

# Medical Clinics for Planetary Health

THE SURPRISING LINK BETWEEN  
LOGGING AND HEALTHCARE IN INDONESIA

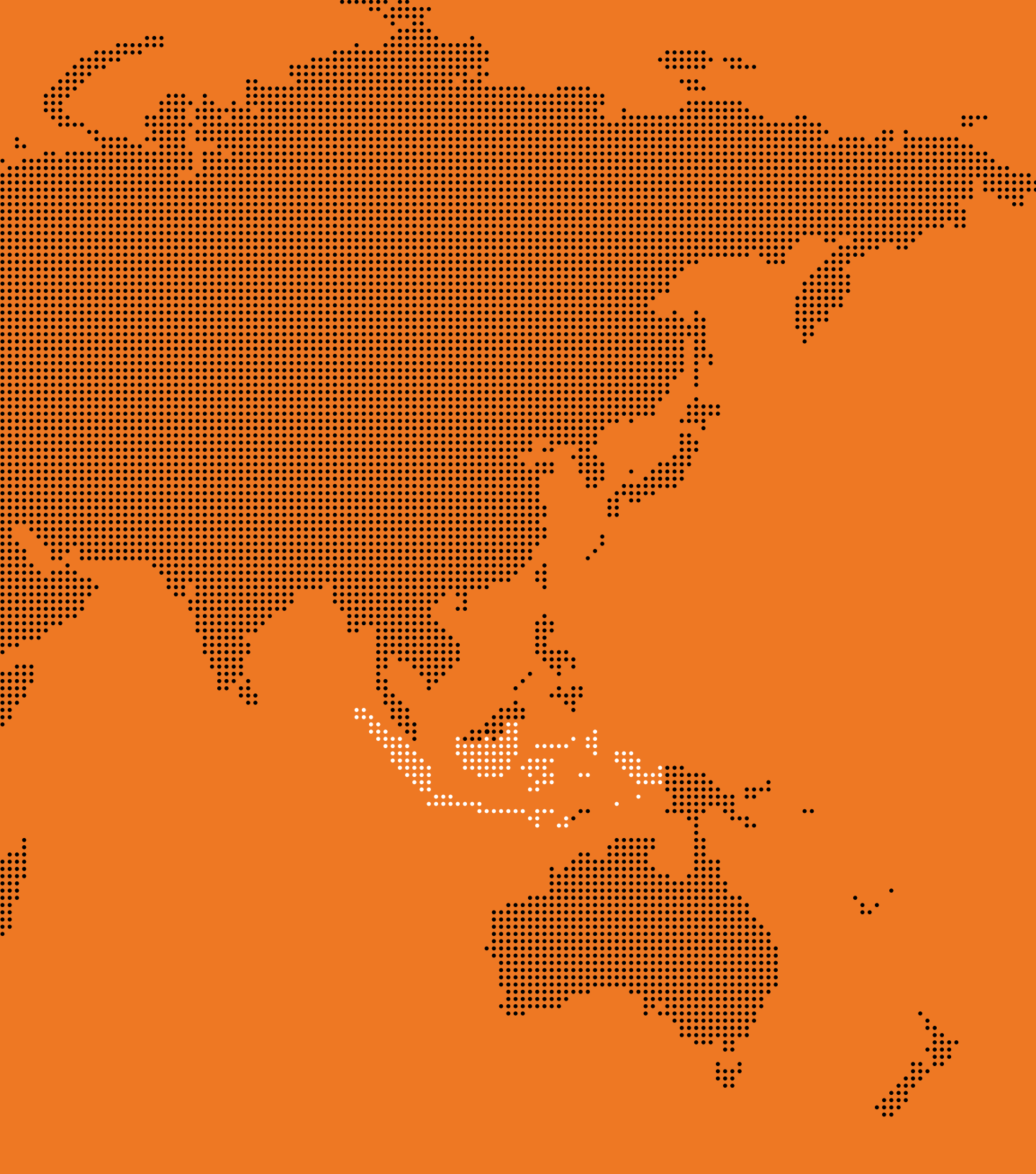
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## Executive Summary

Themes of land use change and deforestation are explored in the land use section of chapter 4 of [\ Planetary Health: Protecting Nature to Protect Ourselves](#). Environmental determinants of infectious disease exposure are explored in chapter 6. Developing business and economics models more consistent with planetary health are explored in chapters 15 and 16.

### Learning Objectives

*After examining this case, in relation to the communities surrounding GPNP, students should be able to:*

- ① Understand the interlinkages between deforestation and health.
- ② Analyze the push and pull factors of deforestation.
- ③ Describe common barriers to access healthcare services.
- ④ Appraise the utility of bottom-up approaches in the face of planetary health challenges.

This case study examines a connection between rainforest conservation and affordable healthcare access in communities surrounding Gunung Palung National Park (GPNP) in West Kalimantan, Indonesia. It emphasizes that human and environmental well-being cannot be seen as separate from one another. Specifically, it explores how deforestation impacts human health and well-being, and how implementing co-beneficial solutions can improve human health while protecting natural ecosystems. Finally, this case study highlights the importance of collaboration to achieve planetary health, both within communities and within organizational teams.

Featuring the work of U.S.-based NGO Health In Harmony and its Indonesian partner organization, Alam Sehat Lestari (ASRI), this case study details how a planetary health intervention that integrates medical care, conservation education, reforestation, and livelihoods training has had positive benefits on human health and the surrounding ecosystem. These benefits include a decrease in deforestation between 2008 and 2018 around the GPNP, and the opening of a medical clinic, which has served over 33,000 patients in that same time period.<sup>1</sup>

*This case study was developed based on interviews conducted in West Kalimantan, Indonesia, in July 2018.*

## Introduction

When Kinari Webb visited Borneo in 1993, the orangutans were her first love. “It was said at the time that an orangutan could go from coast to coast to coast on the third largest island in the world without touching the ground,” Webb recalls in a 2016 TEDx talk. “But even back then, you could hear that hated sound: the sound of a chainsaw. The trees they were cutting were so enormous that when they hit the ground you could literally feel the Earth shake in your feet.”

In the beginning, Webb hated not only that sound, but also the men wielding the weapon. But over the course of her year in the rainforest, she met some of the loggers—and she started to listen to what they had to say. What she heard were stories of impossibly large responsibility, men who had to pay for their family’s needs, including medication and emergency healthcare, while living in subsistence conditions. From her conversations and follow-up research, Webb learned families would spend approximately a year’s income on medical emergencies like surgeries, caesarean sections, wounds, and serious malaria cases. Those medical bills would leave most in debt, and as it happened, illegal logging was one of the best ways to get fast cash.

Near the end of her time in Borneo, Webb felt herself staring down diverging paths. “I remember writing a list of the pros and cons of doing conservation work versus health, and not being able to decide between the two,” she describes. “This intersection wasn’t on anyone’s radar, but I could see it from my own experience talking to people. I had this real desire to focus on human health and the protection of the rainforest.”

Instead of continuing orangutan research and working for a traditional single-sector NGO, Webb decided to tackle one of the root causes contributing to the loss of the species: the illegal logging that was occurring to pay for emergency healthcare. Finishing medical school in 2005, Webb—now with an MD after her name—founded Health In Harmony. The organization started with the understanding that human and environmental health are inextricably intertwined, and that the best way to save the forest is to ask communities what solutions they think would work.

After searching for an appropriate site to set up the program, Webb moved to Kalimantan with her husband Cam Webb who she had originally met in Gunung Palung National Park when he was doing his PhD in rainforest ecology. In 2007, alongside Dr. Hotlin Ompusunggu and ecologist Antonia Gorog, they created partner organization Alam Sehat Lestari (ASRI). ASRI is a dual community medical clinic and conservation organization in Sukadana, West Kalimantan, Indonesia. A planetary health organization before the term existed, ASRI provides people living in and around Gunung Palung with the access and means to a livelihood outside of logging.



*Gunung Palung National Park as seen above ASRI’s clinic. Photo courtesy of Jocelyn Stokes.*

## Borneo and Gunung Palung National Park: Biodiversity Hotspots

The close interaction between nature and people is evident even before reaching Sukadana. The road into town is mercilessly bumpy, an amusement park ride through rainforest vegetation. Just beyond, the distinctive branchless-trunks of giant dipterocarp trees extend a hundred meters into the sky, exploding into a dense canopy shading the road from the afternoon sun.

Gunung Palung National Park (GPNP) and Sukadana are found on Borneo in the Indonesian province of West Kalimantan. As an island, Borneo is shared between Indonesia, Malaysia, and the tiny nation of Brunei. The Indonesian portion of the island goes by the name Kalimantan.

↘ *Appendix 1: Three maps featuring the area where ASRI operates*

One of the thousands of islands that compose Indonesia's 5,000 kilometer archipelago, Kalimantan is home to eight national parks. Gunung Palung National Park has tripled in size since it was first protected as a forest nature reserve in 1937, and is considered one of the best maintained examples of the primary lowland forest that once characterized the island.<sup>2</sup> Recognized as a national park in 1990, GPNP now covers 1,080 square kilometers along Kalimantan's western coast.<sup>1</sup>

The area holds a special place in the hearts of many conservationists. "Borneo as an island has one of the richest biodiversity levels in the world," says Mahardika Putra Purba, ASRI's Conservation Manager. "Some of the flora and fauna can also be found in Sumatra (another of Indonesia's islands) or Malaysia, but they were originally from here. That's what makes Borneo unique."

Putra Purba further explains that 80% of that biodiversity can be found within GPNP's boundaries. That includes 2,500 critically-endangered Bornean orangutans (*Pongo pygmaeus*), and the park remains one of the last remaining places where orangutans thrive in the wild. Other unique species join this list: endangered proboscis monkeys with their peculiar long noses, vulnerable clouded leopard and sun bear populations, and hundreds of species of birds, mammals, and other primate groups, several endemic to Borneo.<sup>3</sup> Much of the region's flora is also on the endangered species list, including many trees within the dipterocarpus genus—valuable tropical hardwood trees that form the foundation of Kalimantan's lowland forests.

<sup>1</sup> Based on a map drafted by the park in 2014.



*Gunung Palung National Park in West Kalimantan, Indonesia, is home to 10% of the remaining wild Bornean orangutan population. The name orangutan comes from two Bahasa Indonesian words: orang and hutan. The translation, "person of the forest," is an indication of the connection people feel to that species.*

## The Intertwined Nature of Human Health and Forest Health

ii Before moving ahead, what do you think these benefits are?

iii “Pak” is the respectful honorific used to refer to an adult man, the equivalent of saying “Mr.” in English. Many Indonesians only use one name, in this case, Sahmadi.

Rainforests provide invaluable health benefits for those living around them.<sup>ii</sup> There’s often a misconception that the people who exploit nature fail to understand the connection between environmental well-being and the health of their families. In many cases, this couldn’t be further from the truth.

Early on a Sunday morning, Pak Sahmadi<sup>iii</sup> stands on the beach in Sukadana. He’s preparing his boat for a fishing expedition, but for now he’s marooned on the shore, a pool of muddy water reflecting his blue and red craft, and the towering rainforest beyond. The morning is quiet, but Sahmadi says it wasn’t always that way.

“Before, I heard the sound of many chainsaws here,” Sahmadi remembers. “Usually in the morning I would see trees falling from where I stood.” The effects of logging became even more apparent when he would go to the rainforest to gather water. In the past, he says the number of drinking sources were declining, and many children were getting sick because of poor water quality. The water flowing into the villages around GPNP draws its source from three upstream watersheds.<sup>4</sup> The watershed supplying Sukadana and other coastal communities is facing an acute human-caused loss of its lowland dipterocarp forest, despite being classified as an area of High Conservation Value.<sup>5</sup>

Sahmadi’s observations linking the health of children in his village with water quality are not purely anecdotal. Research conducted in 35 countries, including on the Indonesian island of Flores, has verified that link, finding a higher level of upstream tree cover associated with a lower probability of downstream diarrheal disease for children under five.<sup>6</sup> The World Health Organization (WHO) lists diarrheal disease as the second leading cause of death for children in this age group, killing around 525,000 children annually. In total, there are an estimated 1.7 billion childhood cases globally each year.<sup>7iv</sup>

Preventing diarrheal disease is one of the ways in which forest ecosystems safeguard human health. They do this in two ways: “by displacing human activities that can pollute the watershed, or by filtering or diluting pollutants from areas of human activity.”<sup>8</sup> In other words, people are less likely to disrupt a watershed if they can’t access it, and if they do gain access, tree cover provides a layer of protection so pollutants have a lesser effect on people living downstream.<sup>v</sup>

iv What microbes are primarily responsible for this high burden of disease and mortality? You will probably be surprised.  
↘ [Read more here](#)

v What do you think are the biological mechanisms at play here? Does soil play a role?

The ability of Gunung Palung’s forests to regulate pollutants was tested by unseasonably high rainfall in 2017, which caused flooding in and around Sukadana. Many people blamed this event on the logged forests. The effect that land use and land cover change has on flooding in Indonesian Borneo was the focus of a 2016 study. It acknowledged that a major rainfall event can lead to flooding even in ecosystems that have not undergone land use and land cover change—the clearing of land through logging, for example.<sup>9</sup> However, the authors noted that natural land conversion can result in increased flooding risk. These risks originate from a loss of groundwater storage in deforested areas, erosion and sedimentation, and the role that man-made roads and footpaths play in channeling the direction and speed of water.<sup>10</sup>

When forests are intact, trees regulate heavy rainfall using their canopy and root systems. The canopy above prevents heavy rain from falling directly to the ground. When rain filters through the leaves, it reaches the soil at a rate in which it can be absorbed and stored by root systems. This helps prevent flooding. The 2016 study reported that flood frequency was less likely in watersheds with a greater level of intact forest, while villages within five kilometers of a logged forest recorded higher-than-average recent flood activity.

Past publications have directly and indirectly linked flooding to multiple health problems, including diarrhea, acute respiratory infections, skin infections, and non-communicable diseases.<sup>11vi</sup> Dr. Nurmilia Afriliani, a General Practitioner and former Clinic Director at ASRI says this was reflected in the clinic’s patient diagnoses after the 2017 flooding event: “there were cases of diarrhea and many bacterial skin infections because the water contained everything,” she remembers.

The services provided by forest ecosystems have added importance in rural, lower income communities where people are more vulnerable to the impacts of upstream tree cover loss.<sup>vii</sup> The aforementioned 2016 study of 35 countries found that 93% of people relying on surface water live in rural communities, making the effects of watershed degradation disproportionately impactful to these populations.

vi What are the mechanisms at play here?

vii Ecosystem services are widely discussed in the Chile-Aguas Andinas Case Study. Make sure you review this concept before moving forward.  
↘ [Learn more here](#)



*Pak Sahmadi on the beach in Sukadana, West Kalimantan.*

## Community Healthcare Access: A Multi-Layered Challenge

<sup>viii</sup> The area around Gunung Palung National Park is Kayong Utara Regency. Indonesia is divided into provinces, and sub-divided further into regencies. For example, Kalimantan has five provinces, including West Kalimantan where the ASRI clinic is located. West Kalimantan is divided into 14 regencies, including Kayong Utara Regency, of which Sukadana is the capital city. Kayong Utara is West Kalimantan's newest regency, and was created by the government in 2007.

<sup>ix</sup> **What is the recommended ratio by the WHO? What is it in your country? Refer to the [WHO data here](#)**

<sup>x</sup> How many people in your country are covered by health insurance? How many services are covered? What does this depend on?

<sup>xi</sup> Beyond having social insurance, what other factors determine your access to healthcare?

In the communities around GPNP, the outcome of past deforestation is already being witnessed: loggers and their families are the ones most acutely affected by the domino health effects of forest loss. As Mahardika Putra Purba, ASRI's Conservation Manager, points out, communities and forests can continue functioning after the effects of deforestation, but the impact won't go unnoticed: "Imagine you cut off one of your arms," Putra Purba says. "You can still live, but your activity will be limited. The balance of the ecosystem is completely disturbed."

The forests surrounding Gunung Palung National Park (GPNP) are home to many families. More than 107,200 people in 23 districts live around the park,<sup>viii</sup> and the population has grown steadily in recent decades.

Economic growth brought by industries such as oil palm and forestry have made a difference on the household incomes of rural Indonesian families. Today, 5.8% of the country's rural population (nearly 120 million people) live below the international poverty line of \$1.90 a day. That's a steep decline from 1984 when 80% of rural households fell into that category.<sup>12</sup> When it comes to healthcare, lower rural incomes are compounded by the country's doctor shortage. Kalimantan has one doctor for every 2,700 people. The doctor-to-patient ratio is much lower in the regency around Gunung Palung—approximately one general practitioner for every 10,700 people.<sup>13</sup><sup>x</sup>

In 2014, seven years after the establishment of Alam Sehat Lestari in Sukadana, the central government introduced a mandatory National Health Insurance in the aim of making medical care more accessible. The insurance program is overseen by an agency called *Badan Penyelenggara Jaminan Sosial*<sup>14</sup> (BPJS, the Social Security Administration for Health in English) and is slowly being phased in for all Indonesians. More than 222 million people<sup>15</sup> (about 85% of the total population) currently hold membership, making the insurance program one of the largest worldwide.<sup>x</sup> The government aspires to have all Indonesians covered, but challenges include government deficits,<sup>16</sup> large population numbers, and significant regional disparities in accessing resources and care.<sup>xi</sup>

BPJS health insurance coverage<sup>xii</sup> does acknowledge some of the socio-economic inequities that exist in the country. Less economically-fortunate Indonesians have their health insurance paid by the central government, which waives the cost of doctor's fees, minor procedures, and limited medications. In smaller villages and towns where appointments are available only with a nurse or general practitioner, patients can be referred to a free-of-charge hospital in what Indonesia classifies as a more advanced Type C, B, or A facility.<sup>xiii</sup>

Although implementing universal health insurance relieves many of the burdens of healthcare costs, it does not remove them all. For example, the insurance does not account for the expenses of accessing healthcare away from home: costs like transportation, accommodation, and food for a patient and at least one family member. "Getting referred to another medical facility is okay in big cities because everything is in the same area," says Dr. Afriliani. In Sukadana, however, she points out that patients need to travel 80 kilometers to access more advanced medical care. If they still can't be treated, the next level of care requires either a five-hour speedboat or hour-long flight to a larger city. Sometimes patients are even asked to travel to Jakarta for an appointment with a specialist. "Patients in critical condition sometimes refuse to get referred because they cannot pay," Dr. Afriliani explains.



<sup>xii</sup> Attracting more patients who are subscribed to a BPJS scheme is one of ASRI's future pathways to financial sustainability. As a healthcare provider, ASRI receives a monthly payment based on the number of BPJS patients who have listed the clinic as their primary care provider, regardless of whether a patient received care that month. As of time of writing, 1,000 BPJS patients had ASRI listed as their primary care provider, and ASRI aspires to grow that number to 10,000 patients in the next five years.

<sup>xiii</sup> Type D category medical facilities include small community clinics like ASRI, including ones that aspire to reach hospital status.

*Dr. Nurmilia Afriliani is the former Clinic Director at Alam Sehat Lestari (ASRI). She says a number of anthropogenic environmental changes have affected the health of the clinic's patients, including flooding and haze events.*

In other cases, physical access to even the first-tier of primary care is nearly impossible. Many villages outside of Sukadana are accessible only via four-wheel-drive, motorbike, boat, or a combination of the three. Prior to ASRI's establishment in 2007, residents of Sukadana had access only to a government health-clinic (*puskesmas*) which offered sub-par primary care and lacked a general practitioner. This remains the case in many smaller villages around GPNP.

Pak Sukri Sabar was the head of Pangkalan Jihing sub-village for 12 years. He remembers the story of a woman who experienced complications during childbirth. She was carried from her home and, after a full day of travel aboard two boats, was finally able to see a medical professional. "If we had not brought her to that place, she probably would have died," he says. Sabar recalls another time before the community had cell phone reception. They would bring a patient to the nearest large village only to discover the midwife wasn't working that day. Sukri Sabar's story is one example of how universal healthcare is true only in theory. In reality, the burdens of physical access and additional travel costs mean many Indonesians face significant barriers preventing them from utilizing universal healthcare coverage. Similar limitations affect rural communities worldwide.<sup>xiv</sup>

For people living in remote, low-income communities like Pangkalan Jihing, essential medical care could be attained through either a higher household income or infusions of quick cash. These monetary gains would help people afford travel to their healthcare provider, and pay for subsequent medications or procedures. Illegal logging was the most reliable way for community members to earn that quick cash.

Logging is deeply entrenched in Indonesian culture. Its roots stem back to the 17th century when the Dutch East India Company (DEIC) first took control of what is now modern-day Indonesia. Forestry policies from the Dutch colonial and post-Independence Indonesian governments favored the exploitation of forestry resources over conservation.<sup>xv</sup>

Indonesia gained independence from the Netherlands in 1945. Over the next 50 years, the country's forest cover decreased from 1.62 million square kilometers to 980,000 square kilometers.<sup>17xvi</sup> By the 1980s, Indonesia was the world's largest exporter of tropical hardwood, and forests were being unsustainably cleared.<sup>18xvii</sup>

Recent government policies indicate a greater shift towards conservation. A 2002 government regulation divided forests into three categories: conservation forests, protection forests, and production forests, with national parks and nature preserves falling into the first category.<sup>19</sup> In 2011 the government also issued a moratorium on new logging concessions.<sup>20</sup> That moratorium couldn't prevent illegal logging, however, and an estimated half of all Indonesia's timber comes from illegal, small-scale sources.<sup>21</sup>

Still, the World Resources Institute notes the incredible complexity and contradictory nature of Indonesia's forestry laws, with more than 1,000 bodies and individuals holding the ability to create new laws across many levels of government.<sup>xviii</sup> This complicates the monitoring and enforcement of illegal logging, including in the area around Gunung Palung.<sup>xix</sup> The effectiveness of negative incentives in curbing logging rates has not been measured.

National park regulations state that people living around parks can use the protected forest to obtain non-timber forest products. This includes collection of fruits and vegetables, water, and rattan—pliable palm stems used to create furniture and handicrafts. While non-timber forest products offer some value, logging has always been a lucrative activity, and local communities saw an opportunity to pay for their basic needs. Many secondary industries around the park, including wood processing and the sale of chainsaws, spare parts, and gas, were also dependent on the continuation of illegal logging.<sup>22</sup> Vested interests were everywhere.

Community surveys conducted around Gunung Palung National Park found other factors motivating community-based illegal logging.<sup>23</sup> For example, the transition from a bartering system to a cash-based economy meant people who had historically obtained goods through trading suddenly needed access to cash. There was also a movement away from traditional medicine collected in the forest, in favor of modern medical systems—all of which cost money. Additionally, the timber concessions that operated around the park closed by the late 1990s. This meant that villagers—now with greater access to chainsaws—had free-range to use their logging training and knowledge of waterway and road access to pick-up where the concessions left off. Some of the sawmills that had once processed wood from legal concessions switched to purchasing illegally logged wood.

<sup>xvii</sup> Where is Indonesian wood mainly exported? \ [Explore the chart here](#)

Visit \ [Global Forest Watch](#) to see satellite imagery of deforestation in Indonesia over the last 15 years.

<sup>xviii</sup> To learn more about the various regulations that govern production, protection, trade, and taxation of Indonesia's forests, visit the World Resources Institute's \ [Risk Tool](#). It includes summary descriptions of key forestry policy and links to the original regulations.

<sup>xix</sup> \ [Read more about the complexities of this issue here](#)

<sup>xiv</sup> The issues rural communities face in accessing primary health care is also discussed in chapter 5 of this anthology in the context of northeastern Madagascar.

## The History and Effects of Community-Based Logging

<sup>xv</sup> Why do you think post-colonial governments favored exploitation over conservation?

See: 1865 Forest Law and the Basic Forestry Law No. 5 1967, for instance.

<sup>xvi</sup> Who benefited more from this exploitation of hardwood?



## Forest Cover Change Around Gunung Palung National Park

**xx** A logging household is classified as any household where one person has logged in a month.

**xxi** Landsat is a free collection of satellite imagery that has been compiled by the U.S. Geological Survey and NASA over the course of four-decades. The images are often used by agriculture, forestry, geology, and other sectors to identify land change over time. More information and data sets can be found on the [Landsat website](#).

**xxii** Mixed plantations include land that is converted for use as industrial timber, pulp and paper, or oil palm concession. Mixed agricultural land is composed of areas where food crops are grown, including rice and vegetables.

Illegal as it may be, community-based logging had the potential to transform the average income of households around GPNP. Though logging provided families with quick cash, the supply chain was fraught with inequality. The amount individual loggers received—around USD \$20 per tree—was a fraction of the timber’s high market value. Logged trees purchased by a middleman were often sold to sawmills for twice the price paid to community loggers. From there, the timber reached the market where it was priced higher still and sold to meet local and national demand.

A study around Gunung Palung from the late 1990s found that 47% of households relied on logging as their primary source of income—a 71% increase in the seven years leading up to the time of survey.<sup>24</sup> When ASRI started its work in 2007, Kinari Webb’s calculations estimated that 1,450 households around GPNP were logging as their primary source of income.<sup>xx</sup> This figure came through self-reported community surveys, and the ASRI and Health In Harmony teams suspect the number was higher.

A bird’s eye view of GPNP offers a sense of the changing landscape. Nurul Ihsan Fawzi sits cross-legged on the floor and opens his laptop. ASRI’s Reforestation Program Manager and GIS Remote Sensing Analyst, Fawzi knows the park inside and out. He zooms into the area of Gunung Palung on the satellite layer of Google Maps. Zoom in enough and you see the orderly blocks that make up the unmistakable landscape of oil palm plantations. Move your eyes west of the park and you come across rice paddy terraces and other gardens, areas cleared for rubber, durian fruit, and chili growth. There are bare spots in the dark green patches that represent the park’s primary forest—land once covered in towering trees is now bald with anthropogenic grasslands. Fawzi used remote sensing data from Landsat<sup>xxi</sup> to calculate that the lowland forest in GPNP declined by nearly 40% between 1989 and 2017. The land dedicated to mixed plantations nearly doubled in the same time period, and mixed agriculture land use increased 33 fold, though still makes up a small portion of the park.<sup>xxii</sup>

[↘ Appendix 2, 3: Land cover change in Gunung Palung National Park from 1989 to 2017. Table / Maps](#)

While GIS mapping offers a bird’s eye perspective, hiking through the park also reveals the extent of land use change. Only three sections of GPNP are currently accessible by visitors. The nearest

is Lubuk Baji, a section of park a half hour’s motorbike from Sukadana. Along the way, the road passes through rice paddies, agricultural fields, and small sub-villages, all of which were historically forested areas.

Pak Muslianto is the park guide for the day. He leads the way through a quiltwork of fields, a handful of which are currently being scorched as a cheap and efficient way to prepare land for agricultural purposes.<sup>xxiii</sup> Pillars of smoke billow into the air, and the ashy land sits gently smoldering, waiting to be replanted. From here, it’s a transition through recovering grassland to reach the depths of the rainforest. Soon, it’s like someone has dimmed the lights and boosted the humidity. The vegetation underfoot becomes tangled and challenging to navigate—a web of roots, decomposing leaves, and scurrying ant trails. Walking is a slow and graceless task, and yet for many years this landscape was expertly navigated by men wielding chainsaws.

When it comes to trees, Lubuk Baji is both a graveyard and the site of new vegetation growth. Muslianto points out each tree that was illegally downed, using his hands to imitate the act of a chainsaw taking its final blow. The operations that downed these trees were a far cry from industrial production, and often involved villagers using traditional tools or chainsaws, transporting their timber via motorbike, bicycle, or river floats. Though small-scale in nature, the cumulative effect was a substantial environmental threat, contributing to the 40% decrease in forest cover that Fawzi mapped through satellite data.

As Kinari Webb learned during her first visit to Borneo, logging isn’t viewed through a simple lens of good or bad. A 2013 study from Borneo supports what Health In Harmony learned in 2007. It found that nearly half of people on the island approved of small-scale forest clearing if it was for their own direct use.<sup>26</sup> Interestingly, it also noted that 93% of people recognized the forest as either “very important” or “quite important” for their health. The seemingly contradictory data illustrates the complex relationship people have with the forest: despite the majority wanting it maintained, it was also seen as a source of economic value.<sup>xxiv</sup>

To combat illegal logging, Health In Harmony recognized the need for an intervention that considered the realities of people who wanted to live in peace with the forest but also use its timber to benefit their families.

**xxiii** Traditional shifting cultivation methods (also known as slash and burn) are a common practice in Indonesia, including in Kalimantan. This agricultural preparation method was a contributor to substantial peatland fires in 2015. The haze created by this event, and the subsequent health effects, are the topic of chapter 1 of this anthology.

**xxiv** For the case discussion, remember to look up general socio-economic data for Indonesia.



*Pak Muslianto appears miniscule amongst the giant trees in Lubuk Baji, the only publicly accessible section of Gunung Palung National Park.*

## Identifying an Intervention through “Radical Listening”

xxv These techniques fall broadly in the category of action/research methods called Community-based Participatory Research – or CBPR for short. Why are these methods important? Why are they useful? When should they be used?

That paradox presented an opportunity for Health In Harmony and ASRI. **Ask anyone at either organization why their work has been successful and they’ll say it’s because the community proposed the solution that led to their approach.**

To learn how goes back to ASRI’s founding in 2007, and Kinari Webb’s prior work in Kalimantan. Webb and the other ASRI founders knew their end goal was to conserve the rainforest around the park. What they didn’t fully understand were the drivers causing logging in the first place. In order to gain greater insight, the newly created ASRI team made the choice to “radically listen.”<sup>xxv</sup>

**“Radical listening” doesn’t look any different than normal listening. In practice, 15 to 50 people take part in a radical listening session, and everyone sits in a circle at the same level. There are always two listeners, who, for trust and gender consideration purposes, are ideally both women. One of those two listeners should come from a religious or cultural background similar to participants, and one with an outsider’s perspective. They ask an open-ended question, like the one asked by ASRI listeners in 2006: “what would you need as a thank you from the world community so that you could protect this precious rainforest that you all are the guardians of?”**

The answers, Webb says, rarely touched on a single sector. “As long as you give people a big enough container, they’ll bring all the issues: health, conservation, economics.” “Radical listening” is similar to the Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) approaches that became popular in the 1980s and 1990s. Both RRA and PRA were approaches used by outside groups to learn more about the lives and conditions of people living in rural settings.<sup>27</sup> PRA saw outsiders as facilitators, asking questions and learning from the people who lived in a place.

What Health In Harmony says is fundamentally different about its “radical listening” approach is its readiness to implement the solutions proposed by community members. “This is a different paradigm,” says Jonathan Jennings, Health In Harmony’s Executive Director. “We aren’t just listening to learn and extract, we are listening to drive solutions which we can then invest in realizing.” Webb says “radical listening” is inherently solutions-oriented: **“It’s not asking people what the problems are—it’s asking them for the solutions and getting a consensus, which is a whole other step.”**

“Radical listening” and a commitment to implement community solutions have been core values of Health In Harmony and ASRI since the very beginning. At the time of the radical listening sessions in 2007, ASRI was a lean start-up. The main office was Webb’s small home, where the team of five gathered each day to discuss which villages to visit. Pak Wilfirmus and his wife, Clara, were two of the original nurses who served as listeners for the first community meetings.

The approach was different from what Wilfirmus had encountered in previous NGO work. “We were just doing, never hearing the community, or even talking to them,” Wilfirmus describes of past experiences. “It’s different with ASRI—we are listening to the community and then we do something. That’s how the community approved and trusted ASRI, and we became the best healthcare option in this area.”

The nascent ASRI team spent 10 months systematically listening to all 23 communities around Gunung Palung National Park. “It’s possible that in those formal listening sessions there might have been bias in the solutions that the communities proposed so that they could protect the national park,” Webb admits, since they introduced themselves as medical professionals opening a clinic. But from her 10 years working with the communities around GPNP, she knew there was truth to the healthcare request. In later years when they did radical listening in other regions of Indonesia, the Philippines, and Madagascar they concealed the fact that they were medical professionals, but still often found radical listening sessions yielded requests for healthcare.

After more than 400 hours of radical listening sessions around Gunung Palung, community solutions became clear. **The consensus was that people could stop logging if they had access to high quality, affordable healthcare and training in organic farming techniques—a request that surprised the team. With the community-driven solutions identified and permits secured, the ASRI clinic opened its doors for service.**



*Pak Wilfirmus and his wife, Clara, were two of ASRI’s original team members.*

## A Win-Win for Human Health and the Rainforest

Today, ASRI's operations in Sukadana have grown significantly. The program employs a team of 100 staff members, a cohort that's entirely Indonesian, the majority of whom are women. The clinic sits along one of the village's main roads, and the large, bright building stands in contrast to the smaller houses and open shopfronts nearby. This newly-built clinic opened in October 2016, replacing the makeshift single-family home that housed ASRI for its first nine years.

Household surveys conducted between 2007 and 2017 exhibit measurable improvements in the health of people living around Gunung Palung National Park.<sup>xxvi</sup> These surveys were conducted in villages where ASRI had signed a Memorandum of Understanding agreement. MoU agreements mean ASRI works with those villages to offer conservation activities, tiered healthcare costs based on logging activities, education sessions, and livelihood trainings.

Individuals were asked to self-assess their health and well-being during the surveys. Analysis found there was a decrease in infant and childhood mortality rates during the 10-year period, and a drop in disease symptoms such as fever, persistent cough, diarrhea, and weight loss symptoms.<sup>xxvii</sup> Further analysis of this health data is currently underway in order to determine whether MoU-signing villages experience a greater improvement in health outcomes.

Offering affordable and high-quality primary<sup>xxviii</sup> care will remain ASRI's focus in the short-to-midterm period, which includes partnering with the new district hospital so it can utilize their expertise to offer more specialized services. A surgeon has recently completed his ASRI-funded residency and returned to Sukadana where he has been positioned at the district hospital. "The hospital has not had a surgeon since July 2019 and it is very hard to get a specialist who wants to stay in a small town like Sukadana," explains Nur Febriani, ASRI's Executive Director. "It is ASRI's contribution to the community." She adds that the surgeon will likely spend the afternoons at ASRI serving patients and training young doctors.

Meanwhile, ASRI continues to incorporate the values of nature and conservation into its clinic space. The spine of the building is a long, sunlight-flooded corridor with views onto garden courtyards. Beyond, the back half of the building houses ASRI's conservation office and space for training and volunteer accommodation.

Continue down the hallway and you can literally walk into nature—there is no door. Two hundred meters later you reach the rainforest and an unassuming log marks the spot where ASRI property ends and the national park begins.



*Today, ASRI is in its second home, a custom-built medical facility where patients can sit among nature. The hallways are open-air and gardens dot the property.*

<sup>xxvi</sup> Fankhauser, Katie. "Health in Harmony Impact Data." June 17, 2018; unpublished

<sup>xxvii</sup> Fankhauser, Katie. "Health in Harmony Impact Data." June 17, 2018; unpublished.

<sup>xxviii</sup> What is meant by "primary care" and "primary health care"? How are these different? Why is this difference important?

xxix Anthropogenic environmental shifts include human-produced air and water pollution, shifts in biodiversity, land use change, and more. In 2015, The Rockefeller Foundation and The Lancet released their Commission on Planetary Health. The Commission is the forefront academic resource shedding light on the many ways in which human-caused disruptions to the Earth's natural systems affect human health. ↘ The Commission's documents can be found here.

### Health Levers for Conservation

Planetary health examines the ways in which human health is impacted by human-caused disruptions to the Earth's natural systems. Within that definition is a feedback loop. Anthropogenic environmental changes affect the health of people.<sup>xxix</sup> But the health of people—the ability to be physically, socially, and mentally well, in addition to economically secure—also influences the way people interact with the natural environment.

This loop reiterates the interconnectedness of human health and environmental systems. It introduces the possibility of designing win-win planetary health solutions that recognize that a change in one system can trigger positive shifts within another. Ecological levers for public health are interventions in the ecosystem or conservation space that have positive outcomes for human health.

There are also health levers for conservation, such as Health In Harmony and ASRI's intervention. The theory of change was straightforward enough: by creating a dual conservation-health program, the organizations were able to improve human health and reduce deforestation of Gunung Palung's rainforests. While the lever-based framework offers a helpful way to envision the interplay between different systems, these links are not easy to prove or quantify. Monitoring impact across its diverse programmatic areas is one of the greatest challenges flagged by ASRI and Health In Harmony leadership.

In the case of Health In Harmony and ASRI's intervention, community surveys spoke of a 90% decrease in illegal logging households since 2007, down to a total of an estimated 150 households. However notable, the organizations want to confirm whether there was an actual decline in deforestation during that time period. Engaging a team from Stanford University, researchers are using satellite imagery and statistical inference to compare forest change rates in GPNP to that in all other national parks across Indonesia, during the period of 2007 to 2017. The Stanford team is also in the midst of assessing whether a decrease in deforestation could be attributed to community engagement with ASRI activities.

The next question the Stanford team asked was whether a decrease in deforestation could be attributed to engagement with ASRI activities. Engagement was defined as a person interacting with the clinic, or participating in conservation, education, and livelihood

activities. Data found that forest loss decreased in a dose-response ratio to the level of engagement. According to the team's paper, a "casual association between the intervention (including health, livelihood, and conservation programs) and ultimate deforestation outcomes is plausible."

### Planetary Health in the Clinic

For ASRI and Health In Harmony, the interplay between human health and conservation exists in daily practice. Collaboration among ASRI's multidisciplinary teams is a central value. Each workday starts with a morning meeting in the clinic's library. Medical staff sit next to conservation team members who chat up the ASRI economist who calls across to the garden landscaper. A pen is spun, and whomever it points to is in charge of taking notes and leading the meeting. Everyone is given an opportunity to speak and the day's activities are coordinated between the health and conservation teams.

"It really helps bring people together from a teamwork point of view," says Dr. Monica Nirmala, ASRI's Executive Director between 2014 and 2018. Coming from Jakarta with little exposure to environmental issues, Dr. Nirmala says she was surprised by what she learned, in part thanks to these meetings. "If we didn't have a morning meeting then maybe someone on the conservation team wouldn't know the nurses. It helps everyone to have the same planetary health perspective," she says. The morning meeting also works in a practical sense—staff can disseminate educational information, coordinate travel to pick up planting supplies or medicines, and ask questions, knowing that everyone who can answer them is in the same room and on the same page.

The fusion of conservation and healthcare extends beyond morning meeting. ASRI patients receive their medical check-up with a side of planetary health education. That includes planetary health presentations delivered by ASRI staff in the waiting room, as well as information directly from doctors. "I talk about nature with my patients, and tell them to open the windows on their home so that the air from outside can enter. And I try to make them understand how it can be harmful when they burn garbage," says Dr. Fitriyani Simangunsong, ASRI's new Clinic Manager and a general practitioner.

Clinic art further supports this dual education: photos of reforestation progress, maps of GPNP’s ecosystems, an illustration of a human body outlining what happens when the environment is healthy, versus when it’s not. There’s even a large banner of an orangutan with puckered lips, a favorite selfie spot for staff and visitors alike.



The scene from ASRI’s morning meeting.

## Designing an Intervention for Success: Affordability and Positive Incentives

Creating a planetary health intervention is one thing—maintaining its success is another. That’s where affordability and positive incentive measures come into play. **Health In Harmony and ASRI have initiated a non-cash payment system to ensure people can always afford the clinic’s medical services.** Meanwhile, the organization also offers a number of positive incentives to discourage people from logging while accessing care.

### Non-Cash Payments

It’s not far from ASRI’s seedling nursery that Pak Sebani sits waiting for his doctor’s appointment. He’s borrowed his neighbor’s motorbike to visit the clinic—he makes a modest income as a farmer, and can’t afford his own mode of transportation. Without ASRI’s non-cash payments, he wouldn’t be able to afford care, either.

Sebani is recovering from tuberculosis. Today, he’s suffering shortness of breath and pains in his stomach. In the past, he would drive two-hours to buy his medication. “We had a lot of costs when I did this. My daughter had to take a break from school because I got sick and we couldn’t afford the books and other school costs,” Sebani says. “The most important thing is the cost. But expensive medications are not a problem now because at ASRI you can buy them with other things.”

**Tree seedlings have been Sebani’s payment of choice on two separate occasions.** The seedlings are commonly grown by patients themselves using seeds foraged in the rainforest. These young plants are the non-cash payment most encouraged by ASRI, and carry the highest value. In-demand ironwood and meranti seedlings earn patients between \$0.70 and \$1.40, and are brought to one of ASRI’s reforestation sites. The goal is to have 10,000 seedlings “paid” by patients every year. Figures from 2019 exceeded that, with 23,146 seedlings received from patient payments.

Today, about one patient a week pays using a non-cash payment, though these are often the patients with higher bills.<sup>xxx</sup> The options are displayed on a large green poster outside the cashier till: requests for fertilizer, manure, rice husks, and egg shells, all of which are used in the ASRI-established organic farming cooperatives. Patients can even make handicrafts and barter with Nani Utari, ASRI’s cashier, in exchange for their visit fees. The average visit ranges from \$0.55 and \$2, and patients can bank extra non-cash value for later visits or emergencies. As was demonstrated

<sup>xxx</sup> A small percent of patients pay using non-cash methods, but they constitute a higher percentage of ASRI’s income.

in a shortfall with the national healthcare scheme, high quality healthcare can only get patients so far if it's prohibitively expensive and difficult to access. ASRI's non-cash payments help reduce some of these barriers.

### Village-wide Incentives

ASRI has also created an initiative to circumvent the rational behavior that would tempt families to access high-quality healthcare while continuing to illegally log. Since 2018, ASRI has been offering community-wide discounts to incentivize the curbing of illegal logging.

To begin, villages are color categorized based on the progress they've made towards ending the indicators of illegal logging. Assessed as either red, yellow, or green, villagers receive between a 30% discount (for red villages) and 70% discount (for green villages) applied to their healthcare bill. Administration of these discounts takes regular monitoring, and is overseen by Agus Supianto, ASRI's Monitoring Coordinator. Supianto visits villages three times a year, looking for any of seven negative indicators of illegal logging, including small sawmills and logging access routes. No indicators, and the village is green, more than three, and it's deemed red.

Supianto says the act of implicating an entire village in the actions of one or two loggers is key. "If we give punishment only to the logger then maybe the other villagers will not care about the forest because they have their discount," he says. "This category system makes caring for the forest the responsibility of all villagers, and they are the ones who give social punishment and pressure to the logger." This village-wide discount system has been identified by ASRI patients as the most important incentive to reduce illegal logging.

Despite being deemed effective, Agus Supiano, ASRI's Monitoring Coordinator, says villages regularly go back and forth between red, yellow, and green. He explains: "in the dry season the indicators of forest gardens could increase because people's crops aren't growing. In the rainy season the indicators can increase because the rain makes it easier for loggers to access forest areas, which makes transporting wood easier." Harvesting bird nests is another popular industry around West Kalimantan—bird nest soup is a delicacy in China. The harvesting is done in the multi-story, windowless buildings that line the roads. "Whenever there is a

spike in prices for bird nests more people try to build the houses to benefit," says Supianto. Illegal logging is a main source of building material. Finally, while one village may not exhibit any logging activity, Supianto admits that could simply be because individuals are logging outside of the park, their activity undetected by ASRI.



*Thousands of seedlings are stored behind ASRI's clinic in Sukadana. In addition to accepting them as non-cash payments from customers, ASRI also receives seedlings from children and teenagers who participate in their education program. Health In Harmony's recent [carbon offset program](#) also allows people living worldwide to purchase seedlings and support the organization's replanting efforts.*

## Livelihoods to End Logging

Seasonal spikes in logging activity meant that providing high quality healthcare alone wasn't going to be enough to protect the rainforest. When asked in 2007 what they needed to put down their chainsaws, community members said they wanted affordable and high-quality healthcare, and training in organic farming practices. The message was clear and reasonable: if loggers were going to permanently give up their main source of income, they needed to replace it with another.

This idea references a new framework that was developed by labor unions and the environmental justice movement. **“Just Transition” is the term used to describe the shift between an environmentally-detrimental, extractive industry (such as logging) to more planet-friendly, regenerative economic activities.** The framework was created in part to protect worker's rights, ensuring they had other meaningful work to turn to when their extractive job was eliminated. In West Kalimantan, Just Transition demands that an alternative work solution be introduced so loggers can maintain their household income and benefit from the transition away from logging.

Dr. Courtney Howard, a Canadian ER doctor and member of the Health In Harmony board of directors, spent a month in Sukadana in early 2018. Two months earlier, she had been in a very different setting, serving as a Canadian delegate to climate change negotiations at COP23. There, the importance of Just Transition was brought up in every meeting.

“I was thinking that the health community hadn't done a good job in addressing this transition, and I felt quite guilty,” Howard recalls. “Then, I go from the center of the world conversation to rural Sukadana, where I'm watching a fisherman sign over his chainsaw in exchange for a small business loan. I'm sitting there thinking ‘holy cow, ASRI has a giant Just Transition component in their community-based project.’ I was blown away.” Howard says Kalimantan was the first place she saw a Just Transition approach in practice, rather than in theory.



### The Time for Just Transition

**As the world transitions towards more environmentally sustainable economies and industries, an important mission is to ensure the people whose industries and jobs are being transitioned don't get left behind. This has been a demand since the 1970s when the Just Transition concept was born during the US labor movement. The acknowledged father of the movement, Tony Mazzocchi, was a member of the Oil, Chemical and Atomic Workers' Union, and he established the movement to ensure the rights of workers were respected through the environmental and social movements that were taking place in the country.<sup>33</sup>**

Whether it's men dependent on illegal logging in Indonesia, coal workers in America, or people employed by fossil-fuel dependent industries worldwide, the Just Transition movement was created to ensure those people had a voice and a job to turn to when their current position was deemed environmentally-defunct. In a way, the Just Transition movement draws from the lessons of Participatory Rural Appraisal and “radical listening,” by putting the people who are affected by this transition in a place of power and self-determination. Just Transition is becoming a greater part of climate action policy worldwide. COP24 in Poland saw the creation of the Solidarity and Just Transition Silesia Declaration, signed by 50 countries, including Indonesia. That declaration recognizes that developing countries and their citizens are especially vulnerable to the adverse effects of climate change, and that conditions of poverty would make it more difficult for these communities to experience a Just Transition.<sup>34</sup>



*Pak Iskander and his family outside of their home.*



### From Logger to Alternative Livelihood

Former loggers aren't using terms like Just Transition, but they do agree that the opportunity to access an alternative source of income has helped them put down their chainsaw.

The afternoon light filters into Pak Iskandar's home in Penjataan Village, illuminating a faint tinge of smoke and dust. School is out for the day, and there is a small huddle of children crouched in the front room. Four of them are Iskandar's children, and along with his wife, Ibu Suryati, and mother, Ibu Amah, there are three generations and seven people living in this modest wood home.

Supporting a family of any size costs money, and this household is no exception. That's why in 2000, Iskandar started logging the protected rainforest around his home. He had heard from friends that it was good money. "The money I earned was for the daily needs of my family: healthcare, school costs, clothes, food," Iskandar explains.

While many of his friends were caught and punished for logging, Iskandar never received a warning. The park rangers would often tell the village office they were planning a visit, and word got out to the loggers that a "guest" was coming to the forest. On these days, Iskandar would watch from the safety of his home as the rangers rode by on their motorbikes.

"I cannot blame the police rangers, and it's good that they asked us to take a break," Iskandar admits. "But if they ask us to have a break from cutting the trees then it meant my family would have a break from food. I didn't have another job and we still needed to cook." It wasn't that he didn't feel guilty. "Even though I did not steal someone's money from their house, I bought oil, I bought a chainsaw, and I knew it was stealing in the forest."

On one occasion, Iskandar remembers being surrounded by park rangers. Like a scene in an action movie, the officials were closing in from all sides. Spotting an escape route, Iskandar threw his chainsaw into the trees and bolted. When the park rangers left the village the following day, he trekked back, recovered his chainsaw, and resumed logging.

His attitude only recently shifted. For one thing, Iskandar's 12-year-old daughter, Ayu, started attending ASRI Kids, the organization's after school program. There, she learned how cutting down trees could cause floods, fires, and sickness, and about how important it was to protect wildlife. She brought that message home to her father, once, twice, many times. Eventually what she was saying struck a chord.

Ayu's pressure was paired with a visit from Agus Novianto, ASRI's Economist and head of the Chainsaw Buyback Program.<sup>35</sup> The Chainsaw Buyback Program is ASRI's approach to convert "last mile" loggers. Despite an 90% decline in logging households since 2007, the forest guardians counted a remaining 141 loggers in 2017. This correlated with the estimated 150 logging households from ASRI's 10 year survey in 2017. At this point, ASRI staff recognized they needed another solution, one that acknowledged the education level and economic well-being of families. Mindful of these social determinants of health,<sup>xxxii</sup> ASRI created an alternative livelihood program to help loggers experience a Just Transition away from logging.

Introduced in January 2017, the Chainsaw Buyback Program is a business development program for families. After five days of entrepreneurship training with Novianto, loggers and their wives have a business plan they can use to start or scale their enterprise, which is co-owned by ASRI. Including wives in the process is deliberate and important. "Usually at home it's the wife who manages the finances, and often even the business," Novianto explains. He says that while men might use the income to buy cigarettes, women are more likely to spend that cash on family needs. This fits in with another main principle of Just Transition framework, which is to use new livelihoods as a way to redistribute power and transform traditional gender inequities.<sup>36</sup>

The funds for the new family business come from two sources. Families are given approximately \$275 for selling their chainsaw, and can access another \$400 in zero-interest loans to support their new business. The entire amount is held by Novianto, who accompanies families to buy the supplies outlined in their business plan. Once the loan is paid off, the business is wholly owned by the family.

<sup>xxxii</sup> The World Health Organization defines social determinants of health as "the conditions in which people are born, grow, live, work, and age." It notes that social determinants of health are responsible for many health inequities, as they are shaped by the distribution of money, power, and resources.

For Pak Iskandar, the Chainsaw Buyback program has meant reconnecting with his former work as a fisherman. ASRI program data found that the most common livelihoods couples have transitioned to are those in retail, agriculture, and food and drink. Unlike the forest rangers or police who threaten loggers with arrest or punishment, Iskandar says he was drawn to ASRI's proposal of a solution. Hanging on the wall in his home are two hand woven nets awaiting their first use. Beneath is an insulated container for fish storage, and a box of hooks and lines. Parked outside is the motorbike he was able to repair with some of the money so that he could transport his catch. Down the road, the used boat he purchased has a new coat of paint. Ayu, Iskandar's daughter, looks pleased. "She wants to be a policewoman," Iskandar laughs, proudly pointing at the trophies she has won for academics and chess. "Luckily I already stopped being a logger!"

A consistency in income and a desire to transition away from a risky livelihood are factors former loggers say make ASRI's alternative livelihood programs attractive, even if they're bringing in less money overall. It's not just ASRI promoting the program to loggers—Novianto says forest rangers and police often present the Chainsaw Buyback Program in order to avoid conflict with the community.

Nowhere is the initial success of that program more evident than in a room at the ASRI clinic, where dozens of purchased chainsaws lie haphazardly on the floor, rusty blades in the air, surrounded by a dried puddle of oil. The plan is to turn these collected chainsaws into a number of monuments, as a memorial of sorts to the thousands of trees that were cut using the tools and as a testament to the new planetary health future of these communities.

*Agus Novianto stands carefully among the chainsaws that have been purchased as part of ASRI's Chainsaw Buyback Program. The program creates financial incentives for both men and women in a household, supporting them in the creation of a new livelihood.*



## Improvement and a Regrowth Approach

Despite successes like the Chainsaw Buyback program, ASRI and Health In Harmony face similar challenges to those of other organizations. One is the aforementioned difficulty in quantitatively linking improvements in health outcomes to a reduction in deforestation, as well as capturing other success metrics.

Resources are another challenge. A dual medical-conservation approach means resources have to be spread across a large and diverse team—positive for programming, but challenging for staff capacity. “I am the long boat [that travels down the river to monitor logging sites], I am the drone,” laughs Agus Supianto, referencing how he is the only ASRI staff member responsible for monitoring the forest activities in dozens of villages.



### ASRI's Forest Guardians

At the request of community members, ASRI launched its Forest **Guardians (Sahabat Hutan) program in 2011 to help monitoring efforts. Based in more than 30 villages surrounding Gunung Palung National Park, Forest Guardians are the link between clinic and community. They're responsible for reporting illegal logging activity in their villages, and help ASRI staff members approach those loggers to discuss an alternative livelihood.**

Many Forest Guardians are former loggers, and believe this makes them better at their job since they understand the motivations and realities of being a logger. That includes Pak Handayani, who had been logging the forests around GPNP for 26 years before being nominated to become a Forest Guardian. “At the time we were poor, and we didn’t have other jobs or choices,” he says of his quarter century as an illegal logger. “Now we have a lot of jobs through ASRI so we can move from logging to something else.” In addition to working as a Forest Guardian, Pak Handayani is also a member of his village’s ASRI-coordinated organic farming group. These farming groups are meant to produce food for family consumption and selling at market.

Pak Muslianto, the guide on the hike through Lubuk Baji, is another Forest Guardian. Before becoming a guardian, Muslianto was a long-time national park guide. Despite encountering loggers in the forest, Muslianto says he didn’t have the courage or ability to stop them until he was trained as a Forest Guardian. “I learned how to approach the community. When I find loggers cutting down trees I’ve learned to not make them upset and offended. It’s very helpful to persuade them with ASRI’s programs,” he says. Since starting as a Forest Guardian, Muslianto has persuaded six loggers to put down their chainsaws and adopt an alternative livelihood.



*The view from Batu Bulan. The reforested corridor is visible on the right side, connecting Lubuk Baji with the main portion of Gunung Palung National Park. In the next ground-level photo, a concealed camera reveals that orangutans have again started to use the forest corridor.*

Lack of staff capacity is also felt by other members of the conservation team. Despite multiple people working on reforestation efforts, ASRI needs more data to inform its future strategy. That includes the development of more comprehensive indicators to identify illegal logging, and a forest inventory and map so the team can site-match seedlings with the conditions that support their growth. The latter, Conservation Manager Mahardika Putra Purba says, can come from improved collaboration with national park staff. ASRI has a long-running Memorandum of Understanding with GPNP, but Putra Purba says the organization would benefit from information sharing, as well as potential assistance in accessing government funds. When it comes to the indicators and drivers of illegal logging, ASRI is also proposing potential research areas with different organizations and universities.

### A Long-Term Outlook: Beyond Restoration to Reforestation

A main focus of ASRI's current five-year strategy—just one of the ways in which the sister organizations are closing the feedback loops that connect rainforest and human health.

Back on the hike with Pak Muslianto in the Lubuk Baji portion of Gunung Palung National Park, the climax of the multi-hour loop is the Batu Bulan viewpoint. Standing at the cliffside forest clearing offers a dramatic vista across to the primary forest that makes up the majority of the park. Until recently, the rainforest between Lubuk Baji and the rest of the park was disconnected by a band of rice fields. Today, one of ASRI's reforestation sites is dedicated to reconnecting these two portions of park, creating an orangutan corridor in what was previously sparse forest and grasslands. In addition to focusing on key areas like the orangutan corridor, the reforestation projects also target areas that have been heavily logged and burned to grassland, places where natural recovery is less likely. Alongside two other reforestation sites, the organization has replanted 1.6 square kilometers of degraded or deforested areas since 2007. It's aiming for 4.8 square kilometers over the next five years. This area is small when compared to the huge areas that are deforested each year, but it's a start.

Community members are in favor of reforestation. In fact, it was what people asked for as part of a 10-year radical listening check-in. One of the reasons for that request, ASRI suspects, is that people now better understand that replanting efforts also bring jobs, and that healthy forests supply fruits for harvest and protect water supply.



### Funding the Future

ASRI's reforestation work is also a strategic move to access grants. Reforestation is currently a popular funding area—by using conservation grants to buy seedlings from patients for reforestation efforts, ASRI is indirectly using environmentally-oriented grants to fund medical care. The team says it's a workaround since many grants and other traditional funders still dole out money using a single sector approach.<sup>xxxii</sup>



<sup>xxxii</sup> How can planetary health organizations like ASRI and Health In Harmony overcome the challenges of single-sector funding? What are ways foundations and grantors could adapt their system to acknowledge the need for holistic approaches?

*Etty Rahmawati speaks to a group of preteens as part of the ASRI Kids program. The sessions cover a range of topics, from the effects of climate change to plant identification to the importance of not littering.*

Education is at least partly responsible for this attitude shift, and it's an element that unites Health In Harmony and ASRI's medical, conservation, and livelihoods approach. Community outreach is central in that learning campaign. That's why every second Wednesday, a handful of team members pile into a car to give a presentation to a community that may not have had the chance to hear about ASRI's programs.

Crucial, too, are ASRI Kids and ASRI Teens, after school programs like the one attended by Ayu, the daughter of former logger, Pak Iskandar. While education has been part of Health In Harmony and ASRI from the beginning, the term "planetary health" has only been actively incorporated in the past few years. "I think the community is aware of the benefits of the forest, but they don't get that it really affects your health a lot," says Etty Rahmawati, ASRI's Planetary Health Education Manager. "Our outreach is about making them draw that connection to the next level."

ASRI surpassed its 10-year mark in 2017. Now, Health In Harmony is replicating that model worldwide—taking the successes and lessons learned from Sukadana and applying them in other similar contexts. “This means high conservation value areas where human health and well-being barriers are driving ecosystem degradation,” says Jonathan Jennings, Health In Harmony’s Executive Director. In 2018, Bukit Baka Bukit Raya (BBBR) National Park on the border of Central and West Kalimantan provinces became the organization’s first replication site. The Health In Harmony also began work in 2019 in rainforests as far away as Madagascar and will likely begin in the Brazilian Amazon in 2020. In all of these sites, the radical listening methodology is being used to create a community-driven planetary health solution that takes local challenges into account.

Kinari Webb, Health In Harmony’s Founder, acknowledges its interventions will always be multi-sectoral, though they may need to shift depending on what the team hears. They haven’t yet visited a site where health was not one of the needs. “We have done a first round of “radical listening” in Madagascar and found that food security was a much bigger issue than it is in Indonesia,” she says. “Health and hunger are clearly both major drivers of logging.”

While the intervention in Borneo is an example of a health lever for conservation, future replication sites could hone in further and adopt a ‘livelihoods lever for conservation’ or ‘food security lever for conservation’ approach. This possible adaptation demonstrates the need to localize even proven planetary health solutions. Regardless of the lever at play, the value of interconnectedness remains: an improvement in one system can have co-benefits in many others.

In Webb’s 2016 TEDx talk<sup>xxxiii</sup>, she shares the story of Pak Nasir, a logger since the age of 12 who once cut down dozens of trees to pay for a family member’s caesarean section. Some elements of Nasir’s story remain the same: he still lives in Sukadana, a few minutes from the ASRI clinic. But outside his home today is a small storefront. Stocked with packets of instant coffee and shelled peanuts, Nasir and his wife opened the shop in 2017 in partnership with ASRI’s Chainsaw Buyback Program. He no longer needs to log the forest to make quick cash, and in turn gets to spend more time with his family. Nasir’s story has come full circle.

<sup>xxxiii</sup> ↘ [Click here to watch Kinari Webb’s TEDx talk](#)

Ultimately, Health In Harmony and ASRI’s interventions are unique to this context. In West Kalimantan, the organizations’ “radical listening” sessions identified the need for affordable, high quality healthcare, alternative livelihoods, conservation education, and a switch from deforestation to reforestation. The combination of planetary health interventions will most certainly look differently for those working elsewhere. However, the methodology for effectively working with communities is universal: ask, listen, and act.

This co-creation of solutions between outside groups and communities is gaining momentum worldwide. While experts have found that many of these interventions have yet to eliminate systemic issues, they note that, they note that co-creation has the potential to break the status quo of how companies, non-profits, and other groups serve and collaborate with communities. Interdisciplinary research in this space has identified five best practices shared by groups who are changing how they work with people. They include finding ways to share power, prioritizing relationships, and legitimizing different ways of knowing.<sup>37</sup> Utilizing these learnings, planetary health practitioners can partner with community members to identify their needs and design human-centered innovations that make a real impact. In doing so, these solutions can further validate Health In Harmony’s theory of change: that it’s possible to conserve and regenerate the world’s most biodiverse ecosystems by respecting the realities of people living within them.



*Pak Nasir and his daughter outside of their home and storefront.*

## Keeping Track of Who's Who

### Dr. Nurmilia Afriliani

General Practitioner and former Clinic Director, Alam Sehat Lestari (ASRI);

### Dr. Monica Nirmala

Executive Director of ASRI from 2014-2018

### Pak Sahmadi

A resident of Sukadana and a Forest Guardian with ASRI

### Dr. Fitriyani Simangunsong

General Practitioner and Clinic Manager at ASRI

### Nurul Ihsan Fawzi

Reforestation Program Manager and GIS Remote Sensing Analyst, ASRI

### Agus Novianto

Economist, ASRI

### Pak Sebani

Former MBA student at the Middlebury Institute for International Studies at Monterey; Member of the business development team for The Upstream Alliance

### Agus Supianto

Monitoring Coordinator, ASRI

### Nur Febriani

Executive Director, ASRI

### Mahardika Putra Purba

Conservation Manager, ASRI

### Pak Sukri Sabar

Former head of Pangkalan Jihing sub-village, one of the communities where ASRI operates

### Dr. Kinari Webb

Founder of Health In Harmony and Co-Founder of ASRI

### Dr. Courtney Howard

Canadian ER doctor and member of the Health In Harmony board of directors

### Pak Muslianto

CEO of Station d'Innovation Aquacole; Executive Board Member with The Upstream Alliance

### Pak Wilfirmus

A nurse at ASRI and one of the organization's original team members

### Pak Iskandar

Farmer and resident of Maka Diama

### Pak Nasir

Former logger and resident of Sukadana, participant in ASRI's Chainsaw Buyback program

### Etty Rahmawati

Planetary Health Education Manager, ASRI

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Pak Muslianto appears miniscule amongst the giant trees in Lubuk Baji, the only publicly accessible section of Gunung Palung National Park.

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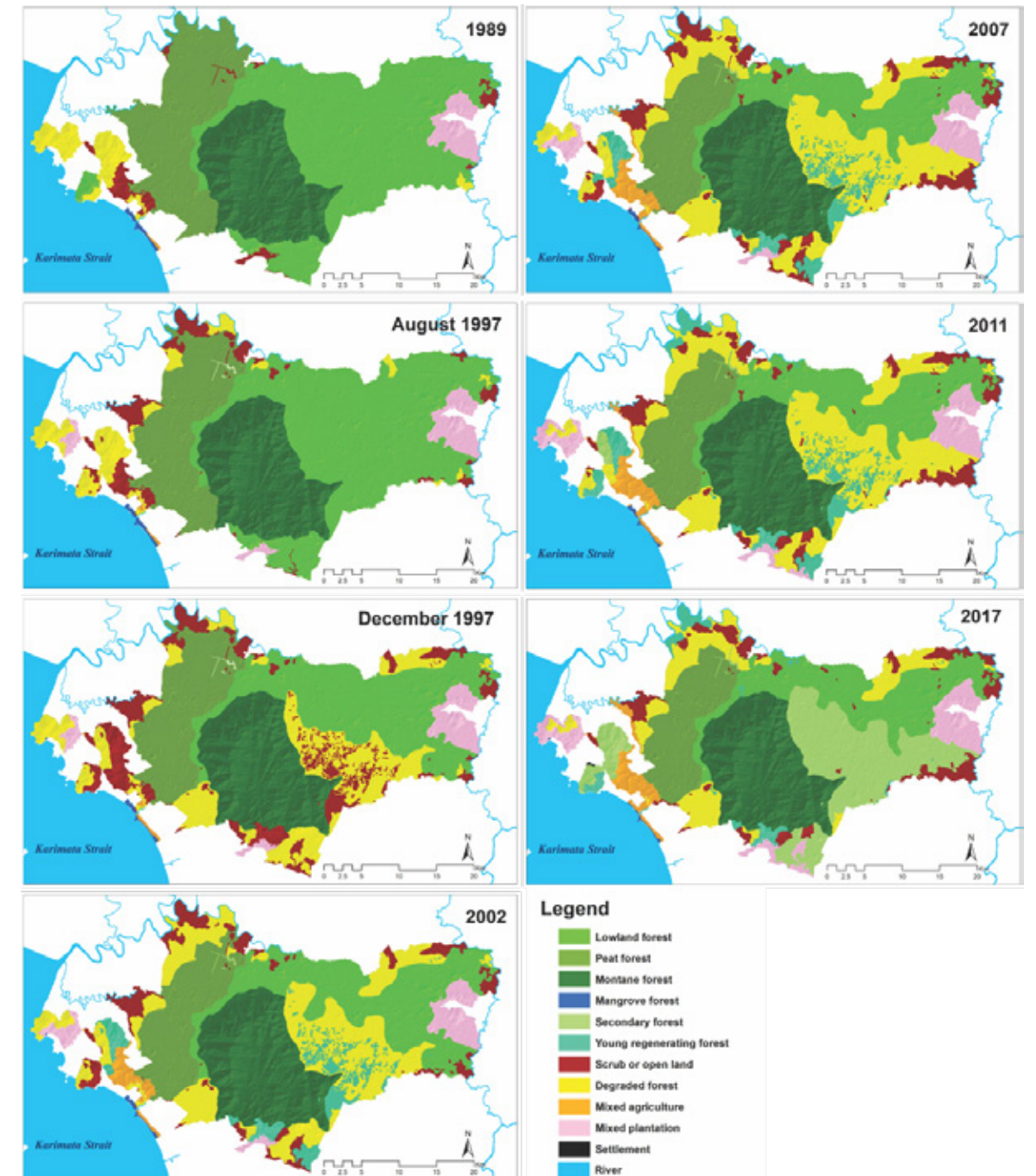
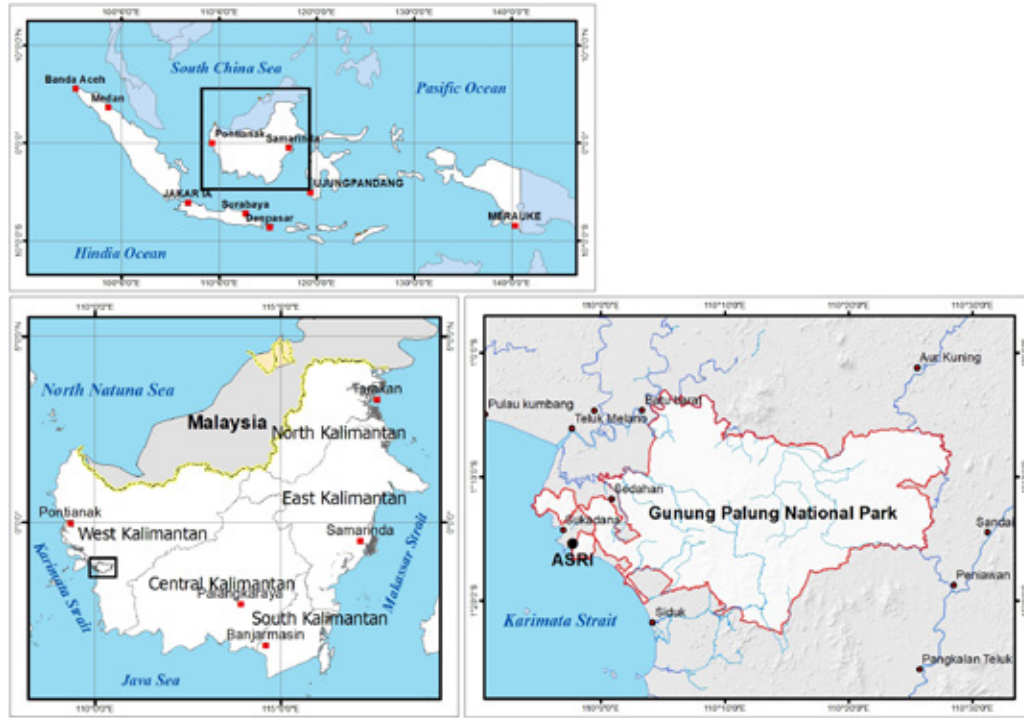
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Land cover change in Gunung Palung National Park from 1989 to 2017 (in hectares)

No	Land use	1989	Aug-97	Dec-97	2002	2007	2011	2017
1	Lowland forest	48,741.55	46,921.43	28,360.32	24,060.45	19,579.92	19,436.93	19,125.77
2	Peat forest	24,561.19	19,892.65	17,244.91	14,085.23	13,366.52	13,265.14	12,951.78
3	Montane forest	22,790.20	22,790.04	22,200.86	22,149.86	22,126.82	22,126.82	22,126.82
4	Mangrove forest	311.91	311.91	213.78	213.78	196.96	169.62	118.04
5	Mixed agriculture	83.30	136.96	235.08	1,800.03	2,330.43	2,479.78	2,764.48
6	Mixed plantation	3,653.29	4,714.56	4,714.56	5,192.37	5,332.56	6,346.62	6,842.24
7	Scrub or open land	2,807.31	6,243.31	14,017.88	7,607.28	8,800.11	7,068.74	7,097.09
8	Degraded forest	5,063.86	6,889.85	20,913.32	26,523.77	29,821.87	28,756.91	11,107.40
9	Young regenerating forest	0.00	111.90	111.90	6,267.93	6,345.52	7,621.28	2,517.68
10	Secondary forest	0.00	0.00	0.00	111.90	111.90	740.76	23,330.37
11	Settlement	0.00	0.00	0.00	0.00	0.00	0.00	30.96
<b>Total</b>		<b>108,012.61</b>	<b>108,012.61</b>	<b>108,012.61</b>	<b>108,012.61</b>	<b>108,012.61</b>	<b>108,012.61</b>	<b>108,012.61</b>