point remains though that economic growth and fragility is dependent on high amounts of environmental and social externalities, and corruption to continue exportation of raw resources; however, how long will these high levels of legal and illegal deforestation be able to occur? As Indonesia, just as Malaysia, reaches a point where land can no longer be converted or cheap methods for deforestation such as peat land burning are no longer legal and the price of palm oil becomes more expensive, where will markets look for their demand of palm oil? Already, China is seeking out lands in the Democratic Republic of the Congo for a possible future supplier of palm oil in the event that Indonesia and Malaysia cannot maintain high levels of output. If palm oil production reaches its peak in Indonesia in the near future, and Indonesia has not yet made alternative plans or has not reached its third part of its development plan, innovation, Indonesia will remain dependent on its deforestation and illegal measures to maintain financial stability. If Indonesia wishes to become independent of the illegal activity and wide expansion of palm oil, it must either find ways for rapid productivity gains in palm oil, or it must rely on its foreign savings to balance this deficit. However, in this case, Bresser-Pereira and Gala show that foreign

savings rather than domestic savings create high levels of financial fragility which take place in large amounts of inflows from foreign investors in carry trades. In either situation financial fragility occurs, but specifically the dependence on Indonesia on the palm oil sector leads to a heightened fragility as the addition of externalities and their impact on the economy are not a component of the price of the commodity leading to high levels of unknown debt.

Chapter VII: Final Reflections

On a separate, but perhaps a more prominent note, my project entails the analysis of the environmental and social conflicts that arose with the presence of corporate firms in Indonesia specifically relating to palm oil expansion. It is with dismay that I admit to have found no feasible solution that equates the environmental well-being equal to corporate and national profits. What I have found instead is a raw, and complete understanding of the function of world through an economic lens. Whilst writing the conclusion to my senior project, I sit between the Tivoli Bay Conservatory and 9G. The juxtaposition in my current state although very ironic, shows the current situation that the world has chosen.

Economists are much like philosophers. We dissect, analyze, and criticize about the functions of the world, and try with our best attempt to propose reason and solution to the chaos around us. However, what I have found is not a solution, but in fact a visual of what reality is. Humans have placed themselves above the natural law to which the world runs. Through our intelligence we created a system in which we disregard the natural ecosystem as a component of not only the world's well-being, but also of humans' daily function. It was not through intelligence that we derived this equation, but it was through our selfish interest that the world now functions as though it is indifferent and independent from the ecosystem.

As an economist and also a lover of philosophy, through my paper, I discovered what is both enlightening, as well as, tragic. We have become Oedipus Rex and transformed overnight to our worst enemies. In our attempt to flee the ever chaotic state of being in the human state, we have arrived a proposed solution that is no better than what we had to begin with, even though it we have chosen to ignore the physical evidence of our actions.

Indonesia's current state either calls for a rapid transformation of their economy away from the dependence on natural resources for exportation or it requires the government and the world to ignore the environmental impacts, financial instability, and social conflicts that palm oil production carries. Either way Indonesia suffers with a loss in revenues for development or a loss of the ecosystem and its natural flora, which will eventually carry to exposed financial fragility.

Although humans to the best of their ability have tried to separate the environment from their being, humans resemble the same characteristics that nature portrays. Through varying landscapes we are both raw, chaotic, unpredictable and whole, complete in our natural state. Though we have distanced ourselves from the environment it is necessary to reflect that our pure intelligence that produced the economic system we function in, could have produced a state where the environment was regarded as a unit of our circle. But what could have been, it not what is, or what might occur.

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