

FORUM:	Environment Commission
ISSUE:	Measures to Promote Sustainable Agroforestry Practices to Reduce Deforestation in Southeast Asia
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Introduction

Forests play various integral roles in the world, serving as a habitat for over 80% of amphibians and 68% of mammals, as well as a source of commercial benefits and a basic necessity for humans.

However, since the Industrial Revolution began, human activity has started to jeopardize the safety of territories, ultimately resulting in the loss of over 420 million hectares of forest so far. This issue is not exclusive to one region. Still, Southeast Asia is one of the regions where deforestation has been most prevalent, particularly due to the demanding agricultural production requirements that support industries and a rapidly growing population.



An image depicting a deforested forest in Southeast Asia

Southeast Asia refers to the geographical area encompassing Indonesia, Malaysia, Vietnam, and Thailand, comprising around 15% of all the tropical forests worldwide. A study from 2001 to 2019 has estimated that around 610,000 square kilometers (235,500 square miles) of forest have been eradicated from Southeast Asia, an area larger than Thailand. Should deforestation persist worldwide, researchers predict that Southeast Asia's biodiversity will decrease by 40% and climate change will be exacerbated, due to the role that forests play as carbon sinks. What's more, regions like northern Laos, Myanmar, and eastern Indonesia will become especially susceptible to soil erosion, landslides, and floods, jeopardizing citizens' safety and quality of life.

Background

The two primary causes for deforestation in Southeast Asia include palm oil production and logging. Since the 1980s, the territory used for palm tree cultivation has grown by at least 4 times, reaching a peak of 72 million tons of palm oil in 2018. The availability of palm oil in supermarkets has led to a surge in the product's popularity among citizens, further exacerbating the consequences of deforestation.

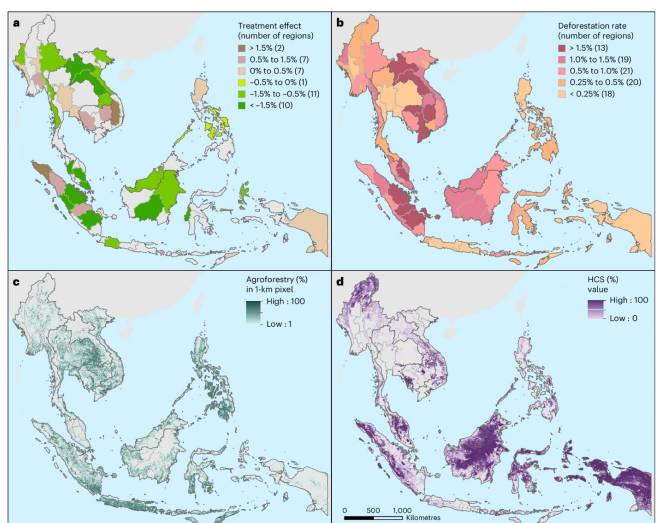


Timber awaiting transportation for commercial purposes

The second primary cause of deforestation in Southeast Asia is illegal logging activities on wood, paper, and timber plantations. According to the World Resources Institute, illegal logging between 1991 and 2014 resulted in a loss of 219 million cubic meters of timber. The consequence of this practice, however, is that after a few years, farmers will have to repeat the same process again, as all the nutrients in the region have now been depleted. This has

led to a global increase in carbon emissions and wildfire risks.

As a result, agroforestry has been proposed as a viable solution to overcome the implications of deforestation. Agroforestry is the practice of adding trees and shrubs into an agricultural setting, which can range from fast-growing timber to fruit trees. These agroforestry species can often be paired with crops like rice, coffee, cacao, or fruits to support their growth sustainably, not at the expense of the environment. A study conducted by the National University of Singapore, Vietnam National University, and Chulalongkorn University, analyzing deforestation rates in 38 Southeast Asian countries from 2015 to 2023, found that agroforestry led to a decrease of approximately 1.08 percent in deforestation and a reduction of 59 million tons of CO₂. While there is no guarantee that this framework may apply to all regions of Asia or the world, there seem to be promising results with



Visual representation of the change resulting from agroforestry initiatives, including the negative effect on deforestation rates

further research and development, along with international collaboration and investment, into agroforestry.

Problems Raised

Community Health Implications from Accelerated Climate Change

Research has shown that deforestation can exacerbate the effects of climate change, as carbon dioxide and other pollutants in the atmosphere will continue to accumulate over time. According to studies from the United Kingdom government, increased temperatures have a wide impact on human health, from increasing the risk of heatstroke, cardiovascular diseases, and respiratory conditions to affecting mental health issues like anxiety or PTSD. Especially in vulnerable, underrepresented, or Indigenous communities, healthcare is not readily accessible or affordable to all, while there is often poor insulation and occupations that require working long hours in the heat; subsequently, these demographic groups are disproportionately affected by such health conditions, further widening the healthcare disparity between individuals living in urban and rural settings. At the end of the day, mental and physical health is an inalienable human right that must be protected via international policies and cooperation.

Lack of Biodiversity Due to Monocropping and Deforestation

Monocultures or monocropping is the practice of integrating one primary crop into their farm system, which leads to soil degradation and unhealthy plant growth. As a result, most farmers who practice monocropping turn to chemical fertilizers to produce fruits and crops, but the use of these chemicals leads to long-term consequences, including nutrient depletion from the soil. Additionally, when faced with viruses or pests, all the crops will be especially susceptible because of the uniform makeup and lack of diversity of the crops.

In terms of endangered species, the orangutan, the Javan rhino, and the Sumatran tiger are the main species impacted by deforestation in



An example of monocropping in Brazil

Southeast Asia. According to recent research, there are fewer than 400 existing Sumatran tigers in the wild, due to a lack of both suitable habitats and abundant resources for these animals to survive.

Furthermore, the smoke from fires undermines animals' immune systems and DNA, exemplifying the multifaceted consequences resulting from deforestation.

Lack of Awareness of Agroforestry Among Farmers

Community feedback has shown policy leaders that farmers are still hesitant towards investing in agroforestry due to the unfamiliar nature of this practice and the upfront costs. According to Yara Sehnnan-Farpón, a conservation scientist at the University College London, farmers “don’t necessarily know how to plant and grow using agroforestry techniques”, especially when they have been working for a sustained period using solely industrial techniques. Hence, this truly calls for the need for non-governmental organizations (NGOs) that can support these farm owners in the transition towards sustainable farming and technology.

International Actions

United Nations Conference of the Parties

The Paris Agreement outlined that every five years from the initial signing of this agreement, countries should have regular conferences updating their status on critical environmental issues. Hence, the UN Conference of the Parties regularly holds international discussions on the intersection between climate change and politics.

At the 26th session of the United Nations Conference of the Parties (COP 26), countries that represent territories containing 85% of forests worldwide have promised to eliminate deforestation by 2030. Particularly, Brazil, Russia, Colombia, Indonesia, and the Democratic Republic of the Congo have officially endorsed their commitment through the Glasgow Leaders’ Declaration on Forest and Land Use.



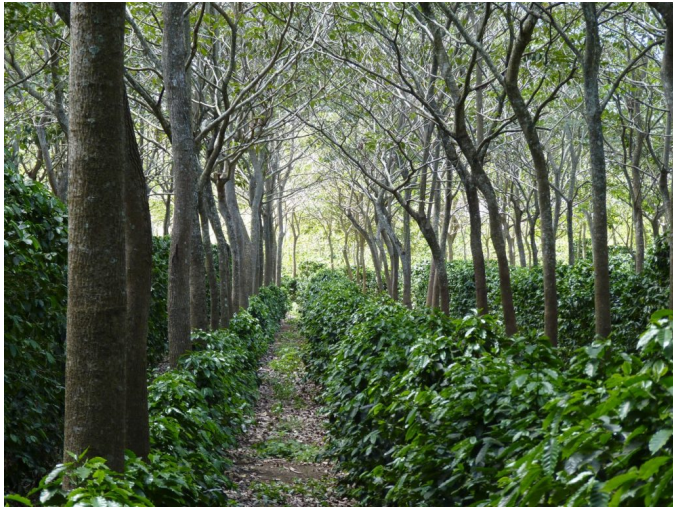
Depiction of the United Nations COP26

This declaration is supported by 12 countries that have pledged to allocate more funds to restore deforested regions, subsidize Indigenous communities, and address damage from natural disasters like wildfires or floods. Moreover, private industries are also contributing to nature-based solutions, including planting more trees or instituting sustainable technologies. Ultimately, due to the critical role that forests play in mitigating the progress of climate

change, this declaration was an essential first step in establishing a quality, clean environment beyond the scope of the Paris Agreement.

Research and Development of Agroforestry

According to the Food and Agriculture Organization of the United Nations, agroforestry has led to increased resilience and adaptation for water management, soil health, and crop gathering, aligning with the key principles of the Sustainable Development Goals. A study analyzing research on agroforestry



An instance of agroforestry where trees are planted between crops

over the past four decades has found an overall increase in international agreements dedicated to agroforestry and local policies that promote sustainable forest management. To illustrate, out of the 148 National Declared Contributions to the United Nations Framework Convention on Climate Change, agroforestry was mentioned as a viable solution for climate change in 40% of the documents. Even reports from both the United Nations Environment Program and the Intergovernmental Climate Change (IPCC) report of 2022 emphasized agroforestry as a key means of

resilience toward climate change, truly exemplifying the innovative progress made in this field.

Key Players

The Center for International Forestry Research and World Agroforestry

The Center for International Forestry Research and World Agroforestry (CIFOR-ICRAF), founded over 75 years ago, has established programs in over 60 countries in Southern Asia. This organization has five primary focuses, including targeting biodiversity, climate, value chains, food, and equity, to work at the intersection between science and social good. By establishing alliances with governments and specific programs tailored to each geographic region, the CIFOR-ICRAF has connected over 1.5 billion people worldwide through sustainability.

The Asian Forest Cooperation Organization (AFoCO)

The Asian Forest Cooperation Organization, short for AFoCO, is an organization that collaborates with international governments to increase forest coverage and operates under the Paris Agreement. This organization is directly tied to the United Nations, being a Permanent Observer to the United Nations General Assembly and consists of 15 partner countries that are directly cooperating with this

organization. Thus far, AFoCO has contributed to providing site-specific actions that teach forest management practices, promote resilience of forest communities against disasters, and restore degraded forests. By combining community action with national policies, this organization serves as a liaison between the public and the government that promotes effective collaboration for a healthier ecosystem worldwide.

The Wildlife Alliance

The Wildlife Alliance, formed in 1995, is an organization that recognizes the critical regions in Southeast Asia that are at risk from deforestation. From 2002 continuing until the present day, the

Wildlife Alliance has reduced 7,000 wild animals, prevented 3,500 cases of land encroachment, and filed 1,600 illegal environmental cases in court. By employing park rangers in the Cardamom Rainforest who observe signs of illegal poaching or logging in this area, the organization directly addresses the issue of deadly snares that put animals at risk, removes illegal timber, and saves animals



Wildlife Alliance Rangers Protecting the Cardamom Rainforest

from poachers. Additionally, this organization has recognized the importance of the demarcation of land to sustain communities that are living near forest areas. This not only encourages sustainable natural resource management but also incentivizes communities to participate directly in the forest conservation process.

Efforts from the Association of Southeast Asian Nations (ASEAN)

ASEAN, short for the Association of Southeast Asian Nations, is one of the many regional initiatives that have contributed to increasing awareness and popularity of agroforestry in Southeast Asian nations. Consisting of seven primary goals, the *Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture, and Forestry*, viable from 2016 to 2025, aims to both anticipate potential natural disasters and devise effective mechanisms to prevent or mitigate the impact of such catastrophes.

Alongside this plan, ASEAN has also established the *ASEAN Guidelines for Agroforestry Development*, providing a dense, comprehensive overview of how to implement agroforestry considering social and economic circumstances particular to each region. Currently, ASEAN collaborates directly with various Asian governments, including but not limited to establishing policies in Bangladesh, Indonesia, Nepal, and Vietnam.

Possible Solutions

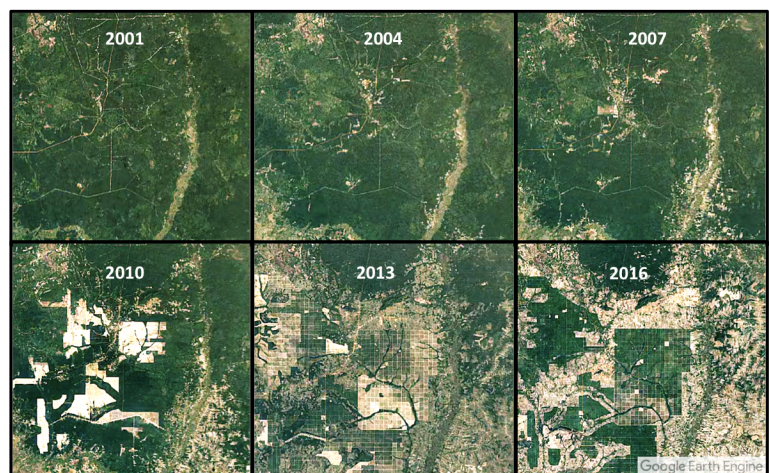
Government Intervention in Incentivizing Agroforestry

The majority of palm oil production worldwide derives from Indonesia, Malaysia, and Thailand, given the suitable climate conditions that support palm oil cultivation. While there was a national forestry law in Indonesia that imposed a limit on the number of forests allocated for palm oil production, over 3 million hectares of forest were used in 2019 for this very purpose. As a result, agroforestry systems have been proposed to have multiple salutary effects on farmers as well as the environment. By diversifying farmers' source of income to include products like timber, fruits, and fuelwood, agroforestry certainly has the potential to make a significant impact on individuals residing in rural areas, while abating the risk of deforestation.

However, local policies dedicated to agroforestry are integral in effectively reaping the benefits of this practice. According to a study from Nature, around 18% of the land of Southeast Asia has been practicing agroforestry, but a consideration of local or region-specific social, economic, and climate conditions is necessary to truly increase this number. Lian Pin Koh, a professor of conservation at the National University of Singapore, explicates that factors like “tenure, government policies, market demand, community governance, and individual motivations” all impact the effectiveness and incorporation of agroforestry in these areas. Hence, local governments must collaborate with non-governmental organizations (NGOs) to understand the inner workings of agroforestry and establish credit programs or certifications to incentivize farmers to promote agroforestry.

Incorporation of Satellite Technology and Artificial Intelligence

Improved satellite technology has the potential to monitor deforestation across the Southeast Asian region. Combining satellite imagery with GIS (Geographic Information Systems) can allow governments to track the progress of deforestation areas in a less costly manner than simply having individuals track the region manually. Satellite imagery can also provide information on the growth and survival rates of planted trees, allowing the government to have a real-time indication of what future programs should be initiated and which areas they should specifically target. When used in combination with artificial intelligence,



A series of satellite images that display deforestation across 6 years in Cambodia

these technologies have the power to detect patterns in the data via neural networks, allowing for a quick and effective diagnosis of current environmental conditions.

Glossary

Agroforestry

The practice of incorporating trees, crops, or shrubs into existing farm settings as a means to sustainably manage farm resources.

Deforestation

The deliberate practice of eradicating forests for personal, commercial, or financial reasons. In Southeast Asia, deforestation is prevalent due to palm oil, rubber, and coffee production.

Monoculture

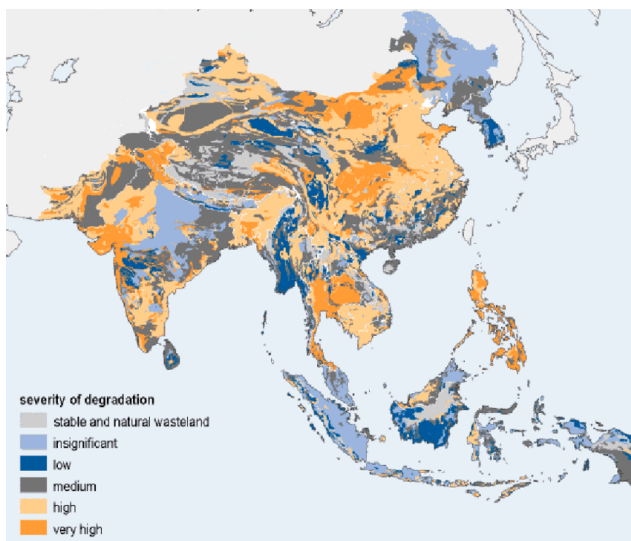
The practice of farming one primary crop across many years leads to decreased biodiversity and resilience but increased susceptibility to disease and climate change.

Soil Degradation

The gradual loss of quality soil, typically resulting from erosion, contamination, or lack of nutrients, leading to decreased functionality as a stabilizer for plants and a storage site for carbon.

Southeast Asia

A geographical area encompassing countries like Cambodia, Laos, Myanmar, Thailand, Vietnam, and Indonesia, across over 4,000 miles.



Visual representation of the severity of degradation across Asian countries

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