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Recurring Haze Over Southeast Asia – The Role of Indonesia

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ABSTRACT

Recurring Haze Over Southeast Asia – The Role of Indonesia

This paper address the topic of the haze problem in Southeast Asia, which is recurring transnational pollution that has serious environmental, health, and economic consequences. The paper examines the problem with a particular focus on the role of the main hot spot of forest fires and haze, Indonesia and why has Jakarta been unsuccessful in handling the issue. The paper first describes the fundamental roots of the haze problem, followed by an overview of its local and transnational consequences. The paper then discusses this year's events and the current measures executed in response to the subject. Finally, it raises recommendations and the aspects that need to be targeted to effectively address and eliminate the haze problem.

ÖSSZEFOGLALÓ

Füsttakaró alatt Délkelet-Ázsia – Indonézia szerepe

A műhelytanulmány Délkelet-Ázsia egy évente visszatérő, komoly környezeti, egészségügyi, és gazdasági következményekkel járó transznacionális problémáját, a füstszennyezést vizsgálja. Az elemzés a jelenséget az erdőtüzek és a füst fő forrása, Indonézia szemszögéből elemzi azzal a kutatási szándékkal, hogy kiderítse, Jakartának miért nem sikerül évtizedek óta megoldania a problémát. Az írás először a füstszennyezés alapvető okait mutatja be, majd annak regionális következményeiről ad áttekintést. A tanulmány a különösen súlyos idei füsthelyzetre is kitér, valamint bemutatja a jelenség kezelésére tett erőfeszítéseket. A szerző végül a probléma megoldását célzó szempontokat és az intézkedési javaslatokat szemlélteti.

MÁTÉ SZAKÁLI

THE RECURRING HAZE OVER SOUTHEAST ASIA
THE ROLE OF INDONESIA

I. INTRODUCTION

Haze is an atmospheric phenomenon in which dust, smoke and other dry particles obscure the clarity of the sky. In a modern context, the term is commonly related to the detrimental product of the common slash-and-burn technique in subsistence agriculture.[1] The thick, dirty, toxic haze from forest fires occurring mostly in Indonesian territories, that blankets also parts of Southeast Asia is a recurring phenomenon, and has this agricultural origin.

Indonesia's rain forest – mainly on the islands of Sumatra, Borneo and Papua – is the third-largest in the world, but disappearing fast as huge proportions are being handed over to palm-oil and pulpwood producers that use this slash-and-burn method to clear the existing vegetation for new crops. It is vanishing so rapidly amidst the haze that Indonesia is now the world's third-largest emitter of greenhouse gases with three-quarters of its emissions stemming from deforestation, forest degradation and damage to peatlands.

Indonesia has struggled for years to contain the fires which not only release greenhouse gases into the atmosphere but also affect wildlife, the rain forest as well as the quality of life and economy of local residents and neighbouring countries. Its harmful consequences can vary from irritation of one's vital organs to cardiovascular effects and the development of chronic respiratory diseases, and it illustrates the lack of control checks and reinforcement of protection of the environment. The adversity of the problem, moreover, can impair international relations hence haze incidents have caused profoundly adverse health and economic impact videlicet on Singapore, Malaysia, Brunei Darussalam, and to a lesser degree, on Papua New Guinea, the Philippines and Thailand. Although Jakarta has failed to duly account and compensate for the degeneration of its neighbours' environments. Therefore the problem has resulted in a persistent haze conflict in the region as flames ignite every dry season, in varying degrees.

[1] HEIL – GOLDAMMER 2001.

Whilst this fire and haze issue is complex with multiple actors and interests playing a role, the problem is quite clear. Accordingly, the Indonesian governments' unsuccess to even partially or temporarily solve it, requires to be examined. This paper attempts to pinpoint the main causes of this failure.

II. THE FUNDAMENTAL ROOTS OF THE HAZE PROBLEM

The fundamental roots of Indonesia's fire problem lie in poverty and weak governance. Consequently, they are principally human problems, not environmental ones. Many factors and a network of different actors – from the community, government, non-government, and private sectors – are involved in the basis and reservation of the problem, making it more difficult to tackle. The fires do not have a single cause, but the main ones can be identified as the following: the high demands for palm oil and pulp-and-paper, state incompetency and regulatory weaknesses, land conflicts, and degradation of peatlands.

Indonesia is occupying 1,905,000 square kilometres of land. Approximately 49 per cent of it is covered by actual forest, although the government classifies 69 per cent of the land area as forest, and 23 per cent of actual forest is classified as protected nature reserves.[2] Fires emitting the haze occur dominantly in the rain forests of Sumatra and Kalimantan. These once forest-rich islands are now largely covered in plantations. Fifty years ago, entire Indonesia was rich with pristine forests. But between 1980 and 2000 a timber logging boom emerged, followed by an illegal logging boom in the first decade of this century, and then the palm oil boom began. Thus economic considerations made Indonesia having the fastest rate of deforestation in the world between 2000 and 2012. Pristine forests were severely logged and turned into degraded forests. What was left was slashed and burned, causing haze events, made ready for oil palm and wood plantations of all scales.[3]

Demand has risen for palm oil as it is found in a wide variety of products including shampoo and ice cream, but demand is also driven by the bio-fuel policies of some developed countries. Due to the boost of palm oil and pulp-and-paper production,

[2] This discrepancy is largely the result of the Ministry of Forestry's refusal to reclassify lands that have long since been occupied for cultivation or other non-forest uses. Such refusal is presumably motivated by a reluctance to cede authority over land to other ministries.
[3] PURNOMO 2015.

these sectors have become dominant in Indonesia's economy and lucrative for participants. Around 80 per cent of deforestation in Indonesia is illegal, mostly for large-scale plantations producing palm oil and timber, 75 per cent of which is exported.[4] Indonesia is now the world's biggest producer of commodities and plantations owned by Indonesian, Malaysian and Singaporean companies earned about $18.4 billion in revenue in 2014.[5]

Illegal logging relies on corruption, the cooperation of (public and military) officials and the involvement of transnational organized criminal syndicates.[6] Albeit, as some Indonesian politicians zealously emphasize, the problem is not traceable merely to official corruption, because legally the corporations are the ones responsible for preventing and extinguishing fires on their concessions.[7] This and other regulations, however, are seldom enforced. Successive Indonesian governments have passed numerous regulations outlawing burning, yet enforcement is so poor that people and companies carry on regardless of the law.

According to economic interests, most of the fires are started deliberately by both local farmers and multinational actors to make way for palm oil agriculture. The majority of local farmers follow the traditional slash-and-burn method because of its efficiency. Herry Purnomo, a researcher at the Center for International Forestry Research, says clearing land by fire is fast and about 10 times cheaper than using machinery.[8] The lack of governmental enterprise into alternatives that can help farmers achieve similar results with more sustainable and less polluting techniques is another root of the haze problem. Moreover, the lack of education and incentives as well to encourage the adoption of substitutions dissuades local farmers to grow their crops in an environmentally friendly manner.[9]

Transnational corporations also tend to use the method on their own or to be the farmers' prompters. Even though the World Wildlife Foundation (WWF) reports that 87

[4] KIRBY 2014.
[5] SCHONHARDT 2015.
[6] One example: between Pekanbaru and the East coast of Sumatra island is Giam Siak Kecil Bukit Batu, a huge UNESCO-listed peatland and biosphere reserve that is home to the Sumatran tiger, among other species. In 2014 it had been invaded by over 2,000 people from north Sumatra who were clearing the land by burning about 3,000 hectares. Local village heads were suspected of selling plots of land to the newcomers, aided and abetted by a local military officer previously convicted of illegal logging in Western Sumatra.
[7] "Leaders Fiddle as Sumatra Burns."
[8] SCHONHARDT 2015.
[9] LIU 2015.

companies have committed to using only sustainable palm oil by 2015, including Unilever and Nestlé, furthermore the United Kingdom and Belgium have committed to importing 100 per cent certified sustainable palm oil by the same year, sustainable palm oil accounts for only 15 per cent of palm oil produced.[10] Environmentalists often point to plantation firms as the offenders, while companies blame the local actors. Unclear land ownership adds to the accusations hence illegal land transactions do occur both in concession and state lands.[11] In Indonesia, the Basic Forestry Law grants the Ministry of Forestry authority over lands that are classified as forests. The land rights of traditional communities that live on such land cannot be registered and are generally unrecognized by the state.[12] Therefore, these communities cannot in fact enforce rules at the village level and exclude outsiders such as oil palm plantations, logging companies, residents of other villages, migrants, or small-scale loggers. Competing claims, in turn, lead to land conflicts, in which fire ignition can be a tool.[13]

Fire-fighting is difficult as much of Indonesia's rainforest grows on top of peatland made up of decomposing plant matter that has built up over thousands of years. For human activities, much of the peatlands in the country and the region have been degraded. Canals are dug to drain the swampy land so it can be farmed have lowered the water table and drained the peat. The peat retains the heat below ground so that fires can burn up to two metres underground and re-emerge elsewhere, making the fires hard to control.[14] The flames fueled by peat, which is very rich in organic matter, produce a tremendous amount of air pollution when it is burned. The ongoing deforestation over the past decades has thus made Indonesia rank first for carbon dioxide emissions intensity relative to GDP.[15]

As multiple factors and actors are involved in the roots of the problem, it is more difficult for the Indonesian governments to handle the issue. Still, there are certain national efforts, and even regional measures have been adopted as the haze does affect surrounding areas.

III. The Regional Consequence: The Ongoing Haze Conflict

[10] Kwok 2013.
[11] Schonhardt 2015.
[12] This is the legacy of the authoritarian Suharto regime (1967-1998).
[13] Carder 2013.
[14] Woolf 2015.
[15] Russel 2015b.

Jakarta has been tackling the haze problem for the past two decades, yet the thick haze from the rapidly spreading and extensive fires in Indonesia usually measures hundreds of kilometres across Southeast Asia, causing a significant deterioration in air quality and neighbourly relations. Indonesia has repeatedly faced calls from its border countries to control the fires, hence the environmental, health, and economic costs of the haze have angered them.

The annual haze events have affected several countries in Southeast Asia, and smoke has led to a range of health, economic, and environmental problems, direct and indirect. The haze is a mixture of soot and various dangerous chemicals, including carbon monoxide, ammonia, cyanide, formic acids, formaldehyde. The immediate health effects of smoke include headaches, dizziness, sleeplessness, confusion, and fatigue, all of which can substantially reduce productivity and exacerbate other illnesses. The longer-term health risks are less clear but are thought to increase the heavier the smoke and the longer the exposure.[16] Apart from the health implications, Singapore's reputation as a major business hub and one of the world's largest offshore financial centres, for example, is at stake during haze events, as they could put off international investors.

Regarding the damage to the environment, the fires mean a net increase in carbon dioxide in the atmosphere, whilst deforestation and land degradation deprives wildlife of habitat, and threaten many plant and animal species, including endangered orangutan, tiger, and elephants populations. The haze could also have a devastating impact on insect species. Bees may be unable to navigate, with a damaging domino effect on plants that rely on them for pollination.[17]

Since neighbouring countries' strong criticism and explicit demand for definitive actions have failed to persuade Jakarta, these countries – all of which are members of the Association of Southeast Asian Nations (ASEAN) – have attempted to channel their efforts and evoke a multilateral solution to the crisis. Following particularly severe land and forest fires, the ASEAN states introduced a legally binding environmental agreement signed in 2002 called the ASEAN Agreement on Transboundary Haze Pollution. Furthermore, an ASEAN Cooperation Plan on Transboundary Pollution was established in 1995, and a Regional Haze Action Plan in 1997. Last year, after endless prompts,

[16] "Clearing the smoke…"
[17] RUSSEL 2015b.

Indonesia was the last to ratify the 2002 ASEAN Agreement on Transboundary Haze Pollution, which requires the parties involved to implement measures to prevent, monitor, and mitigate this kind of pollution. The treaty is criticised for being vague and lacking enforcement mechanisms or strong instruments for dispute resolution. However, this is a legally binding treaty, the kind that member states have previously vehemently refused.[18]

Besides annual fires and Jakarta's 12-years long reluctance to ratify this treaty, Indonesia has also angered neighbours by being offensive on occasions. For example, Indonesian Vice President Jusuf Kalla recently stated: "Look at how long they have enjoyed fresh air from our green environment and forests when there were no fires […] Are they grateful? But when forest fires occur, a month at the most, haze pollutes their regions. So why should there be an apology?"[19]

In fact, an apology would be only an adhesive plaster on the problem. Solutions are required, although, as mentioned, too many different people benefit enormously from fires, including local farmers, politicians, business people, government and military officers, even academics. On one hand, this partially explains the failure of the Indonesian government to solve the task, on the other hand, it means the financial incentive to shift to alternative land-uses and methods needs to be substantial. The ASEAN and the international community here can play a crucial role. Additionally, thinking globally, linking this issue to the achievement of the United Nations' Sustainable Development Goals (SDGs) is advisable to get better support from them.

Greater international attention and support is justifiable, as the phenomenon has significant global consequences. Fires on peatlands emit methane as well, a greenhouse gas 21 times more potent than carbon dioxide, but peat fires may emit up to 10 times more methane than fires occurring on other types of land. Taken together, the impact of peat fires on global warming may be more than 200 times greater than fires on other lands.[20] "I think we can safely say that of anything that has happened over the last decade, these fires are having the largest impact on the climate,"[21] said Susan Minnemeyer of Global Forest Watch.

[18] DOMÍNGUEZ 2015.
[19] "Indonesia VP Kalla reiterates…"
[20] HARRIS – MINNEMEYER – STOLLE – PAYNE 2015.
[21] RUSSEL 2015b.

Solutions are thus gravely needed, especially since the haze conflict, beyond causing frustration to member states, as a persistent transnational conflict undermines to some extent the credibility of this month starting ASEAN Economic Community (AEC), which is arguably the most ambitious economic integration program in the developing world. The Community is a milestone in Southeast Asia's integration, of which success should be a priority for all participating states. The AEC aims to integrate a region with 630 million people and a combined gross domestic product of $2.4 trillion, which makes the Economic Community collectively the third-largest economy in Asia and the seventh-largest in the world.

The AEC is defined by four pillars: creating a single market and production base, increasing competitiveness, promoting equitable economic development, and further integrating ASEAN into the global economy. In order to synergize the region's markets and production hubs, this would entail the free flow of goods, services, investments, capital, and skilled labour. Proponents argue that if the integration succeeds, the region could become the fourth-largest economy in the next few years.[22] However, the ongoing haze conflict jeopardizes member states' trust and goodwill in each other.

IV. AN EXCEPTIONALLY PROBLEMATIC YEAR: 2015

As aforementioned, fires take place annually in the archipelago but this year has seen one of the worst and most prolonged periods of haze, owing to the unusually dry weather in Indonesia caused by the El Niño climate phenomenon.[23] The haze crisis of 2015 affected Indonesia from June to the end of October, turning into an international problem in September.

More than 117,000 forest fires were detected via satellite this year, the majority on the islands of Sumatra and Kalimantan.[24] In September, daily emissions from Indonesia's fires exceeded the daily emissions of the entire U.S. economy. To put it into perspective, the U.S. economy is 20 times larger than that of Indonesia. The Global Fire

[22] PALATINO 2015.
[23] The term El Niño refers to the large-scale ocean-atmosphere climate interaction linked to a periodic warming in sea surface temperatures across the central and east-central Equatorial Pacific. The presence of El Niño can significantly influence weather patterns, ocean conditions, and marine fisheries across large portions of the globe for an extended period of time.
[24] PHIPPS 2015.

Emissions Database has estimated around 600 million tonnes of greenhouse gases were released as a result of fires, roughly equivalent to Germany's entire annual output.[25]

Six Indonesian provinces declared a state of emergency due to the haze, these were Riau, Jambi, South Sumatra, West Kalimantan, Central Kalimantan and South Kalimantan. Former Riau Police chief Sutjiptadi said there have been three motives behind the forest fires. Firstly, land clearing by burning is indeed cost-effective. Secondly, to avoid spending on compulsory reforestation, firms rather burn their lands. Thirdly, the companies revitalise palm plantations by cutting or burning old palm trees that are no longer productive. By law, cleared plants must be stacked and burning must be conducted on a bed of concrete so that fires will not spread, but to reduce the costs, most companies disobey.[26]

At least six of the ten countries in the ASEAN region have been affected by the haze in 2015, most parts of Indonesia, Malaysia, Brunei, and Singapore, southern Thailand, and Vietnam. To a lesser extent, the haze has affected Cambodia and Cebu in the Philippines. Throughout the region, schools have been periodically closed, flights grounded and hospitals put on alert as smog levels topped. The authorities in the affected countries advised people to wear face masks, stay hydrated and limit unnecessary outdoor activity for the elderly, pregnant women, and children. In Pekanbaru, in Sumatra's Riau province, one of the worst-hit areas, a makeshift clinic for newborn babies was set up in an air-conditioned room in the mayor's office.[27] Traffic and other public services restrictions due to the haze were implemented in Indonesia, Malaysia and Singapore. Events were disrupted or even cancelled as the 2015 FINA Swimming World Cup in Singapore and the Kuala Lumpur Marathon in Malaysia.

More than 43 million people in Indonesia alone were affected by the crisis, and half a million cases of respiratory illness were reported. The fires have caused the air to turn a toxic sepia colour in the worst-hit areas of Sumatra and Kalimantan, where levels of the Pollutant Standard Index (PSI) have pushed toward 2,000. Anything above 300 is considered hazardous.[28]

The Indonesian government estimated that the 2015 haze crisis would cost the state up to US$35 billion. The direct costs come from damage caused by the fires, but

[25] HARRIS – MINNEMEYER – STOLLE – PAYNE 2015.
[26] WISNU 2015.
[27] COOPER 2015.
[28] LAMB 2015.

there are also related impacts on health, environment and tourism. Whereas in October Islamic authorities in Malaysia have called on Muslims to hold special prayer sessions for the haze to end, nature (and the wet season) has solved the problem: heavy rains reduced the size and number of fires later that month. Notwithstanding, the threat is only periodically lower. Flames will return in the next dry season feeding the haze problem again. Human actions are therefore needed.

V. EFFORTS TO MITIGATE FIRES AND HAZE

While, according to some experts, Indonesia's laws against burnings are effective and the threat of substantial penalties is in place, many think requisite firm actions have not been taken, and long-term strategies have not been adopted and implemented.

For example, as Indonesian governments have failed to diversify local economies, farmers have no substitute source of income, and there are no incentives persuasive enough to encourage their legal compliance. Regarding the corporations' social responsibility, the naming-and-shaming strategy pressurises the big brands (like Lego, Adidas, Mattel) to dedicate their businesses to the sustainable production of goods. Some of the biggest paper and palm oil companies in Indonesia have already made no-deforestation pledges, largely to meet sustainability commitments that allow them to export to companies in Europe and the U.S. Many have also put no-burn policies in place, which they say they apply to all their suppliers. Although many smaller firms and the many illegal operations still using the slash-and-burn technique are now the source of much of the risk and trouble. Under national laws companies caught clearing land by fire could suffer sanctions, such as fines or jail time, yet law enforcement ought to be strengthened.[29] A legal strike may be still triggered by the Indonesian government's successful case in September against palm oil company PT Kallista Alam, which was forced to pay $25.6 million in compensation for illegal burning.[30]

In terms of long-term solutions and political will, it is promising that the governor of East Kalimantan reaffirmed in March his commitment to a 2013 moratorium on mining, logging, and plantation permits. In May, Indonesian President Joko Widodo has

[29] SCHONHARDT 2015.
[30] COOPER 2015.

refreshed a two-year national moratorium on logging in virgin forests, although World Resources Institution found that the moratorium implemented in 2011 was not always upheld, as local officials were often unclear on which areas were protected. Moreover, there are exceptions in the provision, and the decision does not apply for secondary forests leaving 48.5 million hectares of woods at exposure.[31]

In respect of actual operations, the Indonesian government has a standard operating procedure in case of forest fires, but a state of national emergency must be declared to allow the full mobilisation of the resources needed to mitigate fire.[32] This year, only selected provinces declared states of emergency. Adequate reaction to the fires is constrained by the climate and the very scale of the fires, as well as by limited response capacity in terms of equipment, budget, and human resources. In 2015 Indonesia dispatched tens of thousands of personnel to Sumatra and Kalimantan. Despite their water-bombing, chemically-induced rainfall techniques and other efforts, the fires have failed to be kept under control. Poor coordination of and between government agencies also played a role, along with the general approach of reacting to fires by suppression instead of preventing them.

Fire suppression is indeed important and also visible, though the government's management could be more successful with a renewed policy attention. Economic interests, however, appear to still prevail. Some people were arrested in connection with illegal burning, but Indonesian presidential chief of staff, Luhut Pandjaitan said that economic considerations meant the government would not name the corporations suspected of involvement in starting the fires.[33] Palm oil is a strategic sector for the national economy and developing Indonesia is wary of punishing the producers of its main agricultural export product. The country's palm oil output next year will be already a half million tonnes lower than initially expected as the dry weather pattern offsets higher yields from mature trees.[34]

Nevertheless, in September, Indonesia released a draft of its new climate plan, entitled National Determined Contribution. The report calls for at least a 29 per cent reduction in emissions by 2030 and up to 41 reductions with international assistance. However, the plans were cast into doubt after Indonesia and Malaysia confirmed their

[31] RUSSEL 2015a.
[32] "Experts from Indonesia call for…"
[33] PHIPPS 2015.
[34] "Indonesia's 2016 Palm Output…"

plan to establish a palm-oil cartel, which will allegedly keep prices stable and develop the industry.[35] This indicates that the governments of neighbouring states, like Malaysia and Singapore, are also to be blamed for perpetuating the haze problem by supporting and protecting their own national palm oil companies, which have subsidiaries and large plantations in Indonesia.

As for ASEAN, the ASEAN Agreement on Transboundary Haze Pollution adamantly protects national sovereignty. The implication is that states are compelled to act in their self-interest rather than regional interests. Although national actions in Indonesia are hampered by the close relationships between key economic actors and political elites, in the end, Indonesians themselves will have to find an answer to the roots and consequences of the illegal and polluting practices. This raises the question as to whether Indonesia can muster the political will anytime soon, and how does it establish reliable institutions of governance that can enforce environmental laws and hold offenders legally and financially liable.[36] Recommendations, as a matter of fact, are numerous.

VI. WHAT SHOULD BE DONE?

Environmentalists say restoration projects and strict law enforcement would also help, as well as changing the complex network of economic interests that drives the demand. A complex patronage network benefitting enormously from the fires needs to be eliminated. Greenpeace says the government should speed up work on a comprehensive land-use map that would include plantation concession information to better determine who owns what land.[37] In addition, regional reforms are needed to resolve the land conflicts and ensure that land and resource allocations and decisions at all levels are compatible with physical site characteristics, prominently taking fire risks into account.[38]

The trend of encouraging communal efforts should be maintained. In recent years, efforts have been made by the Ministry of Forestry to grant more land ownership

[35] LEYLAND 2015.
[36] DOMÍNGUEZ 2015.
[37] SCHONHARDT 2015.
[38] However, Indonesia's legacy of inaccurate maps, overlapping boundaries, and a lack of technical expertise will make this a difficult task.

to the communities themselves, encouraging smaller-scale and locally-owned forest management. In several places, such as communally-managed teak plantations in Central Java, the results showed assuring results. Research by the Centre for International Forestry Research shows that when communal rights to manage forest land are recognised by governments, the rates of deforestation commonly decrease. Based on this experience, Indonesia would do well to accelerate efforts in granting local communities a larger portion of the national forest estate.[39]

Stakeholders need to negotiate land-use planning, and Herry Purnomo suggests negotiations should cover duration. For example, an area that has been converted illegally from a conservation area to an oil palm plantation could remain oil palm for a certain number of years to provide compensation for the investment by private sectors or local communities. However, after that designated period, it would be time to restore the area to a forest.[40]

Plantation companies ought to use land more productively rather than expand their concessions. The government needs to create disincentives for illegally degraded, burned and oil-palm-planted lands, and also needs to better enforce existing laws that prevent forests and forested peatland from being developed for agriculture. Furthermore, increasing state and third parties' monitoring capabilities, and improving infrastructure are also essentials. Namely, canals or dams should be built to provide peatlands with a constant supply of water to keep them moist and prevent fires.

The usage of social media to spread consciousness on the issue of haze and consumption of sustainable products would be also important. Consumers have an instrumental role in the haze problem, and a paradigm shift in their demands for palm oil that is produced unsustainably could effectively abandon the supplies of such commodities.

Long-term solutions are needed because current actions mostly deal with fighting fires without nullifying the possibility of future haze events. Therefore reviewing fire policy and laws, mapping actors and their networks and economies, providing clear and transparent spatial maps, and engaging with key policymakers and practitioners is key for eliminating the haze problem.[41] It will take time for the long-term solutions to

[39] LIU 2015.
[40] PURNOMO 2015.
[41] PURNOMO 2015.

develop, but their focus should be on providing Indonesia's rural poor with fiscal support and competitive alternatives to fire-dependent agriculture.

VII. CONCLUSION

Land transformation needed for palm oil production, which is a major driver of economic growth in Indonesia and the region, go hand in hand with fire and haze. The nationalist and protectionist policies by successive Indonesian governments failed to diversify the local economy which, in turn, has led to almost no other comparatively lucrative sources of income for small farmers in rural areas. In addition, opaque bureaucracy has made it easier for big companies to engage in illegal burning activities on their land.[42]

Every year, existing farmland is dried out and burned for the next season's crop and to clear surrounding forests for expansion. The fires are extensive and hard to control, as dry, carbon dioxide-rich peatlands can burn for many weeks. Local authorities face many challenges. One is identifying who exactly is behind the burning and who is responsible for the land on which it occurs. The other major challenge is that peat fires burn underground and are hence incredibly difficult to extinguish once they have started.[43] It's a persistent problem that disrupts lives, costs the governments of Indonesia, Singapore and Malaysia billions of dollars, and leaves millions of people at risk of various illnesses. Moreover, the haze increases Indonesia's contribution to climate change.

Nevertheless, as the ongoing haze events demonstrate efforts so far have failed to mitigate the problem. Regarding Jakarta's position, a number of reasons can be listed to prove its failure. These include the limited political will to sanction big entrepreneurs and smallholders, a limited capacity to access and protect the areas involved, weak coordination between ministries and different levels of governments, and weak law enforcement due to corruption in Indonesia's police, military, administrative system and political parties.[44]

[42] DOMÍNGUEZ 2015.
[43] Ibid.
[44] STATER – MCCAFFERTY 2015.

Under incumbent President Joko Widodo, the Government of Indonesia has committed to reducing fire incidences in the country. Although some improvements have been made, fire and haze continue. In 2015, the fires were spewing more than carbon dioxide into the atmosphere each day than the entire United States economy did in a day and had cumulatively surpassed Germany's annual emissions. Current actions mostly deal with fighting fires and are not systematically planned.[45] In order to achieve real and enduring progress, Indonesia needs to focus on better land planning, improved law enforcement, and competitive alternatives for small farmers to burning land. If Indonesia is to improve national environmental conditions and neighbourly relations if it is to meet its climate commitment, making significant investments in these areas and implementing long-term policies to prevent future fires are must-be steps.

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[45] HARRIS – MINNEMEYER – STOLLE – PAYNE 2015.

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