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A Domestic Solution for Transboundary Harm: Singapore's Haze Pollution Law

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Keywords: Haze, ASEAN, extraterritoriality, precautionary principle, preventive notice

I. Introduction

Toxic 'haze' from fires, often burning over dry peatland in Indonesia, has affected millions across Indonesia, Singapore and Malaysia, as well as parts of the Philippines and Thailand. For Singapore in particular, this slash-and-burn method of clearing land in Indonesia to cultivate crops such as oil palm² has been an annual problem since 1972. However, 2015 stands out as the year Singapore experienced one of its worst episodes of haze pollution. Air quality based on the Pollutant Standards Index (PSI) plummeted to the 'very unhealthy' and 'hazardous ranges' for close to 50 days. Singapore suffered an estimated SGD \$700 million in economic losses in 2015 as a result of, *inter alia*, the closure of schools, hotels, tourist attractions and major sporting events.

Moreover, the large quantities of carbon dioxide released set back Southeast Asia's efforts to mitigate climate change. A scientific study has shown that the 2015 fires in Indonesia released nearly one gigaton of greenhouse gases. Daily emissions during that haze period were even higher than that of all the European Union member states put together.⁷

^{*} Assistant Professor of Law, Singapore Management University. The author is grateful for the research assistance of Amber Estad and Siraj Shaik.

¹ '\$47b? Indonesia counts costs of haze', 11 Oct 2015, http://www.straitstimes.com/asia/47b-indonesia-counts-costs-of-haze (accessed 25 April 2017).

² 'What causes Southeast Asia's haze?' BBC News (26 October 2015) http://www.bbc.com/news/world-asia-34265922 (accessed 25 April 2017).

³ 'Haze in Singapore: A Problem Dating Back 40 Years', The Straits Times (2 October 2015), http://www.straitstimes.com/singapore/environment/haze-in-singapore-a-problem-dating-back-40-years (accessed 25 April 2017).

⁴ Haze: One-hour PM2.5 reading soars to 442', The Straits Times (20 October 2015), http://www.straitstimes.com/singapore/haze-one-hour-pm25-reading-soars-to-442 (accessed 25 April 2017); Malaysia, Brunei and parts of Thailand were also similarly affected.

On the PSI scale, a reading of 100 PSI is considered 'unhealthy' and anything greater than 300 PSI is 'hazardous'.

⁶ 'Schools to close on Friday due to worsening haze situation: MOE', Channel News Asia (24 September 2015), http://www.channelnewsasia.com/news/singapore/schools-to-close-on/2147982.html (accessed 25 April 2017); 'Sports events in Singapore, Malaysia cancelled due to haze', Rappler.com (3 October 2015), http://www.rappler.com/world/regions/asia-pacific/indonesia/english/107995-sports-events-cancel-haze (accessed 5 May 2017).

Singapore Parliamentary Debates, Official Report (12 April 2016) vol 94 (Mr Masagos Zulkifli BM, Minister for the Environment and Water Resources); see also, MEWR and NEA Factsheet on Measures Against Haze, 2016, available at http://www.nea.gov.sg/docs/default-source/corporate/COS-2016/ep1-updated—cos-2016-media-factsheet—thpa-and-green-procurement.pdf (accessed 25 April 2017).

International lawyers might say that affected Southeast Asian (SEA) states are not without recourse. Under international law, 'no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequences and the injury is established by clear and convincing evidence.'8 States are further required to assess the environmental impact of their activities, and 'when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically'. Applying this 'precautionary principle', one could argue that Indonesia has a 'responsibility to ensure that activities within [its] jurisdiction or control [do] not cause damage to the environment of other States or to areas beyond the limits of national jurisdiction, regardless of conclusive scientific proof or whether its officials were implicated. However, saying Indonesia may be notionally liable for breaching international law, and actually having the requisite locus standi to commence a claim at an international court or tribunal, are two separate matters – bearing in mind that, in any event, Singapore is unlikely to bring such a claim against SEA's largest state and a close trading partner.

Nonetheless, the cost to both public health and economic interests have led to increased calls for domestic measures for the haze pollution of 2015. Singapore's Ministry of Environment and Water Resources (MEWR) and National Environment Agency (NEA) have attributed the 2015 transboundary haze pollution episode to the conduct 'of errant companies that undertake irresponsible land clearing using fires', and note that 'their emphasis on profit at the expense of the environment and society has led to serious and harmful consequences affecting millions of people'. Singapore's extraterritorial Transboundary Haze Pollution Act (THPA) is one such domestic legislative measure which imposes both civil and criminal liability on errant companies domiciled or operating overseas but which cause or contribute to haze pollution in Singapore.

Notably, Section 9 of the THPA extends the abovementioned 'precautionary principle' to corporations as well, obligating entities that cause or contribute to peatland fires in Indonesia, and therefore haze pollution in Singapore, to take certain precautionary and remedial measures. More specifically, the Director-General of the NEA 'may, if he thinks it necessary or expedient to prevent, reduce or control any haze pollution in Singapore, give a preventive measures notice to any entity that, in his opinion, is directly or indirectly involved in any conduct which is causing or contributing to, or is likely to cause or contribute to, any haze pollution in Singapore'. In this author's view, the THPA also implicitly endorses and mutually reinforces the Second Pillar of the United Nations (UN) Framework and the Guiding Principles, particularly Principle 2

⁸ Trail Smelter Arbitration (USA v Canada) (1941), RIAA, vol III (1938) 1911, 1965.

⁹ Staff, Science and Environmental Health Network, 26 January 1998 (Wingspread Conference on the Precautionary Principle).

Principle 2, UN Rio Declaration on Environment and Development 1992.

¹¹ 'Singapore Aims to Prosecute Indonesian Polluters under Haze Law', Bloomberg (10 June 2016), http://www.bloomberg.com/news/articles/2016-06-10/singapore-aims-to-prosecute-indonesian-polluters-under-haze-law (accessed 25 April 2017).

¹² 'The Effects of Haze on Health, the Economy and the Environment, Youth Against Climate Change (5 November 2014) https://unfcccecosingapore.wordpress.com/2014/11/15/the-effects-of-haze-on-health-the-economy-and-the-environment/ (accessed 25 April 2017).

seen together with the right to health protection.¹³ In particular, the THPA gives effect to Principle 2, which provides that 'States should set out clearly the expectation that all business enterprises domiciled in their territory and/or jurisdiction respect human rights throughout their operations.'¹⁴

Moreover, in light of Principle 13, corporations have a separate but related 'responsibility to respect human rights [that] requires [they] (a) avoid causing or contributing to adverse human rights impacts through their own activities, and address such impacts when they occur; (b) seek to prevent or mitigate adverse human rights impacts that are directly linked to their operations, products or services by their business relationships, even if they have not contributed to those impacts.' Scholars acknowledge environmental pollution as one of the most significant risks to the right to health protection. In addition to traditional environment-related health risks, such as the lack of access to potable water, transboundary haze pollution should be taken into account and viewed together with the precautionary principle, ¹⁵ and other separate but related international law principles set out in the UN Framework and Guiding Principles.

As Singapore's Foreign Minister Dr Vivian Balakrishnan said in Parliament (then as MEWR Minister) during the second reading of the bill underlying the passage of the THPA, '[w]e must not allow companies to ignore the environmental and health impacts of their actions'. ¹⁶ Chief Justice Sundaresh Menon of Singapore has added that the THPA 'is designed to shift the cost-benefit calculus to the corporate economic actors who perpetuate such practices. ¹⁷ Examining recent preventive actions taken by the Director-General of the NEA under the THPA, this piece considers whether the Act should be hailed as a balanced domestic response to addressing business-related human rights harm.

II. THPA AND GUIDING PRINCIPLES

Section 4 of the THPA states that the statute 'shall extend to and in relation to any conduct or thing outside Singapore which causes or contributes to any haze pollution in Singapore.' Remarkably, a cause of action may also be commenced under the Act against companies which have no assets or presence in Singapore by any person or body corporate who/that sustains personal injury, physical damage or economic loss. The THPA also empowers the NEA to investigate and prosecute errant companies involved in haze pollution. The THPA provides expressly for extraterritorial jurisdiction allowing the NEA to pursue companies in Indonesia as long as the haze pollution extends to Singapore.

¹³ Guiding Principles on Business and Human Rights: Implementing the UN 'Protect, Respect and Remedy' Framework, Annex to A/HRC/17/31 2011. Also, the right to health protection is, amongst the economic, social and cultural rights, most closely connected with environmental protection and application of the precautionary principle. In the Preamble to the Constitution of the World Health Organization (WHO), health is defined as follows: 'health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity', available at http://www.who.int/governance/eb/who_constitution_en.pdf (accessed 25 April 2017).

See Guiding Principles on Business and Human Rights, p. 6 (2011).

Hannes Veinla, Precautionary Environmental Protection and Human Rights (2007) XII Juridica International Law Review 91–99.

¹⁶ Singapore Parliamentary Debates, Official Report (4 August 2013) vol 92 (Dr Vivian Balakrishnan, Minister for the Environment and Water Resources).

KC Vijayan, 'Chief Justice Sundaresh Menon: Haze Law a local solution to issues across the border', Straits Times, 20 September 2014.

Indonesia has criticized Singapore for prescribing through the Act an alleged encroachment on Indonesia's sovereign jurisdiction. However, the intention behind the THPA is not to interfere with or replace Indonesia's efforts but to 'complement the efforts of other countries to hold companies to account.

The extraterritorial application of the THPA is a bold move on Singapore's part. Only rarely is extraterritorial jurisdiction directly asserted over overseas actors and activities in the environmental and human rights arena. The commentary to Guiding Principle 2 illustrates how 'some human rights treaty bodies recommend that...States take steps to prevent abuse abroad by businesses within their jurisdiction. There are strong policy reasons for home States to set out clearly the expectation that businesses respect human rights abroad.' In addition to criminal liability for haze pollution, Section 6 of the THPA provides the prospect of civil liability for companies where a person sustains any personal injury, contracts any disease or sustains any mental or physical incapacity in Singapore.

It also notes that states have adopted measures that 'amount to direct extraterritorial legislation and enforcement', and points out that '[v]arious factors may contribute to the perceived and actual reasonableness of States' actions, for example whether they are grounded in multilateral agreement.' That factor is present in the context of the THPA, which itself appears to be inspired by the Association of Southeast Asian Nations' (ASEAN) Agreement on Transboundary Haze Pollution,²⁰ to which Singapore is a party. Tellingly, Article 3.3 of that Agreement adopts the 'precautionary principle' and provides:

The Parties should take precautionary measures to anticipate, prevent and monitor transboundary haze pollution as a result of land and/or forest fires which should be mitigated, to minimize its adverse effects. Where there are threats of serious or irreversible damage from transboundary haze pollution, even without full scientific certainty, precautionary measures shall be taken by Parties concerned.

[emphasis added]

One might even suggest that the THPA appears to be a form of enabling legislation for Singapore, which gives domestic legislative effect to its international obligations under the Agreement. To this end, it follows that NEA empowered to order, or to apply for court-ordered, injunctions and arrest warrants against errant entities and their representatives believed to be causing or contributing to transboundary haze pollution, preventing them from engaging in further unlawful conduct which causes serious or irreversible harm to public health and the environment; or put differently, to the right to health protection and a clean environment as fundamental economic, social and cultural rights.

This trend of having recourse to legislation grounded in extraterritorial bases of jurisdiction such as objective territoriality and the effects doctrine can also be observed in the context of business and human rights by reference to the right to water. The Special

^{&#}x27;Singapore cannot enter Indonesia's legal domain on forest fire issues: Forestry Minister', Channel News Asia (14 June 2016), http://www.channelnewsasia.com/news/singapore/singapore-cannot-enter/2869346.html (accessed 25 April 2017).

¹⁹ Singapore Parliamentary Debates, Official Report (4 August 2013) vol 92 (Dr Vivian Balakrishnan, Minister for the Environment and Water Resources).

ASEAN Agreement on Transboundary Haze Pollution (signed on 10 June 2002 in Malaysia, entered into force 25 November 2003).

Rapporteur on the human right to safe drinking water and sanitation recognized in 2013 that the Maastricht Principles on Extraterritorial Obligations require states to 'desist from acts ... that create a real risk of nullifying or impairing the enjoyment of economic, social, and cultural rights extraterritorially';²¹ even arguing that this duty translates directly into state obligation to avoid transboundary water contamination. The Committee on Economic, Social and Cultural Rights in General Comment 15 interpreted the International Covenant on Economic, Social and Cultural Rights (ICESCR) as requiring parties to 'refrain from actions that interfere, directly or indirectly, with the enjoyment of the right to water in *other countries*. These developments should apply with equal force to protecting the right to clean air. In any event, the THPA is not the first statute to implement extraterritoriality as evidenced by precedents in Commonwealth jurisdictions. For instance, Section 212B of the New South Wales Protection of Environmental Operation Act (NSW PEA) states that 'a notice may be given to a person in respect of a matter even though the person is outside the State or the matter occurs or is located outside [New South Wales], so long as the matter affects the environment of [New South Wales]', thereby effectively applying the effects doctrine.

More unconventional is THPA's jurisdictional reach over non-Singapore entities operating outside Singapore, i.e., companies or individuals with little or no link to Singapore such as Indonesian or Malaysian companies operating in Indonesia. This is probably inspired by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), a federal law in the USA that authorizes federal natural resource agencies, states and private individuals to recover natural resource damages caused by releases of hazardous substances. ²³ In 2006, CERCLA was used in the case of Pakootas v Teck Cominco Metals Ltd, 24 in which a Canadian lead-zinc smelter discharged hazardous untreated effluent into the Canadian portion of the Columbia River, which subsequently carried the effluent southward into the American state of Washington. Ultimately, it was found that the release of hazardous substances occurred within the USA and therefore involved a domestic, as opposed to extraterritorial, application of CERCLA. Even so, the court expressed concerns about the impact extraterritoriality would have on the comity of nations; specifically, the potential of reciprocal extraterritorial jurisdiction over polluting activities of American companies. The extraterritorial clause of the THPA might raise similar concerns, a fact that Singapore would have to accept as par for the course with the implementation of this law.

While there are local Indonesian laws, such as the Environmental Protection and Management Act, enforcement is scant. The THPA could thus inspire other Southeast Asian countries facing a similar deadlock on tackling a transboundary environmental issue. For example, although a detailed discussion is beyond the ambit of this article, extraterritorial legislation would be the logical next step for the Government of Thailand

²¹ Catarina de Albuquerque, Human right to safe drinking water and sanitation, A/68/264 para 46 (2013).

²² The Committee on Economic, Social and Cultural Rights, General Comment 15, *The right to water*, E/C.12/2002/11 para 31 (2003).

²³ JSH Lee, Z Jaafar, AKJ Tan, LR Carrasco, JJ Ewing, DP Bickford, EL Webb and LP Koh, 'Towards clearer skies: Challenges in regulating transboundary haze in Southeast Asia' (2015) 55 Environmental Science and Policy 87, 90.

AKJ Tan, 2015b, The 'Haze' Crisis in Southeast Asia: Assessing Singapore's Transboundary Haze Pollution Act 2014. NUS Law Working Paper Series, Working Paper 2015/002.

to take after resolving to recognize the human rights responsibilities of Thai companies operating beyond Thai borders. Given that, the Thai National Human Rights Commission has investigated Thai companies linked to human rights abuses in the Dawei Special Economic Zone (SEZ) in Myanmar²⁵ and Koh Kong province in Cambodia.²⁶

III. Preventive Measures Notices and Arrest Warrants

As mentioned, Section 9 of the THPA gives the NEA the power to issue 'preventive measures notices' to companies that are directly or indirectly involved in such conduct. Preventive measures notices were sent to six companies in 2015, including PT Bumi Mekar Hijau, requesting them to (i) deploy fire-fighting personnel to extinguish or prevent the spread of any fire on land owned or occupied by them; (ii) discontinue, or not commence, any burning activities on such land; and (iii) submit to NEA any plan of action to extinguish any fire on such land or to prevent its recurrence. NEA also sent APP in Singapore a notice pursuant to Section 10 of the THPA, seeking information from APP on its subsidiaries, its related companies and suppliers in Singapore and Indonesia, as well as measures taken by its suppliers in Indonesia to put out fires in their concessions and otherwise mitigate haze pollution. 27

To date, two companies, Bumi Sriwijaya Sentosa and Wachyuni Mandira, have responded to the notices, saying they were no longer associated with the affected lands before the fires occurred in 2015, and investigations have been discontinued against them, while the other four companies (all APP suppliers) have not done so despite repeated reminders.²⁸

The NEA also issued a notice to a director of these companies to attend an interview in this regard when he was in Singapore. When he failed to turn up for at the interview, NEA obtained an arrest warrant against him.²⁹ These actions against the director of one of the errant companies is consistent with the commentary to Guiding Principle 23, which states, *inter alia*, that to secure legal compliance, 'corporate directors, officers and employees may be subject to individual liability' for certain gross human rights abuses.³⁰

Speaking in Parliament, Singapore's Minister of Environment, Masagos Zulkifli, has reiterated the need to apply legal and commercial pressure on errant companies to prevent them from profiting from unsustainable land and forest clearing. Indonesia has

²⁵ Maureen Harris, 'A Matter of Rights in the Future of the Mekong', 22 December 2016, https://www.internationalrivers.org/blogs/721/a-matter-of-rights-in-the-future-of-the-mekong (accessed 25 April 2017).

Maureen Harris, Landmark Report Promotes Human Rights in Transboundary Investments, 10 June 2015, https://www.earthrights.org/blog/landmark-report-promotes-human-rights-transboundary-investments (accessed 25 April 2017).

See note 7, MEWR and NEA Factsheet, p.3.

²⁸ 'Haze-linked firm opaque with information', The Straits Times (3 March 2017).

²⁹ 'NEA sends notice to 6th Indonesian firm over haze', Channel News Asia (12 October 2015), http://www.channelnewsasia.com/news/singapore/nea-sends-notice-to-6th/2187688.html (accessed 25 April 2017); 'NEA obtains court warrant against director of Indonesian company with suspected haze links', The Straits Times (11 May 2016), http://www.straitstimes.com/singapore/environment/nea-obtains-court-warrant-against-director-of-indonesian-company-with (accessed 25 April 2017).

³⁰ See note 13, p. 25.

protested against these official notices and statements, and has even threatened to review and terminate international cooperation between Indonesia and Singapore.³¹ Nonetheless, the NEA appears resolute in its desire to investigate and prosecute companies that contribute to haze pollution. Mr Zulkifli described the position as 'standing on high moral ground' and merely asking companies and directors to be accountable for their involvement in causing or contributing to transboundary haze pollution.³²

This entails tracing the chain of causation, i.e., the link between the cause (activity) and the effect (harm), and the intermediate links in this chain of causation that make it imperative for corporations operating or permitting hazardous activities to take all necessary steps to prevent transboundary haze pollution. If a company is found liable for haze pollution, it could face a fine of up to S\$100,000 per day of haze under the THPA.³³

IV. CAUTIOUS OPTIMISM?

The THPA expressly provides for extraterritorial application, but this does not always overcome the practical challenges of investigating and prosecuting a transboundary case in Singapore. Most, if not all, of the evidence necessary to establish a case under the THPA is located within Indonesia, beyond NEA or MEWR's direct investigative reach. Gathering of evidence thus depends on Indonesia's cooperation and the NEA has faced considerable challenges when seeking to obtain such evidence. In 2013, the NEA sent a request to the Indonesian government for information on companies that were suspected of causing or contributing to the haze and in particular, requested concessions maps that showed which land was owned by each company.³⁴ These maps would allow the NEA to match the owners of the land with the location of fires causing haze pollution.

To date, however, Indonesia has not acceded to this request.³⁵ To mitigate some of these evidentiary difficulties, Section 8 of THPA provides certain evidentiary presumptions. These include (a) presuming a causal link between fires with smoke blowing towards Singapore and the haze; (b) presuming a causal link between a controlling entity and an entity responsible for haze; and (c) presuming the identity of the owner of land through certain maps and records. These evidentiary presumptions are notably more extensive that those found in the abovementioned NSW PEA. Significantly, in March 2017, MEWR Minister Masagos Zulkilfi underscored the

³¹ 'Indonesia reviewing cooperation with Singapore in environment, forestry matters: Report', Channel News Asia (15 May 2016), http://www.channelnewsasia.com/news/asiapacific/indonesia-reviewing-cooperation-with-singapore-in-environment-fo-8009394 (accessed 5 May 2017).

³² 'Singapore Aims to Prosecute Indonesian Polluters under Haze Law', Bloomberg (10 June 2016), http://www.bloomberg.com/news/articles/2016-06-10/singapore-aims-to-prosecute-indonesian-polluters-under-haze-law (accessed 25 April 2017).

³³ THPA, sec 5(2)(a).

³⁴ 'Singapore pressures Indonesia to identify firms behind haze', Reuters (18 June 2013), http://www.reuters.com/article/us-southeastasia-haze-idUSBRE95G09F20130618 (accessed 25 April 2017); 'Ministers agree to share hot spot info', The Straits Times (29 July 2015), http://www.straitstimes.com/asia/se-asia/ministers-agree-to-share-hot-spot-info (accessed 25 April 2017).

^{35 &#}x27;Transboundary Haze Pollution Act Not About National Sovereignty: MEWR', Channel News Asia (15 June 2016) http://www.channelnewsasia.com/news/singapore/transboundary-haze/2874888.html (accessed 25 April 2017).

'active efforts by the Indonesian government' that have prevented a repeat of the 2015 haze episode in response, undoubtedly influenced, in part, in part by NEA's preventive action under the THPA:

'Fortunately, the relatively wet Southwest Monsoon season in 2016 and active efforts by the Indonesian government have prevented a repeat of the 2015 haze. However, it is important that we continue to send a strong deterrent message to errant companies responsible for these fires, that they must change their ways. That is why we enacted the Transboundary Haze Pollution Act (THPA) in 2014. We will continue to take all steps necessary to enforce the THPA, while ensuring that we operate within the ambit of international law.'

[emphasis added]

There is also further cause to be cautiously optimistic in light of a progressive attitude adopted by Indonesia's senior leadership. In the wake of the unprecedented 2013 fires and haze, a 'zero tolerance' attitude towards illegal land burning was emphasized several times by the President, the most recent being during a conference in Jakarta on 5 May 2014.³⁶ Furthermore, the government is reviewing laws that allow smallholder farmers to burn, which the plantation companies blame for the forest fires. It is also considering laws to ban peatland development and take back all burned land within a company's concession area.³⁷

V. Conclusion

Notwithstanding its limitations, the THPA provides a basis for an unprecedented domestic response to transboundary haze pollution reminiscent of the UN Framework and Guiding Principles. It is important to note that the greatest value of the THPA lies in the fact that it has prompted a degree of compliance on the part of companies that have responded to the preventive notices. Indonesia too has taken further strides with enforcement.

For example, in August 2016, PT National Sago Prima, a unit of Indonesian plantation company Sampoerna Agro, was fined 1.07 trillion rupiah (\$81.62 million) by a Jakarta court, the largest fine imposed on a company linked to forest fires in Indonesia. Here, the court, echoing Singapore's THPA and applying a strict liability approach, found the company liable for fires that occurred on its concession regardless of evidence, or lack of it, that the fires were caused by the company or by its negligence. This, in turn, may have emboldened the Indonesian Environment and Forestry Ministry to declare in a public statement that five other lawsuits are being currently pursued by it against companies linked to forest fires.

Extending the remit of the 'precautionary principle' to the right to health protection, this extraterritorial statute allows preventive actions by the NEA, and in time, could be relied upon for civil actions under Section 6 of the THPA by aggrieved individuals who broadly sustain any personal injury, contract any disease or sustain any mental or

³⁶ Zubaidah Nazeer, 'Zero tolerance for illegal land burning, vows Yudhoyono', Straits Times, 6 May 2014.

³⁷ 'Indonesia pledges to protect peatlands to fight climate change, haze' Reuters, 6 December 2016.

³⁸ 'Quarterly Highlight: Corporate legal accountability and haze in Indonesia' (2016) 22 Corporate Legal Accountability Quarterly Bulletin.

^{&#}x27;Indonesia's Sampoerna Agro fined record sum for 2014 forest fires', Reuters, 15 August 2016.

physical incapacity in Singapore. The THPA sends a strong message not only to companies in Indonesia, but also at home in Singapore. It is also well positioned to inspire similar initiatives in other Southeast Asian states. At his speech at the Opening of the Legal Year 2017, for example, Malaysian Chief Justice Tun Arifin Zakaria expressed his desire for the Malaysian Federal Constitution to be amended to include a right to a clean and healthy environment. It is only a matter of time before an empirical study on the social, public health and economic impacts (and by extension the human rights impacts) of the 2015 haze crisis is undertaken, which will consolidate the case for the ASEAN member states to strengthen efforts to prevent the recurrence of haze pollution.

^{40 &}quot;Yes" to law on transboundary haze', AsiaOne (23 February 2014) http://health.asiaone.com/health/health-news/yes-law-transboundary-haze (accessed 25 April 2017).

⁴¹ 'Chief Justice moots making clean environment a stated right', Malay Mail Online, 13 January http://www.themalaymailonline.com/malaysia/article/chief-justice-moots-making-clean-environment-a-stated-right#sthash.9inTpWAT.dpuf (accessed 25 April 2017).