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Selective border permeability: Governing complex environmental issues through and beyond COVID-19

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ABSTRACT
COVID-19 has changed the permeability of borders in transboundary environmental governance regimes. While borders have always been selectively permeable, the pandemic has reconfigured the nature of cross-border flows of people, natural resources, finances and technologies. This has altered the availability of spaces for enacting sustainability initiatives within and between countries. In Southeast Asia, national governments and businesses seeking to expedite economic recovery from the pandemic-induced recession have selectively re-opened borders by accelerating production and revitalizing agro-export growth. Widening regional inequities have also contributed to increased cross-border flows of illicit commodities, such as trafficked wildlife. At the same time, border restrictions under the exigencies of controlling the pandemic have led to a rolling back and scaling down of transboundary environmental agreements, regulations and programs, with important implications for environmental democracy, socio-ecological justice and sustainability. Drawing on evidence from Southeast Asia, the article assesses the policy challenges and opportunities posed by the shifting permeability of borders for organising and operationalising environmental activities at different scales of transboundary governance.

1. Introduction

As the COVID-19 pandemic has progressed, its direct and indirect impacts on the environment and environmental governance have gradually been revealed. This article interrogates the intersections between a global shock – COVID-19 – and the resultant cross-border processes that reconfigure transboundary environmental governance priorities and programs. The pandemic-induced recession has reoriented the concerns of governments and businesses toward the immediate exigencies of growth-driven recovery while raising difficult questions about environmental sustainability in the longer term. Selective border openings to facilitate a return to business-as-usual have been linked to subsequent waves of COVID-19 infections and cross-border environmental impacts associated with accelerated production, such as accumulating single-use plastic waste and the return of greenhouse gas (GHG) emissions to pre-pandemic levels (Adyel, 2020; Le Quéré et al., 2021). Although stronger forms of transboundary cooperation are urgently needed to address these interconnected problems, the prevailing...
geopolitical focus on economic recovery risks jeopardising key transboundary arrangements aimed at safeguarding environmental agreements, sustainability standards and activist programs.

This article develops the transboundary concept of selective permeability to show how COVID-19 has reorganised human-nature relations within and between borders. Here, we apply the concept of borders to denote the (geo)political power of public, private and communal property boundaries within as well as between nation-states, in addition to the deliberative practices of enclosing, parceling and transferring resources, labour, capital and technologies across them (Miller, 2020). In emphasising cross-border human resource relations at sub-national, national and regional scales, we seek to redress the misleading tendency in studies of transboundary governance to treat transboundary as a synonym for transnational scalar analysis. Border crossings occur at all scales of governance. Even the most assiduously policed and surveilled borders have always been semi-permeable in regulating what they allow in, what they keep out, and how they shape interactions between resource enclosures (Popescu, 2012; Varol & Soylemez, 2018). Like the membranes of living cells, mechanisms of semi-permeability are designed to sustain and strengthen what lies within borders. Yet these same control mechanisms inadvertently expose borders to intrusion by invasive organisms and other transboundary flows of environmental harm that defy enclosure, such as pollution of air and water (Wiebel, 2020). The COVID-19 pandemic has similarly overcome traditional mechanisms for regulating cross-border flows, triggering government responses to protect (geo)political and economic interests while enhancing security measures to fortify borders against external threats.

Our overall argument is that pandemic-induced shifts in selective bordering practices exacerbate socioeconomic inequalities at different organisational scales of transboundary governance to the detriment of environmental democracy, socio-ecological justice and sustainable development. Theoretically, this article is concerned with this changing character of border permeability in transboundary environmental governance, understood to mean the full range of state, civil society and private sector institutions and decision-making processes that shape cross-border environmental outcomes (Hirsch, 2020; Miller et al., 2020). While our definition resonates with recent work that locates the transboundary scale of governance at the intersection between administrative borders and natural resource systems (Milman et al., 2020), we take our analysis in a slightly different direction. In order to explore the ways in which decisions made in one jurisdiction affect environmental and social outcomes in another, we need to conceptualise transboundary environmental governance beyond its conventional scope. Many pandemic-related impacts are diffused away from borders to intersect with other areas of society, the economy and (geo)politics. Socioeconomic inequalities inform environmental choices, and vice versa, with spatially far-reaching and temporally cascading effects. Rising poverty, livelihood loss and mounting public healthcare costs resulting from COVID-19 have challenged governments, affecting their ability to deal with negative externalities such as transboundary air and water pollution and the accumulating cross-border impacts of climate change that resist territorial containment. Selective permeability, as a modality of transboundary governance, is heuristically useful in exploring these cascading and often unseen cross-border effects of COVID-19. For example, the role of border restrictions in shifting the availability of physical and virtual spaces for transboundary environmental activism remains largely unknown and undocumented.

Weground our theoretical enquiry in examples from Southeast Asia, drawing from the geographical expertise and diverse research backgrounds of our authors. Southeast Asia is a biodiverse and economically interconnected region that is simultaneously fractured by deep inequalities in wealth, income and access to technologies and public services. At the time of writing, these inequalities, which assume specific socio-spatial forms, pose the greatest obstacle to pandemic recovery (World Bank, 2021). While countries within Southeast Asia have historical experience in coordinating responses to infectious disease outbreaks (Davies, 2019), COVID-19 recovery plans remain jurisdictionally partitioned and fragmented. Moreover, governments in resource-rich, developing countries have exploited reductions in public oversight amidst border restrictions by rolling out pandemic recovery stimulus packages that support profitable but polluting industries while relaxing environmental legislation (Djalante et al., 2020; Mahy, 2021). This in turn heightens the risk that transboundary problems such as food insecurity and ecosystem service losses will increase in the near to medium term. More hopefully, however, Southeast Asia is home to a tremendous diversity of public-private, private-societal and hybrid co-governance partnerships around shared environmental concerns that could provide a spur for envisioning and operationalising more sustainable post-pandemic pathways.

The article is structured as follows. It begins by developing the concept of selective permeability as it relates to transboundary environmental governance in the context of COVID-19. We then consider how government responses to the pandemic in Southeast Asia have realigned transboundary environmental regimes at different scales, beginning with the supranational or regional scale and extending downwards to the level of nation-states and the sub-national scale, where we examine rural-urban networks and then grassroots actors and organisations. Our analysis draws from news articles, NGO reports and scholarship on cross-border pandemic issues published between January 13, 2020, when the first case of COVID-19 was detected in Southeast Asia (WHO, 2020), through to mid-2021. The research uses qualitative document analysis suited to evaluating and comparing selective permeations of borders with varying characteristics that can be usefully applied to inform policy development. To this end, the final concluding section makes policy recommendations for plausible co-governance actions to enhance transboundary cooperation in providing redress for complex environmental issues that continue to accumulate during the COVID-19 pandemic and are arguably exacerbated by it.

2. Selective permeability in transboundary environmental governance

Administrative borders are deliberately enacted to encourage some transboundary flows while blocking or reducing others, according to the perceived risks and benefits they bring to jurisdictions and property regimes (Wonders, 2005). Processes of strategic selection (re)organise these border relations of openness and closure simultaneously by distinguishing between regulated, less regulated and unregulated (or deregulated) entities (Goodhart & Lastra, 2010). Political decisions about what constitutes licit and illicit cross-border flows generate new socio-spatial forms of inequality by facilitating access inside borders or reinforcing exclusion outside them (Mau et al., 2012). For example, constructions of (il)legality in border security may enhance flows of trade and information while restricting the mobility options for marginal people, calibrated by wealth, income, ethnicity and religion. Times of crisis cast these everyday inequalities into stark relief while exposing the limits of territorially demarcated understandings of responsibility and containment. We see this in the differentiated capacities of individual countries to deal domestically with COVID-19 and to absorb fugitive flows of “survival migrants” seeking refuge from food, livelihood and health insecurity through cross-border return migration and urban-to-rural movements (Martin & Bergmann, 2021, p. 1).

The (geo)politics of pandemics fundamentally alter both the governance arrangements affecting the movements of people across borders and the priorities and practices of governance itself. Here, the concept of permeability (deriving from Latin permeabilis: “that can be passed through”) is useful for analysing these processual geographies as it treats border controls as basic tools for operationalising political decisions by creating blockages in cross-border flows or linkages between bordered spaces (Varol & Soylemez, 2018). One of the primary responses to the pandemic has been the selective hardening of (sub)national borders to control the movement of potential COVID-19 carriers by isolating and
containing disease outbreaks. In Southeast Asia, this strategic disciplining of human populations into compliance with pandemic distancing measures has often been achieved through coercion or intimidation by security forces personnel (Chen, 2020) and/or by expanding surveillance technologies and infrastructures along key nodes, revalidating borders as a “public health good” (Ong, 2020). While this build-up of border policing may create an illusion of a regulated domestic policy environment, it obscures widening socioeconomic inequalities that drive resource over-exploitation, biodiversity depletion and unsustainable land use practices.

Importantly, such border controls are not equipped to address cross-cutting environmental issues that exceed the governance capacities of individual jurisdictions, sectors and groups of resource users. Well before the onset of COVID-19, the cascading effects of leakage (displacement) of land use pressures (for example, carbon emissions) from inside to outside the boundaries of modified landscapes, including across national borders, were a vexing problem for environmental governance regimes (Ingalls et al., 2018). Deforestation and habitat disruptions in tropical countries between 1990 and 2016 have been linked to increasing outbreaks of zoonotic and vector-borne diseases (Morand & Lajunie, 2021). Degraded landscapes have also become more prone to wildfires that contribute to transboundary air pollution and other cross-border problems associated with losses to human health and livelihoods, conditions ripe for the emergence of novel zoonotic diseases in the future (Smith & Varkkey, 2020). Just as territorial logics are limited in dealing with flows of environmental harm like transboundary pollutants, pests and diseases, environmental goods such as clean air and water and migratory taxa that contribute to the health of dispersed ecosystems are similarly resistant to bordering practices.

Alongside the unprecedented hardening of borders in the context of COVID-19, governments have selectively re-opened channels for restoring trade flows and disrupted food supply chains (Laborde et al., 2020). For the most part, these efforts to return to a borderless globalised economy in an otherwise securitised world have prioritised Keynesian-style stimulus packages aimed at getting economic activity “back on track” while downplaying the negative environmental impacts of growth (Leach et al., 2021, p. 7). This narrow focus on growth-driven recovery jeopardises sustainability standards in agro-export industries that originally came into being to mitigate the extended socioecological costs of development (Mason, 2008). The longer economic recovery takes precedence over ecological interconnectedness and sustainability, the more likely high-income countries are to increase their off-shoring of environmental costs that are seen as too hard to deal with domestically, such as the disposal of toxic waste and other polluting activities.

This selective rendering of borders as spaces of exception casts a critical spotlight on areas of juridical order that become suspended or replaced with emergency measures to mitigate pandemics (Triandafyllidou, 2020), contain crises (Bouzarovski & Cauvain, 2016) or deal with other exceptional circumstances (Griffin, 2010). When strategic economic interests and investment opportunities are at stake, governments are more likely to use “flexible sovereignty” (Mountz & Hiemstra, 2012, p. 468) to safeguard de-territorialised spaces for profitable cross-border flows while creating or reinforcing zones where marginal people and agendas are ignored, devalued or excluded. Selective practices of neoliberal accumulation in special economic zones have long expatriated agrarian livelihoods by displacement, dispossession and/or forced resettlement (Rose, 2017). Pandemic bio-politics have perpendicularised spaces of exception through biopolitical modes of citizenship, as shown in the provision of medical resources to some while neglecting others in healthcare regimes (Sparkes & Anguelov, 2020, p. 499). Previous pandemics caused by viruses such as SARS (Severe Acute Respiratory Syndrome) (2002–2004) and the H1N1 influenza (2009) have highlighted spaces of exception where adequate healthcare services are lacking, including through shortfalls in vaccines, heightening the risks of health complications and mortality in under-privileged and minority areas (Quinn & Kumar, 2014).

In Southeast Asia, such spaces of exception operated well before COVID-19 to reinforce resource inequalities, avoid corporate social responsibility and subvert environmental legislation. In the Mekong River Basin, the governments of China and Myanmar selectively excluded themselves so as not to be bound by the transboundary framework that seeks to govern the sustainable development of Mekong water resources (Hensengerth, 2015). Spaces of exception similarly serve the development interests of large plantation owners in carbon-dense peatlands across Indonesia and Malaysia to the detriment of equitable water-sharing arrangements for traditional landowners in adjacent peatland communities, with clear implications for social and environmental injustice for the latter (Miller, 2022a).

The reopening of borders for flows of commodities and finances has widened the global wealth gap in ways that are likely to have lasting impacts for transboundary environmental governance. The pandemic brought to an abrupt end the 20-year trend toward narrowing between-country inequalities (Hornet & Hulme, 2017), while laying bare the fragility of recent improvements in food security and poverty reduction in low and middle income countries (Sumner et al., 2020). These pandemic-related setbacks have deepened imbalances in the poverty-environment-development nexus, adding to problems of social inequality and negative externalities (such as air and water pollution and transboundary pests and diseases) that challenge transboundary governance regimes (Dasgupta et al., 2005).

Border controls and supply chain interruptions in Southeast Asia have especially impacted small farmers, who, unlike large agribusinesses, lack reserves to withstand economic shocks. Reduced rural incomes and related food insecurity have left up to 60 million people undernourished region-wide (Sleet, 2020). These factors, combined with rising rural unemployment and Southeast Asia’s disrupted migrant remittance economy, have forced changes to rural livelihoods (Suhandiman et al., 2021). Some residents of rural areas deprived of traditional sources of income have been compelled to push the boundaries of resource extraction by illegally encroaching upon national parks and protected habitats, including by poaching and trafficking wildlife (OECD, 2020). At the same time, border controls within and between countries have disabled or compromised traditional coping mechanisms for dealing with environmental shocks such as droughts and floods by preventing people from moving back and forth across borders in pursuit of flexible livelihood opportunities.

Not all permeations of borders have eroded pre-existing social welfare and sustainability arrangements. Some transboundary institutions and actors have used the opportunity presented by the pandemic to exploit the semi-permeability of borders by cooperatingly addressing climate change and other complex environmental issues (Khanna, 2021; Cavoski, 2020). In Southeast Asia, efforts to rethink the “value” and “purpose” of development along these lines (Leach et al., 2021, p. 8) have focused on transitioning away from the status quo of high-carbon growth and toward enhancing environmental protections within a broadly inclusive eco-concerned economy (UNESCAP, 2021). Encouraged by initially observed – albeit temporary – environmental benefits of border restrictions on reduced greenhouse gas emissions and other forms of air pollution (El Zowalaty et al., 2020; He et al., 2020), some governments and businesses have prioritised pandemic recovery around green growth partnerships centred on sustainable development pathways. Notwithstanding the justifiable critiques of green growth (Gómez-Baggethun, 2020), these partnerships, characterised by varying degrees of social inclusion, have prioritised transitions toward low-carbon and energy efficient futures.

In subsequent sections, we examine how selective bordering practices are realigning intersecting inequalities in social and environmental outcomes at different organisational scales of transboundary governance. Local-urban-national-supranational scales of governance do not exist separately or function as discreetly enclosed political entities (Wyborn & Bixler, 2013; see Fig. 1). Rather, strategic decisions about border permeability occur within nested governance arrangements and
assemblages of cross-border flows. Global pandemic recovery priorities filter down to become entangled with (sub)national agendas, and vice versa. While these multi-scalar and extraterritorial flows are cross-cutting in affecting all levels of governance, they elicit specific responses at particular scales. It is important to understand how decisions about the environment at one scale are interpreted and acted upon at other scales of governance, both to overcome traditional barriers to cooperation and to bridge deficits in formal policy regimes that have developed or deepened during the COVID-19 pandemic.

3. Regional economic flows and political blockages

At the supranational or regional scale of environmental governance, COVID-19 has provided a unique opportunity for transboundary cooperation among member countries of the Association of Southeast Asian Nations (ASEAN). Insofar as it is possible to speak of pan-Southeast Asian governance in the region-wide context of hardening national borders, ASEAN has promoted a Comprehensive Recovery Framework (ASEAN Secretariat, 2020) that emphasises environmental sustainability as a core component. The ASEAN Secretariat has further urged its member countries to implement environmental safeguards in pandemic recovery stimulus packages and to exercise caution in bailing out state-owned companies (Board, 2020b). That it has largely failed in this pursuit can be attributed to the sheer enormity of the region’s environmental challenges, combined with competing claims on transboundary resources and the institutional limitations of ASEAN itself.

Fig. 1. Changing permeability of borders before and during COVID-19 at different scales of governance.
ASEAN’s limited geopolitical influence is bound up in the extreme sensitivity of its member countries to outside interference. A region-wide legacy of colonialism followed by decolonisation has configured national borders in such a way as to selectively render them open for wide legacy of colonialism followed by decolonisation has configured economic cooperation around green growth partnerships and collaborative strategies to address environmental threats and crises while actively minimising the political dimensions of governance. This region-wide culture of political non-interference is evidenced in Singapore’s 2014 Transboundary Haze Pollution Act that imposes heavy fines on plantation companies found responsible for burning practices that pollute Singaporean airspace, but carefully avoids blocking the governments of neighbouring countries.

COVID-19 has slightly reconfigured these geopolitical relations in dealing with complex environmental problems by intensifying the already heavy reliance of ASEAN member countries on the business sector. Inter-governmental cooperation to combat transboundary haze pollution, for instance, has become subordinated to national government priorities that support agribusinesses in leading pandemic recovery, despite their major roles in deforestation and biomass burning that elevate global emissions (Varkkey, 2020). This blurring of boundaries between state and corporate responsibility for the environment through stimulus recovery packages follows a global pattern of restructuring states along market lines that became pronounced in Southeast Asia in the aftermath of the 1997 Asian financial crisis (Miller, 2022a). Like this earlier crisis, which ushered in a region-wide transition toward neoliberal forms of democratisation shaped by structural adjustment programs, donors and lending agencies have played a prescriptive role in influencing Southeast Asia’s green recovery agenda from COVID-19 by promoting sustainability innovations within a competitive regional investment climate that equates resource efficiency with economic productivity (ADB, 2021).

A key problem with such macro-environmental agendas is that they often over-simplify or misrepresent more complex socioecological realities. Transboundary cooperation at the regional level has been critiqued for its failure to meaningfully connect with situated communities who attend to the everyday labour of environmental practice. This scalar disconnect is shown in the Greater Mekong Subregion’s COVID-19 Response and Recovery Plan 2021–2023, which emphasises sustainable and inclusive livelihoods to enhance regional food security through “COVID-19 responsive green agribusiness supply chains” as part of its overall strategy to build resilience to future pandemics (Greater Mekong Subregion Secretariat, 2020, p. 2). Pandemic border restrictions, however, have severely disrupted millions of livelihoods in the six countries along the Mekong River that depend upon open borders to sustain supply chains and cross-border livelihoods. These blockages have increased the volatility of prices for staple commodities such as rice and eggs, aggravating region-wide conditions of food insecurity and livelihood precarity (Nortajuddin, 2020). Compounding this situation, a severe drought in early 2020, triggered by the upstream impoundment of water resources by large hydropower dams along the mainstream Mekong and its tributaries, caused Cambodia’s national fisheries to collapse (Weatherby & Lichtefled, 2020). The immediate consequences of this crisis on severe food shortages and rising household debts threaten, in the longer term, to further displace socioecological pressures from aquatic to terrestrial landscapes as Cambodia’s fishing communities are gradually abandoned (Lovgren, 2020). In neighbouring Thailand, where the government responded to the Mekong Basin drought by declaring a state of emergency in 12 provinces, farmers delayed planting time-sensitive crops, instead reallocating their precious water supplies to vulnerable households (Weatherby & Lichtefled, 2020). Thousands of unemployed farmers were subsequently prevented from pursuing alternative work as COVID-19 border controls not only precluded travel between jurisdictions, but crippled national industries such as tourism and the garment sector as export orders declined (Jongwanich, 2021).

Even when transboundary environmental cooperation at the supranational scale does translate into meaningful collaborations at lower scales of governance, it tends to be highly selective, and, in the context of COVID-19, has been infused with agendas unrelated to the environment. We see this in ASEAN member country responses to pressure by international organisations, such as the World Wildlife Fund and the Organisation for Economic Cooperation and Development (OECD) to increase border security to combat wildlife trafficking (OECD, 2020). The spur for this transboundary cooperation has less to do with conservation than with global concerns about the transmission of zoonotic diseases. Anti-trafficking efforts have concentrated on pangolins – Southeast Asia’s most trafficked mammals - due to their identification as possible COVID-19 vectors (Lam et al., 2020). Pandemic border controls have successfully restricted illicit flows of these high-profile mammals, with reports indicating a 50 percent decline in illegal wildlife trade activities in 2020 (Abano & Chavez, 2021). However, these short-term achievements are unlikely to evolve into longer-term gains unless transboundary forms of cooperation can expand to prioritise the development of enforceable international environmental legislation and address endemic poverty that forces unsustainable livelihood transitions. From the demand side, such transboundary cooperation would need to tackle the unabated reliance on exotic wildlife by Chinese Traditional Medicine (TCM), a global industry worth around US$50 billion annually (Cyranoski, 2018). In Southeast Asia, where links with markets in China have strengthened through the latter’s Belt and Road Initiative (BRI) for transport, trade and human connectivity (Jiao et al., 2021), conditions are ripe for these illicit cross-border flows to flourish in the post-pandemic period.

During COVID-19, however, bordering practices have afforded a temporary slowdown in the extent of natural resource exploitation in Southeast Asia by Chinese investors. In 2020, economically depressed host countries in Southeast Asia delayed or cancelled up to 20 percent of BRI infrastructure and energy projects (Yinghui, 2020). While many of these delays were linked to host countries renegotiating loans with Beijing (Mouritz, 2020), in other cases, BRI projects were suspended over concerns about their perceived environmental costs (Rochmyaningsih, 2020). Although infrastructure investment is a hallmark of ASEAN’s pandemic recovery plan (ASEAN Secretariat, 2020), the deferral of environmental losses from these stalled transboundary projects offers an opportunity to reassess their long-term sustainability. On Indonesia’s island of Sumatra, a Chinese government-funded hydropower dam that threatens the last remaining habitat of the critically endangered Tapanuli orangutan (Pongo tapanuliensis) has been postponed until 2025 amidst disruptions to funding linked to COVID-19 (Rochmyaningsih, 2020). This delay does not in itself constitute an environmental victory, but it buys time for activists and scientists to conduct further impact assessments to bolster ongoing campaigns against the dam’s developers. Deferred road construction in Vietnam, Malaysia, Thailand and Indonesia linked to the reallocation of national budgets for pandemic recovery purposes has similarly postponed habitat loss and ecological degradation along planned BRI transportation routes (Koh, 2021). Unless governments across Southeast Asia seriously rethink the socio-ecological consequences of their commitment toward returning to business as usual, ASEAN is unlikely to make progress in creating more accountable, equitable and responsible institutions for regional-level environmental stewardship in the post-pandemic future.
4. Hardening national borders and shifting green growth priorities

In contrast to the liberal international order that preceded COVID-19, pandemic (geo)politics have hardened national borders by directing policy-making processes downward and inward to the exigencies of domestic health, social and economic challenges. Governments of the eleven countries that comprise Southeast Asia have demonstrated varying capacities to deal with these national challenges according to their developed, developing or less-developed socioeconomic status, combined with their relative natural resource wealth. These differential capacities are so pronounced that the International Monetary Fund (IMF) projected a multispeed pandemic recovery outlook in the near to medium term characterised by widening regional inequalities in education, per capita income, health and life expectancy (IMF, 2020). Fig. 2 shows linkages between these Human Development Index (HDI) inequalities and differentiated mortality rates; for example, Singapore’s per capita COVID-19 mortality rate to June 2021 was around 30 times lower than Indonesia’s and 10 times lower than Malaysia’s (JHU, 2021). Notwithstanding these tremendous intraregional variations, some generalizable patterns of selective border permeability can be discerned at the national level that shape social inequalities and environmental outcomes at other scales of governance.

National governments across Southeast Asia have themselves exploited hardening border controls to roll back or scale down key environmental safeguards while suppressing democratic spaces for collectivised environmental action. Strategic decisions about cross-border flows have been directly or tacitly endorsed by authoritarian leaders, reflecting a global trend toward democratic regression that predates COVID-19 (Power and Warburton, 2020). In Myanmar, where such an authoritarian turn was well underway when COVID-19 struck (Bell et al., 2020), government forces used the pandemic as a cover for increasing armed operations against insurgent groups and ethnic minorities, compounding spill-over effects of extreme poverty and livelihood loss that have borne out ecologically. Illicit flows of Rohingya refugees from Myanmar into neighbouring Bangladesh before the pandemic have since reached a crisis point in the “sustainability-peace nexus” (Ahmed et al., 2021, p. 1201) as they contribute to, and are further marginalised by, deforestation, biodiversity loss and rising surface temperatures linked to reduced forest cover in resource-constrained refugee camps (Rashid et al., 2021). At the same time, the Myanmar government’s deepening economic reliance on China during its severe pandemic recession (World Bank, 2020) has reinforced the selective permeability of its northern border in Shan state to facilitate Chinese investments in unregulated mining operations and palm oil and rubber plantations (Bennett & Faxon, 2021).

Resource-rich, developing countries are by no means alone in manipulating the permeability of borders for pandemic recovery.
Wealthy but land-scarce Singapore welcomed the investment opportunities afforded by Indonesia’s 2020 Omnibus Law on Job Creation (Yulisman, 2021) that was harshly criticised by environmental groups for limiting the public’s ability to challenge centralised decision-making about unsustainable land-use practices that erode workers’ rights (Mahy, 2021). China similarly took advantage of developing countries in Southeast Asia to complete its transition from a predominantly waste-importing country to a waste-exporting country. Even before COVID-19, Southeast Asia’s recycling facilities and landfills were unable to cope with the burden of China’s 2017 National Sword policy, which banned plastic waste that China had previously absorbed from Europe and the USA (Marks et al., 2020). The global spike in single-use plastics during COVID-19 (face masks, gloves, takeaway food containers and plastic bags) left Thailand, Malaysia, Vietnam, Indonesia and the Philippines critically unprepared to deal with the ecological disaster of surging plastic waste imports (Praveena & Ariis, 2021). Apart from rolling back decades of global gains in recycling, this selective off-shoring of plastic waste by wealthy countries generates illicit cross-border flows of leakage from landfills into freshwater and marine environments as well as transboundary air pollution from open fires or outdated incinerators.

Disrupted domestic supply chains have further realigned the development priorities of Southeast Asia’s national governments away from international sustainability standards, with significant environmental costs. State and privately owned agribusinesses that rely upon highly permeable borders have been especially impacted. Malaysia, the world’s second largest producer of palm oil after Indonesia, has experienced declining productivity amidst periodic outbreaks of COVID-19 plantation clusters (Hassan, 2021), coupled with the hardening of national borders for labour migration as foreign workers comprise over 75 percent of its plantation workforce (Ismail, 2013). To stimulate economic recovery, the governments of both Malaysia and Indonesia have de-gazetted substantial forest reserves for palm oil area expansion, directly contamploring global industry standards set by the Roundtable on Sustainable Palm Oil (RSPO) that prohibit the clearing of primary forests. Defiant in the face of condemnation by transboundary environmental publics, Malaysian and Indonesian political leaders have vowed to defend their cross-border flows of deregulated palm oil products. As part of this process, both governments have intensified their long-standing public relations “war” on the “black campaign” against them by local NGOs and their EU-based supporters (Jong, 2021).

Set against these unsustainable development plans, national governments in Southeast Asia have continued to embrace green growth ideals centred on principles of market environmentalism, especially in relation to their commitments to fulfill Nationally Determined Contributions (NDCs) to the 2015 Paris Agreement on climate change. COVID-19 has not altered how governments articulate these non-binding NDCs, which were formally integrated into national development agendas across the region well before the pandemic and form the cornerstone of ASEAN’s foremost concern with adapting to climate change by greening the regional economy (ASEAN, 2021). However, the pandemic has altered the capacities and priorities of governments to green their national economies within bordered and fiscally depressed national policy contexts. Government choices that selectively reopen borders for the resumption of trade flows reinforce the reliance on existing development plans that only weakly integrate sustainability strategies and technologies, resulting in delayed and/or diluted environmental benefits (Sembiring, 2020, p. 14).

5. Transboundary exclusions in urban environmental networks

With 90 percent of COVID-19 cases worldwide reported in cities (United Nations, 2020), urban populations have come to represent the epicentre of the pandemic. In Southeast Asia’s majority urban population (UNESCAP, 2019), accounting for over 330 million people in 2019 (Worldometer, 2021), urban density has heightened vulnerability to viral contagion. The coastal and riparian orientation of human settlement in Southeast Asia has further exposed large populations to climate change impacts such as rising sea levels, extreme weather events and recurring urban flooding episodes (Miller & Douglass, 2018). Cities, as concentrated sites of wealth and poverty, are at the sharp edge of Southeast Asia’s intersecting inequalities. Before the onset of COVID-19, around 65 percent of the region’s urban workforce were employed in the informal economy (UNESCAP, 2019), creating tremendous spatial and social inequities and converging risk factors within close proximity. As the pandemic has progressed, the distribution of these imbalances shifted as urban-rural return migration placed mounting health, socio-economic and environmental pressures on the finite resources of rural communities.

Selective bordering practices in response to COVID-19 have added to these intersecting inequalities by contributing to the gentrification and democratic decline of urban environmental networks. In Southeast Asian cities, articulations of “clean and green” post-pandemic urban futures (Board, 2020a) resemble what Alexandrini and Janoschka call “new routes of ‘post-pandemic’ transnational gentrifications” (2020: 3204), or the global redeployment of capital to create consumer spaces of exception that accommodate some at the expense of the majority. In Bangkok, Manila and Jakarta, official post-pandemic planning discourses have valorised physically distanced green urban futures. In these national capitals, self-contained middle and upper class neighbourhoods (Yee, 2020), decongested shopping malls with green enclaves (Board, 2020a) and other elite green visions are being woven into the fabric of post-pandemic urban planning models. This return to top-down urban development, which echoes modernisation agendas of the mid-20th century, is reinforced by elite exclusionary practices that disproportionately expose marginal groups to pandemics and other environmental risks and pressures (Sharifri & Khavarian-Garmsir, 2020).

Ironically, plans to integrate more vegetation into gentrified urban environments have at least partly arisen in response to societal dissatisfaction with urban spatial inequalities. COVID-19 lockdown measures have highlighted the limited availability of parks for exercise in Southeast Asia’s crowded cities (Chandran, 2020), while simultaneously raising awareness of the potential co-benefits of green public spaces for human health and climate adaptation (Bates et al., 2021). Responding to this deficit, some city governments and civil society organisations have converted unused urban areas along railway tracks and roads connecting neighbourhoods into green corridors for public use (Chandran, 2020), including, occasionally, by converting “unused” areas that up-root informal settlers (Elloff, 2021). In the Philippines, a nationwide food resiliency program has clevered inter-district and inter-city urban farming networks to facilitate recovery from the pandemic-induced recession while adapting to future climate change challenges (UCLG ASPAC, 2020). To some extent, these urban-based networks have built upon, or been modelled on, pre-pandemic environmental networks that encompassed a wide diversity of place-making initiatives around community gardening (Salim et al., 2019), recycling (Archer & Garrigan, 2019) and other urban climate resilience programs (IFRC, 2021). In general, however, these pre-pandemic urban networks were far more inclusive of Southeast Asia’s substantial informal sector, elderly populations and other socially marginal groups than allied initiatives established within the context of COVID-19.

The reduced permeability of interstitial urban spaces has especially impacted Southeast Asia’s informal urban workers, who, before COVID-19, moved and worked beyond the radar of state control. Informal sector opportunities have largely diminished amidst the growing securitisation of cities and the attendant surveillance of urban populations to root out disease carriers. In all countries, people involved in creating and maintaining green urban spaces have been constrained in what they can do on account of physical distancing rules, self-isolation among key vulnerable groups (especially the elderly), a lack of volunteers, and an inability to consult key stakeholders whose labour has been diverted by pandemic pressures (for example, extra caregiving
In this paper, we focus on the ways in which grassroots environmental democracy has been selectively undermined in Southeast Asia in the 2020s. Specifically, we examine the ways in which de-bordering and re-bordering practices have been selectively deployed to reinvigorate growth, grassroots networks have been selectively fragmented and dispersed publics. This selective bordering has been used to advance the interests of national developmental governments across the region. This official use of repressive and coercive strategies is not new in Southeast Asia; nation-building projects under illiberal developmentalist governments across the region have historically portrayed environmental activism as a threat to national development and unity, tantamount to treason (Power and Warburton, 2020). Such reasoning underpinned the Cambodian government’s imprisonment of several Mother Nature Cambodia activists in 2020–2021, sending a clear message that pandemic recovery would be development-driven and intolerant of civic interference (Amnesty International, 2021).

Higher levels of governance surveillance have, to different extents in varying national contexts, selectively hardened borders to prevent NGO representatives from transboundary environmental governance regimes. The cancellation or scaling back of public participation in transboundary decision-making bodies and the consignment of environmental matters to online spaces have in turn severely impacted procedural rights of access to public information (UNECE, 2020). This rolling back of participation rights occurred in October 2020 during a regional consultation meeting of the Mekong River Commission’s Procedures for Notification Prior Consultation and Agreement (PNPCA). The purpose of that meeting was to obtain key stakeholder inputs into the transboundary impacts of the Luang Prabang dam project along the Mekong River mainstream in Laos, scheduled for completion in 2027 (RFA, 2021).

Civil society and NGO representatives, who were themselves placed under COVID-19 restrictions in Thailand, were prevented from inviting community stakeholders with limited internet access along and beyond the Mekong River. Consequently, their statement opposing the dam development plan only incorporated Thai perspectives and lacked the regional push the group aimed to achieve to (re)shape transboundary environmental governance in their favour.

Second, already marginal rural and agrarian communities have become further disenfranchised by the unequal application of stimulus recovery packages that privilege ethnic-majority citizens and support big businesses while weakening the requirements for environmental justice.
impact assessments (Cotula, 2021). Indonesia’s deregulated pandemic recovery plans have focused on fortifying domestic supply chains by pursuing several free trade agreements and expanding the boundaries of a nationwide food estate program through the agricultural conversion of millions of hectares of carbon-rich peatlands and forests (Mahy, 2021). Before COVID-19, indigenous and agrarian communities had resisted - with varying degrees of success - President Joko Widodo’s efforts to extend Indonesia’s food estate program into new frontiers of resource exploitation in outer provinces like Papua (Indrawan et al., 2017). Since the onset of the pandemic, however, Indonesia’s ethnic minorities in rural communities have not only been deprived of critical forms of government assistance (Barahamin, 2020), but their capacity to resist the expansion of large plantation companies into their homelands has been attenuated by new laws that rely upon developers’ self-declarations of compliance with environmental regulations (Bell, 2020).

Third, these spaces of exception for non-compliance with industry standards have aggravated social inequalities and transboundary environmental impacts. At the (inter-)village level, restrictions on movement have disrupted once-taken-for-granted land and river crossings of people and commodities while reducing the availability of sustainable livelihood opportunities. A study of the impact of COVID-19 on agrarian communities in Vietnam found that rural poor households in border provinces suffered the greatest income losses (over 40 percent) and food insecurity linked to disrupted remittance economies and supply chains (Tran et al., 2020). This finding mirrors a broader pattern of rising rural insecurity, livelihood loss and social dispossession across Southeast Asia. Before COVID-19, Mekong villagers regularly crossed the transboundary river border to maintain familial, work and trade connections, but have since become confined to their individual villages under their respective national territory. Unable to generate income from their various cross-border, non-farm livelihood activities (for example, migrant work in tourism and the service sector), rural residents have been forced to more frequently, intensively, and, often illegally, extract natural resources. Lacking the requisite set of land use permits due to bureaucratic delays, informal tenurial arrangements or landlessness, villagers in many areas have been compelled to exploit resource extraction opportunities presented by reduced environmental monitoring amidst border restrictions. Across Southeast Asia, there have been reports of intensified artisanal gold panning (Straits Times, 2020), sand mining (ASEAN Today, 2020) and illegal logging, including in national parks that have lost ecotourism revenues (Adams et al., 2021) and reduced ranger patrols during pandemic lockdowns (Cahyadi & Newsome, 2021).

Urban-to-rural return migration, driven by disproportionately high infection rates in cities and informal sector unemployment, has placed additional pressures on existing forms of rural land use. Return migration flows have spread infection through rural communities, often undetected amidst poor testing facilities and inadequate health services (Dasgupta, 2021). They have also reversed the pre-pandemic pattern of rural-to-urban migration that was originally set into motion by land scarcity, plantation expansion and attendant anthropogenic environmental impacts (such as droughts, floods and soil erosion) that displaced rural residents from their farmlands and reinforced rural resource exclusions (Suhardiman et al., 2021). This echoes what happened during the 1997 Asian financial crisis, when urban migrants returned to natal homes in the countryside in large numbers, creating additional pressures for rural households previously dependent on migrant remittances (Suhardiman, 2021).

The spin-off effects of this situation are potentially far-reaching with transboundary governance implications. Deepening inequalities at the grassroots scale connect to broader power asymmetries that seek to remedy unemployment through economic recovery without paying sufficient attention to enduring questions of sustainability. Development processes that over-exploit particular resources introduce new forms of vulnerability and unpredictability that are most acutely felt at lower scales of human-nature connections. Transgressive flows of pollutants, transboundary pests and diseases – the by-products of development pressures – weaken the very borders that growth-oriented policies seek to strengthen. Such illicit border crossings create governance dilemmas at higher scales where overlapping areas of authority and responsibility impede cooperation between neighbouring jurisdictions and among government agencies (Miller, 2022b).

Reconceptualising transboundary environmental governance more holistically directs attention toward the complex human realities that shape wider environmental outcomes, often out of sight and far away from borders. Unseen drivers of transboundary environmental harm, such as chronic poverty and a lack of sustainable livelihood opportunities that place significant human populations and the resources on which they depend at risk, need to be prioritised in cross-border environmental agendas. Borders may not be designed or equipped to contain flows of environmental harm, but transparent and inclusive border mechanisms of selective permeability can help to mitigate the costs of growth by strategically protecting shared resources and the local livelihoods that sustain them.

7. Conclusions

Decisions that shape the selective permeability of borders have always aimed to sustain cross-border flows that protect the health of certain populations and assets inside borders while expelling flows of biological and socio-ecological harm to safely outside them. In this article, we have argued that the progression of COVID-19 in Southeast Asia has altered the character of this selective permeability in ways that compromise the protective functions of borders by failing to take into account the broader environment in which they operate. Across the region, pandemic (geo)politics have disproportionately privileged permutations of commodities, finances and trade flows at the expense of wider considerations of sustainability. This trend is not in itself new; the ease with which flows of capital permeate borders is a longstanding critique of globalisation. COVID-19 has exacerbated this trend, however, by deepening pre-existing intersecting inequalities while highlighting the inability of territorial logics to deal with cross-cutting environmental problems that require cooperative forms of redress at all scales of governance.

This study has shown how decisions about border permeability at one scale of governance affect social and environmental outcomes at other organisational scales. From this observation, two generalizable lessons are discernible that could provide policy opportunities for environmental reforms during recovery from the COVID-19 pandemic. First, at all scales of governance, the short-term deferral of environmental losses linked to interrupted transboundary development projects could potentially be transformed into transboundary governance gains in the medium to longer term. At the supranational scale of governance, COVID-19 has created an opportunity for ASEAN to play a more assertive role in establishing an enforceable region-wide framework for environmental governance. In rethinking its regional leadership role, ASEAN could take a proactive stance in encouraging China to become more responsive to environmental concerns in BRI project areas. Such soft diplomacy would in turn enhance China’s geopolitical legitimacy in the region, as South Korea has demonstrated in its related low-carbon and green growth partnerships that have increased its leverage with ASEAN (Howe & Park, 2019). At the national scale, governments in Southeast Asia could equally use the hiatus in China-led regional development to commission impact assessments and introduce environmental safeguards into recovery stimulus packages. At the urban and grassroots scales, transboundary publics have been given a fleeting opportunity to mobilise or strengthen existing campaigns against ecologically destructive megaprojects while proposing and pursuing more sustainable alternatives.

Second, the revival of democratic environmental institutions and processes will be integral to resetting Southeast Asia’s pandemic recovery along a more sustainable trajectory. COVID-19 serves as a
powerful reminder that socioeconomic inequalities force unsustainable livelihood transitions, exacerbating negative externalities that incubate fertile conditions for the emergence of new zoonotic and vector-borne diseases and other complex environmental problems. The current loss of grassroots voices and perspectives from transboundary governance networks has produced scalar disconnects between higher levels of decision-making and situated communities of environmental practice. Such disconnects could potentially be bridged and eventually remedied by incorporating participatory mechanisms into the institutional design of transboundary agreements and programs.

Borders cannot be effectively maintained at the expense of the wider environment. COVID-19 has revealed both the limitations of border controls and the ways in which our global interconnectedness heightens our susceptibility to transboundary shocks and stressors. If COVID-19 could be used to inform our responses to future environmental disruptions, then the current epidemiological crisis contains valuable lessons about the importance of cross-border cooperation in addressing intersecting inequalities that affect us all in direct or discrete ways. Unless we address these inequalities by protecting inclusive spaces for collective environmental stewardship, then bordering practices will continue to drive flows of environmental harm rather than form part of the solution.

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Declaration of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Abano, I., & Chavez, L. (2021). The Covid-19 has shifted everything online–including wildlife trafficking. 2 June Eco-Business https://www.eco-business.com/news/the-covid-19-has-shifted-everything-online–including-wildlife-trafficking/. (Accessed 2 June 2021).

Adams, K. M., Choe, J., Mostafanezhad, M., & Ph, G. T. (2021). (Post-)pandemic tourism resiliency: Southeast Asian lives and livelihoods in limbo. Tourism Geographies. https://doi.org/10.1080/14616688.2021.1916584

ADB. (2021). Implementing a green recovery in Southeast Asia, ADB briefs No.173. https://doi.org/10.22671/BR/210099-2

Adyel, T. M. (2020). Accumulation of plastic waste during COVID-19. Science, 369 (6509), 1314-1315.

Ahmed, S., Simmons, W. P., Chowdhury, R., & Huq, S. (2021). The sustainability-peace relationship: The impact of COVID-19 on peace and transition processes: Tracking the trends. Political settlements research programme (PSRP) research report: COVID-19 series. Edinburgh: The University of Edinburgh.

Amnesty International. (2021). Cambodia: Assault on environmental defenders escalates as four more charged, 22 June https://www.amnesty.org/en/latest/news/2021/06/cambodia-assault-on-environmental-defenders-escalates-as-four-more-charged-imprisonment/. (Accessed 21 July 2021).

Archer, D., & Garrigan, C. (2019). Informal solutions key to plastics. The Bangkok Post, 6 May https://www.bangkokpost.com/opinion/opinion/1672588/informal-solutions-key-to-plastics, (Accessed 25 May 2021).

ASEAN Secretariat. (2020). ASEAN comprehensive recovery framework. Jakarta, Indonesia: ASEAN, (Accessed 2 June 2021).

ASEAN Today. (2020). How sand mining puts Southeast Asia’s farmers at risk, 19 May https://www.aseantoday.com/2020/05/how-sand-mining-puts-southeast-asias-farmers-at-risk/. (Accessed 21 May 2021).

ASEAN. (2021). ASEAN holds the key role in the energy transition in Asia. Singapore: ASEAN Climate Change and Energy Project.

Ahn, L., & Chavez, L. (2021). The Covid-19 has shifted everything online–including wildlife trafficking. 2 June Eco-Business https://www.eco-business.com/news/the-covid-19-has-shifted-everything-online–including-wildlife-trafficking/. (Accessed 2 June 2021).

Bates, A. E., Primack, R. B., & Duarte, C. M. (2021). Global COVID-19 lockdown highlights humans as both threats and custodians of the environment. Biological Conservation, 260, 108917. https://doi.org/10.1016/j.biocon.2021.108917

Bell, L. B. (2020). Indonesia’s five most consequential environmental stories of 2020, 29 December Mongabay https://news.mongabay.com/2020/12/indonesia-five-most-consequential-environmental-stories-of-2020/. (Accessed 19 May 2021).

Bennett, M. M., & Faxon, H. O. (2021). Uneven frontiers: Exposing the geopolitics of Myanmar’s borderlands with critical remote sensing. Remote Sensing, 13, 1583.

Board, J. (2020a). Greener and Cleaner: Reimagining our cities in the wake of COVID-19, 6 June ChannelNewsAsia https://www.channelnewsasia.com/news/environment/change-covid-19-stimulus-southeast-asia-13058708, (Accessed 31 May 2021).

Board, J. (2020b). COVID-19 has prompted stimulus measures, but Southeast Asian governments may be missing the change to go green, 28 August ChannelNewsAsia https://www.channelnewsasia.com/news/environment/climate-change-change-covid-19-stimulus-southeast-asia-13058708, (Accessed 31 May 2021).

Bouzarovski, S., & Cauvain, J. (2016). Spaces of exception: Governing fuel poverty in England’s multiple occupancy housing sector. Space and Polity, 20(3), 310-329.

Buchanan, L., Bui, Q., & Patel, J. K. (2020). Black Lives Matter may be the largest movement in U.S. History. The New York Times, 3 July.

Buchanan, L., Bui, Q., & Patel, J. K. (2020). Black Lives Matter may be the largest movement in U.S. History. The New York Times, 3 July.

Cavkovic, A. (2020). An ambitious and climate-focused Commission agenda for post-COVID-19 EU. Environmental Politics, 29(6), 1112–1117.

Chandran, R. (2020). Bangkok on track for more green spaces with park on old train line, 16 June Reuters https://news.trust.org/article/20200616071915-vpx/, (Accessed 24 May 2021).

Chen, L. L. (2020). Human rights and democracy amidst militarized COVID-19 responses in Southeast Asia, E-International Relations. https://www.e-ir.info/2020/05/13/human-rights-and-democracy-amidst-militarized-covid-19-responses-in-southeast-asia/. (Accessed 17 June 2021).

Connolly, C., Keil, R., & Ali, S. H. (2021). Extended urbanisation and the spatialities of infectious disease: Demographic change, infrastructure and governance. Urban Studies, 58(2), 245-263.

Cotula, L. (2021). Towards a political economy of the COVID-19 crisis: Reflections on an agenda for research and action. World Development, 138, 105235.

Cyranski, D. (2018). The big push for Chinese medicine. Nature, 561, 446-450.

Dasgupta, D. (2021). COVID-19 spreading undetected in rural areas. The Straits Times. https://www.straitstimes.com/asia/south-asia/covid-19-spreading-undetected-in-rural-areas, (Accessed 1 June 2021).

Dasgupta, S., Deichmann, U., Meisner, C., & Wheeler, D. (2005). Where is the poverty-environment nexus? Evidence from Cambodia, Lao DPR, and Vietnam. World Development, 33(4), 617–638.

Deichmann, U. (2019). Containing contagion: The Politics of disease outbreaks in Southeast Asia. Baltimore, USA: John Hopkins University Press.

Douglas, I., Champion, M., Clancy, J., Haley, D., et al. (2020). The COVID-19 pandemic: Local to global implications as perceived by urban ecologists. Socio-Ecological Practice Research, 2, 217-228.

El Zowalaty, M. E., Young, S. G., & Jarhult, J. D. (2020). Environmental impact of the COVID-19 pandemic – a lesson for the future. Infection Ecology & Epidemiology, 10, 1768023.

Elinoff, E. (2021). Citizen designs: City-making and democracy in Northeastern Thailand. Honolulu, USA: University of Hawaii Press.

Goldstein, J. E., & Faxon, H. A. (2020). New data infrastructure for environmental monitoring in Myanmar: Is digital transparency good for governance? Environment and Planning E: Nature and Space, 1–21.

Grimes-Beg仗though, E. (2020). More is: Scaling political ecology within limits to growth. Political Geography, 76, 102095.

Goodhart, A. E., & Lastra, R. M. (2010). Border problems. Journal Of International Economic Law, 13(3), 705-718.

Greater Mekong Subregion Secretariat. (2020). Joint ministerial statement. In 24th GMS ministerial conference, 4 November. https://www.greatermekong.org/sites/default/files/SG/24-MC24-Joint%20Statement%20-%20No%2020-20-CN. pdf. (Accessed 2 June 2021).

Griffin, L. (2010). The limits to good governance and the state of exception: A case of North Sea fisheries. Geoforum, 41, 282-292.

Hapal, K. (2021). The Philippines’ COVID-19 response: Securitising the pandemic and internationalising the Pasayway. Journal of Current Southeast Asian Affairs, 40(2), 224-244.

He, G., Pan, Y., & Tanaka, T. (2020). The short-term impacts of COVID-19 lockdown on urban air pollution in China. Nature Sustainability, 3, 1005–1011.

Hirsch, P. (2020). Scaling the environmental commons: Broadening our frame of reference for transboundary governance in Southeast Asia. Asia Pacific Viewpoint, 61 (2), 190–202.

He, G., Pan, Y., & Tanaka, T. (2020). The short-term impacts of COVID-19 lockdown on urban air pollution in China. Nature Sustainability, 3, 1005–1011.
United Nations. (2020). Policy brief: COVID-19 in an urban world. United Nations. https://www.un.org/sites/un2.un.org/files/sg_policy_brief_covid_urban_world_july_2020.pdf. (Accessed 21 May 2021).

Varkkey, H. (2020). Air pollution and COVID-19 mortality: Considerations for Southeast Asia. AsiaGlobal, 23 April. https://www.asiaglobalonline.hku.hk/air-pollution-and-covid-19-mortality-considerations-southeast-asia. (Accessed 2 June 2021).

Varol, C., & Soylemez, E. (2018). Border permeability and socio-spatial interaction in Turkish and EU border regions. Regional Science Policy & Practice, 10(4), 283–297.

Weatherby, C., & Lichtefeld, J. (2020). In the Mekong, a confluence of calamities, 28 April. Foreign Policy. https://foreignpolicy.com/2020/04/28/in-the-mekong-a-confluence-of-calamities/. (Accessed 2 June 2021).

WHO. (2020). Thailand responding to the novel coronavirus. World Health Organisation, 14 January. https://www.who.int/thailand/news/detail/13-01-2020-thailand-responding-to-the-novel-coronavirus. (Accessed 24 May 2021).

Wiebel, J. (2020). Realising government ambition: Policing insiders and outsiders. In P. Otto, & S. Berthier-Foglar (Eds.), Permeable borders: History, theory, policy and practice in the United States (pp. 117–135). New York, USA and Oxford, UK: Berghahn Books.

Wonders, N. A. (2006). Global flows, semi-permeable borders and new channels of inequality. In S. Pickering, & L. Weber (Eds.), Borders, mobilities and technologies of control (pp. 63–86). Dordrecht, Netherlands: Springer.

World Bank. (2020). Myanmar’s economy severely impacted by COVID-19: Report, Press Release, 25 June. https://www.worldbank.org/en/news/press-release/2020/06/25/myanmars-economy-severely-impacted-by-covid-19-report. (Accessed 29 May 2021).

World Bank. (2021). Uneven recovery. East Asia and Pacific update. Washington D.C., USA: World Bank Group. April.

Worldometer. (2021). South-East Asian population (live). Worldometers. https://www.worldometers.info/world-population/south-eastern-asia-population/. (Accessed 25 May 2021).

Wyborn, C., & Bider, R. P. (2013). Collaboration and nested environmental governance: Scale dependency, scale framing, and cross-scale interactions in collaborative conservation. Journal of Environmental Management, 123, 58–67.

Yee, T. H. (2020). Urban design for post-pandemic world. Straits Times. https://www.straitstimes.com/asia/se-asia/urban-design-for-post-pandemic-world. (Accessed 24 May 2021).

Yinghui, L. (2020). COVID-19: The nail in the Coffin of China’s Belt and road initiative? The Diplomat. https://thediplomat.com/2020/09/covid-19-the-nail-in-the-coffin-of-chinas-belt-and-road-initiative/. (Accessed 2 June 2021).

Yulisman, L. (2021). Singapore investors welcome Indonesia’s new Omnibus Law, 8 March. Straits Times. https://www.straitstimes.com/asia/se-asia/singapore-investors-welcome-indonesias-new-omnibus-law#:~:text=He%20said%3A%20%22Singapore%20businesses%20welcome%20opportunities%20to%20harness%20the%20new%20opportunities%20to%20harness%20the%20new%20opportunities%20to%20harness%20the%20new%20opportunities%20to%20harness%20the%20new%20opportunities%20to%20harness%20opportunities%22. (Accessed 29 May 2021).