

ISSN 0219-3213

2019 no. 18

Trends in Southeast Asia

THE BELT AND ROAD INITIATIVE:
ENVIRONMENTAL IMPACTS IN
SOUTHEAST ASIA

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ANGELA TRITTO, ALEXANDER HORSTMANN,
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ISEAS YUSOF ISHAK
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Published by: ISEAS Publishing
30 Heng Mui Keng Terrace
Singapore 119614
publish@iseas.edu.sg
<http://bookshop.iseas.edu.sg>

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ISEAS Library Cataloguing-in-Publication Data

Names: Lechner, Alex M. | Tan, Chee Meng. | Tritto, Angela. | Horstmann, Alexander. | Teo, Hoong Chen. | Owen, John R. | Campos-Arceiz, Ahimsa. |

Title: The Belt and Road Initiative : environmental impacts in Southeast Asia / by Alex M. Lechner, Chee Meng Tan, Angela Tritto, Alexander Horstmann, Hoong Chen Teo, John R. Owen and Ahimsa Campos-Arceiz.

Description: Singapore : ISEAS – Yusof Ishak Institute, December 2019. | Series: Trends in Southeast Asia, ISSN 0219-3213 ; TRS18/19 | Includes bibliographical references.

Identifiers: ISBN 9789814881425 (paperback) | ISBN 9789814881432 (pdf)

Subjects: LCSH: Yi dai yi lu (Initiative : China)—Environmental aspects—Southeast Asia—Case studies. | Economic development—Southeast Asia—Environmental aspects. | Investments, Chinese—Southeast Asia—Environmental aspects.

Classification: LCC DS501 I59T no. 18(2019)

Typeset by Superskill Graphics Pte Ltd

Printed in Singapore by Markono Print Media Pte Ltd

FOREWORD

The economic, political, strategic and cultural dynamism in Southeast Asia has gained added relevance in recent years with the spectacular rise of giant economies in East and South Asia. This has drawn greater attention to the region and to the enhanced role it now plays in international relations and global economics.

The sustained effort made by Southeast Asian nations since 1967 towards a peaceful and gradual integration of their economies has had indubitable success, and perhaps as a consequence of this, most of these countries are undergoing deep political and social changes domestically and are constructing innovative solutions to meet new international challenges. Big Power tensions continue to be played out in the neighbourhood despite the tradition of neutrality exercised by the Association of Southeast Asian Nations (ASEAN).

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The Belt and Road Initiative: Environmental Impacts in Southeast Asia

By Alex M. Lechner, Chee Meng Tan, Angela Tritto,
Alexander Horstmann, Hoong Chen Teo, John R. Owen and
Ahimsa Campos-Arceiz

EXECUTIVE SUMMARY

- China's Belt and Road Initiative (BRI) is expected to be the largest infrastructure development scheme of the twenty-first century.
- There is escalating concern over BRI's potential environmental impacts in Southeast Asia, a global biodiversity hotspot and a focus area of BRI development.
- Case studies of Indonesia, Myanmar, Lao PDR and Malaysia show that the success of BRI in bringing about sustainable growth and opportunities depends on the Chinese government and financiers, as well as the agencies and governments involved when BRI investments take place.
- The adoption of best environmental practices is critical in ensuring that growth is sustainable and that bad environmental practices are not locked in for decades to come.

The Belt and Road Initiative: Environmental Impacts in Southeast Asia

By Alex M. Lechner, Chee Meng Tan, Angela Tritto,
Alexander Horstmann, Hoong Chen Teo, John R. Owen and
Ahimsa Campos-Arceiz¹

INTRODUCTION

China's Belt and Road Initiative (BRI) is expected to be the largest infrastructure development scheme of the twenty-first century. It involves over eighty countries, with overall investments estimated to be between US\$1 trillion to US\$8.5 trillion.²

President Xi Jinping launched the BRI in 2013, describing the initiative as an exercise in “economic cooperation” with a focus on connectivity

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² Jonathan E. Hillman, “How Big Is China's Belt and Road?”, Centre for Strategic and International Studies, 2018, <https://www.csis.org/analysis/how-big-chinas-belt-and-road>.

and trade. The primary goals are to create policy coordination between countries, increase cultural exchange, promote financial integration and cooperation, facilitate international trade, and increase connectivity through infrastructure development.

While the goal of improving the prospects of developing nations is laudable, scholars across the world have raised concerns around the potential environmental and social impacts of the BRI. Of the five goals, perhaps the most visible and worrying is infrastructure development, notably via six terrestrial infrastructure corridors, a marine economic route and a recently announced polar BRI. These routes are expected to connect more than half of the world's population. Infrastructure development will include mega projects to overcome geographic barriers to growth such as those seen in ASEAN members states.³

Southeast Asia, with a population of 320 million, which is expected to grow to 526 million by 2050, represents huge opportunities for trade and is a focus of BRI investment.⁴ The economic effects of BRI investments could be transformational and could smooth out income inequalities within ASEAN where gross domestic product per capita varies from as little as US\$3,645 in Cambodia to US\$85,535 in Singapore.⁵

The direct and secondary impacts associated with major infrastructure corridors have been identified as posing threats to biodiversity in an already ecologically vulnerable region. Infrastructure development could negatively affect the atmosphere, hydrosphere, geosphere, and biosphere.⁶ Southeast Asia is home to four out of thirty-four of the

³ Michael Cox et al., "China's Belt and Road Initiative (BRI) and Southeast Asia", CIMB ASEAN Research Institute, October 2018, p. 47.

⁴ UNDP, "Human Development Indices and Indicators. 2018 Statistical Update", *United Nations Development Programme 27*, no. 4 (2018): 123, http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdfhttp://www.hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf<http://hdr.undp.org/en/2018-update>.

⁵ Ibid.

⁶ Hoong Chen Teo et al., "Environmental Impacts of Infrastructure Development under the Belt and Road Initiative", *Environments* 6, no. 72 (2019).

planet's biodiversity hotspots and to the Coral Triangle, also known as the Amazon of the ocean, which hosts 600 reef-building coral species.⁷

In this review we provide a synoptic overview of the potential environmental impacts in the region. We start with an inventory of BRI projects in Southeast Asia, and then we describe the potential negative impacts of BRI from an environmental perspective. As the effects of the BRI needs to be examined on multiple scales, we provide detailed case examples from Indonesia, Myanmar and Malaysia before offering recommendations for how these impacts and challenges can be addressed.

CURRENT INVESTMENT AND BRI PROJECTS IN THE REGION

China's growing footprint in Southeast Asia as part of its "going out" policy is apparent, but it can be difficult to objectively gauge the extent of its involvement, since projects with Chinese assistance are both many and diverse in form. The two main types of financing are overseas direct investments (ODI) and development finance, largely coming from two policy banks, the China Development Bank (CDB) and China EXIM Bank (EXIM). These two policy banks do not disclose lending criteria or their portfolio of regional investment loans, and researchers have to rely on third-party estimates, which are challenging to obtain.⁸ Moreover, project financing may also come from obscure but

⁷ Alex M. Lechner, Faith Ka Shun Chan, and Ahimsa Campos-Arceiz, "Biodiversity Conservation Should Be a Core Value of China's Belt and Road Initiative", *Nature Ecology and Evolution* 2, no. 3 (2018): 408–9, <https://doi.org/10.1038/s41559-017-0452-8>.

⁸ David Dollar, "Is China's Development Finance a Challenge to the International Order?", *Asian Economic Policy Review* 13, no. 2 (July 2018): 283–98, <https://doi.org/10.1111/aepr.12229>; Axel Dreher et al., "Aid, China, and Growth: Evidence from a New Global Development Finance Dataset", Ssrn, 2017, <https://doi.org/10.2139/ssrn.3051044>.

possibly large investment vehicles and from shadow lending.⁹ To further complicate matters, some projects are multilateral, with varying degrees of involvement from different institutional actors from outside China. In some circumstances, the value-add may not be directly financial, but can be seen in future opportunities for technical cooperation and access to a rapidly expanding Chinese market.¹⁰

Due to differing definitions on investments and data quality issues, even with official Chinese government figures,¹¹ estimates of the BRI's total investments over the next decades vary hugely from US\$1.3 trillion to US\$8 trillion.¹² One recent estimate indicates that around US\$340 billion have been invested between 2014 and 2017 alone.¹³ Despite varying figures cited by different sources (Table 1), it is apparent that Southeast Asia is the primary destination for most BRI investment. The largest recipients of Chinese investment are Singapore, Indonesia, Malaysia and the Lao PDR (Table 2). Some of the investment flows to

⁹ Yunlin Lu et al., "Shadow Banking and Firm Financing in China", *International Review of Economics and Finance* 36 (March 2015): 40–53, <https://doi.org/10.1016/j.iref.2014.11.006>.

¹⁰ Deborah Bräutigam, "Aid 'With Chinese Characteristics': Chinese Foreign Aid and Development Finance Meet the OECD-DAC Aid Regime", *Journal of International Development* 23, no. 5 (July 2011): 752–64, <https://doi.org/10.1002/jid.1798>; May Tan-Mullins, Frauke Urban, and Grace Mang, "Evaluating the Behaviour of Chinese Stakeholders Engaged in Large Hydropower Projects in Asia and Africa", *China Quarterly* 230, no. May (2017): 464–88, <https://doi.org/10.1017/S0305741016001041>.

¹¹ Piter De Jong, Mark J. Greeven, and Haico Ebbers, "Getting the Numbers Right on China's Actual Overseas Investment: The Case of the Netherlands", *Journal of Current Chinese Affairs* 46, no. 1 (April 2017): 187–209, <https://doi.org/10.1177/186810261704600108>.

¹² Andrew Chatzky and James McBride, "China's Massive Belt and Road Initiative", Council on Foreign Relations, 2019; Jonathan E. Hillman, "How Big Is China's Belt and Road?", Center for Strategic and International Studies, 2018.

¹³ Cecilia Joy-Pérez and Derek Scissors, "The Chinese State Funds Belt and Road but Does Not Have Trillions to Spare", 2018.

Table 1. Outgoing Chinese Overseas Investments in 2014–17 (US\$ billion)

	Bloomberg^a	China MOFCOM^b
China-Indochina	58.2	40.4
China-Bangladesh-India	23.1	1.6
China-Pakistan	36.2	2.6
China-Central/West Asia	—	10.5
China-Mongolia-Russia	—	7.1
Total	117.5	62.2

Source: a. Fickling (2018); b. China MOFCOM (2019).

Table 2. Outgoing Chinese Overseas Investments to ASEAN Countries in 2014–17 (US\$ million)

	2014	2015	2016	2017
Brunei	3	4	142	71
Cambodia	438	420	626	744
Indonesia	1,272	1,451	1,461	1,682
Lao PDR	1,027	517	328	1,220
Malaysia	521	489	1,830	1,722
Myanmar	343	332	288	428
Philippines	225	28	32	109
Singapore	2,814	10,452	3,172	6,320
Thailand	839	407	1,122	1,058
Total	7,816	14,659	10,279	14,119

Source: China MOFCOM (2019).

Singapore are expected to be re-routed to support developments in other destinations.¹⁴

Examples of larger BRI projects planned for the region include the East Coast Rail Link in Malaysia, the Phnom Penh-Sihanoukville

¹⁴ Stephanie Luo, “Singapore Top Destination for China Investments”, *Straits Times*, December 2017.

highway, and the Hai Duong power plant at US\$2,000 million, US\$10,600 million and US\$2,300 million respectively. What sets BRI apart from other geographically disparate infrastructure schemes is the transformative potential in terms of the spatial configuration of the ASEAN landscape. The BRI's network of linear infrastructure, such as roads and railways, extend across long distances to connect nodal infrastructure, such as airports and seaports, creating logistics corridors that create unprecedented linkages with China. Other global powers such as the United States and Japan are also significant players in the region, and by some measures have invested even more in Southeast Asian infrastructure than China.¹⁵ However, unlike these powers, China is the immediate continental and maritime neighbour of Southeast Asia, and can leverage its geographical proximity by integrating BRI infrastructure directly into its own networks, reshaping Southeast Asia's geopolitical and economic landscapes. Our case studies on Myanmar and the Lao PDR in the case studies section further illustrate these dynamics.

Although the greatest environmental concerns over Chinese overseas investments precipitate around primary and secondary industries such as mining, energy and construction, these actually form only a small proportion of the overall investment profile (Table 3). Most Chinese overseas investments worldwide are in relatively less pollutive tertiary industries that have few visible direct environmental impacts. Also, despite fears that the BRI is merely a play for securing future resources for the Chinese market, there is contradicting evidence as to whether Chinese overseas investment is primarily geared towards natural resource wealth, and more fundamentally, whether BRI has stimulated more investment to BRI countries in the first place.¹⁶

¹⁵ Matthew P. Goodman and Jonathan A. Hillman, "Is China Winning the Scramble for Eurasia?", *The National Interest*, August 2017.

¹⁶ Hai Yue Liu et al., "The Determinants of Chinese Outward FDI in Countries Along 'One Belt One Road'", *Emerging Markets Finance and Trade* 53, no. 6 (2017): 1374–87, <https://doi.org/10.1080/1540496X.2017.1295843>; David Dollar, "United States-China Two-Way Direct Investment: Opportunities and Challenges", *Journal of Asian Economics* 50 (June 2017): 14–26, <https://doi.org/10.1016/j.asieco.2017.03.001>; Dollar, "Is China's Development Finance a Challenge to the International Order?".

Table 3. Outgoing Chinese Overseas Investments to All Countries by Sector in 2014–17 (US\$ billion)

	2014	2015	2016	2017
<i>Primary industries</i>	18.6	13.8	5.2	6.2
Agriculture	2.0	2.6	3.3	2.5
Mining	16.5	11.3	1.9	3.7
<i>Secondary industries</i>	14.7	25.9	37.0	38.4
Manufacturing	9.6	20.0	29.0	29.5
Energy	1.8	2.1	3.5	2.3
Construction	3.4	3.7	4.4	6.5
<i>Tertiary industries</i>	73.9	62.5	154.0	95.2
Retail and distribution	18.3	19.2	20.9	26.3
Transport and logistics	4.2	2.7	1.7	5.5
Real estate	6.6	7.8	15.2	6.8
Other services (e.g. finance, IT, research, tourism)	44.8	32.8	116.1	56.6
<i>Total</i>	107.2	102.2	196.1	139.8

Source: China MOFCOM (2019).

BRI'S POTENTIAL NEGATIVE IMPACTS ON THE ENVIRONMENT

Recent studies have drawn attention to potential environmental impacts attached to BRI developments, especially in relation to biodiversity.¹⁷ Direct impacts from infrastructure projects, in particular linear transport infrastructure, are well documented and include habitat loss

¹⁷ Alice C. Hughes, “Understanding and Minimizing Environmental Impacts of the Belt and Road Initiative”, *Conservation Biology*, 9 April 2019, <https://doi.org/10.1111/cobi.13317>; Fernando Ascensão et al., “Environmental Challenges for the Belt and Road Initiative”, *Nature Sustainability* 1, no. 5 (2018): 206–9, <https://doi.org/10.1038/s41893-018-0059-3>; J. Marc Foggin, “Environmental Conservation in the Tibetan Plateau Region: Lessons for China’s Belt & Road Initiative in the Mountains of Central Asia”, *Land* 7, issue 2 (April 2018): 1–34;

and fragmentation, increased wildlife mortality from roadkill, and the opening up of frontier landscapes, making them susceptible to illegal poaching and logging.¹⁸ Research also indicates that greater sea traffic will increase the movement of invasive species, and pollution.¹⁹

Southeast Asia is home to a number of global biodiversity hotspots and a high concentration of endemic and threatened species²⁰ (Figure 1a). In addition, it has expanses of frontier landscapes with ecosystems that historically have received very little anthropogenic pressure but which are likely to be impacted by infrastructure development (Figure 1b). Southeast Asia's biological diversity and weak governance systems have made it a major hub for illegal wildlife trade, and a massive expansion of transport networks brings huge risks to wild species within and between countries.²¹ Illegal poaching is one of the greatest threats to biodiversity in the region, especially for charismatic megafauna such as the Asian elephant and tiger.

Lechner, Chan, and Campos-Arceiz, "Biodiversity Conservation Should Be a Core Value of China's Belt and Road Initiative"; Teo et al., "Environmental Impacts of Infrastructure Development under the Belt and Road Initiative"; Xuan Liu et al., "Risks of Biological Invasion on the Belt and Road", *Current Biology* 29, no. 3 (February 2019): 499–505.e4, <https://doi.org/10.1016/j.cub.2018.12.036>.

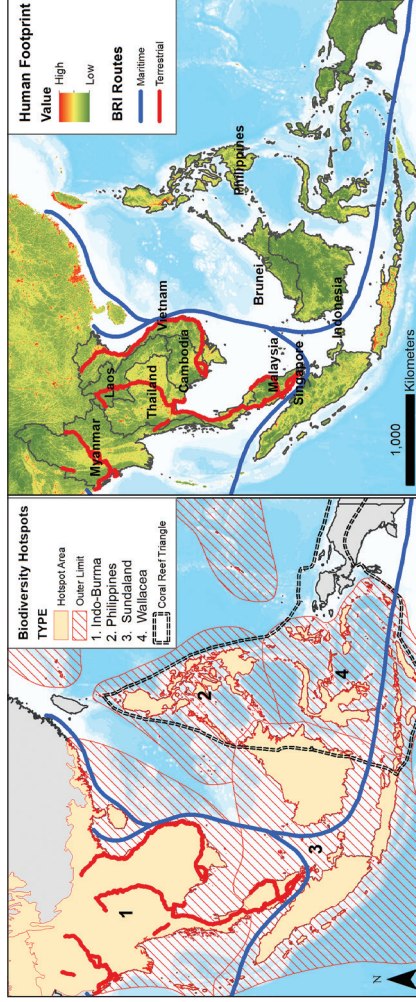
¹⁸ Richard T.T. Forman and Lauren E. Alexander, "Roads and Their Major Ecological Effects", *Annual Review of Ecology and Systematics* 29, no. 1 (1998): 207–31, <https://doi.org/10.1146/annurev.ecolsys.29.1.207>; William F. Laurance, Miriam Goosem, and Susan G.W. Laurance, "Impacts of Roads and Linear Clearings on Tropical Forests", *Trends in Ecology and Evolution*, 2009, <https://doi.org/10.1016/j.tree.2009.06.009>.

¹⁹ Lechner, Chan, and Campos-Arceiz, "Biodiversity Conservation Should Be a Core Value of China's Belt and Road Initiative".

²⁰ Hughes, "Understanding and Minimizing Environmental Impacts of the Belt and Road Initiative"; Lechner, Chan, and Campos-Arceiz, "Biodiversity Conservation Should Be a Core Value of China's Belt and Road Initiative".

²¹ Mohammad S. Farhadinia et al., "Belt and Road Initiative May Create New Supplies for Illegal Wildlife Trade in Large Carnivores", *Nature Ecology & Evolution* 3, no. 9 (12 September 2019): 1267–68, <https://doi.org/10.1038/s41559-019-0963-6>.

Figure 1. Biodiversity and BRI Terrestrial and Marine Routes^a (left); Conservation International Biodiversity hotspots which represent biologically rich areas around the world cover just 1.4 per cent of Earth's land surface but contain more than 60 per cent of all terrestrial species^b; Coral Reef Triangle a Hotspot for Marine Biodiversity^c (right), 2009.



Source: a. Belt and Road Portal, “Belt and Road Initiative Information Centre”, 2017, <https://eng.yidaiyilu.gov.cn>; Suprabha Baniya, Nadia Rocha, and Michele Ruta, “Trade Effects of the New Silk Road A Gravity Analysis”, Policy Research Working Paper, no. WPS 8694 (Washington, DC: World Bank Group, 2019); Angus Morrison-Saunders and Thomas B. Fischer, “What Is Wrong With Eia and Sea Anyway? A Sceptic’s Perspective on Sustainability Assessment”, *Journal of Environmental Assessment Policy and Management* 8, no. 1 (March 2006): 19–39, <https://doi.org/10.1142/S146433206002372>.
 b. Norman Myers et al., “Biodiversity Hotspots for Conservation Priorities”, *Nature* 403, no. 6772 (2000): 853–58, <https://doi.org/10.1038/35002501>; J.A. Ludwig et al., “Assessing Landscape Health by Scaling with Remote Sensing: When Is It Not Enough?”, *Landscape Ecology* 22, no. 2 (2007): 163–69, <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-33846584936&partnerID=40>.
 c. Annick Cros et al., “The Coral Triangle Atlas: An Integrated Online Spatial Database System for Improving Coral Reef Management”, *PLoS ONE* 9, no. 6 (2014), <https://doi.org/10.1371/journal.pone.0096332>.

In addition to the direct and indirect impacts from infrastructure development, any increase in economic productivity supported by BRI will increase pollution, including greenhouse gases and waste. The magnitude of these impacts will be driven by the choice of investment. If BRI countries continue with their current carbon-intensive growth models it is likely to cause a dramatic growth in global emissions.²² According to a recent review, Chinese financiers, invested in 240 coal power plants in sixty-five BRI countries from 2001 to 2016.²³ The reconnecting Asia database (<https://reconnectingasia.csis.org/map/>) which maps infrastructure across Asia identified twenty-two fossil fuel power plants being built in Southeast Asia where the principal agent is China. Another related concern is the potential relocation of polluting industries from China to countries with weaker environmental and labour standards, though it is unclear whether this is happening.²⁴

BRI CASE STUDIES

Natural Resource Extraction: The Cases of Myanmar and the Lao PDR

Myanmar and the Lao PDR are both committed to overcoming their status as the two least developed countries in the ASEAN bloc. The BRI opens the door to aspirations of wealth and the creation of jobs. Both countries have signed memoranda of understanding to build economic corridors in order to enhance connectivity, produce revenues

²² Ma Jun and Zadek Simon, “Decarbonizing the Belt and Road: A Green Finance Roadmap”, September 2019.

²³ Ren Peng, Liu Chang, and Zhang Liwen, “China’s Involvement in Coal-Fired Power Projects along the Belt and Road”, *Global Environmental Institute*, May 2017.

²⁴ Elena F. Tracy et al., “China’s New Eurasian Ambitions: The Environmental Risks of the Silk Road Economic Belt”, *Eurasian Geography and Economics* 58, no. 1 (2017): 56–88, <https://doi.org/10.1080/15387216.2017.1295876>; Teo et al., “Environmental Impacts of Infrastructure Development under the Belt and Road Initiative”.

and increase their prospective for economic growth. In this section, we examine the socio-environmental impacts associated with the way that BRI infrastructure projects have been implemented. Both case studies are examples of natural resource extraction producing large revenues for governments, but providing little benefit for other stakeholders who are often not involved in the planning process or beneficiaries through other flows, such as supply chains.

Infrastructure projects have a political impact as some of the most important projects, such as the Shwe gas and oil pipeline, criss-cross two volatile regions: Kachin state in northern Myanmar and the Rakhine state in western Myanmar. The Shwe gas pipeline in Myanmar channels energy from gas fields in the Andaman sea to Kunming, Yunnan in Southwest China, feeding China's growing appetite for energy. While the project could have potential upsides for host communities along the corridor, the current arrangements do not have direct benefit streams for local people who are closest to negative consequences such as environmental degradation. Roads, strongly securitized hydropower, and pipeline projects not only generate windfalls for struggling states, but also enhance the control over otherwise inaccessible hinterlands and rebellious minorities, contributing to a new wave of local state-building and resource extraction in the mountainous borderlands.²⁵

In Kachin state, the government shares power with local militia and strongmen, who participate in the development of roads, trade, agricultural concessions and dams. BRI infrastructure projects tend to bolster existing power structures, greatly accelerating access to and control over territory and people. Stakeholders are not consulted, and are not included in the planning, even though some groups may hold great hope for road or railway development. While in neighbouring Northern Shan state, some groups do not have access to bulk services: running water, electricity, education or basic health care. Furthermore, the practical application of

²⁵ James C. Scott, *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (Yale University Press, 2009).

legislation between national and autonomous regions can result in people being displaced of land without due compensation.²⁶

Infrastructure projects are implemented between Chinese firms, Sino-Burmese business elites, and the Myanmar military, often without the participation of ethnic minority community leaders, and these in tandem promote resource grabs.²⁷ Resource grabs in resource-rich Kachin state include rainforest logging, multibillion dollar exploitation of jade mines, wildlife, hydraulic and highly polluting gold-mining, and mono-crop plantations, such as for rubber and bananas. No environmental standards are being applied in the regulation of these projects. Even conservation in state parks is problematic in the sense that traditional land users are not allowed to gather forest products or use river resources.

The planned Myitsone dam in Kachin state is another controversial project located at the confluence of the Mali and N'mai rivers, the headwaters of the Irrawaddy River. If built, this dam would be among the fifteen largest hydropower projects in the world. Myanmar suspended progress on the project in 2011. Two concerns have been noted. First, the dam would establish a large Chinese presence on one of the most geostrategic rivers and thus potentially compromise Myanmar's sovereignty. Second, the dam was fiercely resisted by the Kachin Independence Army (KIA) and Kachin civil society, fearing a total assault on Kachin land and livelihoods. Thus, the dam constituted a major hindrance to ongoing ceasefire negotiations between the KIA and the government of Myanmar. For the Kachin people, it represents another deadly step in a series of resource grabs.

A year ago, the Chinese and Myanmar governments signed an agreement to establish the BRI-supported Chinese-Myanmar economic

²⁶ Deanna Kemp and John R. Owen, "The Reality of Remedy in Mining and Community Relations: An Anonymous Case-Study from Southeast Asia", in *Business and Human Rights in Southeast Asia*, edited by Mahdev Mohan and Cynthia Morel, pp. 259–77 (Routledge, 2014), <https://doi.org/10.4324/9781315867649-26>.

²⁷ Esteve Corbera, Carol Hunsberger, and Chayan Vaddhanaphuti, "Climate Change Policies, Land Grabbing and Conflict: Perspectives from Southeast Asia", *Canadian Journal of Development Studies* 38, no. 3 (July 3, 2017): 297–304, <https://doi.org/10.1080/02255189.2017.1343413>.

corridor, as elsewhere, made up of a mix of transport (railway from Muse to Mandalay), special economic zones and other major infrastructure projects. Currently, there are no serious environmental preassessment or public feasibility studies. The Chinese government reopened dialogue about the Myitsone dam, with the Chinese ambassador inviting the Kachin leaders for discussions, but these ended without success. The current violence in northern Myanmar does not seem to allow for negotiations on the Myitsone project, but a ceasefire or approval by the Myanmar government might revitalize the idea.

Increased connectivity between China and Myanmar as well as other BRI countries such as the Lao PDR and Cambodia have resulted in these countries becoming epicentres of intensive and expansive deforestation, through government-approved land concessions. Hundreds of logging companies ship to the Chinese borderlands in Tengchong from Myanmar and the Lao PDR, and are considered legal once they cross the border of Yunnan in southern China, thus outmanoeuvring bans on illegal logging. In the northern provinces of Luang Namtha and Phongsali, there are active concerns over regulations and practices surrounding cross-border enterprises from China. The Lao government has granted large agricultural land concessions for ninety years, resulting in mass clearing of forested land and establishment of vast tracts of commercial banana plantations. Local level conflicts have arisen over the use of toxic chemicals, worker health, and the pollution of rivers and ground water.

The relative weak power status of Myanmar and the Lao PDR raise direct challenges in managing border frontiers with China. In the Lao PDR, Chinese security, along with large numbers of expatriate workers, operate in specifically designated Chinese Special Economic Zones. Similar encroachments occur in northern Myanmar where Chinese currency and cell phone networks have become mainstream. In both Myanmar and the Lao PDR, security, human rights and environmental impacts cannot be easily separated.²⁸ These issues are not specifically

²⁸ Deanna Kemp and John R. Owen, "Grievance Handling at a Foreign-Owned Mine in Southeast Asia", *Extractive Industries and Society* (2017), <https://doi.org/10.1016/j.exis.2016.09.001>.

caused by the BRI, but do demonstrate the inherent geographic and political dilemmas constraining developments in the region.

Energy Investments and Negotiations: The Cases of Indonesia and Malaysia

Since its inception, it was forecasted that the BRI would gravitate towards the energy market. This is because, on the one hand, there is a large overcapacity within China, where most state-owned enterprises find themselves in the midst of a saturated market and, having gained strong technological capabilities to engage in large-scale domestic projects, are eager to internationalize. On the other hand, the BRI engages mostly developing economies that have considerable needs for energy investments to propel their growth. In Asia alone, the infrastructural deficit has been estimated at US\$14.7 trillion.²⁹

Analysing energy investments and the way they are negotiated with host countries can help illustrate the level of environmental sustainability of the BRI. The cases of Indonesia and Malaysia provide useful examples of how investments in this sector are heavily influenced by the quality of governance. Rent-seeking by political elites can effectively lock countries into long-term fossil fuel dependency, while green policies can unlock new opportunities for the development of the renewable energy sector.

The process of how energy investments are awarded also warrants further attention. While typically the building of energy infrastructure is tendered through open and transparent processes, in both countries the period that followed the announcement of the BRI saw a number of large commercial deals being negotiated behind closed doors. Even when contracts are awarded in open tenders, observers have argued that processes tend to favour Chinese companies, which can often outbid

²⁹ Asia Development Bank, *Meeting Asia's Infrastructure Needs*, 2017, <https://doi.org/10.22617/FLS168388-2>.

competitors by offering lower prices and more advantageous financial arrangements, being backed by state banks.³⁰

The case of Indonesia's coal power sector exemplifies dynamics of rent-seeking and lack of transparency in negotiations. Figure 2 shows Chinese investments in Indonesia's energy sector. After 2013, Chinese companies started to move away from the mining of coal and mineral ores and switched from undertaking construction contracts to investments in coal power plants. This shift is a deliberate result of the Indonesian resource sovereignty agenda employing protectionist policies to retain control over mining permits, seeking majority ownership of large-scale mining projects, and avoiding the export of raw commodities in favour of value-adding in country, while at the same time promoting a more "developmental" economy through the active pursuit of investments in coal power plants.

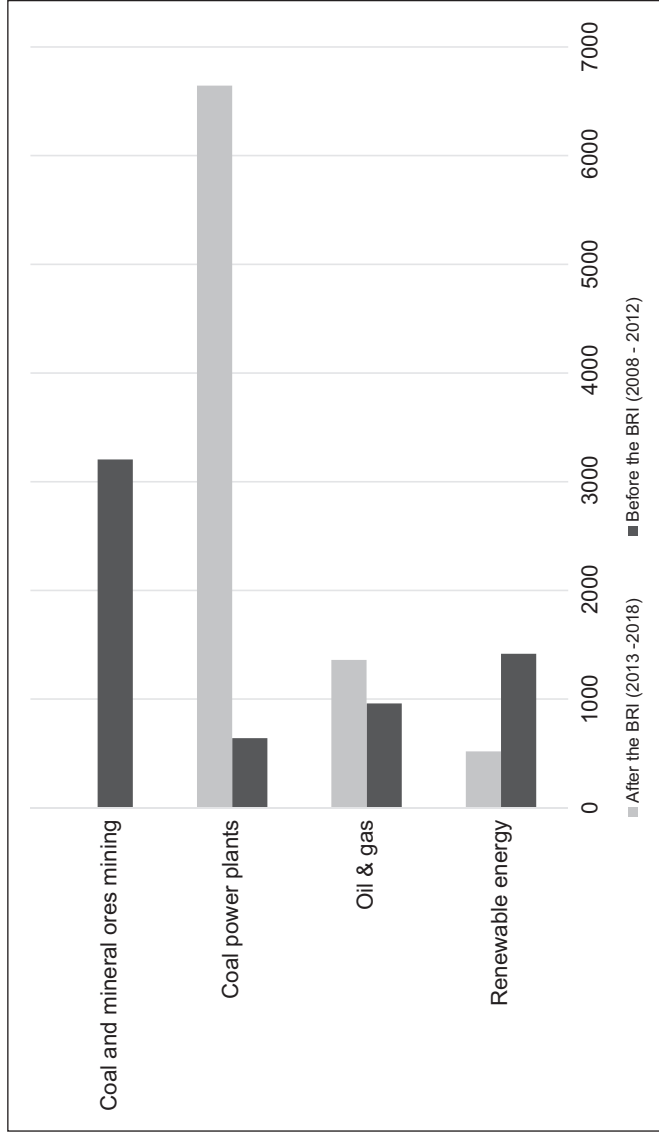
The BRI effectively propelled Chinese state-owned enterprises as well as other large conglomerates to "Go Out", and fourteen new deals to build coal power plants were announced between 2013 and 2015.³¹ These deals will not only cause significant environmental and health impacts, as highlighted by a recent study,³² but also perpetuate a system of corruption and inequality. Recently, a report from a coalition of non-government organizations (NGOs) alleged corruption, ill-financed political campaigns, and conflicts of interest involving high-level politicians in Indonesia, some of whom are directly responsible for negotiating BRI deals on behalf of the country. As an example, Luhut Binsar Panjaitan,

³⁰ J McBeth, "Why Does Indonesia Cling to Its Plagued Chinese Infrastructure Projects?", *This Week in Asia*, 2016, <https://www.scmp.com/week-asia/geopolitics/article/2053395/why-does-indonesia-cling-to-its-plagued-chinese-infrastructure>.

³¹ Angela Tritto, "China's Maritime Silk Road: From Perceptions to Realities in Indonesia's Coal Power Sector", *IEMS Policy Briefs*, 2019.

³² Shannon N. Koplitz et al., "Burden of Disease from Rising Coal-Fired Power Plant Emissions in Southeast Asia", *Environmental Science and Technology*, 2017, <https://doi.org/10.1021/acs.est.6b03731>.

Figure 2. Chinese Investments in Indonesia's Energy Sector (US\$ million)



the Coordinating Minister for Maritime Affairs, leads the number one office responsible for negotiating with the Chinese National Development and Reform Commission (NDRC) as part of the BRI.³³ Recently, media reports alleged bribery (McGibbon 2019), in addition to irregularities in the commissioning of foreign-invested coal power plants, including the Chinese-financed plants of Riau 1 and Celukan Bawan.³⁴

In Malaysia, the previous government of Najib Razak negotiated three large deals in the energy sector with large Chinese state-owned enterprises, which were linked to the much-publicized 1MDB graft scandal. The construction cost of two oil pipelines connecting Sarawak to Peninsular Malaysia were allegedly inflated to cover outstanding interests associated with the 1MDB.³⁵ The fund also sold its US\$2.3 billion holdings in Edra Global Energy Bhd to General Nuclear Power Corporation (CGN) through a deal that is now the subject of dispute.

After the acquisition, Edra-CGN invested almost US\$100 million into the first solar farm in Malaysia, which will bring 50MW of power to the state of Kedah.³⁶ What is more important is that the large scandal

³³ Jatam, Greenpeace, ICW, and Auriga, “Coalruption: Shedding Light on Political Corruption in Indonesia’s Coal Mining Sector”, *Greenpeace* 2018, <https://auriga.or.id/wp-content/uploads/2018/11/COALRUPTION-EN-1.pdf>.

³⁴ Nithin Coca, “Corruption and Coal Dug up in Indonesia”, *China Dialogue*, 2019, <https://www.chinadialogue.net/article/show/single/en/11375-Corruption-and-coal-dug-up-in-Indonesia>; Basten Gokkon, “Indonesia Electricity Chief Charged with Bribery over Coal-Fired Power Plant”, *Mongabay*, 2019, <https://news.mongabay.com/2019/04/indonesia-electricity-chief-charged-with-bribery-over-coal-fired-power-plant/>.

³⁵ Tom Wright and Bradley Hope, “WSJ Investigation: China Offered to Bail Out Troubled Malaysian Fund in Return for Deals”, *Wall Street Journal*, 2019, <https://www.wsj.com/articles/how-china-flexes-its-political-muscle-to-expand-power-overseas-11546890449>; Rozanna Latiff and Joseph Sipalan, “Malaysia Had Plan to Use Chinese Money to Bail out 1MDB, Court Hears”, *Reuters*, 2019, <https://www.reuters.com/article/us-malaysia-politics-najib/malaysia-had-plan-to-use-chinese-money-to-bail-out-1mdb-court-hears-idUSKCN1VP1DS>.

³⁶ As of 2018, the capacity of Malaysia generated through solar power was 438MW out of a total capacity of 36,000MW.

resulting from the 1MDB case led to a historical change of government in 2018 and, under the leadership of Mahathir Mohamad, Malaysia is now implementing tough screenings of foreign investments to meet environmental criteria, and it is providing incentives for investments in renewable energy and environmental technologies. In 2018, the Malaysian government announced its decision to increase renewable energy generation to 20 per cent by 2025. As a result, new energy investments by Chinese private companies into solar energy have materialized, spurring new activities in Malaysia's photovoltaic industry, one that has huge potential but that has been dormant until recently.

ADDRESSING IMPACTS BY APPLYING BEST ENVIRONMENTAL PRACTICES

The BRI's ability to provide sustainable growth and opportunities for Southeast Asia depends on decisions rendered by two sides: the Chinese government and financiers as well as agencies and governments where BRI investments and co-financing take place. Assessing the environmental impact of BRI-related projects is critical to ensuring that growth is sustainable. For this purpose, a host of fundamental recommendations that draw on good environmental practice in the scientific literature for infrastructure development have been made for the BRI beyond the commonly advocated Environmental and Social Impact assessments.³⁷

Firstly, early assessment of impacts at the feasibility or scoping stage will ensure that only projects which have factored in environmental risks

³⁷ Hughes, "Understanding and Minimizing Environmental Impacts of the Belt and Road Initiative"; Ascensão et al., "Environmental Challenges for the Belt and Road Initiative"; Foggin, "Environmental Conservation in the Tibetan Plateau Region: Lessons for China's Belt & Road Initiative in the Mountains of Central Asia"; Lechner, Chan, and Campos-Arceiz, "Biodiversity Conservation Should Be a Core Value of China's Belt and Road Initiative"; Teo et al., "Environmental Impacts of Infrastructure Development under the Belt and Road Initiative"; Alex M. Lechner, Hoong Chen Teo, and Ahimsa Campos-Arceiz, "The Risk to Biodiversity along China's Belt and Road Initiative (BRI)", *University of Nottingham Asia Research Institute*, June 2019.

will proceed to the planning stages. Once a large project is at the planning stage, millions of dollars would already have been sunk in the assessment of the project's feasibility³⁸ and thus environmental and social concerns often become a hindrance for developers.

The vast spatial scale, especially of transport infrastructure development, and the geographic concentration of BRI development within the proposed routes require that both strategic environmental and cumulative impact assessments be performed in order to characterise effects beyond the boundaries of a project footprint. Cumulative impacts result from one or more past, present or future human activities as well as interaction with natural processes to create impacts which are greater than the sum of its parts. The cumulative impacts of the planned infrastructure need to be understood at various scales, including those at global level, such as greenhouse gas emissions. The relationships and connectivity between the different types of infrastructure under the BRI and between the socio-political drivers of associated countries will determine the nature of cumulative impacts.³⁹

The application of the mitigation hierarchy is required to ensure that there is no impact on the environment. The mitigation hierarchy includes four broad sequential actions which should guide project proponents to limit negative environmental impacts as best as they can: (1) avoid; (2) minimize; (3) remediate; and (4) offset. Furthermore, in cases where biodiversity is under threat by a project, proponents should aspire for overall net gain.⁴⁰

³⁸ Alex M. Lechner et al., "Challenges of Integrated Modelling in Mining Regions to Address Social, Environmental and Economic Impacts", *Environmental Modelling & Software* 93 (2017): 268–81, <https://doi.org/10.1016/j.envsoft.2017.03.020>.

³⁹ Teo et al., "Environmental Impacts of Infrastructure Development under the Belt and Road Initiative".

⁴⁰ Martine Maron et al., "Faustian Bargains? Restoration Realities in the Context of Biodiversity Offset Policies", *Biological Conservation* 155 (2012): 141–48, <https://doi.org/10.1016/j.biocon.2012.06.003>; Richard K. Morgan, "Environmental Impact Assessment: The State of the Art", *Impact Assessment and Project Appraisal* 30, issue 1 (2012): 5–14, <https://doi.org/10.1080/14615517.2012.661557>.

Finally, at a broader level, what is required is a move away from old models of growth, which depend on energy-intensive and polluting infrastructure. For example, investment in coal power plants will lock in negative environmental impacts for decades to come.

Underpinning environmental, social and strategic environmental impact assessments is stakeholder engagement, which should include fair, prior and informed consent (FPIC) for any project from relevant stakeholders. But as some authors have argued, such an approach may be in contrast to the socialist governing ideology and traditional Chinese culture.⁴¹

Whether the environmental practices described above will be applied in Southeast Asia, especially in poorer and resource-stricken nations with weak institutions and poor governance is unclear. Though from our case studies it is clear that such approaches are needed. Furthermore, how these recommendations can be applied at the scale of the BRI will need further thought.

However, it is promising that high-level Chinese policy documents such as the “Belt and Road Ecological and Environmental Cooperation Plan 2017” and the “Guidance on Promoting Green Belt and Road 2017” do promote sustainability. While the Asia Infrastructure Investment Bank’s “Environmental and Social Framework” document which provides safeguards for investment includes many of the key elements recommended above, they only fund a small proportion of current BRI investments.⁴² A well-governed BRI, for example, could ameliorate existing negative impacts of the harvest of wild species, where illicit demand inside China is considered a driver in the trade. In contrast, a

⁴¹ Bo Sin Tang, Siu Wai Wong, and Milton Chi Hong Lau, “Social Impact Assessment and Public Participation in China: A Case Study of Land Requisition in Guangzhou”, *Environmental Impact Assessment Review* 28, no. 1 (2008): 57–72, <https://doi.org/10.1016/j.eiar.2007.03.004>.

⁴² Alex He, “The Belt and Road Initiative: Motivations, Financing, Expansion and Challenges of Xi’s Ever-expanding Strategy”, CIGI Paper no. 225, 11 September 2019.

poorly governed BRI could exacerbate these risks. These point to the potential for the BRI to contribute positively to the protection, and even enhancement of the environment.

Some BRI countries have strengthened local regulations and directed BRI investments to areas of need, spelling out conditions for BRI plans (i.e., Indonesia, Malaysia and Myanmar). Additionally, countries that have seen Chinese investment interests have also improved their investment environment (such as through licensing processes), which has renewed foreign interests in investing in these countries as well.

Unfortunately, it is unclear who will enforce the aforementioned standards. Some governments, such as those in Indonesia and Myanmar are restructuring institutions that allow for large investment ventures. While their frameworks are laying the groundwork for industries such as mining in Indonesia and hydropower in Myanmar, prioritizing transparency and sustainability will be crucial for their prolonged success.⁴³ Despite the development of some environmental policies for the BRI, large gaps remain, overlooking the impact of private companies and differences in power between China and BRI host countries.⁴⁴

In China, environmental regulations and enforcement are improving, though the question is whether Chinese companies and Chinese-funded projects operating outside China adhere to these improved standards. This is a legitimate concern since some Chinese firms purportedly misrepresent the feasibility or sustainability of infrastructure projects in countries where weak institutions and bad governance prevail.⁴⁵ Furthermore, there is evidence that China is passing on its domestic

⁴³ Angela Tritto, “The Belt and Road Initiative as a Catalyst for Institutional Development: Evidence from Indonesia, Malaysia, and Myanmar”, *IEMS Policy Brief* no. 30 (2019): 1–4.

⁴⁴ Teo et al., “Environmental Impacts of Infrastructure Development under the Belt and Road Initiative”.

⁴⁵ Mark Akpaninyie, “China’s ‘Debt Diplomacy’ Is a Misnomer. Call It ‘Crony Diplomacy’”, *The Diplomat*, 12 March 2019, <https://thediplomat.com/2019/03/chinas-debt-diplomacy-is-a-misnomer-call-it-crony-diplomacy/>.

modes of development to other countries, which mostly focuses on economic development while neglecting environmental damage and the rights of local people to participate in early discussions about the scope of project impacts and benefits. Nonetheless, there are signs of improvement: evidence exists that Chinese companies are increasingly adopting corporate social responsibility and stakeholder engagement into their operating models when working in countries outside China.

Nevertheless, concerns of corruption remain strong. For instance, large BRI projects are often brokered through closed-door negotiations with local elites. In Indonesia, for instance, most deals brokered through the BRI relate to the mining sector, which is controlled by the strongest families in that country. In Malaysia, two pipeline deals brokered through the BRI were connected to the 1MDB scandal, while In Myanmar, civil society groups have voiced concerns over closed-door meetings and BRI projects whose details have not been disclosed to the public.

THE FUTURE

The United States, India, Australia and some European governments are either openly sceptical or actively hostile towards the BRI. Some of these countries are either launching alternative development strategies and funds under their own leadership, or have formed pacts with others to counter the BRI.

At the individual country level, we see such initiatives as the EU Strategy on Connecting Europe and Asia, the US International Development Finance Corporation, and the Australian Infrastructure Financing Facility for the Pacific. The United States, Australia, India, and Japan have, since 2017, formalized consultations on a common Indo-Pacific Strategy to challenge the BRI, while Thailand at the Ayeyarwady-Chao Phraya-Mekong Economic Cooperation Strategy Summit in June 2018 proposed the creation of a Mekong region infrastructure development fund. Moreover, in 2019, the United States, Australia and Japan joined forces in a large-scale energy project to counterbalance growing Chinese influence in Papua New Guinea.

Regional groups of countries and individual nations are also seeking more equitable terms of cooperation with China and request “coordination”

of BRI with their own economic objectives. An example is Russia's 2015 request for "mutual adjustment of the BRI and the Eurasian Economic Union". Wealthier countries in Asia such as Indonesia, India, South Korea, Taiwan, Singapore, have recently formulated or updated policies and programmes for regional cooperation and development assistance via the BRI.

Even though governments across the world are rushing to sign up to be part of the BRI, the BRI is conceptually nebulous, difficult to pin down and examples of good environmental and social practices have yet to materialize. There is also still great debate in the media and literature on whether BRI is a debt trap⁴⁶ or a programme that opens up unprecedented opportunities.⁴⁷ As Western nations including Italy, the United Kingdom and New Zealand participate in the BRI, there are questions around how these nations will manage BRI projects and influence the social and environmental sustainability of BRI projects given their commitment to tougher environmental and social standards around infrastructure development. As China's priorities turn towards sustainable technology and reducing corruption within their own country, it is hoped that the BRI may promote these values abroad and contribute substantially to a more global uptake of international sustainability standards.

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⁴⁶ Dylan Gerstel, "It's a (Debt) Trap! Managing China-IMF Cooperation Across the Belt and Road", *New Perspectives in Foreign Policy*, Issue 16 (2018): 5.

⁴⁷ Frank Holmes, "China's Belt and Road Initiative Opens Up Unprecedented Opportunities", *Forbes*, 2018, <https://www.forbes.com/sites/greatspeculations/2018/09/04/chinas-belt-and-road-initiative-opens-up-unprecedented-opportunities/#5d1baf793e9a>.

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ISBN 978-981-4881-42-5



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