

Pathway to Sustainable Forest Industry in Indonesia

by

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ABSTRACT

Indonesia is a country with abundance of forest cover. The forests are high in biodiversity and rich in resources. In addition, the country has been dependent on its forests resources and been exploiting the forests for more than 30 years. The wood industry has experienced a rapid growth in production and capacity in the last 30 year period. Unfortunately, a sustainable forest management has not yet been well developed in the country. As a result, the country is currently experiencing a massive deforestation and forest degradation. Moreover, scarcity of wood supply is now becoming a problem for the industry.

Deforestation and forest degradation has a negative impact to the environment and also to the socioeconomic aspects of human's life. The main concern is that deforestation and forest degradation accelerates the rate of climate change due to its carbon emissions. This issue has brought the international world to agree on taking actions to fight deforestation and forest degradation. Thus, the Reducing Deforestation and Forest Degradation (REDD) programme was proposed and is now being developed. Currently, Indonesia is one of many countries that are in the REDD priority list due to its large forest area and high rate of deforestation.

REDD is a potential solution to the Indonesia's unsustainable forest practices. By having international commitment and aid, it is expected that Indonesia's forest loss will be reduced and its carbon stock will be enhanced. The REDD programme, however, also need full cooperation and supports from the local inhabitants. Unfortunately, there are still many challenges and issues in Indonesia that need to be solved for REDD to be successful.

Multiple stakeholders in Indonesia have to respond positively to ensure the effectiveness of REDD. Human resource is the key to the success of implementation of REDD in Indonesia. From government to business owners, from university students to local indigenous population, every Indonesians has to able to understand, promote, and practice sustainability. Only this way, a better and sustainable Indonesia can be achieved.

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OVERVIEW OF INDONESIA FOREST

Forest Area

Indonesia has the 8th largest forest area in the world. According to the data retrieved from the United Nations Statistics Division, Indonesia's forests cover up to 944,320 km² or 52% of the total land area of the country. This number is relatively small compared to Russia's or Brazil's forest areas, which are the largest in the world, with the size of 8,090,900 km² and 5,195,220 km² respectively¹. Indonesia's forests are mostly tropical rainforests which are richer in biodiversity than the Russia's boreal and temperate forests. Indonesia has the second largest tropical forest area in the world; Brazil has the largest tropical forest area².

Forest Types and Management

Indonesia's forest areas are classified by the Indonesia Ministry of Forestry based on the result of the provincial spatial planning and the consensus of forest area usage. Indonesia's forest area is divided into three categories according to their usage as stated in the Act on Forestry 41/1999. The three categories are conservation forest area, production forest area, and protection forest area³.

Conservation forests are forest areas whose main function is to protect and to sustain the lives of plant and animal species and their ecosystem. Conservation forests are categorized into sanctuary reserves, nature conservation area, and game hunting park.

Production forests are forest areas whose main function is to produce forest products. Production forests are categorized into permanent production forest, limited production forest, and convertible production forest.

Protection forests are forest areas whose main function is to protect life's support system and hydrological system. It serves as natural water filtration and erosion control system. It also inhibits seawater intrusion, prevents flooding, and maintains soil fertility³.

FOREST INDUSTRY

The Indonesian legislation clearly states the purpose of its forest. It is for the prosperity of its people³. To reach this purpose, forest management needs to be performed in a sustainable manner to gain maximum benefits from the forests. Forest industry complements the forest management to further process the resources harvested from the forest, increasing their economic value.

The forest industry in Indonesia has been dominated by the wood products industry, which also includes pulp and paper industry. Meanwhile, non-timber forest products play only a small part in the Indonesia forest industry when compared to the timber industry⁴.

Wood Products Industry

Pulp and paper, sawn wood, round wood, and plywood dominated the wood products industry in Indonesia. Secondary wood products industry, such as furniture manufacturing, handicrafts and wood carving, contributes to a small percentage to the whole Indonesia's wood products industry. Nonetheless, these secondary industries are expanding rapidly. In contrast, the round wood, sawn wood, and the plywood industries are shrinking.

1. Pulp and paper

Pulp and paper is the largest wood products industry in Indonesia with annual production of 7.1 million tonnes of Bleached Hardwood Kraft Pulp (BHKP) in 2010; growing significantly from only 5.97 tonnes in the previous year. In addition, Indonesia also produces 9.36 million tonnes of paper and paperboard in 2009. There is about one-third of the production is exported in both sectors⁵. The industry grew rapidly during the 1990s with a nine-fold increase in production between 1988 and 1999⁶. Currently, the industry is still growing and causing a rapid increase in demand for fiber supply. Unfortunately, the industry is still heavily dependent on wood fiber derived from the natural forest. Moreover, there are still questions regarding supplies from illegally harvested logs. Shortage of timber supply is currently experienced by the industry. Ironically, Indonesia's Ministry of Forestry declared a capacity expansion target for 2020 for the pulp and paper industry⁵. On the positive side, the Indonesian government is trying to avert the

issue by accelerating and expanding the industrial plantation development. However, there are concerns because these plantations might come from natural forests and peatland conversion⁵.

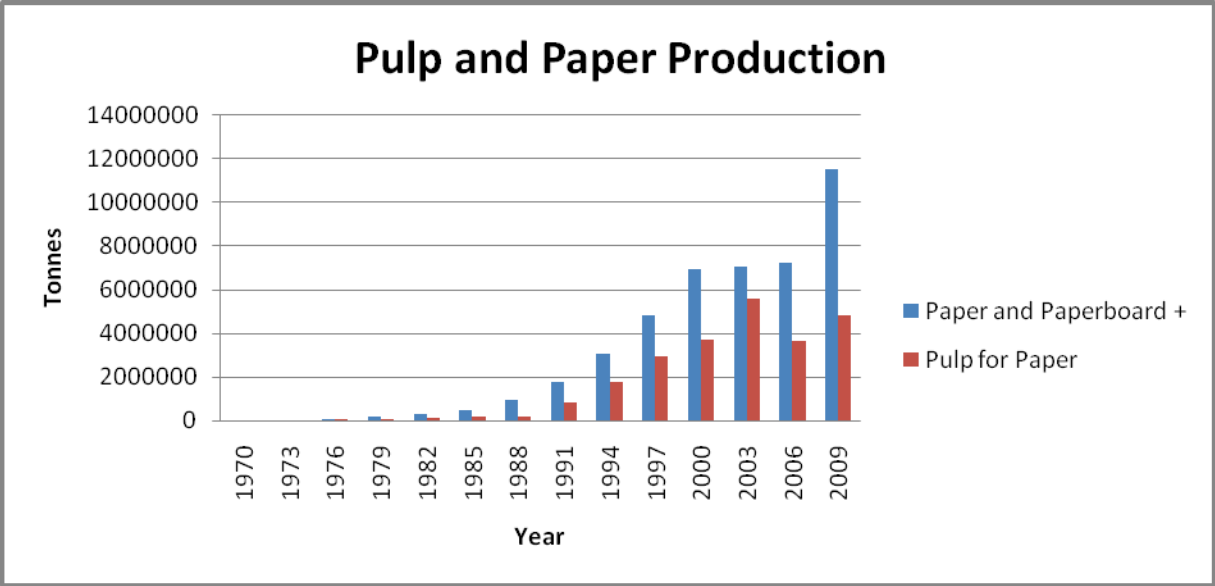


Figure 1 – Indonesia’s Pulp and Paper Productions
(Source: FAOSTAT | © Author 2011)

2. Round Wood

Indonesia was the largest hardwood exporter within the period of 1980 to 1990⁷. The log export ban in 1885 (replaced with huge tariff barrier after the ban is lifted in 1999)⁸ and another log export ban in 2001 has decreased the national production of round wood. Indonesia has also signed different agreements to limit the export of their round wood. Nowadays, round wood production is mainly to satisfy national demand⁹.

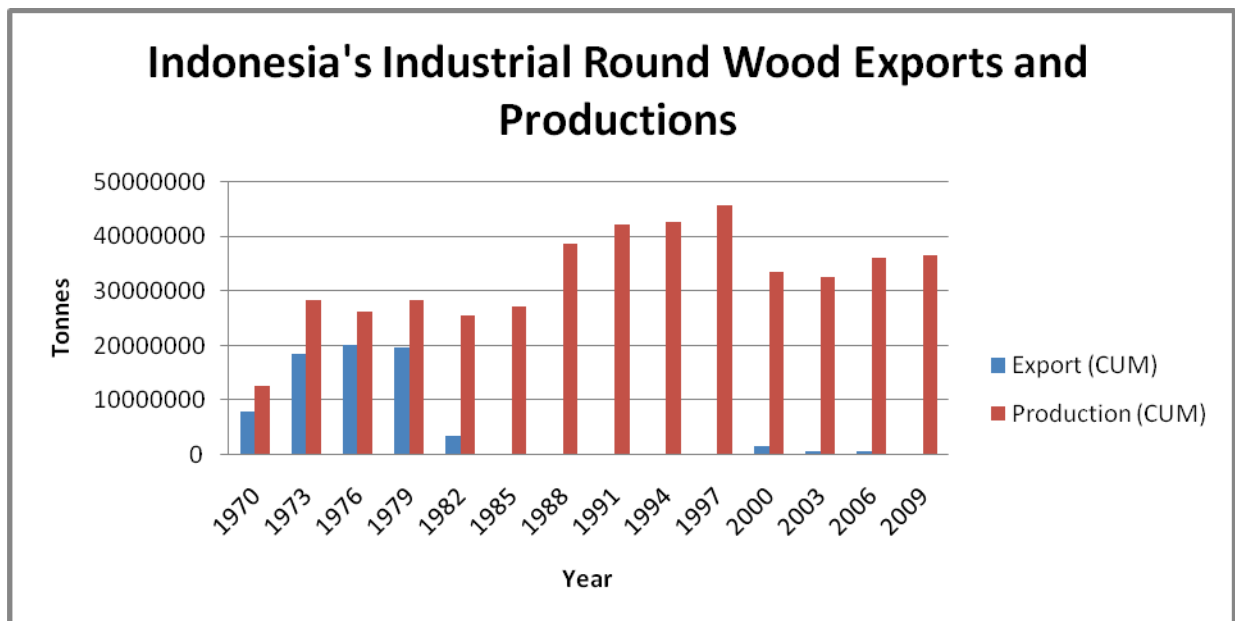


Figure 2 – Indonesia's Industrial Round Wood Exports and Productions

(Source: FAOSTAT | © Author 2011)

3. Sawn Wood

The production of sawn wood decreased from a high of 7.62 million m³ in 2003 to 4.33 million m³ in 2004, and to 1.47 million m³ in 2005¹⁰. This decrease is a result of sawn wood export ban in 2004. The trend is continually decreasing since there is an increase scarcity of wood⁹.

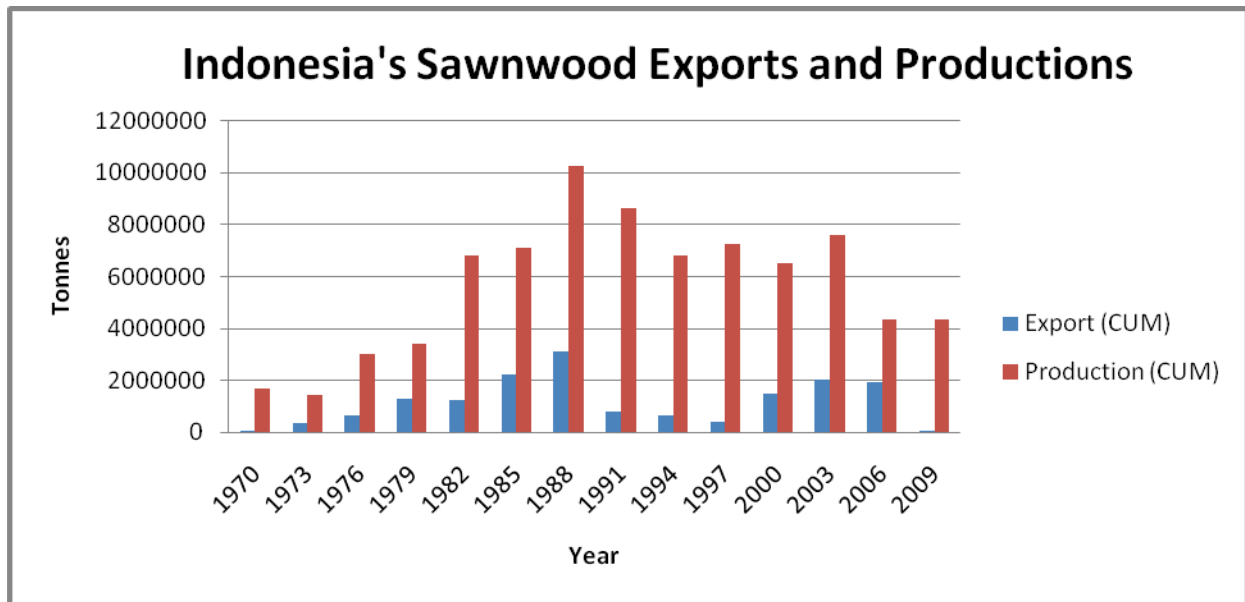


Figure 3 – Indonesia's Sawn Wood Exports and Productions

(Source: FAOSTAT | © Author 2011)

4. Plywood

Indonesia is the biggest plywood exporter of plywood today. However, the production has decreased significantly since there is a reduction in logging quota and an increase scarcity of log supply as mentioned earlier⁹. The production was down from about 10 million m³ in 2002 to only 2.9 million m³ in 2009¹¹.

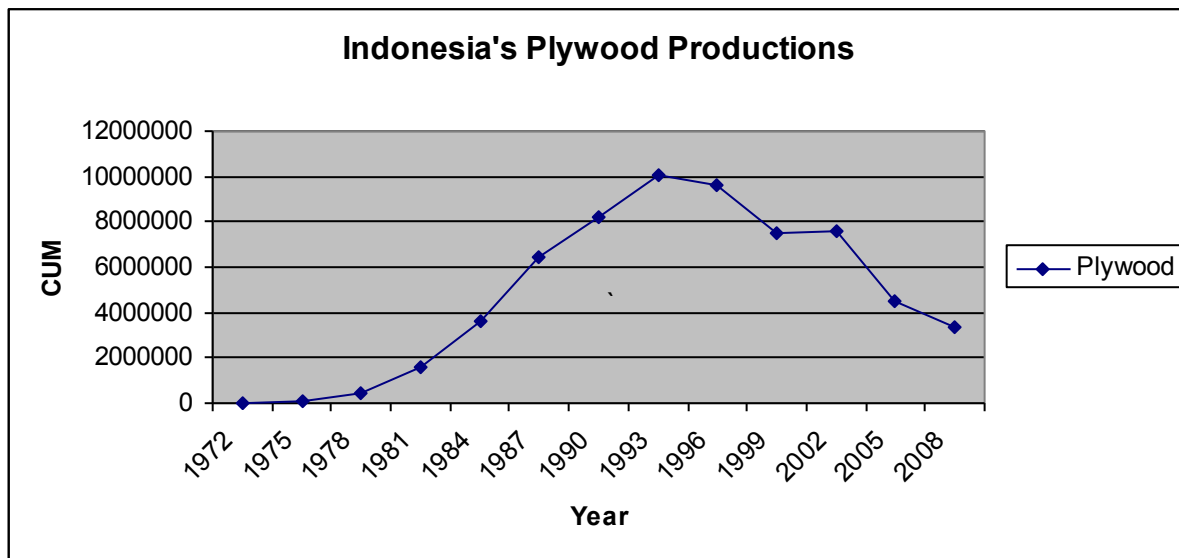


Figure 4 – Indonesia's Plywood Productions

(Source: FAOSTAT | © Author 2011)

5. Secondary Wood Products

Indonesia's secondary processed wood products industry is growing rapidly. Furniture is the main secondary wood products in Indonesia. Handicrafts and wood carvings hold only a small percentage in the secondary industry. According to the latest ITTO report in 2009, Indonesia exported 75% of its wooden furniture production worth \$1.21 billion. This value is a 1% increase from the previous year's export and has been in an upward trend since late 1990s. However, the report also stated that export was expected to slow down in 2009 because of the global recession that lowers demand from major importers, such as Japan and United States¹².

Non-Timber Forest Products

There are about 90 non-timber forest products that have been commercialized both locally and internationally. The main products are rattan, bamboo, damar, patchouli leaves, illipine nuts, cajuput oil, shellac, and temulawak⁴.

DEFORESTATION IN INDONESIA

Carbon Emission and Deforestation Rate

Indonesia has been scrutinized by the world because of the rapid destruction of its forest. Deforestation in Indonesia has long been a problem since the boom of log export in the beginning of 1970. The rate of deforestation is accelerating ever since; from losing about 1 million ha/ year in 1980s to a devastating average rate of losing 2 million ha/ year by 1996¹³.

Indonesia was reportedly having the highest deforestation rate in the world according to the Guinness Book of Record; depleting its forest cover by 1.8 million hectares between 2000-2005¹⁴. Indonesia was also named the third largest greenhouse gas emitters, behind China and United States, in a report released by World Bank in 2007. The emission was mostly due to forest loss which was accountable for about 85% of the total emission¹⁵. The latest report shows, however, a decreasing trend in deforestation in Indonesia¹⁶. According to Indonesia Ministry of Forestry, the current rate of deforestation is predicted to be around 1.125 million hectares¹⁷.

There are several causes to Indonesia's rapid rate of deforestation. The most apparent ones are illegal logging and the increasing number of palm oil plantations in Indonesia. Trees are illegally cut and traded for their values. Forest covers are clear cut and peat lands are drained to be converted into the economically profitable palm oil plantation. Moreover, forest fires caused by these land clearing actions worsens the situation.

- **Illegal Logging**

A greenpeace report in 2003 stated that about 88% of all the logs harvested in Indonesia are illegal¹⁸. An official from Indonesia's Ministry of Forestry declared that illegal logging has destroyed around 10 million ha forest area in Indonesia¹³. Illegal logging in Indonesia was a result of corruption and the over-capacity of the wood industry under the regime of President Soeharto (1968-1988)¹⁹.

During Soeharto's leadership, the forest industry was largely run by his family, close friends, military support, and those who were related to him politically. Up until now, some of these people still hold significant power in the forest industry. To support this, a recent study from the University of Indonesia reported that there are military officials who are still actively engaged in illegal logging although the current Indonesian government has stated that military unit would not be involved in any affairs other than security anymore²⁰.

Subsequently, there is a huge gap between demand and supply of wood. This is a result of uncontrolled expansion of the industry by greedy businessmen during the Soeharto era. The demand of wood industry is approximately 60 million m³/ year. However, the current sustainable supply from natural forest is estimated about 8-9 million m³/ year and about 7-8 million m³/ year from plantations. Moreover, more than a quarter of Indonesia production forest has been severely damaged thus it cannot be productive anymore, as stated by the Ministry of Forest²¹.

Nevertheless, the current Indonesian government, under the presidency of Susilo Bambang Yudhoyono, has been actively combating illegal logging in Indonesia. Many cases regarding illegal logging were filed in court and investigated. In 2005, an illegal logging investigation in Papua was launched with a budget of \$1.3 million. Thirteen people were convicted as the result of the operation²². Starting 2010, Indonesia bans non-certified wood export²³. As a result, the most recent reports suggest that the number of illegal logging has been decreasing²⁴.

- **The Rise of Palm Oil Plantation**

Palm oil plantation is an emerging industry in Indonesia. The high production yield and high economic return are two major factors of why the industry is growing rapidly. Unfortunately, it acts like a double-edged sword. Although it brings economical benefits and alleviates poverty, palm oil industry has a bad impact to the environment. Many peat lands are drained and forests are cut to open space for these palm oil plantations. The Indonesian Palm Oil Commission (IPOC) reported that there are approximately 7.4 million ha of total palm oil plantation area in all over Indonesia as of 2009 and many of these lands were either a forest or a peat swamp²⁵.

The most deforested area in Indonesia because of conversion to palm oil plantations is the Central Kalimantan province. In Central Kalimantan alone, there are approximately 763,000 ha forest lands which are already assigned, but not yet clear-cut, to be converted into palm oil plantations. These lands will be deforested at some point to open space for the palm oil plantation²⁶.

Palm oil plantation is also the cause of massive degradation of peatlands in Indonesia. In Central Kalimantan, there are more than 3 million ha of peat swamp and 14% of it has been converted into palm oil plantation according to Forest Watch Indonesia²⁶. In Riau, a peat swamp rich province in Indonesia, there are about 1.4 million ha palm oil plantations and one third of these plantations are created on once carbon-rich peat land. According to Greenpeace report, there are about 3 million ha of peatland which has been approved by the Indonesia's government to be converted into palm oil plantation.

Furthermore, palm oil plantation also escalates the danger of forest fires because of the fire used in land preparation for cultivation. Land clearing and peat drainage are also done by burning because it is inexpensive and fast²⁷. According to many reports, satellite images of forest fire hotspots are normally observed to happen near palm oil plantation concessions, thus it supports the argument.

Impacts

Severe deforestation in Indonesia over the last 30 years draws serious environmental concern. In addition, there are also several indirect social and economical drawbacks associated with it.

- **Environmental**

Forest is often dubbed as the lung of the earth because of the abundance of trees that convert carbon dioxide into oxygen, thus all the living beings on earth can breathe and live. In fact, forest function is more than just being an oxygen provider. Forest also functions as hydrological system control, emission filter, climate control and it is a habitat for different animal and plant species. Losing forest cover means that we are losing all these important functions that support human existence. Moreover, deforestation plays a pivotal role in the global climate change.

The major direct impact of deforestation is that millions of species lost their home. Seventy percent of land animals and plants live in the forest²⁸. Many of these species are forced to find a new habitat due to the deforestation. Unfortunately, many could not adapt with the new habitat. One of the popular examples of this observable fact is the orangutan in Kalimantan and Sumatra. Because many of their homes were converted into palm oil plantations, orangutan population went down significantly. In Kalimantan, the population went down by 39% between 1992 and 2002, while In Sumatra, the population declined more than 50% between 1992 and 2000²⁹.

Subsequently, forest acts as hydrological system. With deforestation, there is no more hydrological system in control. In tropical area with heavy rainfall like Indonesia, it can cause flooding to the nearby area³⁰. With no trees absorbing the water, the rain water will flow directly into streams and increase the water level that causes flooding. Furthermore, forest functions as water filter. Trees filter rainfall to provide clean water in the rivers and aquifers. In East Kalimantan, the Indonesian village of Lamcin was heavily dependent on the nearby Kelay river for their daily needs. Due to the heavy logging and deforestation, the water quality in the

river declined and the villagers had trouble finding a clean water source. Fortunately, USAID helped them with a clean water project which pipe in fresh clean water from a forest spring³¹.

Moreover, forests loss also drives climate change. Deforested area tends to get hotter and dryer. Trees precipitate moistures during the day and contribute to the humidity and soil moisture. As there are fewer trees due to deforestation, the number of rainfalls is observed to decline and the temperature in the deforested area is expected to increase. Furthermore, desertification may happen in the deforested area because there is no more tree canopy that protects the soil from direct sun heat and also due to lack of precipitation. Fewer trees also means that there are more greenhouse gases and pollution in the air since there are not as many trees that absorb and filter them as before. All these will increase the rate of global climate change²⁸

- **Social and Economical**

Deforestation also affects the social and economical aspects of human life indirectly. Some of the indirect effects are derived from the environmental impact mentioned earlier. Flooding can cause crop failures, disruption of economic activities, and also increases the likelihood of water-borne and vector-borne diseases³². The case of unavailable clean fresh water in Lamcin village, East Kalimantan, is also a good example that deforestation can decrease the quality of people's lives³¹.

Deforestation does not only affect socioeconomic aspects locally, but also nationally. According to a Human Rights Watch (HRW) report, illegal logging and forest corruption has caused Indonesia an estimate of \$2 billion revenue loss in 2006. This total loss estimate is a result from uncollected forest royalties and taxes, massive unacknowledged forest subsidies, and tax evasion scam by exporters³³.

Subsequently, deforestation also has negative social impact to the local forest dependent people. These indigenous people suffice their daily needs by harvesting resources from the

local forest sustainably. With deforestation, these people are being pushed away from their home. In Indonesia, logging companies and palm oil businesses often deceive the locals to gain their land in the cheapest way possible. Sawit Watch recorded several cases of this incident, in which several communities are trapped by debt to private companies³⁴.

REDUCING DEFORESTATION AND FOREST DEGRADATION (REDD)

Defining REDD and REDD+

REDD is the abbreviation for Reducing Emission from Deforestation and Forest Degradation. It is a programme which helps developing countries in reducing their rate of deforestation and forest degradation. The idea was originated back in 2005, during the COP-11 meeting when Coalition of Rainforest Nations requested to consider “reducing emission from deforestation” because it was not included in the 1999 Kyoto Protocol. Finally, in the COP-13, an agreement on the urgent need to take action to reduce emission from deforestation and forest degradation is reached. This is the start of the development of the current REDD mechanism³⁵.

REDD+ is the evolvement of REDD. REDD+ objective is not only to reduce emission from deforestation and degradation, but also to enhance the carbon stock and to manage forest sustainably. According to the last UNFCCC CoP definition, as described in the REDD text from the Cancun agreement, REDD activities are the followings:

- Reducing emission from deforestation
- Reducing emission from forest degradation
- Conservation of forest carbon stocks
- Sustainable management of forest
- Enhancement of forest carbon stocks³⁶.

➤ **REDD mechanism**

REDD mechanism is divided into three phases:

- Phase 1. REDD Readiness

Initial supports which are financed by voluntary fund from different nations and other institutions.

- Phase 2. Reforms and Investment

Continued financing based on performance of the implementation of REDD strategy

- Phase 3. Global REDD Fund/ Market

Market based mechanism on rewarding quantifiable emission reduction and carbon sequestration³⁷.

➤ **REDD Readiness**

REDD readiness is generally referred to the readiness of a country to receive and to positively channel the fund from the post-2012 REDD+ payment. REDD readiness also prepares the integration of REDD with the private carbon markets in the future. This readiness is very important to REDD's success because most countries, who are eligible for REDD, need a significant capacity improvement in their current forest management and forest governance³⁷.

The activities to prepare this REDD readiness involve the following:

- Developing effective and equitable strategy to reduce emissions through local stakeholder consultation
- Capacity building for institutions, techniques, and human resources
- Designing and implementing Monitoring, Reporting, and Verification (MRV) system and the forest carbon accounting system
- Developing reference and baseline measurement for emission reduction
- Developing mechanism to protect the interest of the poor
- Developing transparent, equitable, and accountable benefit sharing mechanism
- Clarifying land, forest, and carbon tenures³⁷

➤ **REDD supports**

The REDD programme is carried on and led by different nations, international NGOs, private sectors, or any combination of these organizations. World Bank and the United Nations, with its UN-REDD programme, are the two biggest international contributors who are actively in support of REDD.

- **World Bank**

World Bank supports the REDD project with its Forest Carbon Partnership Facility which helps in the funding for REDD eligible countries based on their performance in developing REDD strategy and readiness. World Bank also helps REDD with its Forest Investment Programme which also collects fund to finance projects that are related to REDD.

- **UN-REDD programme**

UN-REDD programme is a United Nation's collaborative programme. It was launched in 2008 and work with supports of expertise from Food and Agriculture Organization of United Nations (FAO), United Nations Development Programme (UNDP), and United Nations Environment Programme (UNEP). The UN-REDD programme supports REDD+ projects which are led by different nations and currently focuses to help for REDD readiness in different countries³⁸.

REDD in Indonesia

There are many different ongoing REDD activities in Indonesia which are led by different organizations or nations. The most significant one is the \$1 billion agreement with Norway. There are also REDD readiness programmes with the help of the Australian government, The Nature Conservancy (TNC), the World Agroforestry Center (ICRAF), and other organizations

➤ **Norway-Indonesia agreement**

On 24th of May 2010, Indonesia signed a letter of intent with Norway to reduce deforestation by having 2 years moratorium on new logging concession. In return, Norway pledged to pay \$1billion to Indonesia over the next 7-8 years. The agreement is a follow up of the commitment

made by the current Indonesian president, Susilo Bambang Yudhoyono, to reduce Indonesia's CO₂ emission by 26% in 2020.

Unfortunately, the moratorium is now (March 2011) stalled since president Susilo Bambang Yudhoyono has yet to sign a decree for the moratorium to be binding. The president is yet to sign the decree because there are three proposed decrees and he hasn't decided on which decree to sign. The first proposed decree was written by the Indonesia Ministry of Forestry, dated 21 December 2010. The second decree was created by the REDD task force, created part of the Indonesia – Norway deal; which was proposed to the president two days after the first decree was out. The last decree was proposed by the Coordinating Minister of Economy in January 2011. There is an important difference between the decrees proposed by the Indonesia's officials and by the REDD task force. The decrees proposed by the Ministry of Forest and the Coordinating Minister of Economy stated that the logging concession moratorium will only apply to primary forest, while the decree written by the REDD task force apply to any forests.

If President Susilo Bambang Yudhoyono decide to sign the decree presented by his officials, then the agreement with Norway will be meaningless. The primary forest was not supposed to be harvested in the first place, even if there were no moratorium, because the primary forest falls under the category of protection forest³⁹.

➤ **Indonesia National REDD+ Strategy**

To help REDD programme in Indonesia, BAPPENAS (National Development Planning Agency) and UN-REDD has collaboratively been working on a National REDD+ Strategy. The first draft has been reviewed and revised in September 2010 and will be the roadmap for REDD development in Indonesia.

The draft discusses underlying causes of deforestation and forest degradation in Indonesia, activities which have been done in REDD readiness, the formulation of REDD+ National Strategy, MRV (Measurable Reportable and Verifiable) System development, future

reformation strategy development in related sectors, and the implementation and integration of REDD with the RPJMN (National Medium Term Development Plan) in the future. The strategy also highlights the importance of involving and educating multiple stakeholders in national, provincial, and regional levels. It also stated the importance of integrating the strategy into the national (RPJMN) and regional planning system¹⁷

DISCUSSIONS: REDD DEVELOPMENT, ISSUES, AND CHALLENGES IN INDONESIA

There are many threats, issues, and challenges to the development of REDD and to a sustainable forest industry as a whole in Indonesia. Politics and corruption are the two biggest issues in Indonesia. Moreover, there are social and economic debates in the attempt of reducing deforestation and forest degradation in Indonesia.

The latest REDD+ National Strategy also mentioned the main underlying causes of deforestation and degradation In Indonesia. These underlying causes evolve from the issues and challenges that Indonesia is currently facing. All the issues are once again related to either politic, human resource capacity, or social economic values. Below are the causes listed in the REDD+ National Strategy:

- Weak Spatial Planning
- Land Tenure Problem
- Weak Forest Management
- Weak Governance
- Weak Law Enforcement and Legal Basis¹⁷

Politics

Indonesia's politics always play a part in the Indonesia's Forestry sector. Indonesia's politics are heavily influenced by many conglomerates in Indonesia since many Indonesian politicians often receive their supports from the business community and many of the politicians are

businessmen themselves. Two out of the tenth richest businessmen in Indonesia have their main business in forestry sector and seven others have related business in the forestry sector. These conglomerates often use their power through politics to gain land rights or to convert forest land designation for the benefit of their businesses.

There are several news reports regarding these practices. However, these businessmen could somehow still get what they want and escaped with no punishment or very little consequences. For example, the recent usage conversion for 14 hectare conservation forest in Gorontalo into production forest is linked with the expansion of one of the sub-companies of Bakrie Group. Bakrie Group is owned by the current Minister of Arts and Culture, also the richest businessman in Indonesia in 2010, Aburizal Bakrie. The Gorontalo forest is suspected to be converted into a gold mine as the area is known to be rich with gold⁴⁰.

Corruption

Corruption is a really big issue in Indonesia. Although there are some improvements in transparency which was shown by the increase of the Indonesia's corruption perception index (CPI). Despite the CPI increase, Indonesia is still one of the most corrupt countries in the world. According to transparency international, Indonesia is ranked 110th with other six countries with CPI of 2.8. This CPI has increased dramatically from 1.9 in 2002 which may has been the result of the establishment of Corruption Eradication Commission (KPK) in 2002⁴¹.

According to transparency international, corruption activities can come in many different forms, such as nepotism, bribery, fraud, and extortion⁴². Human Resource Watch released a report which predicted that Indonesia is losing around \$2 billion from corruption in the forestry sector annually³³. Corruption related to the forestry sector happens in different levels. The levels can be categorized as follows:

1. The Forest Management Agencies

These agencies are those who are responsible for forest management and administration activities, such as monitoring and recording harvest, issuing logging documents, collecting fees, and log logistics. At the district level, common corrupt

activities include allowing excess harvesting without penalty or report, falsely documenting species harvested to avoid higher fees for “expensive” species, and wood laundering. Wood laundering is the activity of allowing other wood from other area to be brought in and mixed with the timber harvested from a legal concession. At national level, the common corrupt activities are to alter forest zoning or designation and to increase the logging allowance capacity. There are reports from the business people that officials demand the bribes openly by dubbing it as “operation fees”, “entertainment fees”, or “other intangible fees”. There are reports that mention the amount of bribe can determine the speed for the paper works to be completed by the officials.

2. The Law Enforcement Agencies

Illegal logging suspects can easily bribe the law enforcement officials to suspend investigation or to manipulate evidence and to present false witnesses. Alternatively, the suspect can arrange the time of sweeping of illegal logging with one of the official so that there will be no illegal activities found at the time of sweeping, but the logged wood. At a later time, the illegal loggers will buy back the wood at an auction to sell the wood at a lower price than the legal price. Some reports even declared investigators have seen many cases where the wood was being loaded directly for shipping by the officials before the auction even began.

3. The Judiciary

In judiciary level, often times the prosecutor demand bribes to the suspect before the court begin. In exchange, the prosecutor will drop his charges. If the case is still open, the prosecutor can withhold the evidence or draw a false witness. Suspect can also bribe the judge to favour the suspect or bribe the clerk to destroy the evidence³³.

Human Resource Capacity

Bad politics, corruption, unsustainable practices and all unlawful actions root back to the capacity of the human resources in Indonesia. Capacity here refers to knowledge, mentality, ethics and character. Education and culture play a big role in developing people's capacity. Unfortunately, Indonesia human resource capacity is far from ideal. Many people never received a proper education and many children can't afford to go to school. In addition, the people who are less educated are those who are generally live close to a forest area, in which the area is less or not yet been developed. Moreover, most Indonesian will not be able to answer what the Bahasa Indonesia of "sustainability" is, since there is no word for it in Indonesia yet. The closest translation is "berkelanjutan" which can be translated directly as "continuous".

In addition, many Indonesian citizens have a weak mentality and a poor character. This might have been the after-effect of being colonized more than 350 years by the Dutch and being pressed under the Soeharto dictatorship. Certainly there are some people with good character and strong mentality. However, their number is relatively small compared to the whole population. Although there is no scientific report, one of observable examples of the weak mentality is that Indonesia people tend to act like a "servant" or a "follower", rather than as a "leader". They rarely take any proactive actions. Moreover, Indonesian people tend to look for the easiest way, but not the best way, to solve a problem; or in other word it will only postpone the problem. Ethically, Indonesia people always look for opportunities to fulfill their personal interest even it means that they have to harm their surroundings. This explains why Indonesia has a high rate of corruption and home to one of the largest illegal logging in the world. There are still many others poor characters that have been cultured to the lifestyle of Indonesia people and in need to be changed.

Social and Economic

Social and economic versus the environment is always the debate in sustainability issues, Indonesia is not an exception from this reality. In fact, the politic practices and corruption in

Indonesia are heavily related to the economy. Palm oil plantation owners would always argue that their industry actually created jobs for the community, thus benefiting the people; although it also means an environmental degradation.

The REDD National Strategy also mentioned about this issue in the discussion of the scarcity of alternative livelihood and income sources. Before, the indigenous people used to be able to live in the forest areas sustainably. However, due to massive population increase, modernization and globalization, the practices become unsustainable. The land is burdened with the increasing population, while the productivity of the forest and the people remains the same. On the other hand, modernization and globalization has triggered an increase in consumption and lifestyle needs. In example, some of these indigenous people now own satellite TVs in their homes. This created an unbalance income and expenses which leads to unsustainable practices, such as the illegal logging or excessive harvesting, to offset the unbalance¹⁷.

RECCOMENDATIONS: PATHWAY TO A SUSTAINABLE FUTURE

Undoubtedly, forest industry has been and is a significant contributor to the strong economy of Indonesia, thus it plays an immense role to the well-being of the people of Indonesia. Unfortunately, Indonesia forest industry has been practiced in an unsustainable manner for decades. The REDD movement, which were initiated in the UNFCC CoP 13 meeting, offers a great opportunity to change the forest industry in Indonesia towards a sustainable industry. However, there are still plenty of challenges and issues that need solutions for the REDD movement to be efficiently carried out in Indonesia, as discussed previously. This section discusses potential solutions and offers recommendations for those issues and challenges.

Education, Capacity Building, and Mentality Shift

Having a good human resource capacity will ensure the success of the delivery of REDD in Indonesia. Without enough knowledge, people would not understand and care about what REDD is. The people who live near forest areas are the most critical target audience that needs to be addressed because of the following two reasons. First, they are generally less educated

since they live in rural areas where there are no schools around. Second, their life is normally dependant on the forest. The old ways used to be that they harvested from the forest sustainably. However, with the increasing population and lifestyle, they now also involve in illegal loggings and other unsustainable practices. Through educating the people of Indonesia about the importance of sustainability and the threat of climate change, the people will care more about the forest and the environment. Moreover, it is important to introduce REDD to the people and inform how REDD will benefit them.

Subsequently, Indonesia has to have a mentality shift of its people. Indonesian people have to be encouraged to have a mentality of a leader; to take proactive actions that can benefit the nation. Moreover, good ethics have to be developed in all areas. The people need to be taught that the easiest solution might not always be the best solution. In addition, sustainability must be planted as one of the core values of the people's life. All these can be done through series of capacity building and character equipping. It is also important to start to plant this sustainability value from a very young age. It may be a little bit late and difficult to change the current generation, but it never is too late to change the next potential leaders of these countries. Local schools and universities must promote sustainability in their systems.

Use of Media and the Internet

Media is a very powerful tool to pass on information. Media in Indonesia has played an integral role in shaping the country over the years. In addition, Indonesia people are one of the most active users in social networking websites. Indonesia is home to the third largest facebook users in the world⁴³ and visited the Twitter more often than any other countries in 2010⁴⁴. The media and the internet will be a very effective and powerful way to promote sustainability in Indonesia.

Government, Politics and Law

Indonesia government needs to be open and enhance transparency in all their institutions. The ongoing fight against corruption has already been a very good progress to reach transparency and must be continued in the years ahead.

Subsequently, it is very important that the government carefully develops the law that governs the forest management in Indonesia. Besides that, law enforcement must be strengthened and any misconduct must be disciplined accordingly.

Another thing that the government can do is to incentivize businesses that promote sustainability by giving no-interest loan, subsidy, or tax reduction. These businesses can include eco-tourism, non-timber forest products, and reforestation management.

Sustainable Forest Management

The forest governance must promote and develop a sustainable forest management. Programmes such as Reduced Impact Logging (RIL) or Production Forest Plantation should be implemented. Partnership with various NGOs and other international parties will be very helpful to the improvement of forest management in Indonesia. It is also important to have a capacity building for the institution and the forest officials, thus they have the capacity to practice a sustainable forest management.

Subsequently, the Forestry Ministry needs to develop the forestry accounting system in Indonesia. Having an accounting system of the forests will help to solve the land tenure problems, improve the land usage zoning and development planning, and develop the MRV system of carbon in Indonesia. Furthermore, palm oil plantations must be limited and placed in the designated area without harming the forests. Ongoing project on land mapping can help solving this issue by allowing the industry to grow palm oil plantations only in the degraded lands which are low in carbon stock⁴⁵. Lastly, the development of MRV system is very crucial to the implementation of REDD as a whole in Indonesia.

Role of Wood Products Industry

Wood products industry has to be more innovative. With the lack of supply the industry is currently facing, the industry has to adapt in a sustainable way. The industry should not rely on the supply from the local forest only and exploit the forest illegally and unsustainably. There are few things that the industry can do to ensure REDD success and promote sustainability:

- Buy supply only from a sustainable management harvest and promote their business as environmentally responsible business.
- Recycle and reuse the products they made as much as possible.
- Engineer the product so that it uses less wood or uses other wood species with greater availability for the same purposes.
- Use an alternative wood species which can be grown quickly in a plantation.
- Use alternative fiber source for the material of their products, i.e. agricultural waste.
- Own their own sustainable plantation to supply their needs.
- Increase productivity and efficiency so there is less waste
- Promote value-added products and diversify the products

CONCLUSION

Indonesia forest industry is big and still expanding, especially the pulp and paper industry. However, the industry is currently experiencing scarcity of wood supply due to overcapacity and over exploitation. These problems are caused by uncontrolled expansions and unsustainable logging practices during the corrupt Soeharto's governance. Thus, deforestation and forest degradation rate in Indonesia was one of the highest in the world.

Today, deforestation and forest degradation are still the main problem of Indonesia forest industry. Illegal logging is still one of the major causes, but the practices have been constantly decreasing since the reformed Indonesia government has declared a fight against it. However, the rise of palm oil industry has brought in a new challenge. Many forest areas are clear-cut and converted into palm oil plantations.

Reducing Deforestation and Forest Degradation (REDD) is an international movement to end deforestation and forest degradation. With REDD, Indonesia can achieve a sustainable forest industry. However, it still needs the cooperation and supports from the people of Indonesia. The Indonesia readiness for REDD is very crucial to the success of REDD implementation. There are still issues and challenges such as corruption, poor ethics, weak mentality, politics and socioeconomic debates. Government needs to strengthen law enforcement and enhance transparency, while the industry is demanded to be innovative and supportive. In addition, promoting the value of sustainability is essential, especially to the young generation; media and the internet can be used as a powerful tool for this purpose. Above all, all Indonesian citizens need to have a "sustainability" mindset. In conclusion, if multiple stakeholders work together to improve and assess those areas of need, Indonesia will soon have a sustainable forest industry.

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