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Indonesia Deforestation

## **Indonesia- Solving deforestation through education**

Many people are aware of the devastating amounts of rainforest being lost all across the globe. Countries with dense rainforest cover usually rely on its forests to make a profit which has led to an increase in deforestation rates over the years. Indonesia is not the only country having to face this problem but is one that has gotten a lot of attention for its high rates of palm oil production. While many organizations have taken action and countries have passed new laws of regulation there is still more we can do to solve this issue. The world's rainforests are vital for the survival of millions of species and are in need of protection from industrialization.

The country of Indonesia is an island country located in Southeast Asia. Officially called the Republic of Indonesia, the current president is Joko Widodo who is part of the PDI-P or Indonesian Democratic Party of Struggle. The government has three branches and seven organs of the state. The three branches of government are similar to that of the United States with a judicial, executive, and legislative branch ("Government"). Two examples of the eight organs include The People's Consultative Assembly and The Supreme Court ("Government"). The population is currently at 270 million- according to the World Bank- located over 18,110 islands and approximately 740,000 square miles making it the world's largest island country (Nationsonline.org). The island nation is also home to around 123 million hectares of forest which accounts for 10% of global forest cover (United Nations). Indonesia is divided into 34 provinces such as Papua and Java (Nationsonline.org) and has a total of 54,720 km of coast line ("Government"). The official language of the country is Bahasa Indonesian ("Government") but there are over 300 indigenous languages (*Columbia Electronic Encyclopedia*). Famous landmarks from Indonesia are The Prambanan Temple, Bali and Mount Ranjini ("Indonesia Tourism & Indonesia Travel Magazine"). In Indonesia there are two seasons: a wet season and a dry season (Wetherbee, Amy). Major exports include oil, fishing, natural gas, minerals, rubber ("Government") and is the number one producer of palm oil in the world (UNESCO). The average farms are small family farms that make up 93% of the farmland being used in Indonesia (Schneck).

The family and lifestyle of Indonesia depends on the region as it varies from indigenous groups living across the islands to the more modern families living in Jakarta. However the average families have a collective face meaning that every individual's actions affect the image of the whole family (Pier). They have a strong culture around marriage and family, and harmony is a guiding principle (Pier). The average is two children per household and the family usually stays very close even into adulthood (Pier). Women in Indonesia still have very domestic roles as the country's views are still fairly patriarchal (Pier). The main religion in Indonesia is Islam as it has the largest population of Muslims in the World (*Columbia Electronic Encyclopedia*). Despite this Indonesia is a large mixing pot with over 250 distinct cultures and ethnic groups (Wetherbee, Amy). The food in Indonesia, much like the population, is a vast mix due to

colonization and regional culture. Their diet mainly consists of fried rice, fish, tropical fruits and vegetables (Wetherbee, Amy). Some popular dishes of Indonesia are satay, a grilled seasoned meat and nasi goreng, fried rice, (Wetherbee, Amy). According to an article by the Jakarta Post 22 million people suffered from chronic illness during 2016-2018 (Phillipp, Jennifer). The country has been battling a hunger crisis and there have been many efforts to help end hunger in Indonesia (Phillipp, Jennifer). Raskin is the name of a government funded effort to deliver subsidized rice to underprivileged homes (Phillipp, Jennifer). "This program delivers rice to 17.5 million people and with an annual budget of 1.5 billion, it is Indonesia's largest social support program", states Phillip, Jennifer writer for the *Borgen Project*. Most people still work low-paid agriculture jobs and approximately 90% of the population are involved in agriculture ("Government). The World Bank states, "In 2017, the share of individuals living in extreme poverty (below the international poverty line of \$1.90 per day in 2011 PPP) was 5.7 percent and in moderate poverty (\$3.2 per day in 2011 PPP) was 27.3 percent respectively" (UNESCO). Education in Indonesia consists of six years in elementary school, three in middle school and three in highschool. These 12 years are known as primary education and as of 2017 98% make it to the last year with a gross enrollment rate of 109% (UNESCO). Tertiary school which would be similar to American college years has had an increase of 24% gross enrollment ratio and in 2018 6% more females were in attendance than males (UNESCO). Even though there are still around 2 million adolescents out of school, the majority of which are males, as of 2015 the illiteracy rate from 15-23 year olds has exponentially dropped from 4 million to around 130,000 (UNESCO). However the amount of people over the age of 25 that have achieved a bachelor's degree or higher is under 9% (Mackie). As well as education rates, the healthcare system in Indonesia is growing exponentially with 84% of the population covered by JKN which is the national health care system (Ita). However there is still an underwhelming amount of hospitals and healthcare workers (Ita). As well as a challenge providing underserved areas of the community access to these amenities. Indonesia has 2,813 hospitals (Ita) and an article from export.gov states "Those hospitals offer 310,710 hospital beds, or 1.17 beds per thousand population. This rate is the lowest in ASEAN and among the lowest in the world"(Ita). Since there is a huge gap between the population living in cities and those living in rural areas things like drugs, education, and food are hard to provide to the more rural section of the population. Major humanitarian issues in are economic corruption, the hunger crisis, deforestation which is pouring 2.15 metric tons of CO2 emissions into the atmosphere ("Each Country's Share of CO2 Emissions.") and the fight for independence for West Papuans who have a history of facing racial discrimination in Indonesia (Gunia, Amy).

Indonesia is home to 10-15% of all known plants and animals in the world (26, Diana Ruiz) living across 123 million hectares of rainforest (United Nations). Deforestation trends show from 2002 to 2020 Indonesia lost 27.7 Mha of tree cover, 71% of that was of natural forest (global forest watch). In recent years Indonesia has worked to combat these trends and succeeded with restoring 6.94Mha of tree cover ("Indonesia Deforestation Rates & Statistics: GFW.") and from 2018-19 a 5.2% increase in net deforestation which was significantly less than in past years (Ppid). In 2020 forest loss was the lowest it has been in 17 years at 270 kha (global forest watch). Today 89.8% of primary forest extent in Indonesia remains ("Indonesia Deforestation Rates & Statistics: GFW."). Over time the main causes of deforestation went from 52% being from large scale farming of mostly palm oil to small scale farming and fires contributing to a higher rate (University,Duke). An article from science daily.com did an interview with Kemen G. Austin, who is a graduate from Duke's Nicholas School of the Environment and states this," Small-scale farming, which has largely been overshadowed by plantation-scale agriculture as

a driver of deforestation, was also found to play a bigger role, accounting for about one-quarter of all forest loss”(Austin 2019). Still in 2019 palm oil plantations made up 14 million hectares of land (“When We Lost the Forest, We Lost Everything.”). Other causes are mining, logging ,slash and burn, cattle raising and wildfires. Again Austin states, “Mining and logging roads were also found to be important drivers of deforestation at different times during the study, particularly on the local level”(Austin 2019). Furthermore The UN states”, The Indonesian Ministry of Forestry estimates that in recent years, the country has lost between 1.6 million and 2.8 million hectares of forest annually (between 3 and 5 hectares a minute) to illegal logging and land conversion”(United Nations).The highest rates of deforestation are calculated in Riau, central Kalimantan, West Kalimantan, East Kalimantan and Jambi (Wijaya, Arief). Deforestation has a large effect on the rural population, as the poor and small scale farming communities need to use their surrounding environments in order to survive so they resort to using a higher percentage of forest. Deforestation in Indonesia affects all people, specifically those living in the country and the rest of the globe as they ranked number 10 for CO2 emissions at 0.61GT by The Union of Concerned Scientists.

Solutions to combat deforestation in Indonesia are as complex as the trends themselves. In order to lower deforestation rates, implementing education strategies that teach small scale farming and underserved communities about the importance of the rainforest and sustainable farming methods would be effective. The solution should focus on members of the community becoming aware of the issue and having the tools to fix them. This would be done through presentations, speakers and even physical information such as flyers that would be available year around. If done correctly the environmental benefits from educating the population have the potential to be great. The main goal of the curriculum would be to teach about sustainability and to create a safe place to report illegal use of the rainforest. To execute the solution organizations such as The World Bank and local members of the community would be ideal in leading the education team. Using educators who already have relationships built into these communities will have the most success. The lesson would be backed up with actual tools, if accepted, that provide alternatives or the ability to farm and raise cattle while using the smallest amount of rainforest possible. It will focus on sustainability and unique approaches to cattle and agriculture farming such as using biodigesters and even something as large as introducing silvopasture production systems. Illegal use of the rainforest and wildfires are other large contributors to deforestation. The team of people leading these expeditions will teach about wildfire prevention and how to react to illegal activity. Since these groups of people are such a big part of Indonesia's population the project will need lots of support. In order to meet the needs of the population organizations such as the UN or World Bank can help fund the supplies and provide outreach. I chose these organizations because of the World Bank's SLMP (Sustainable Landscape Management Program) which is already set up in the country and Indonesia's participation in the UN. Indonesia's own government will also play a role in supporting this project by advocating on behalf of education and financial support. For this project to have the best outcome the government, independent organizations and local communities will have to work together. The end goal will be to create an educated and passionate community that has a healthy relationship with the forest around it. In order for positive change to happen we need to respect those we are working with, meaning if sustainable ideas are rejected then it is not our place to force it upon them. I believe that because of Indonesia's booming economy and high education rates the population will start to lean towards industrial jobs. In other words illegal use of the rainforest and low paying agriculture jobs will be on the decrease. What we need is a way to continue to keep our rainforest safe through methods that will last generations.

Other solutions include creating new government bills that limit the amount of rainforest that can be used for commercial purposes. There have already been cut backs on the amount of rainforest that can be used for palm oil and other products so introducing another will be a challenge to get accepted. The bill would also have to focus on commercial use of rainforest so as to not harm the indigenous peoples way of life as this could create a stigma and enforce racism. Government regulation should focus on industry, industrialization and promoting education. Although changes of law in government can be very effective over time they can be changed. For this reason it is hard to know if new government regulation can be sustainable. We also have to take into account Indonesia's economy. Palm oil accounts for 4.5% of Indonesia's GDP which has a huge impact on their economy (*Green Commodities Programme*). The country has seen a rapid growth in GDP and the world bank describes it as, "the world's 10th largest economy in terms of purchasing power parity, and a member of the G-20" ("The World Bank in Indonesia."). By limiting the amount of deforestation for commercial use it also limits the amount of income the country makes. This in turn could increase the rate of poverty amongst people in Indonesia.

As countries modernize we need to continue to pay attention to the use of the world's rainforests. According to the World Resources Institute we lost 11.9 million acres of tree cover in 2019 alone (Wijaya, Arief,). The environmental effects of deforestation are immense and affect every organism living on Earth. The exponentially growing country of Indonesia is not the only country having to face the challenge of deforestation. Thankfully there have been many strides taken in these countries to help combat the loss of rainforest but the ever changing future does not always mean they are sustainable. In summary, countries should focus on sustainable ideas for lowering deforestation such as education and wellness programs. Overtime as Indonesia becomes more of a modern country I believe that we will see smarter use of the rainforest and an increase in awareness from the country's own people.

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