

Haze in Southeast Asia

Yi Fan Liu

Graduated Student from Hwa Chong Institution
Singapore
yifan-liu@hotmail.com

Abstract— This paper touches on the multitude of origins of the prevalent haze issue in Southeast Asia today. It first describes the root of haze problem, followed by the analysis of some of the current measures executed in response to the subject and their effects. Finally, it raises the aspects that need to be targeted so as to effectively address and eliminate the haze problem.

Keywords—Haze; Southeast Asia; Measures; Environmental Sustainability; Sustainable Development;

I. INTRODUCTION

Haze is an atmospheric phenomenon in which dust, smoke and other dry particles obscure the clarity of the sky. In the modern context, the term haze commonly relates us to the detrimental product of slash-and-burn, a common technique in subsistence agriculture. Most haze events in the Southeast Asian region have resulted from smoke from fires that occurred on peatlands in Sumatra and the Kalimantan region (Fig. 1) of Borneo Island [1].



Figure 1. Forest fires in Central Kalimantan.

Haze is not just an environmental issue; it is multifaceted and encompasses the complexities of its transboundary nature. Its deleterious consequences can vary from irritation of one's vital organs to cardiovascular effects and the development of chronic respiratory diseases [2], and it exemplifies the lack of control checks and reinforcement of protection of the environment. Moreover, the adversity of the problem stretches beyond physical complications; it can strain international relations when the responsible party fails to duly account and compensate for the degeneration of its neighbours' environments. The 2013 Southeast Asian Haze Crisis remains

memorable for members of the Southeast Asian region, of which Singapore was greatly impacted (Fig. 2), as 3-hour Pollution Standards Index (PSI) reached a record high of 401 [3]. In Dumai, one of the most devastated regencies in Riau, visibility was reduced to less than 500m after the PSI peaked a perilous record of 900 [4].



Figure 2. Marina Bay, Singapore, affected by the haze that migrated from Indonesia, owing to Indonesia's annual burning of forests.

II. ROOTS OF THE PROBLEM

The matter in question has its roots convoluted in disposition; it is unwise and myopic to straightforwardly pinpoint a cause and therefore accept settlement. However, it is still mandatory to identify a few prime roots as an inception to crafting effectual plans:

A. *Incompetency of the Primarily Responsible party*

Indonesia vowed to ratify the 2002 ASEAN Agreement on Transboundary Haze Pollution expeditiously. Despite the Environment Minister's, Balthasar Kambuaya, emphasis on the urgency of ratifying the agreement and Indonesia's aforementioned promise with regards to the matter [5], the Indonesian government took two years before giving its formal consent.

Even after the ratification of the treaty, it can be manifested that Indonesia had not, in its capacity, prevented the return of the annual transboundary haze between 2004 and

2010. Dishearteningly, the haze situation deteriorated in the aforementioned 2013 Southeast Asian Haze Crisis.

B. Land Conflicts

In Indonesia, the Basic Forestry Law grants the Ministry of Forestry authority lands that are classified as forests. Approximately 49% of the nation is covered by actual forest, although the government categorises 69% of the land area as forest. Therefore, the land rights of traditional communities that live on supposedly forests are not granted registration and are generally unrecognised by the state [6]. As such, these communities lose the capacity in rule enforcement at village level and exclusion of outsiders, of which include oil palm plantations, logging companies, residents of other villages, migrants, small-scale loggers or transmigrants. The competition for ownership of land inevitably leads to land conflicts [7]. As the number of new, external parties burgeons, so does the probability that fire will be used as a weapon [8].

C. Criminal Deforestation and Regulatory Weaknesses

According to the United Nations Office on Drugs and Crime (UNODC), it is estimated that Indonesia suffers the loss of 1.6-2.8 million hectares of forest land annually to illegal logging which, itself, relies on corruption, the cooperation of officials and the involvement of transnational organized criminal syndicates [9]. Around 80% of deforestation in Indonesia is illegal – mostly for large-scale plantations producing palm oil and timber, 75% of which is exported [10]. Yet, as some Indonesian politicians are keen to point out, the problem is not all down to official corruption. About half of the fires burn on plantations is owned by big palm oil and logging corporations. By law, they are supposed to be responsible for preventing and putting out fires on their concessions, but the regulations are seldom enforced [11].

D. High Demands for Palm Oil and Pulp-and-Paper

In the boost of palm oil and pulp-and-paper production, which dominate Indonesia's economic sector, Indonesia became the world's third largest greenhouse gas emitter with 75% of its emissions stemming from deforestation (Fig. 3) [12].

Most local farmers follow the traditional slash-and-burn method for a single practical purpose – it is the most efficient modus operandi in clearing a piece of land for palm oil plantation in the shortest time possible. There is a lack of venture into alternatives that can help farmers achieve the same or a similar result, in a more sustainable and less polluting manner. Moreover, the lack of law enforcement, education and possibly incentives to encourage them to adopt substitutions form the trinity that dissuades local farmers to grow their crops in an environmentally-friendly process.

Transnational corporations, especially of those pulp-and-paper and palm oil behemoths, are incontrovertibly culprits as well; many source from those involved in or linked to unsustainable forms of production, as is the slash-and-burn method. Even though multinationals like Nestlé and Unilever have pledged to ban usage of palm oil produced from trees planted on land that was virgin rain forest, and some European

countries have committed to importing 100% certified sustainable palm oil by 2015, sustainable palm oil accounts for only 15% of palm oil produced by industrial estimates [13].



Figure 3. Palm oil plantations amidst the Indonesian forests.

E. Degradation of Peatlands

A peatland is an area where organic material such as leaves and twigs had accumulated naturally under waterlogged conditions in the last 10,000 years.

Peat fires are major culprits in the creation of haze. In 2009, around 40% of all fires in Peninsular Malaysia, Borneo, Sumatra and Java were detected in peatlands, even though they cover only 10% of the land area studied [14]. The concentration of sulfur in rain falling over Singapore in 1997 correlated closely with the PM_{2.5} concentration, which can be attributed to the strong sulfur emission from peat fires [15].

Although originally a wetland ecosystem, much of the peatlands in Southeast Asia have been drained for human activities such as agriculture, forestry and urban development. A report published in 2011 revealed that more than 30% of peat swamp forests had been converted to agricultural land and a further 30% had been logged or degraded in the past 20 to 30 years [16]. Excessive drainage in peat results in the top layer of peat drying out. This leads to high carbon content of the dry peat, making it extremely susceptible to burning, especially during the dry season.

III. CURRENT MITIGATIONS AND EFFORTS

A. ASEAN Agreement on Transboundary Haze Pollution

The ASEAN Agreement on Transboundary Haze Pollution is a legally binding environmental agreement signed by all ASEAN nations to reduce haze pollution in Southeast Asia. According to the Agreement, the objective is to prevent and monitor transboundary haze pollution as a result of land and/or forest fires. It should be mitigated, through concerted national efforts and intensified regional and international co-operation, in the overall context of sustainable development and in accordance with the provisions of this Agreement [17].

The treaty is criticised of being vague and lacking enforcement mechanisms or strong instruments for dispute-resolution. However, ASEAN has clearly tried to depart from its institutional culture in attempt to achieve deeper

cooperation on this issue. This is evident in that this is a legally binding treaty, something ASEAN has vehemently opposed in the past.

Nevertheless, the treaty is ill-served by the ASEAN style of regional engagement which adamantly protects national sovereignty. The implication is that states are compelled to act in their own self-interest rather than regional interests. Additionally, the close relationships between key economic actors and political elites have meant maintenance of the status quo.

B. Roundtable on Sustainable Palm Oil (RSPO)

RSPO is an association comprising various organizations from different sectors of the palm oil industry for the purpose of developing and implementing global standards for sustainable palm oil. It is the biggest certification scheme for palm oil. With nearly 1,300 members, including the critical stakeholders in the palm oil industry, the RSPO was set up after the 1997 haze crisis. By producing palm oil in a sustainable fashion, it signifies the demise of unsustainable slash-and-burn practices, thus extinguishing the very existence of haze.

Nevertheless, environmentalists see the RSPO as lax and incompetent in enforcing codes of conduct, noting that 2013's fire-and-haze disaster highlights the regulatory shortcomings of the voluntary international body — some of whose members are connected to the fires. In response to the aforementioned situation, a handful of non-governmental organizations, including Greenpeace, and some palm oil producers have set up a new coalition, Palm Oil Innovation Group, to establish stricter guidelines [18].

A revelation of RSPO members being able to clear-cut pristine forest areas, when there would be large areas of Imperata grasslands [19] available in Indonesia raises doubts about RSPO's commitment in sustainable logging practices. In 2013, the 11th annual RSPO meeting was crashed by palm oil workers and others, and Indonesian and international labour-rights groups have documented a litany of abuses, including forced labour and child labour [20]. A 2013 study uncovered "flagrant disregard for human rights at some of the very plantations the RSPO certifies as 'sustainable'." [21]

C. Corporate Social Responsibility

Jakarta-based paper giant, Asia Pulp and Paper (APP), introduced a zero-deforestation policy, following a Greenpeace campaign that highlighted its role in environmental destruction. APP saw a loss of contracts with more than 100 major companies as a result, including deals with Adidas, Lego, Mattel, Kraft and Nestlé. However, the naming-and-shaming strategy pressurises these big brands to dedicate their businesses into sustainable production of goods [22].

According to the World Wildlife Fund, sales of sustainable palm oil has risen more than 500% over the last five years - from 0.4 million tonnes in 2009 to 2.478 tonnes in 2014. While market uptake is still slow, 47% of certified palm oil was purchased as such in 2014. 18% of world's palm oil

production has been RSPO certified as of October 2014. Companies like IKEA and the REWE Group have committed to sourcing 100% Certified Sustainable Palm Oil (CSPO) from Mass Balance or Segregated supply chains by the end of 2015 at the latest [23]. The take-up of CSPO by many companies may experience a large inertia in the beginning, what with the short-term implications brought by the transformation of operations in order to accommodate the new usage of CSPO. However, as the take-up rate increases, it will put a pressure on other companies to follow suit.

D. Communal efforts

In recent years, efforts have been made by the Ministry of Forestry to grant more land-ownership 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. Recent research by the Centre for International Forestry Research, an international research organisation based in Bogor, 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 [24]. This can also be a potential plan to salvage the land conflicts as touched on earlier.

IV. WHAT CAN BE DONE

On the Indonesian government's part, stricter enforcement on rules and regulations is in order, and perhaps introduce strategies that promote sustainable ways to cultivate palm crops. Tougher law implementation implies that there should be prosecution of parties who do not comply whole-heartedly. All of these will not be possible without the eradication of corruption as well.

In addition, while it may not be possible to completely ban the logging of forests with regards to pulp-and-paper production, the Indonesian government can impose tougher laws on the rate of deforestation so that the forests are given ample time to regenerate. Although this has little direct correlation to the haze issue, its success can serve as an example for the others – cases that are linked to or involved in haze management – to emulate.

At the same time, intergovernmental support and assistance can be rendered in times of need; after all, many of the subsidiaries that are involved in the burning of Indonesian forests come from neighbouring countries such as Singapore and Malaysia. The loopholes and limitations that surface in the ASEAN Transboundary Haze Agreement and RSPO should be duly dealt with, i.e. stronger execution of rules and wholesome treatment towards both the environment and the people. Otherwise, even as every other stakeholder's responsibility has been fulfilled, the haze problem will persist. Moreover, countries can lend their expertise, especially regarding green technology and agricultural practices that are far more efficient and eliminate the rudimentary slash-and-burn

method, to Indonesia so that Indonesia can hasten its pace in the sustainable path.

As mentioned, a common cause of fire in Indonesian forests is related to competition and conflict with reference to land tenure and land allocation. Land-use allocation decisions made by central government agencies often overlap with the concession boundaries of local jurisdictions and indigenous communities' territories. Regional reforms are needed to resolve the resource conflicts and they offer opportunities for the regional government to reconcile decisions with those of local and customary institutions. These reforms should also ensure that land and resource allocations and decisions at all levels are compatible with physical site characteristics, prominently taking fire risks into account. However, Indonesia's legacy of inaccurate maps, overlapping boundaries, and a lack of technical expertise at the Provincial and District levels will make this a difficult task. Therefore, a delicate deliberation in said areas is in high order. This can thus tackle the quandary in terms of land ownership, reducing the likelihood of using fire as a weapon during territorial disputes.

Consumers play an instrumental role in the haze game; a paradigm shift in their demands for palm oil that is produced unsustainably and products containing said oil could effectively shut down the supplies of such commodities. Hence, it is paramount that awareness is raised among buyers, through methods that ingrain the concept of sustainability. For example, the Sustain soap bar, which is made of sustainable palm oil, makes use of its packaging to inform customers of a sustainable alternative to using soap, a common day-to-day necessity (Fig. 4).



Figure 4. Sustain soap bar.

The usage of social media to spread consciousness on the issue of haze and consumption of sustainable products can form a multiplier effect, owing to the pervasiveness of the Internet. Prince Ea's, a YouTuber, viral video "Sorry", which creates awareness among Internet users on the severity of climate change today exemplifies how simple words that are packed with emotion can get people to reflect on their own actions towards the environment (Fig. 5).

In the end, it is still critical that due recognition is given to current efforts, so as to invigorate the morale of key parties involved in the resolution of the haze issue. Such ensures an ongoing endeavor in the path of eliminating haze.



Figure 5. Viral video "Sorry".

V. CONCLUSION

In the long run, every country and corporation, however big or small, needs to see the importance in educating people on the necessity of running things sustainably. If we perpetuate the status quo, we will soon run out of resources; proper closure of the loop is necessary so that the survival of our future generation has a guarantee. Behind the haze issue in Southeast Asia lie the real dire problems that call for attention – environmental sustainability, corruption, law enforcement, domestic conflicts and so on. Like a symptom to a disease, haze is but evidence of anthropogenic environmental devastation.

REFERENCES

- [1] A. Heil, J. G. Goldammer, "Smoke-haze pollution: a review of the 1997 episode in Southeast Asia". *Regional Environmental Change* 2, 1 August 2001.
- [2] Impact of Haze on Health. Retrieved on May 8, 2015 from <http://www.hpb.gov.sg/HOPPortal/health-article/HPB051226>
- [3] Singapore haze hits record high from Indonesia fires. Retrieved on May 8, 2015 from <http://www.bbc.com/news/world-asia-22998592>
- [4] The Straits Times, "Indonesia's haze battle enters 'preventive mode'". Singapore Press Holdings. 2 July 2013
- [5] The Straits Times, "Jakarta moves to ratify Asean haze pact". Singapore Press Holdings.
- [6] Property Rights & Resource Governance, Indonesia" (PDF). USAID.
- [7] Carder, Reuben. "Indonesian villagers think their land tenure is stronger than it actually is – study". CIFOR.
- [8] Reuben Carder, "Indonesian villagers think their land tenure is stronger than it actually is – study". CIFOR.
- [9] New UNODC publication examines impact of corruption on the environment. Retrieved on May 9, 2015 from <http://www.unodc.org/indonesia/2012/04/uncac/story.html>
- [10] Criminal deforestation poses growing climate threat. Retrieved on May 9, 2015 from <http://www.rtc.org/2014/09/12/criminal-deforestation-poses-growing-climate-threat/>
- [11] Leaders fiddle as Sumatra burns. Retrieved on May 9, 2015 from <http://www.economist.com/news/asia/21599388-fires-cause-much-regions-haze-have-started-early-year-leaders-fiddle-sumatra>
- [12] The Southeast Asian Haze Is Back and Worse May Follow. Retrieved on May 9, 2015 from <http://world.time.com/2013/07/30/the-southeast-asian-haze-is-back-and-worse-may-follow/>

- [13] The Southeast Asian Haze Is Back and Worse May Follow. Retrieved on May 9, 2015 from <http://world.time.com/2013/07/30/the-southeast-asian-haze-is-back-and-worse-may-follow/>
- [14] J. Miettinen, C. Shi, S. C. Liew, "Influence of peatland and land cover distribution on fire regimes in insular Southeast Asia". *Regional Environmental Change* 11 (1), 17 June 2010.
- [15] I. Orlic, X. Wen, T. H. Ng, and S. M. Tang, "Two years of aerosol pollution monitoring in Singapore: a review". *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms* 150 (1-4), April 1999.
- [16] Peatlands in Southeast Asia: A Profile. ASEAN Secretariat and Global Environment Centre.
- [17] ASEAN Agreement on Transboundary Haze Pollution http://haze.asean.org/?wpfb_dl=32
- [18] The Southeast Asian Haze Is Back and Worse May Follow. Retrieved on May 9, 2015 from <http://world.time.com/2013/07/30/the-southeast-asian-haze-is-back-and-worse-may-follow/>
- [19] Murniati (2002). "From imperata cylindrica grasslands to productive agroforestry". Tropenbos International.
- [20] Eric Gottwald (14 November 2013). "Workers Give Message to RSPO: Don't Certify Abuse!". Labor is Not a Commodity. laborrightsblog.typepad.com.
- [21] "Empty Promises: RSPO Labor Case Studies". Bogor: Sawit Watch; Washington, DC: International Labor Rights Forum.
- [22] The Southeast Asian Haze Is Back and Worse May Follow. Retrieved on May 9, 2015 from <http://world.time.com/2013/07/30/the-southeast-asian-haze-is-back-and-worse-may-follow/>
- [23] Promoting Certified Sustainable Palm Oil. Retrieved on May 10, 2015 from http://wwf.panda.org/what_we_do/footprint/agriculture/palm_oil/solutions/responsible_purchasing/
- [24] The Straits Times, "How Singapore can help clear the air on the haze," June 26, 2013. Retrieved on May 10, 2015 from <http://www.straitstimes.com/the-big-story/case-you-missed-it/story/how-singapore-can-help-clear-the-air-the-haze-20130628>