Understanding the Environmental Implications of Belt and Road Initiative Projects: A Focus on Southeast Asia

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Abstracts

The Belt and Road Initiative (BRI) is a massive infrastructure development initiative across participating states to enhance trade and connectivity. Even though the initiative aims for economic growth and development, the risk is that large infrastructural projects will have severe environmental and social impacts. Deforestation will result due to new road and rail routes fragmenting forests. Biodiversity will be impacted and threatened species and conservation sites along BRI corridors will risk extinction. Moreover, it is well established that Southeast Asia (SE Asia) is one of the major global biodiversity hotspots suffering rapid deforestation. Hence, SE Asia is an important case study for identifying the impact of BRI projects and determining possible harm reduction measures. In this thesis I evaluate the environmental impact of five projects, assessing the effectiveness of the commitments of China and SE Asian countries to mitigation. The thesis assesses the environmental impact assessment (EIA) processes for the five projects. Biodiversity and several threatened species have been impacted, confirming that mitigation measures by both responsible governments and the developers and a comprehensive EIA is necessary for long-term environmental protection. The thesis concludes that modifications to current BRI projects are necessary if stakeholders in SE Asia are to protect threatened biodiversity and forests.

Contents

Abbreviation

ACB	ASEAN Centre for Biodiversity
ADB	Asian Development Bank
ASEAN	Association of SE Asian Nation
ARF	ASEAN Regional Forum
BRI	Belt and Road Initiative
CAEC	China-ASEAN Environmental Cooperation
CAFTA	China-ASEAN
CBD	Convention on Biological Diversity
CCCC	China Communications Construction Company
CCICED	China Council for International Cooperation on Environment and Development
CCIEE	China Centre for International Economic Exchanges
CCP	Communist Party of China
CEIEC	China National Electronic Import-Export Corporation
CFS	Central Forest Spine
CITIC	China International Trust Investment Corporation
CSR	Corporate Social Responsibility
DoE	Department of Environment
DVD	Digital Versatile Disc
ECRL	East Coast Railway Link
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
IBAT	Integrated Biodiversity Assessment Tool
ICJ	International Court of Justice
IDI	Inclusive Development International
INGO	International Non-Governmental Organisation
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
MoFA	Ministry of Foreign Affairs
MOFCOM	Ministry of Commerce of the People's Republic of China
MRC	Mekong River Commission

MRL	Malaysia Rail Link
MW	MegaWatt
NDRC	National Development and Reform Commission
NEC	National Electricity Company
NGO	Non-Governmental Organisation
NRC	National Research Council
PA	Protected Area
PPA	Purchasing Power Agreement
PT NSHE	PT. North Sumatera Hydro Energy
SE Asia	Southeast Asia
SEZ	Special Economic Zone
SOS	Sumatran Orangutan Society
TEDA	Tianjin Economic-Technological Development Area
UNISDR	United Nations International Strategy for Disaster Reduction.
WALHI	Wahana Lingkungan Hidup Indonesia
WWF	Worldwide Fund
UN	United Nations
UNDP	United Nations Development Programme
USD	United States Dollar
VRN	Vietnamese Rail Network

Declaration

I, Asmita Dudhraj, certify that this research thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text or footnotes.

10 December 2019

Asmita Dudhraj

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Lists of Tables and Figures

1. Introduction

Over the past few decades, international concern over environmental degradation has grown. Environmental degradation, according to United Nations International Strategy for Disaster Reduction, implies

> *the reduction of the capacity of the environment to meet social and ecological objectives and needs." Furthermore: "Degradation of the environment can alter the frequency and intensity of natural hazards and increase the vulnerability of communities. The types of human-induced degradation are varied and include land misuse, soil erosion and loss, desertification, wildland fires, loss of biodiversity, deforestation, mangrove destruction, land, water and air pollution, climate change, sea-level rise and ozone depletion (UNISDR, 2009).*

The environment is considered to be harmed when common resources are exhausted, and biodiversity is under the threat of extinction (NRC 1999). Loss of biodiversity can have a severe impact on the overall balance of the ecosystem, where long term negative effects can destroy the environment.

The world needs development, economic growth and progress to transform people's living standards and generate income for the state to distribute. Developing countries need to alleviate poverty by providing access to necessities such as health care, education, and employment (Crow 2016). Nevertheless, development doesn't always occur for the better, especially its environmental impacts. An essential requirement for this progress involves infrastructural development such as dams, roads, power stations and railways. Here, the main concern is that infrastructure development on a large scale may result in significant environmental risks.

SE Asia incorporates countries facing environmental vulnerability. The rate of habitat loss is highest among the world's tropical regions (Hughes 2017, p. 2). SE Asia is a known a biodiversity hotspot. Numerous endemic species are threatened (Gaworecki 2017), contributing to the extinction of taxa (Cardillo et al. 2006; Brook et al. 2003; Lee and Jetz 2008). Due to deforestation, Asian elephants (WWF, 2018), the orangutan, Sumatran tiger and the Javan rhinoceros are on the verge of extinction (WWF, 2019; Forrester, 2019; Hujibregts 2019). Research estimates that over 40% of animal and plants are on the verge of extinction (Staff Writers, 2016). Increased air pollution due to using fire for clearing forests in Kalimantan is a major problem in Brunei, Singapore, Thailand, Malaysia and Indonesia (Ramakreshnan *et al.*, 2017). Coral reefs and limestone-karst used to make cement for construction are also under

threat of extinction (Gaworecki, 2017). Overall, SE Asian countries struggled to conserve the environment and its biodiversity prior to launch of the BRI in 2013 (Sodhi *et al.*, 2010). The BRI risks compounding challenges preventing major biodiversity losses.

The BRI has the potential to challenge environmental sustainability embodied in goal 15 of the Sustainability Development Goals 2030, which seeks to: "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss" (United Nations, 2015). Infrastructure developments consume raw materials and energy (Zapata & Gambatese, 2005), while water shortages, soil degradation and global warming are by-products of processing and extraction of raw materials. (Bretschger & Smulders, 2006). Hence, the environmental impacts of the BRI have been questioned (Tesse, 2018; Teo et al. 2019; Simpson, 2019). It is crucial to implement Environmental Impact Assessments (EIAs) prior to planning infrastructure development to help reduce forest fragmentation and mitigate loss of biodiversity and conserve ecology. Nonetheless, areas of ecological significance will still be at risk of environmental degradation.

1.1 Project Objectives

This thesis investigates China's attempts to make the BRI green by examining five projects in SE Asia. I assess the projects' impacts on Biodiversity Areas, Protected Areas, Forest Reserves and threats to endangered species. I assess the efficiency, viability and comprehensiveness of the EIAs for the selected projects. This involves analysis of China's effort to 'green' its projects and the host country's responsibility to conserve ecological systems. This thesis answers the following research questions:

- What is the BRI and what does it mean for SE Asia?
- Is the BRI sustainable?
- What is the extent of environmental vulnerability in SE Asia?
- Does the BRI degrade the environment and biodiversity?
- Are EIAs efficient to protect and help mitigate environmental harm?
- What are Chinese initiatives to ensure projects are green and sustainable?
- How has SE Asia responded to the threats?
- What are the opportunities to build a sustainable and green BRI?

2. Literature Review

2.1 The BRI in SE Asia

The BRI was proposed by President Xi Jinping in 2013 (Kuo & Kommenda 2018). It is the Communist Party's grand strategy to enhance physical and digital connectivity through a series of economic corridors linking Asia with Europe and Africa (Jones & Jeng 2010) and better connecting the global economy with China's (CCIEE & UNDP 2016). The corridors are meant to build infrastructure connecting Eurasia with the Indo-Pacific and the Indo- Pacific with Africa (Ruta 2018). The BRI has six economic corridors, as shown in figure 1.

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Figure 1: Six Economic Corridors and Marine route of BRI Source: Geopolitical Intelligence Service (2017)

President Xi Jinping in October 2013 delivered a speech to the Indonesian Parliament, announcing the building of the 21st century Maritime Silk Road. He highlighted under BRI the importance of the Association of SE Asian Nations (ASEAN), playing a crucial part in making BRI a reality (Ping 2013). 'The Vision and Actions on Jointly Building the Silk Road Economic Belt and the 21st Century Maritime Silk Road' was enacted by China in 2015 (NDRC 2015), proposing the China to Indochina Peninsula Economic Corridor to facilitate trade. China is

ASEAN's key trading partner. In 2010, the China-ASEAN Free Trade Area (CAFTA) agreement was launched (Paladini & Cheng 2015). Bilateral trade grew strongly, increasing from US$192b in 2008 to US$515b in 2018 (Asia Regional Integration Center database, Asian Development Bank). An upgraded CAFTA was agreed to in 2015, providing new opportunities. Hence, CAFTA plays a significant role in the BRI's facilitation of regional integration (Das 2018).

Chinese government officials stress that because the BRI is important to SE Asia and vice versa (MOFCOM 2016) SE Asia is a primary focus of Chinese diplomacy. China talks of building 'a closer China-ASEAN Community of Shared Destiny'. (Gong 2019). Looking at the 6 economic corridors, BRI connectivity with SE Asia poses greater potential in in comparison to other regions (The Belt and Road Initiative: Report on Five Connective Index 2016, p. 41). Due to its connection with the Indian Ocean and the South China Sea, SE Asia connects the 'main' maritime routes (Blanchard 2017). Moreover, China's southwestern provinces will benefit from the BRI because of their proximity to mainland SE Asia. For China, ASEAN is strategically an important regional grouping since it maintains many multilateral mechanisms for dialogue with other states; such as the East Asia Summit, ASEAN Plus Three, and the ASEAN Regional Forum (ARF) (Sambaugh 2018a). Scholars argue that China will play a dominant role in shaping the economic prosperity of SE Asia (Vu 2014, Hong 2016).

2.2 Environmental Sustainability and the BRI

Concerns have been expressed about the environmental impacts of the BRI (Gokkon 2018; Hughes 2019; WWF 2017; Ascensão *et al.* 2018) and is seen as a possible obstacle (Chen 2015; Zhang 2017). Acknowledging the problem, China's Ministry of Ecology and Environment published a circular on 'Guidance on Promoting Green Belt and Road' in 2017 and later the 'Plan for Cooperation in Ecological and Environmental Protection for the Belt and Road Initiative' (Cheng *et al.* 2017). Many articles have been produced in the Chinese literature on environmental policy, financing and law regarding the BRI (Rolland 2017). By way of contrast, there is very little research in English regarding the BRI's environmental impacts.

Infrastructural developments as large and extensive as the BRI often have a poor track record when addressing environmental harm (Virapongse *et al.* 2016). Most policy and research on the environmental impacts of building dams or mining projects is limited to specific projects and is along disciplinary lines, even though there is a growing emphasis on adopting an inter-

disciplinary perspective (Virapongse *et al.* 2016; Hamilton 2015; Jakeman *et al.* 2003; Franks *et al.* 2013). There are examples as Chinese economists attempting to classify national environmental indicators and economic variables for the BRI (Li & Zhang 2017; Wang 2018; Liu & Hao 2018), though there are gaps in data collection. Mostly, research into and data collected is of projects in China. The Chinese government was aware of the gaps and sought to establish more data and information collecting and sharing platforms for the BRI (Chen 2015).

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Figure 2: Overall impact on the environment along the BRI corridors
Source: WWF (2017)

The WWF (2017), a non-governmental organisation, reported an overlap between land areas and corridors in SE Asia that are important for biodiversity conservation. Due to massive infrastructure development the overlap also creates greater risk of negative impacts on biodiversity. The WWF identified corridors which overlap with 1739 important bird Areas, or Key Biodiversity Areas (KBAs), Global 200 Ecoregions and 46 biodiversity hotspots (WWF 2017). A report published by Lechner in 2018 identified an excessive amount of biodiversity loss in SE Asia as a result of the BRI in land and marine biodiversity hotspots, and key conservation and wilderness areas (Lechner 2018). We can clearly see the threats to SE Asia in figure 2.

Similarly, research conducted by the World Bank Group indicated that road and railway

developments have direct and indirect impacts, causing habitat loss via illegal activities, fragmentation, pollution, and logging and poaching. Furthermore, the marine environment will be impacted by pollution and increases in sea traffic impacting sea creatures. Poor projects can have long term effect (Losos *et al.* 2019).

Awareness of the potential environmental impacts of the BRI has slowly increased. Ascensão *et al.* (2018) in 'Environmental challenges for the Belt and Road Initiative' insists on thorough social and environmental assessments to help raise the bar in protecting the environment. Similarly, the WWF (2017) reports that sustainable infrastructure investments can protect the environment and increase resilience while helping to generate employment and boost international trade.

2.3 Ecological Vulnerability in SE Asian Countries

SE Asia is a hotspot of biodiversity, and there exists a threat to biodiversity loss in the region. The leading causes of biodiversity loss can be seen due to climate change. Though the exploitive use of natural resources and land use such as mines, dams, and hunting (Slingenberg 2009) are significant, deforestation has the most effect on the loss of biodiversity and the Earth's capacity to regulate the ecosystem (Giam 2017).

High levels of rubber and palm production in SE Asia have resulted in extensive deforestation. Plantations are often located in biodiversity hotspots, impacting the ecosystems essential for dependent communities. According to Forest Watch Indonesia, it has a lost 54% of its initial forest cover. Between 2009 and 2013 alone, more than nine hundred thousand hectares of forest was cleared (Forest Watch Indonesia 2015; Butler 2015).

Due to climate change, ecosystems and organisms are having difficulties adapting and climate change is affecting extinction rates, growing seasons, distributions and reproduction (Lasco and Villamor 2008).

Large numbers of dams are planned for SE Asia (Zarfl *et al.* 2014) that, among other impacts, will reduce the volume of migratory fish by 20%-70% (Ziv *et al.* 2012). Much of SE Asia depends on fishing, generating food for 655 million people. Over-fishing is a problem. Fifty million wading birds are at risk due to loss of habitats (WWF 2014).

SE Asia is a biologically complex region reflecting an intricate biogeography and distribution of biotic patterns in various zones with convoluted divisions. According to Sheldon *et al.*, this requires more research to understand it fully (Sheldon *et al.* 2015). The diverse regions include Wallacea, Sundaland, the Philippines and Indochina (Myers *et al.* 2000). The International Union for Conservation of Nature's (IUCN) country-level data indicates that SE Asia has the world's greatest diversity of several taxa for amphibians, mammals and birds. Moreover, much of the regional taxonomy correlated with various taxa probably is likely substantially more significant than other regions, since only a small percentage of taxa has been defined (Francis *et al.* 2010). This gap in expertise creates challenging situations prioritising the importance of different regions. Between 1997 and 2014 over 2216 taxa were described in SE Asia (see WWF-Greater Mekong 2008, WWF-Greater Mekong 2009, WWF-Greater Mekong 2010, WWF-Greater Mekong 2011, WWF-Greater Mekong 2012, WWF-Greater Mekong 2013, WWF-Greater Mekong 2014). As a result, several species could become extinct before they are described. SE Asia is the world's most biologically threatened region, especially for a specific taxonomic group as mammals (Duckworth *et al.* 2012). This is supported by Schnipper *et al.*, who argue that the SE Asia is a hotspot for threatened biological species (Schnipper *et al.* 2008), where mammals are known to be the most vulnerable. (Duckworth et al. 2012). Nevertheless, identifying threats is a very complex task, but must be done to develop effective and coherent mitigation plans for BRI infrastructure projects. The potential threats are very complex and require further research.

2.4 China's Efforts to 'Green' the BRI

The first official BRI blueprint, *Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road* was published in 2015 (NDRC 2015). The BRI was incorporated into the government's 13th Five-Year Plan (FYP) (2016-20) as a key strategy for "all-round opening up" (NDRC 2016). Another new term featuring in the 13th FYP was construction of "Ecological Civilization", referring to a national strategy for inclusive green development (Zhu 2016). The concept was first proposed in 2007 and incorporated into the Communist Party of China (CCP) Constitution in 2013 as a response to the heightened public concern over China's environmental degradation (Chun 2015; Wang, He & Fan 2014). These two seemingly unrelated strategies, one tackling domestic environmental challenges, the other promoting foreign collaboration, are integrated to shape China's guiding environmental policy framework in the BRI (Hanson, A. and Shijin 2017). The Visions and Actions document touched upon greening BRI projects by mentioning "eco-environment", "environmentally

friendly", and "climate change" several times with a special focus on green infrastructure and ecological conservation in trade. In May 2017, the Ministry of Foreign Affairs, the Ministries of Environmental Protection and, Commerce, and the National Development and Reform Commission jointly issued the *Guidance on Promoting Green Belt and Road Guidance* (2017). The Guidance outlined two main objectives, visioning that in "3-5 years a pragmatic and efficient system of environmental cooperation and exchange" will be built and "a series of eco-environment risk prevention policies and measures" will be formulated (Guidance on Promoting Green Belt and Road 2017, Section II). The 5-10 years goal is to set up a "full-fledged environmental service, support, and guarantee system" (Guidance on Promoting Green Belt and Road 2017, Section II). It is noteworthy that the guidance adopted a 'five connectivity' framework; namely, policy coordination, facilities connectivity, unimpeded trade, financial integration and people-to-people bonds, framework to guide discussion of environmentally friendly principles and resource-efficiency in and policy coordination, facilities connectivity, unimpeded trade, financial integration and people- to-people bonds. In the *Belt and Road Ecological and Environmental Cooperation Plan (Cooperation Plan)* announced by the Ministry of Ecology and Environment, the five areas of connectivity were identified as follows (Ministry of Ecology and Environment, 2017):

- Policy Coordination: Address the Concept of Ecological Civilization in policy coordination.
- Green Trade: Promote Sustainable Production and Consumption
- Facility Connection: Promote International Cooperation on Capacity Development and Eco-friendly Infrastructure Construction
- Financial Integration: Increase Support for Green Financing
- People-to-People Bonds: Carry out Environmental Protection Projects and Activities

Twenty-five key projects are in the *Cooperation Plan* under each connectivity area; however, most of the projects were still in the planning stage in 2017 (Ministry of Ecology and Environment 2017). The *Cooperation Plan* also dedicated its last chapter to safeguards, but only briefly mentioned the coordination mechanism, policy support, financial support, and monitoring and assessment. More guidelines were issued relating to financial institutions', such as the *Green Credit Guidelines* published by the China Banking Regulatory Commission in 2012. These were designed to "encourage banking institutions to adjust credit structure, effectively fend off environmental and social risks" (The China Banking Regulatory

Commission 2012). In 2016, *Guidelines for Establishing the Green Financial System* was jointly published by the Bank of China and six other government agencies, which provided the official definition of green finance, disclosure requirement, and risk mitigation (Wang 2017). In 2017, the Green Finance Committee, an organisation established by the People's Bank of China, which covers many of China's financial assets, issued the *Environmental Risk Management Initiative for China's Overseas Investment* (Chun & Zhe 2017). Though leading banks investing in the BRI, such as the Asian Infrastructure Investment Bank, released environmental and social safeguards (Brombal 2018), the lack of environmental safeguard is one of the most criticised aspects of the BRI (Gokkon 2018; Russel & Berger 2019). Although some guidance on overseas investment was issued by governments, business associations and supervision commissions, no regulatory mechanisms or law enforcement agencies were established to ensure compliance of enterprises operating overseas. A relatively pragmatic measure guiding BRI investment is the credit score system on overseas investment. According to the Measures for Bad Credit Records in the Fields of Foreign Investment Cooperation and Foreign Trade issued in 2013, acts "damaging the local ecological environment, and threatening the local public security" shall be "included as the bad credit records in foreign investment cooperation" (Ministry of Commerce *et al.,* 2013). Unfortunately, no specific measurements or indicators are provided in the document to clarify what constitutes such "acts".

2.5 Conclusion

Most of the research on the BRI and its impacts focus on policy issues, economic and trade benefits, and the BRI as a threat. Very few explore environmental concerns. A study of the ecological impacts in SE Asia is yet to be conducted. This study fills that gap. It assesses SE Asia's biodiversity and where BRI projects overlap, acknowledging data constraints and methodological challenges attempting to integrate the social and natural sciences.

3. Methodology

In the previous chapter, a broad outline of the BRI, the idea of a Green BRI and the environmental vulnerability in SE Asia were outlined. It is now necessary to briefly outline the research design of the thesis, the methodology for gathering data and the major research questions. To reiterate, the aim of this thesis is to explain the concept of environmental sustainability, with a specific focus on how BRI projects affect the biodiversity of SE Asia.

3.1 Research Method and Research Strategy

It is desirable for the researcher to think about how to develop the thesis before beginning research. A research strategy is a "coherent body of decisions concerning the way in which the researcher is going to carry out the research" (Verchuren and Coorewaard (2010, p. 155). Qualitative and case study research approaches were selected. According to Anderson, case studies allow the researcher to examine how and why certain phenomenon occur, investigate contextual realities and explain differences between what was hypothesised and what was discovered (Anderson 1993). A case study approach is adopted, focusing on SE Asia and the environmental impacts of five specific BRI projects. The major sources are primary documents, both official and unofficial, and secondary assessments.

According to Yin (1993), more than two case studies in the same research design allows the researcher to hypothesis that a similar pattern of outcomes will be generated. Hence, replication of results across five cases increases confidence in the reliability of the overall findings (Yin 1993). Nonetheless, generalisation of the findings of the thesis is limited. Some scholars criticise case studies for lacking reliability and rigour because generalisations cannot be made (Johnson, 1994). Despite this, multiple case studies help establish a broader perspective on a series of events or a particular phenomenon. They also clarify events from different perspectives as many sources are used. Since BRI projects from different countries in SE Asia were selected, we gain a better understanding of China's efforts at greening the projects.

This research focuses on developments and measures that are ongoing. Due to time constraints, the collected data does not measure anticipated effects. Thus, quantification of environmental consequences is not possible. The results of the qualitative method adopted for this thesis are a preliminary analysis.

Primarily, Because the main goal of the paper is to have a better understanding of the BRI projects in SE Asia and their consequences for the environment, the research is explorative in nature. According to Creswell (2013), if a thesis explores a problem or issue then qualitative research is appropriate for comprehensive and detailed explanations of a problem or a phenomenon.

This thesis contains five cases studies; Kuala Lumpur-Kota Bahru rail link (ECRL) (Malaysia), Pak Lay dam (Laos), Melaka Gateway (Malaysia), Kyaukphyu deep seaport (Myanmar), and Sumatra Dam (Indonesia).

3.2 Data Collection

Various books, journals, articles, guidelines and rules and regulations were used. The primary data analysed are the laws and guidelines introduced by the Chinese government, and laws establishing international standards such as EIAs for protecting the environment. Data was collected from various sources to establish suitable projects under the BRI for research. Many are complete and many more are in the process of construction. Various road, railway, dam and port projects were identified as suitable for future assessment of their environmental impacts, and similarly for identification of critical biodiversity hotspots. The chosen case studies correlate with protected and key biodiversity areas. The aim is to determine the immediate and possible long-term impacts of the projects on the ecology of these areas, and critically assess China's role in protecting them.

KBAs are identified using a set of criteria in the Global Standard for the Identification of Key Biodiversity Areas (IUCN 2016). These criteria relate to threatened taxa and ecosystems, geographically restricted species and ecosystems, ecological integrity, demographic aggregations, ecological refugia, source populations and sites of high irreplaceability.

3.3 Data Analysis

As mentioned above, a qualitative method is adopted in this thesis. Also, to structure common concepts a tabular analysis approach is used. A tabular overview was created to identify the most important outcomes of the five selected projects. The information in the table established a basis for analysis, allowing a more in-depth summary. See Figure 4.

Environmental impact assessments are the way to evaluate and analyse the standards these projects follow and the consequences the environment face and will arise in the future. Parameswaran argues that there is a distinct lack of empirical data reporting the BRI's concrete

achievements and evidence that China is addressing critical such as environmental issues (Parameswaran 2019). Due to difficulty to finding EPAs for many selected projects the thesis relies on peer-reviewed studies, media reports and research papers.

Analysis of the case studies was undertaken using the framework established in table 1 below. The five case studies have been highlighted in Chapter four of the thesis which shows various impacts and effects they might have on the environment. Using these dimensions in chapter 5, China's and national efforts are evaluated establishing mitigation measures to be adopted by China and the host governments following the framework outlined in table 1.

Projects	Resulting Effect		Policy/Governance
	Pollution		Project's EIA report should be more transparent for the SE Asian Countries.
Five BRI selected projects from the SE Asian region	Human settlement/ livelihood	Human settlement Displacement	Greening B&R requires cooperation in green, efficient and environmental protection technologies and industrial processes to provide effective plans for environmental governance.
		Spread of the disease through water/air	
	Ecology	Marine life	Promoting green financial integration, encouraging investment in clean technologies. Engage with policymakers in BRI countries to create frameworks which will encourage sustainable B&R infrastructure investments and set up an open access database for sustainable BRI
		Deforestation	
		Animal Life	

Table 1: BRI Projects Possible Impact and Mitigation Measures

3.4 Identifying Projects in SE Asia

Enhancing ASEAN's economic growth requires better infrastructure, increased investment, connectivity, trade and competitiveness It is estimated by the ASEAN Development Bank (ADB) that US$2.8tr in total infrastructure funding will be needed between 2016 and 2030 (ADB 2017) to facilitate trade growth. Total merchandise trade grew from US$4tr in 2010 to US$5tr in 2017 (ASEANstats database). To facilitate further growth in a number of BRI projects have been approved.

Some are complete, others are in progress, and some are in the planning phase. Since 2013, China has invested billions of US dollars. Below is the total investment made by China in BRI projects in SE Asia and will require substantial investment to protect the environment.

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Figure 3: Chinese Investment in BRI Projects in SE Asian Countries
Source: Oxford Economics

According to the Oxford Economics, the 10 largest projects in SE Asia are:

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Figure 4: Top 10 largest BRI projects in SE Asia
Source: Oxford Economics

This thesis identified five projects in Malaysia, Indonesia, Laos, and Myanmar covering both land and sea routes. The selection method of the projects is illustrated in Figure 5:

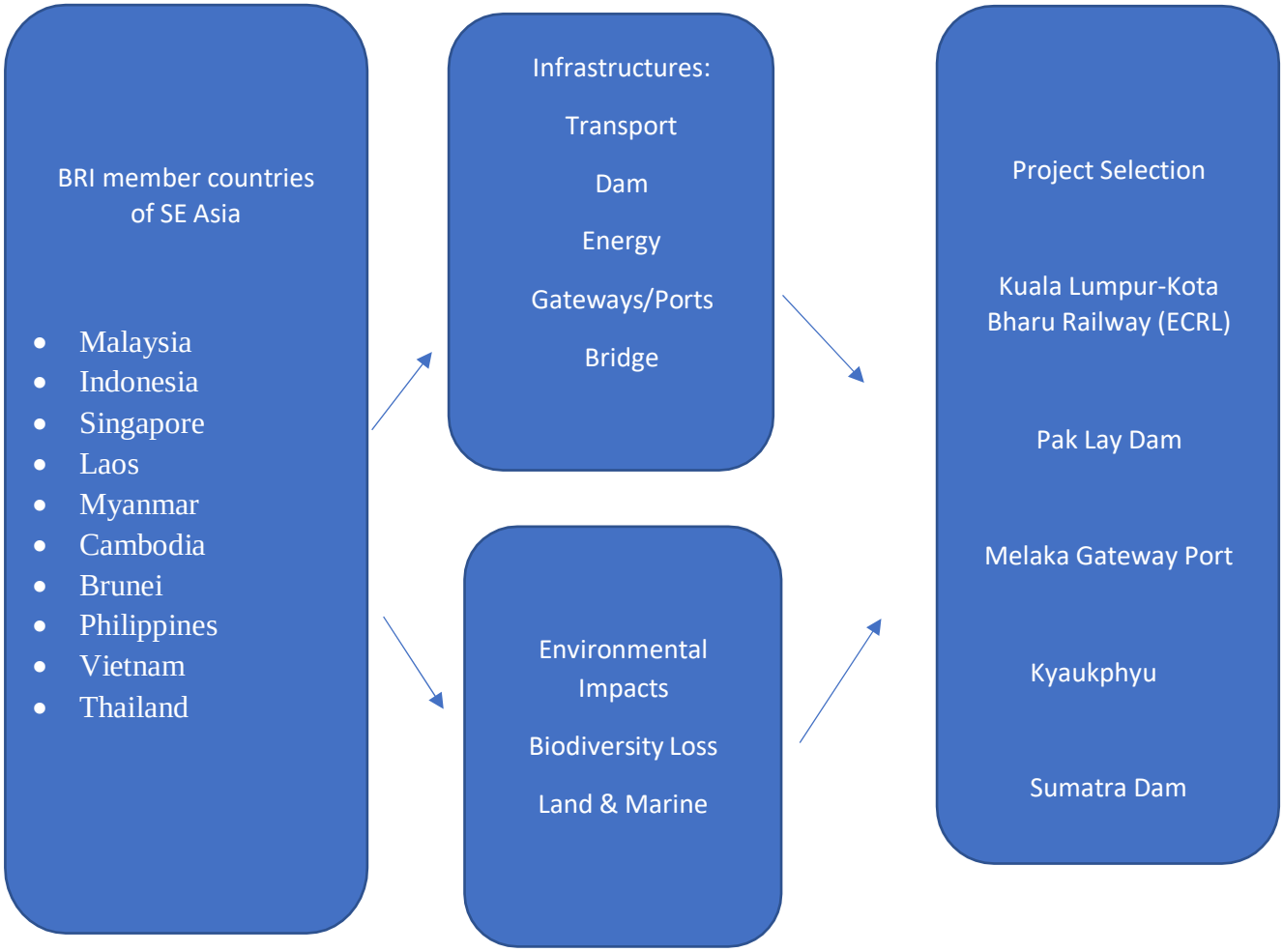

Figure 5: BRI projects selection foundation for this thesis

Hence, the project selected from the allocated countries and the allocated criteria are:

Project	Year	Cost USD	Sector	Country
Kuala Lumpur – Kota Bahru Rail (Construction)	2017	14,300,000,000	Transport	Malaysia
Pak Lay Dam	2022	2,134, 000,000	Dam	Lao PDR
Melaka Gateway	2014	1,960,000,000	Port	Malaysia
Kyaukphyu SEZ (Under Construction)	Unclear	7,300,000,000	Transport	Myanmar
Batang Toru Dam	2015	1,600,000,000	Dam	Indonesia

Table 2: Five Selected Projects for BRI from SE Asian Countries

4. Examining the Environmental Impact of the Projects

The BRI consists largely of infrastructure projects including energy, transport, industrial parks, mining, urban development, Special Economic Zones (SEZ) and ports. As stated earlier, with development, the environment will be impacted one way or the other. Hence, we will look at the possible impact five projects will have on the environment, the effectiveness of the EIAs, impacts on the human settlements near the sites and if the projects are affecting animal species living in certain KBAs.

4.1 Kuala Lumpur – Kota Bahru Project/East Coast Railway Link (ECRL) Project (Malaysia)

The ECRL is supposed to connect Port Klang on the Straits of Malacca to Kota Bharu in the northeast of the Malaysian Peninsula, connecting the Pahang, Terengganu and Kelantan Economic Region of the East Coast, to the west coast and central regions of Peninsula Malaysia. This is shown in Figure 6 (Aziz, Kassim & Masirin 2018). Construction began in Kuantan in August 2017 but was suspended in 2018 due to financial reasons (Murugiah 2018). It resumed in 2019 after renegotiations with China and is scheduled to be completed in December 2026. It is the biggest economic project between China and Malaysia (Anis, Kaos Jr & Carvalho 2019). A realignment of the route resulted in a significant reduction in construction costs from 65.5b to 44b ringgits (Shukry 2019). The route will have approximately 40 tunnels from Kota Bharu to Port Kang, including a 2.8 km Kuantan Tunnel, a 1.1 km Paka Tunnel and an 871m Dungun Tunnel (Railway- Technology, n.d.). On 20 June 2017 the Department of Environment (DoE) endorsed a completed environmental impact assessment (EIA) for the ECRL (Malaysian digest). But, according to Dr. Henry Chan, Conservation Director, in News Strait Times said as of the end of 2019 “recent reports in the media indicate that the Department of Environment has not received an EIA for the new alignment.” (NST 2019).

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Figure 6: Former ECRL alignment & Forest loss from 2000-2015 in Malaysia
Source: Map for Environment (2015)

The ECRL will navigate through Malaysia's major rivers and make its way across 357 ha of protected forests where endangered tigers, elephants and Malayan tapir are found (Chan, 2019). Malaysia's Central Forest Spine (CFS) will face increased pressure. CFS is a Malaysian conservation initiative created to link eight major forests and secure the habitat of various protected species (Lourdes 2018). Previously, the railway was to start from the north-eastern part of Kuala Lumpur and make its way through an eighteen-kilometre tunnel that would be constructed underneath Titiwangsa Range forest (Azizi & Lai 2019). The line was then to cross the landscape of forested hills and cross the Pahang River and many regions of secondary jungle, where the habitats of a number of important endangered wildlife are found (WWF 2019). Nevertheless, these environmental threats were avoided by the new ECLR agreement which shortened the route by 44 km. It no longer passes through the Titiwangsa range bordering Pahang and Selangor. Similarly, prior to the new agreement the project's EIA warned that 25 protected forests were to be crossed, requiring approximately two thousand hectares of logging with the potential for "severe fragmenting of habitats" (MRL 2017). Hence, the contractors agreed to construct an additional 19 tunnels and 70 km of elevated tracks, which will reduce the threat of flooding (MRL 2017).

In Bukit Bauk between the South China Sea and Taman Negara there is a protected region of forest, which is part of the CFS. Malaysia's Department of Wildlife has declared Bukit Bauk as one of the 'critical areas' and the ECRL's original EIA declared it to be a "biodiversity

hotspot". Modification to the route was suggested where a 1 km tunnel will be constructed beneath Bukit Bauk's protected forest (MRL 2017). Nevertheless, the project still requires the clearance of more than 150 hectares of forest (Mayberry 2017).

The railway route through Setiu located further north, consists of 23,000 hectares of wetland, threatening the largest breeding habitat of the painted terrapin. It will also affect Tasik Chini which is a large freshwater lake. The ECRL will pass through the Kemasul forest in Pahang where there are ongoing issues between people and wildlife, especially elephants, because the forest is being cleared for agricultural land (MRL, 2017). The Malayan Tapir, is an endangered species, will also be impacted.

Construction of the railway, regardless of the route, will impact the ecology in various ways wherever it is constructed, including creating barriers for animals to cross well-established paths. Ecosystems may be affected since many trees will be logged and vegetation will be cleared to create a path for the line. The ECRL's EIA suggests building only one-line even where it is possible to build a corridor for two tracks (MRL 2017).

To reduce the ECRL's environmental impacts the route was reconsidered. Indeed, the agreement to increase the number tunnels to prevent forest fragmentation will provide greater protection for wildlife habitat. According to Mongabay, a peer-reviewed non-profit news provider on conservation and environmental science, there were notes attached to the project's EIA alluding to meetings with government agencies including the Department of Wildlife and National Parks Peninsular of Malaysia (*Perhilitan*) regarding threats to wildlife that may arise (Mayberry 2017). According to WWF-Malaysia (2017), continued monitoring of environmental impacts is required, and also mechanisms to prevent poaching and hunting should also be included in the comprehensive wildlife management plan that will be in force from the start of construction to after the railway is operational.

4.2 Pak Lay Dam – Laos

The Pak Lay hydropower project is planned to be constructed on the Mekong River in Pak Lay District, Lao PDR. It is being constructed downstream of the Xayaburi hydropower station and is planned to run continuously, producing 770 MWs of electricity for domestic supply only. The cost is projected to be US$2.134b with an estimated start date in 2022. Completion is planned for 2029. According to the Government's official notification document, the developer

is Power China Resources Ltd (MRC 2018).

Following the announcement, several international organisations expressed concern about the environmental and social impacts of the project (J&C Group 2018). First, the dam will further compound the effects of existing dams on the Mekong (International Rivers 2018). A February 2018 study conducted by the MRC stated that the dams "pose a serious threat to the ecological health and economic vitality of the region". Impacts include a 30-40% reduction in fisheries by 2040 and a 97% reduction in sediment deposits reaching the Delta (MRC 2017). The project will also affect more than 22,000 people directly and indirectly, according to the Mekong River Commission (MRC n.d.). Officials quoted by Radio Free Asia said that at least 1,000 families from 20-some villages will be forced to relocate (Gerin 2018). According to International Rivers, the dam will affect communities in Thailand, since it will be located around 100 kms from the border (International Rivers 2018).

The EIA for the Pak Lay dam was copied largely from the Pak Beng dam EIA. The only alterations made were the name of the site and project location (Rujivanarom 2018). It can be concluded that a field survey was not conducted seriously, if at all. Due to this recklessness, it is likely that the project will have negative environmental outcomes, triggering losses to the food security and ecosystems of inhabitants residing in the Lower Mekong region. A comparison between the two EIAs show that the flow rate analysis, the public consultation, which was done in 2011, and the tables on the dam's status were duplicated. We can see these duplications on pages 40, 135 and 219-222, and table 18 of the EIA. It also uses the same 2005 sustainable development policy issued by the Laotian government, though a new hydropower policy and accompanying guidelines were published in 2015 and 2016 respectively. Hydrology and fisheries data provided in EIA was not updated. (TBESIA & CIA 2017; See https://draftable.com/compare/EGrLQTTQdMsD).

Even though it is feared that the dam will cause severe environmental harm and affect the lives of people along the lower Mekong river, the Lao PDR Government intends proceeding with the dam (Rujivanarom 2018), despite the Xe Pian Xe Namnoy dam collapse in 2018, which had a disastrous effect on property and people in downstream south-eastern Laos. Concerns were expressed for the safety of dams in the upper Mekong mainstream (IDI & International Rivers 2019). This resulted in the authorities undertaking urgent meetings, agreeing to suspend dam construction and inspect existing dams. That the Lao PDR government still intends to

proceed with the consultation process for the Pak Lay dam suggests strongly that it is going against its own decision of 17 August 2018 to suspend further dam construction (MRC 2018a).

The Vietnam River Network (VRN) acknowledges that the Lao PDR Government did not take the harm that will be caused to the environment and people who live downstream of the dam seriously. According to the VRN, the Pak Lay dam consultation process is a mere formality and is still likely to be built, starting in 2022, as planned (VRN 2018).

4.3 Melaka gateway Port – Malaysia

The Melaka Gateway project is a part of the BRI, where Chinese companies KAJD and Power China have invested in the project (Hutchinson 2019). The Gateway covers 1504 hectares, including natural and three artificial. The goal is to create the largest private marina in SE Asia. It consists of four components, Pulau Melaka East 1-4, where apassenger terminal, commercial city, liquid bulk terminal and a multipurpose terminal will be built (Hutchinson 2019). The project is of concern due to its impact on a historic Portuguese settlement. Though construction was suspended briefly in 2017 it soon restarted (Augustin 2017).

China has a long history of coastal reclamation and now is taking its expertise abroad, to construct this sizeable infrastructural project (Mohammed & Razman 2018). The creation of artificial islands must go through a land reclamation process which has a hazardous effect on marine life. Marine sediment displacement can occur through which will have an impact on the marine ecosystem and will risk water pollution endangering marine life (Maren *et al.* 2016). Loke Ming Chou (2018), a researcher on Marine science at the National University of Singapore, argues that sand dredging for reclamation will have great environmental impacts, risking extinction of the critically endangered hawksbill turtle *(Eretmochelys imbricate)*. Pulau Upeh Island, within the 10-km radius of the Melaka gateway, is a major nesting site for the turtles, which have been impacted immensely due to land reclamation. Turtle landings on the island decreased from 111 in 2011 to only 13 in 2016 (Koh 2016). WWF-Malaysia is on 'turtle watch' not only on Upeh Island but all along the Melaka coast (WWF-Malaysia, n.d.). Turtle conservation projects operated by the WWF-Malaysia are ongoing.

Malaysian law identifies 19 categories of activity which require an environmental impact assessment involving land reclamation over 50 hectares. It requires both state and district level authorisation to construct infrastructure (DoE 2007, pp. 26-32). In 1998, though Macro's EIA

was finished relating to land reclamation in Melaka, it cannot be found online, and any assessments made before 20014 have been removed from the Malaysian DoE's central library (Mayberry 2016). The Melaka Gateway project is large scale with great potential impact on nearby communities and marine ecology. The Malaysian WWF and affected communities have called for a more detailed EIA of projects since 2009 (WWF-Malaysia 2009).

Lau Min Min, senior scientist officer of WWF-Malaysia, stated that existing infrastructure in Melaka had a substantial harmful impact on marine life because mitigation is difficult. Due to urbanization, the coastal areas had become unsuitable for nesting turtles. Lau argues strongly that: "Protection of the remaining prime nesting beaches is urgent and vital." (WWF-Malaysia 2016). According to Amri (2014), the Malaysian Government is implementing robust measures to protect marine biodiversity and habitats impacted by development. Mitigation and restoration, he argues, are moving forward to overcome unavoidable damage.

The Kristang people and the Portuguese settlement in Melaka fear that the project will be disastrous for the community (Laub 2018). Historically, the community relied on fisheries, but after land reclamation, the catch decreased drastically, with longer working longer hours to maintain daily incomes (Low 2016). There was a serious violation of the 1998 EIA which required that reclamation should be a minimum of 750 meters from the settlement. A new channel is only 200 metres and the Melaka gateway will make it worse (Mahorm & Samah 2018).

Even though the project was halted for a while, it started again in September 2019 creating three artificial islands (Yatim 2019) and is targeted to be completed by 2025. Malaysia wants the development so that it will provide jobs and attract tourists, and China predicts that it will be a key link of the BRI (Kata Malaysia 2019).

4.4 Kyaukphyu SEZ- Myanmar

Following political reforms initiated by the military junta after 50 years of dictatorship, Myanmar began to develop rapidly. Establishing Special Economic Zones (SEZ) is one of the main government strategies to boost the economy (Ministry of Commerce of the Republic of the Union of Myanmar, n.d.). An SEZ was established in 2013 in Kyaukphyu, located in the eastern part of Myanmar. It is a coastal centre of Rakhine state. The SEZ includes three projects; an industrial park, deep-sea port and a residential area (Aung, 2015). In 2018, a framework agreement was signed for the first stage of the Kyaukphyu SEZ, namely, the

Kyaukphyu Deep-sea Port (Chau & Thant 2018).

Kyaukphyu is a key part of the BRI in SE Asia. (Lo 2017). It is predicted that the project will create greater trade connectivity with India and further West, and China will gain direct access to the Indian Ocean. The deep-sea port will be utilised for oil storage and transport to China via the controversial Shwe oil-gas pipeline, which opened in 2014. CITIC, a China state-owned group, will develop the Kyaukphyu SEZ along with China Merchants Holdings, China Harbour Engineering Company Ltd, Yunnan Construction Engineering Group and TEDA Investment Holding. (Lee & Myint 2017).

The SEZ plan has been criticised widely by local and international non-government organisations, including the Kyaukphyu Rural Development Association (KRDA) and International Commission of Jurists (ICJ) for a lack of transparency and public consultation (Bain 2017; Narinjara 2017). Compensation for acquisition of farmland for construction of reservoirs in 2014 was paid by relevant project proponents. Development land acquisition procedures for the SEZ, however, were initiated by the Ministry of Home Affair in February 2016 (Bain, 2017). The compensation process was much later than the acquisition of land, fuelling discontent.

The entire Kyaukphyu Township and Ramree Island fall in Myanmar's major coastal mangrove eco-region (Myanmar Environment Institute, 2017). Some species observed on Ramree Island are *Dipterocarpu ssp.A, Dipterocarpu ssp.B , Hopea odorata, Xylia xylocarpa* and *Tectona grandis,* which are included on Myanmar's protected species list (IUCN 2007). In addition, *Dipterocarpus turbinatus* is classed as "critically endangered", while *Dipterocarpus alatus* is classed as "endangered" specie in the 2007 IUCN Red List of Threatened Species (IUCN 2007).

Several potential and existing environmental and social effects considered significant are expected to occur. In 2017, final report of the Annan Commission (Advisory Commission on Rakhine State) led by Dr Kofi Annan, former General-Secretary of the UN (1997-2006), made it a requirement of the Strategic Environmental Assessment (SEA) that: "The Government of Myanmar should carry out a comprehensive assessment (or a so-called strategic environment assessment) for Kyaukpyu and its environs to explore how the Special Economic Zone (SEZ) may affect local communities and map different sectors in the state may benefit [or possibly suffer] from the SEZ" (Advisory Commission on Rakhine State 2017). State-owned CITIC, in

charge of the proposed US$1.3b Kyaukphyu port, initiated the environmental and social impact assessment (ESIA) and preliminary geological survey in July 2019 (Htet 2019).

As per the Myanmar Environment Institute, there is great concern about the biodiversity of the Kyaukphyu region (Myanmar Environment Institute 2017). Consequently, a number of environmental impacts are predicted by the Myanmar Environment Institute, as follows:

- Direct impact on terrestrial flora and fauna through site clearance and road construction.
- The disappearance of remnant primary forest habitat and losses of fauna species ofconservation importance such as *Dipterocarpus spp., Hopea odorata, Tectona grandis* and *Xylia xylocarpa* species
- The disappearance of second woodland and loss of *Dipterocarpus spp., Hopea odorata* and *Tectono Grandis* are of recognized conservation interest
- Direct loss of habitat for the reptile species *Indotestudo elongata* (Elongated Tortoise). It is listed as an endangered in the 2007 IUCN Red List of Threatened Species
- Loss of marine turtle nesting and hatching areas due to human encroachment and coastal development
- Disruption of the mangrove community of tidal rivers in sheltered and reserved areas
- Disruption to the natural landscape and sandy beach due to potential aggregate and sand mining for construction works
- Pressure on mangrove communities (Myanmar Environment Institute 2017)

4.5 Batang Toru/Sumatra Dam Project- Indonesia

The Batang Toru power plant is being constructed on the Batang Toru river in Indonesia. The developer of the dam is PT North Sumatra Hydro Energy (PT NSHE). It is proposed to be finished by 2022 with a capacity of 510 MWs. In 2015, the pre-construction stage began after a Purchasing Power Agreement (PPA) was initialised with the National Electricity Company (NEC) (Dharma Hydro n.d.). Indonesia's plan is to build power plants with 35, 000 MW capacity, including the Batang Toru plant, through the National Strategic Program of Indonesia (Prakoso 2019). It is designed to also reduce carbon emissions by 1.6-2.2 metric tons to comply with the Paris Agreement (Prakoso 2019).

The dam's environmental impacts are of concern because it will drastically change downstream

watercourses and have a massive impact on local communities. Downstream communities face flood and drought cycles a couple times a year, but after the dam is built the cycle will be a daily issue. Access to fisheries, clean water rice paddies and transport will be severely disrupted in the region. The controversial aspects (Karokaro 2017) of the dam's construction are reflected in land issues because compensation for affected landholders was not made fairly to the indigenous people (SOS & PanEco Foundation 2018, p.14).

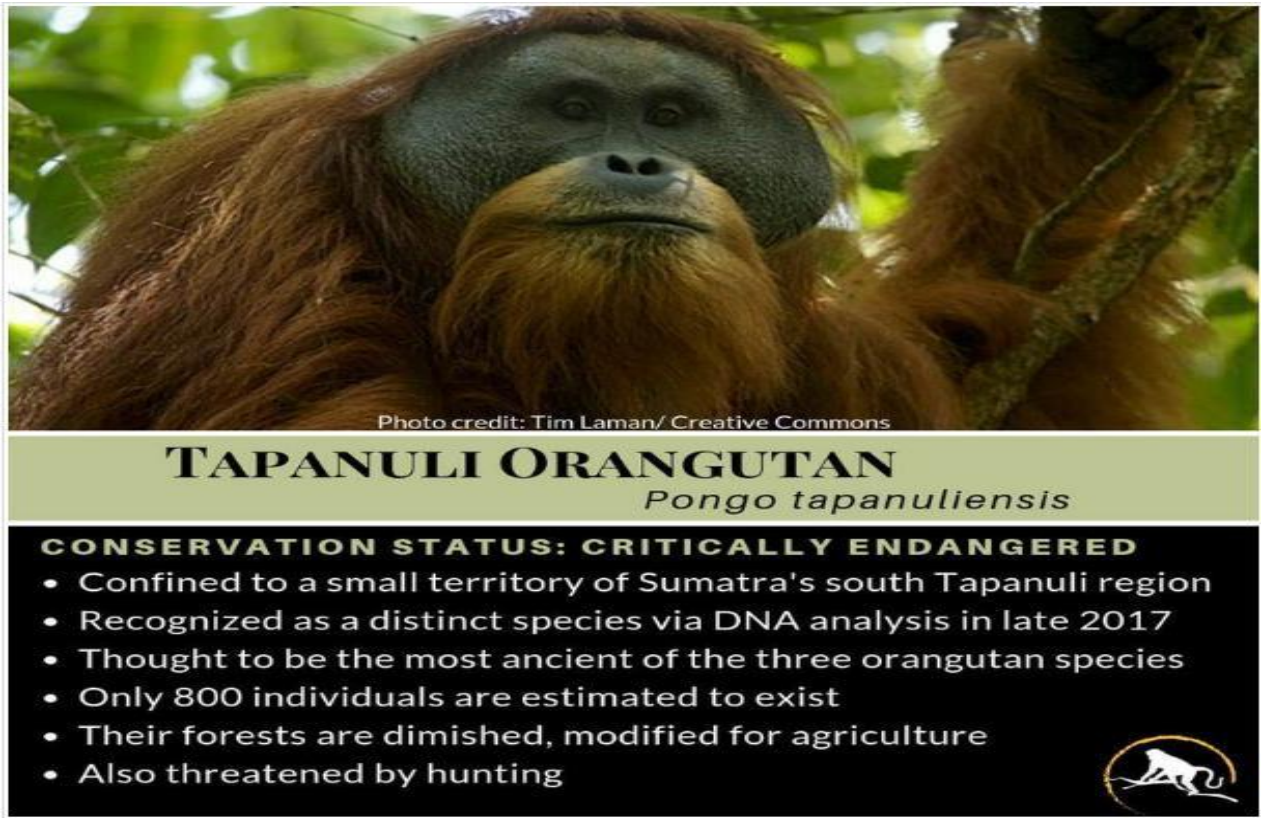

Figure 7: Endangered Tapanuli Orangutan

Source: Primate Conservancy

Many environmental controversies plague the dam's construction. Its location is of high conservation value. In 2017, the scientific community declared the existence of a previously unknown endangered species, the 'Tapanuli Orangutan', shown in Figure 7 (Gill, 2017; Nowal *et al.,* 2017). It is considered to be as rare as the Sumatran species (Groves & Norahyo 2017). The Tapanuli Orangutan numbers 800 and is found only in the area of the proposed dam, risking its extinction (Abrams 2017; IUCN 2019). Fragmentation of the forest caused by the dam will make reproduction problematic (Kafi & Gunawan 2018). This species prefers to live in isolation and requires a large area of forest to survive. Nonetheless, the Batang Toru dam's EIA does not mention this species and does not address the dam's possible impact on forest wildlife.

(AFP-JIJI 2018). The EIA also fails to provide any measures to solve the problems.

There are other endangered species, such as the agile gibbon, pangolins and sun bears, as well as the ecology of the river and fisheries. Since the dam will divide the river, it will prevent fish and any other species from migrating. Fisheries is the downstream communities' primary source of food and species such as '*jurung*' will be impacted severely (SOS & PanEco Foundation, 2018 p. 4). The Sunda pangolin and Sumatran tiger are two endangered species inhabiting Batang Toru. The dam creates a genuinely grave situation and has received significant international attention (IUCN 2019, BBC News 2019). Many environmental organisations and 25 scientists sent letters to the Indonesian Government requesting suspension of the dam's construction (Jong 2018). In 2018 WALHI, an Indonesian environmental group, filed a lawsuit against the project's EIA, claiming it does not acknowledge that the dam will be constructed in an earthquake prone region, but the case was rejected by the court (Kahfi and Gunawan 2018). The local community is also against the project because it is being displaced from areas considered sacred (Karokaro 2017). The Sumatra Orangutan Society (SOS) stresses that the area where the dam will be constructed is vital for the community of orangutans living there (SOS 2017, p 1).

Worryingly, the silencing of an anti-Batang Toru dam protestor is suspected. An environmental lawyer, Golfried Siregar, had a motorcycle accident and died on 6 October 2019. Suspicious were raised that it was not an accident. He was working on the Batang Toru dam project (Paddock 2019).

Some investors financing the first phase of the project, including the World Bank's International Finance Corporation and the Asian Development Bank (ADB), withdrew due to the international attention generated by environmental concerns (SOS 2017, p.3). Yet, the Bank of China continued to fund the project which will be constructed by Sinohydro. Its projected cost is US$1.6b (The Jakarta Post 2019). Many media reported that forest clearing for was in progress in 2018 and that the project will be completed by 2022 (Leahy 2018).

4.6 Tabular Overview of the Five Case Studies and the Environmental Conflict They Pose:

A tabular summary shows the status, outcomes, and environmental questions arising from the five BRI projects selected for this thesis. We can see that only one, the ECRL, has a satisfactory outcome, while the others are proceeding without providing effective protection of the environment.

Projects	Company names/state enterprises	Relevant Government Sectors	Groups mobilizing against	Environmental impacts	Project Status	Conflict Outcome	Development Alternatives	Do you consider this environmental justice success?
ECRL railway - Malaysia	Malaysia Rail Link Sdn Bhd and CCCC Joint Venture	Malaysian Government, Malaysian Ministry of Finance	Local ejos, NGOs, INGOs	Deforestation, Biodiversity loss, wildlife, loss of landscape, wildlife displacement, soil erosion	revived in 2017, started construction	The project was downsized, 19 additional tunnels were introduced	Long term surveying of wildlife conditions after the launch of ECRL. Wildlife Management Plan to be made comprehensively and enforced during the construction phase.	Yes, 90% of environmental harm has been mitigated in the renegotiation process.
Pak Lay Dam - Laos	PowerChina Resources, China National	Lao Government, Mekong River	Local ejos, NGOs, INGOs	Visible: Floods (mudflow, coastal, river,) Reduced hydrological	Planned	Conflict of existing regulations	NGOs proposed to halt all the hydropower projects and to find alternative renewable	No, since the projects need to be suspended. Has not followed

	Electronic Import- Export Corporation (CEIEC)	Commissio n		connectivity / ecological Potential: wildlife impacted, Biodiversity loss, crop damage, Deforestation, Decrease in water quality /water contamination, Groundwater exhaustion,			solutions, such as solar and wind	through environmental standards.
Melaka gateway port - Malaysia						No specific legal policies and institution to govern areas of coastal reclamation. The project continues	NGOs proposed to halt all the hydropower projects and to find alternative renewable solutions, such as solar and wind	No, comprehensive EIA must be conducted to evaluate and asses the full scope and impacts of the project on the marine environment and the communities nearby. The assessment must include both

								stakeholders and the public to assess the outcome of the project. New EIA must be conducted to avoid future environmental impacts.
Kyaukphyu SEZ - Myanmar	CITIC Group (Chinese Group)	Government of Myanmar & Ministry of Commerce	Internati onal ejos, Local ejos, social moveme nts, fisher people	Biodiversity loss Impact on flora and fauna Hawkbills turtle endangered	Planned (decision to go ahead, eg EIA undertakin g)	The project was downsized	A moratorium on SEZ and to halt land acquisition process has been recommended by ICJ.	No, since the construction is still ongoing even though it has been downsized. Hawksbill turtle cannot be saved if any construction goes on the Kyaukphyu SEZ.
Sumatra Dam Project – Indonesia	Sinohydro Corporation	North Sumatera Govenrment	Indigeno us group or	Risk of extinction of Tapanuli Orangutan,	Planned (decision to go	Murders, Deaths, Assassinations	Suspend the construction of the dam	No, still conservation of the wildlife has been ignored wanting to

	Limited (Sinohydro)	, Indonesian government	tradition al communi tes, Internati onal ejos, Local ejos, social moveme nts, local scientists /professi onals	Tigers, sun bears, are also affected. Local community access to be water will be impacted and fisheries limited.	ahead, eg EIA undertakin g)	have occurred to silence people. A human right defender was murdered 6 October 2019, who was actively protesting against Batang Toru dam.	to ensure protection for Tapauli Orangutan.	proceed with the project.

Table 3: Tabular Summary of the Environmental Conflict of the Five Selected Projects

We can see clearly from Table 3 that the projects contribute to environmental degradation, posing risks to biodiversity, deforestation, marine life and critically endangered animals. Many international and local groups are mobilising against the severe dangers that projects pose, either to mitigate the risks or halt the projects altogether. Some alternative measures have been presented by concerned agencies impacts, but only Malaysia was able to renegotiate the ECRL route with the Chinese government, reducing environmental concerns by 90%. The Pak Lay dam, Melaka Gateway, Kyaukphyu SEZ and Batang Toru dam still pose grave risks to the environment and local communities. It is crucial that ecological risks are mitigated by policies and enforcement by both China and host Governments.

5. Discussion

5.1 Has China Kept Its Promise to and Ecological Development and Green BRI Projects in SE Asia?

When large-scale foreign investments are made in developing economies, the concern is always that issues of environmental degradation and forced displacement of communities will arise. Chung (2014) argues that polluting industries in countries with less strict environmental regulations are more likely to be invested in. Due to the need for infrastructure and industrialisation, developing economies seek to attract large scale projects. Corruption also plays a significant role in environmental degradation (Leitao 2016). A report on *deforestation in Indonesia* by the Environmental Investigation Agency and Telapak, argues that: "Forests are being destroyed because Indonesia is one of the most corrupt countries in the world" (Environmental Investigation Agency 2003). There are many controversial issues arising from how the BRI is financed, in addition to corruption, including debt unsustainability, which gives rise to community opposition. The international community has thus criticised China's approach to BRI projects (Russel & Berger 2019).

In order to demonstrate its commitment to greening the BRI in SE Asia, China is using the China-ASEAN Environmental Cooperation Forum, an organization founded in 2007, to mitigate concerns about environmental degradation. *Guidance on Promoting Green Belt and Road* (See chapter 2, pg. 8) promised to prioritise the environment and build green infrastructure:

> *We will boost green infrastructure and prioritize environment quality. We will formulate environmental protection standards and codes for infrastructure construction, increase environment protection service and support for major infrastructure construction projects along the route, popularize energy conservation and environmental protection standards and practice in such sectors as green transport, green building and clean energy, advance environmental protection in areas like water, atmosphere, soil and biodiversity, promote environmental infrastructure construction and improve green and low-carbon construction and operation.* (Ministry of Ecology and Environment 2017)

A Chinese researcher at Human Rights Watch, Yaqiu Wang, argues that "Beijing claims it is committed to working with other countries to foster environment-friendly and sound

development, but the practice so far has raised some serious concerns" (Human Rights Watch 2019)." Looking at the five evaluated projects we can see that China demonstrated some initiative in dealing with environmental concerns, namely the ECRL as seen from Table 3. China agreed to renegotiate terms after the election of a new government in 2018. The ECRL's original route crosses through or is close to 25 forest reserves, where tapir, elephants, barking deer, tigers and sun bears inhabit (MRL 2017). Even though some areas will be affected by the renegotiated project, to reduce the impact on forest and biodiversity 45 tunnels, viaducts and 27 crossings will be built along the new alignment (Anis 2018). We can also see from Table 3, how renegotiation has led to the ECRL to be the only project from the cases studies with satisfactory environmental credentials. To relocate directly impacted species, the China Communications Construction Company (CCCC) created RM10m fund (Free Malaysia Today 2018), an excellent step towards green financing. Even though it might ultimately be inadequate, the fund sets a good example for also prioritising the protection of environment. According to a comment by Wan Junaidi, former Minister of Natural Resources and Environment, in the *News Straits Times:* "What CCCC had done to protect the environment should be a benchmark for other developers to be more sensitive on how their projects would impact flora and fauna" (Marzuki 2018). There are also examples beyond the selected projects studied in this thesis which indicate some effort promoting a green BRI, such as the Forest City which is to be built in Malaysia (Forest City Malaysia 2019; Ganjie 2019).

In March 2018 the state-owned Bank of China announced that it would reassess its funding for the Batang Toru Dam project hydropower project in North Sumatra (Jong 2019), because of negative impacts on the threatened Tapanuli orangutan (Ward 2019). The Bank of China sent an email to Walhi, the Indonesian non-governmental Environmental Organisation advocating for conservation of environment, promising to investigate concerns, but the bank is yet to inform the Walhi of its findings (Edward 2019). According to Professor Laurence on Mongabay.com, who researches the Tapanuli Orangutan: "The response by the Bank of China is merely a vacuous promise to follow 'green principles' in its lending practices," and the "words are hollow. Hidden between the greenwashed lines, however, are more pithy realities (Jong 2019)." He argued that by continuing to invest in the project the Bank of China showed no interest in environmental risks or community concerns (Jong 2019). Hence, even though the Bank of China reviewed the project, few seem to have faith in it.

In the Kyaukphyu SEZ project, according to an OXFAM discussion paper on responsible

investment in Myanmar, the Chinese developer, CITIC, was visible and active in nearby communities. It pushed optimistic visions of the project through brochures and DVDs and told the local community that it will attain training and jobs (OXFAM 2017). For around 50 villages the CITIC provided microfinance loans through a corporate social responsibility (CSR) project. It planned to build a vocational training school, including training for financially weak families (OXFAM 2017). According to *The Strait Times*, the company promised to construct an 'environment-friendly, green and beautiful' deep seaport and industrial park; to carry out a comprehensive environmental assessment prior to construction; and to continuously monitor environmental impacts after operation (Yongan 2018). They attach these through public welfare and CSR initiatives (OXFAM 2017).

An unnamed representative of Powerchina Resources Ltd, the company in charge of developing Pak Lay Dam, argued that the company concluded that assessments done were in accordance with technical standards (Reaksmay & Boyle 2018). Yet, it had not shown any prior interest in protecting the environment of the Mekong River, though it acted quickly to help when disaster happened at the site of the Pak Beng Dam where the Xe Pian Xe Namnoy hydro project collapsed, as discussed in chapter 4 pg. 19 (Powerchina 2018). Nevertheless, showing initiative after the worst is less helpful than initiating a strong process to avoid any future disasters and environmental harm during the planning phase. Similarly, it is evident from discussion of previous chapter 4, that no action was taken against Pak Lay dam's EIA, which was copied from Pak Beng dam. This renders China's interest in protecting the site's environment doubtful.

The 2016-20 China-ASEAN Cooperation Plan for Biodiversity and Ecological Conservation was released by the China ASEAN Environmental Cooperation Centre (CAEC) (CAEC n.d.).The Plan's goal is to form a partnership between ASEAN and China to create green cities, with the aim of creating a path for Chinese companies and other stakeholders implementing the BRI to be transparent and fair toward local stakeholders, especially when projects affect local communities directly (CAEC n.d). This joint initiative, by combined the BRI's greening principles will play, it is hoped, a critical role in environmental protection. According to Peng Bin, director of (CAEC), "the ASEAN countries are important cooperation partners for the Belt and Road Initiative. Ecological and environmental conservation is one of the important aspects of cooperation under the Belt and Road Initiative" (Bin 2016).

In principle, the host country's regulatory framework is critical. China's Government has

established policies and guidelines for enterprises to invest responsibly in overseas projects, including the Guidance on Environmental Protection in Foreign Investment and Cooperation (MOFCOM 2013), Administrative Measures for Approval and Record-filing of Overseas Investment (NDRC 2014), and the Notice of the CBRC on Issuing the Green Credit Guidelines (The China Banking Regulatory Commission 2012). In Myanmar, there are a number of controversial projects such as the Letpadaung copper-miner and Myitsone dam (Aung *et al.* 2018), in addition to the Kyaukphyu SEZ. It is essential that Chinese enterprises engage with local communities over environmental concerns to retain or regain people's trust. As seen in the case studies in Chapter Four China failed to remedy the situations of people affected by Batang Toru Dam where communities living downstream will be severely affected, and also the Melaka Gateway and the Kristang community faces land reclamation consequences.

China has developed robust regulations related to domestic environmental protection (Khan & Chang 2018; Cao *et al.* 2019). There is a growing collection of guidelines for foreign outbound investment by Chinese firms, but they still lack essential details concerning implementation, monitoring, and enforcement (The EU-China Environmental Governance Programme 2014). The guidelines, though mostly voluntary, in principle represent a commitment to social and environmental mitigation mechanisms that mesh with the evolving global model of "good international industry practices (GIIP)". The International Finance Corporation (IFC) defines GIIP as

> *the exercise of professional skill, diligence, prudence and foresight that would be reasonably expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally. The circumstances that skilled and experienced professionals may find when evaluating the range of pollution prevention and control techniques available to a project may include, but are not limited to, varying levels of environmental degradation and environmental assimilative capacity as well as varying levels of financial and technical feasibility* (IFC 2007).

A potentially encouraging trend is that a few large Chinese companies are beginning to voluntarily adopt more stringent environmental standards (Nyíri and Tan 2017, pg. 181). China has moved to improve its domestic environment, but many international organisations and scholars suggests that the same needs to be done in BRI projects (HSBC Jade 2018; Jun & Zadek 2019; Nakano 2019). International expectations of China safeguarding the environment

with large BRI projects are high. Manish Bapana, Executive Vice President of World Resource Institute, has said "In the long run, the world expects this coalition to become an international platform of sharing related progress and practice of the green BRI construction, as well as help produce green demonstration projects for further scaling up," (*Xinhua*, 2019). It is also the responsibility of states signing up to the BRI to compel China and its financing platforms to comply with domestic and international environmental standards. We saw this in the case of Malaysia's renegotiation of the details of the ECRL project to provide greater environmental protection. Yet, as seen from Table 3, Pak Lay dam, Melaka gateway, Kyaukphyu SEZ and Batang Toru dam, will likely result in environmental degradation.

5.2 National Efforts and EIA

As seen in the EIA reports discussed in Chapter 4, the ECRL project provides a comprehensive EIA, declaring key biodiversity areas and the project's impact on the route's ecology. It provided with detailed route assessment of deforestation. The Pak Lay dam project's EIA provide a detailed impact assessment of the river, marine life and the community dependant on fisheries, but it is 90% copied from the Pak Beng dam EIA. Melaka Gateway requires a detailed EIA, whereas Kyaukphyu SEZ had an EIA conducted in 1998 which is not made public, promoting calls for a new EIA by the Annan Commission including public participation. Lastly, Batang Toru Dam's EIA does not mention the threatened Tapanuli Orangutan species let alone mitigation measures. The Handbook of Environmental Impact Assessment says that:

> *The EIA process is intended to improve environmental protection. It informs the decision-making processes by which public bodies, referred to as 'competent authorities', determine whether certain projects should go ahead. It provides these bodies with a written statement about the project's effects on the environment that are likely to be significant (the environmental statement or 'ES'), together with the comments of the public and statutory environmental organisations* (*Natural Heritage Management, 2013).*

Hence, it is essential for Government authorities and investors to strictly follow the EIA process. In developing economies, EIA principles are the same, but implementation usually falls short. The lack of rigorous study of a project's effects, mitigation possibilities, alternatives and participation of public is where developing countries lag (Briffett 1999). Weak implementation of an EIA remains a challenge (Mondiale 2006).

The main issue for many BRI projects in SE Asia is the absence of proper EIAs. Many avoid

mentioning potential biodiversity losses, as with the Tapanuli Orangutan in North Sumatra, which was discussed in Chapter 4. Local community participation in the EIA process is lacking and in some cases the EIA is not made public. As we saw, the Kristang people were not consulted about the Melaka Gateway project, while the 1998 EIA of Kyaukphyu SEZ is not public. Similary, a statement from the save the Mekong reads “It is clear that there has not been meaningful public participation in the preparation of the Pak Lay assessment. For example, the Public Involvement section is almost an exact copy of the Pak Beng report, with only the name of the dam was changed,” It continues: “The authors also neglected to change the name of the company, so the Pak Lay report mentions Datang, which is actually the developer of Pak Beng.” Many of the projects are on listed key biodiversity areas, which makes it even more important for governments to conduct comprehensive EIAs which identify effective mitigation measures to minimise short- and long-term impacts.

As noted previously the clear breach of EIA procedure for the Pak Lay dam was an unprofessional move by the developers and the Lao PDR government. The fear among critics is that it will not only severely affect the river’s ecosystem, but also communities living near the dam. Channarong Wongla of Rak Chiang Khan Conservation Group argues in a press release of International Rivers that "I'm really concerned about the project’s potential impacts on Mekong River ecology, especially on Kaeng Kud Ku rapids, a well-known tourist attraction that boosts the local economy in Chiang Khan district,” (International Rivers 2018). Further: “We are affected every year by fluctuating water flows from Chinese dams upstream, and if the Pak Lay Dam is built, it will create huge impacts on the livelihoods of local people living along the Mekong River in northeastern Thailand” (International Rivers 2018). Any mitigation measure applied to the Pak Beng dam might not work for the Pak Lay dam, *prima facie* recklessly risking the dam’s environment sustainability. It demonstrates that the Lao PDR Government is not taking the matter seriously because it is determined to continue with the project.

Similarly, as mentioned previously, the existence of Orangutans was not mentioned in the EIA for the Batang Toru Dam. PT North Sumatra Hydro Energy denied that the project threatens protected animals (Smith, 2018). Nonetheless, possible cases of killing critics of the Batang Toru dam in Indonesia is a serious issue (Paddock 2019).

It is essential that both environmental and social impact assessments are published and for the

public to participate in the process. The Guidance on Promoting Green Belt and Road states that "strengthening eco-environment protection will help improve mutual understanding and support among governments, enterprises and people of countries along the 'Belt and Road' route." Arguably, this principle is not being adhered to in at least some of the case studies.

The grant made by CCCC, as discussed above, was provided to the *Perhilitan* monitoring the ECRL's impact on biodiversity. According to Dr Wan Junaidi Tunaku Jaafar, former Minister of Natural Resources and Environment in the New Strait Times:

> *We will work with all quarters especially the ECRL owner, Malaysia Rail Link Sdn Bhd (MRL) to ensure the rail line will have minimal impact on the wildlife such as elephants, tigers and tapirs. Even Perhilitan officers, environment experts and ECRL project team had gone to the ground to keep tab of things* (Marzuki 2018).

He also acknowledged that the original project was having a considerable impact on Malaysia's forest reserves, but that with the new ECRL agreement destruction was reduced by 90% (Sivanandam 2018). On the surface, Malaysia showed a deeper interest in environmental protection for the ECRL. Strong push back was exerted to make the developers come to its terms with strict environmental conditions.

As we saw in Chapter 4, it was only in 2019 that a new EIA was undertaken for the Melaka Gateway. Unfortunately, it is not available publicly. Thus, the Government of Malaysia should devote more attention to the project's overall impact and develop mechanisms to protect the marine environment. Though a conservation project for the Hawksbill turtle was initiated by WWF-Malaysia. It does not involve the Melaka Gateway contributing to the ongoing protection of marine species. Similarly, in the case of Kyaukphyu SEZ, an overview of probable adverse environmental and social concerns was made basically with the purpose of encouraging their early integration in the planning process (Advisory Commission on Rakhine State 2017). Recognising the adverse impacts of the SEZ, the Advisory Commission of Rakhine State suggested preparing a comprehensive environmental and social impact assessment, which began in 2019 (Htut 2019).

SE Asian governments are the targets of many protests regarding environmental degradation caused by the BRI, as we have seen. The pressure is on to set basic foundations for maintaining biodiversity and the ecological sustainability of foreign funded projects. Malaysia is an example of voicing concern, halting projects and renegotiating terms and conditions to both reduce

environmental degradation. Neither China nor some SE Asian countries show the same commitment to protect the environment. First, it is primarily the state's responsibility to establish and enforce strict environmental regulations. Secondly, China must enforce its environmental policies and promote green financing of the BRI in SE Asia.

5.3 How can China and SE Asia Mitigate the BRI's Environmental Degradation?

According to the China Council for International Cooperation on Environment and Development, promoting the BRI's green development requires the establishment of an integrated decision-making mechanism for environmental protection and development (CCICED 2018; Kirchherr 2018). Green development and ecological protection need to be integrated in line with principles of international cooperation for environmental protection of to directly help countries along the BRI to realise related SDGs (Yin 2019).

Even though China has developed green principles for BRI, host countries' regulations plays a crucial role in their implementation. The BRI stresses project inter-connectivity. It is required to not only follow Chinese laws and policies but also those of the host countries, though critivs dismiss China's stress on green development as simply a way to gain international and local support rather than generate sustainable outcomes (Min & Montenero 2019; Saha 2019).

If China is entirely dependent on local policies and regulations, environmental outcomes are going to be unsatisfactory because minimum standards will be applied. For example, a case involving China's involvement in Latin - America show that if foreign investors face stringent international standards, but local government enforcement is weak then performance will suffer (Ray *et al*. 2017). Environmental protection will only be robust when investor standards converge with the host government's rigorous enforcement methods. China has more ability to access environmental assessment tools and deploy experts to implement specific standards to fulfil the promise of greening the BRI. Local governments are more knowledgeable of the local environment and their communities. Their input is essential to ensure appropriate standards are met while maintaining positive relations with foreign investors.

Principles and guidelines will not make the BRI green. Projects will suffer due to the inadequate capacity of local governments, lacunas in enforcement and greater interest in short term gain over long-term environmental consequences. A demonstrated ability to address environmental issues in pursuance of green development is in China's interests. Xi Jing Ping in his speech

opening of the initial Belt and Road Forum stated that:

> *We should pursue the new vision of green development and a way of life and work that is green, low-carbon, circular and sustainable. Efforts should be made to strengthen cooperation in ecological and environmental protection and build a sound ecosystem so as to realize the goals set by the 2030 Agenda for Sustainable Development* (Ping, 2017).

Though it is impractical to avoid all regions with biodiversity risks, data for prioritising key ecological regions is often inadequate (Hughes 2017). A case by case approach requiring comprehensive and effective EIAs before project planning is completed is essential according to international standards required by the World Bank, Asian Development Bank and also the Asian Infrastructure Investment Bank (World Bank 2016; ADB 2009; AIIB 2016). This means establishing monitoring mechanisms for evaluating protection measures and their affects while a project is being constructed and after completion. Deforestation is a major cause of biodiversity loss, for example. It must be minimised, if not prevented. China's Ecological Civilization principles assert that biodiversity has to be a crucial part of preparation for every project, and is not an "optional extra if the economic and social costs are low enough" (Jin 2008). It is particularly crucial in SE Asia, which is a global biodiversity hotspot, where deforestation and fragmentation have increased. Chinese investors and local governments should compensate deforestation with afforestation, which is the process of planting trees, or sowing seeds, in a barren land devoid of trees to establish a forest (Naumann *et al.* 2011).

5.4 What are the Opportunities for Conservation of Biodiversity?

Table 3 in Chapter 4 clearly summarises the impacts the projects on biodiversity. It illustrates the mitigation measures for the case studies, showing that they are lacking. Both China and the host countries require alternatives to conserve SE Asian biodiversity. There are specific institutions for researching and taking initiatives to protect biodiversity. In SE Asia there is the ASEAN Centre for Biodiversity (ACB), which encourages the financial sector to invest in projects promoting biodiversity through the CSR (CBD 2020; Aseanbiodiversity.org 2020). The BRI provides an opportunity to re-examine multilateral agreements, where the Convention on Biological Diversity (CBD) & ACB support the Aichi target to protect biodiversity and are harmonised with the national regulations of both recipient and foreign investor countries (CBD 2013). The Aichi targets were adopted by the CBD, Twenty targets are outlined to address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; reducing the direct pressures on biodiversity and promoting sustainable use;

improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity; enhancing the benefits to all from biodiversity and ecosystem services; and enhancing implementation through participatory planning, knowledge management and capacity building (CBD 2013). There are currently few mechanisms for mediating global BRI investments and assessing how they contribute to national biodiversity policy (Su & Ang 2014) and assessing biodiversity loss where 'tele-coupling' is a growing phenomenon. Telcoupling "refers to how connections between nature and human beings are growing ever tighter in a more globalised world—for good and ill" (Walsh 2011). Though EIAs have been conducted for projects, it is argued that many prove to be moot or are ignored. Both local government and investors should mandate strict EIA processes with alternative solutions and mitigation plans (Hughes 2018).

According to Ali et al. (2018):

> *In order to conserve natural resources, the Chinese government has initiated different measures including Circular Economy (CE). Under the current CE policy, the Chinese government aims to improve the generation of goods and services provided by ecosystems (termed ecosystem services), enhance coordination among levels of government to reconcile conservation with development, and promote eco-compensation mechanisms* Further, he argues that *aligning these objectives with other sustainability policies for resource conservation in China, in particular biodiversity offsets, would help address the currently unaccounted impacts on natural habitats and their associated biodiversity and ecosystem services.*

Generating plans such as integrating CEs with sustainability policies counteracting environmental risks and protecting ecosystem possible if there is the will to do so. Such initiatives could be a template for SE Asia. If the Government provides strict restrictions on access to and use of sensitive areas, stakeholders are more likely to avoid funding projects planned for such areas. Effective and clear offsetting laws to mitigate deforestation for all BRI projects will have an immense effect on reducing biodiversity loss. Hence, it is important that host countries enforce strict laws, and for China to mandate its environmental guidelines and policies through binding and enforceable bilateral agreements.

5.5 Conclusion

Even though developing infrastructure is a basis for achieving economic and social development, it can have a drastic impact on the environment. Roads fragment forests and

endanger the habitat of living organisms; dams harm marine ecosystem: and key biodiversity and protected areas where the existence of endangered species are threatened. It is evident from the 5 case studies that environmental harms are not always considered during the planning phase or even after the construction has begun.

SE Asia is the region most threatened with biodiversity loss. The BRI overlaps with many regional KBAs and PAs. The ECRL in Malaysia intersects 25 protected and conserved forests, and Butik Bauk is a known 'critical hotspot'; Pak Lay Dam threatens the existence of fish species and fisheries and affects downstream communities; Melaka Gateway is a threat to the endangered Hawksbill turtle and other marine species which are listed as endangered by the IUCN; Kyaukphyu SEZ not only impacts the life of the Kristang people living nearby but also threatens marine biodiversity and loss of fauna species; and the Batang Toru dam project completely neglects threatened species.

All the projects generated conflict with affected communities, NGO, INGOs and civil society. Chinese proponents and local governments often lacked the will ensure projects are environmentally sustainable in line with the vision of a green BRI.
The projects discussed in this thesis illustrate the following:

- Lack of effective EIAs.
- Large scale infrastructural development has the potential to damage the environment severely, even when there are attempts at mitigation. When poorly managed, it results in serious ecological harm
- It is important that China commit to green funding, providing incentives for environmental protection and mitigation measures
- China's stringent rules and regulations should be rigorously enforced by the host country
- Local environmental expertise and the awareness of affected communities are the basis for conducting effective EIAs.
- Transparency and accountability should be the key characteristics of the BRI. Local governments must demand that developers comply with the terms and conditions of environmental sustainability

Based on the review of the five BRI projects:

- Public participation is a must at all levels of the EIA process. It is essential from top to bottom, from rules and regulation-making to implementation, the public take an interest

in bettering the provision or scrutinising the actions

- A sustainable approach to EIAs is much needed, offsetting biodiversity and ecosystem hazards, including transboundary impacts, as in the case of Pak Lay dam
- A lack of commitments to sustainable development is a feature of the EIAs. The Batang Toru dam's EIA completely ignored the Tapanuli Orangutan.

Hence, the thesis has focused on different aspects through which sustainability can be achieved. This is shown in table 4. Failure to apply these measures will have negative outcomes for the environment.

Measures for sustainability	**Results of failure to apply adequate protections**
To protect the protected forest and threatened species in every project of BRI	Deforestation and fragmentation of forest, loss in biodiversity, possible extinction of threatened species
Engage in bilateral and multilateral agreements and strengthen local mechanisms to avoid unsustainable use of the designated sites and compel effective EIA	Many ecosystems in the region will be harmed or be susceptible to unstainable use (e.g. river, orangutan, turtle)
Also, to establish mechanisms to oversee if the EIA process has been followed through effectively to avoid devastating effect on the ecosystem of the region.	Weak implementation of both developer and host countries environmental law, there will be no effective EIA and mechanism to monitor the projects' environmental sustainability will be absent.

Table 4: Sustainability Measures and Outcomes in Case of Failure

Not all aspects of the BRI projects overlap directly with areas of biodiversity and affect threatened species, but, due to some devastating impacts solutions are very difficult to agree

upon. EIAs rules and international and investor oversight are required. Investors are an essential part of projects, with many institution adopting sustainability policies which are mandated for host countries to gain project approval. To avoid the outcomes identified in table 4 many guidelines, policies, approaches and tools developed by China should be implemented thoroughly in BRI projects where the environment is likely to be harmed. William F. Laurence (2018) questioned the promise of Green BRI, in the case of Batang Toru Dam, as follows; "if China and its Indonesian partners will press ahead with this project despite all the scientific evidence that it is a terrible idea, then how can we believe any of China's promises about a "sustainable" Belt & Road?"

Chapter 5 suggested that China has demonstrated some initiatives to promote environmental protection. Providing funds for the ECRL to keep tab on the environment is one way of keeping its promise. However, rescuing one project from adverse environmental outcomes does not prove much. We saw in the other four projects that the environment suffers greatly, and both China and the host country have done little to conserve these sites. In the case of the Melaka Gateway, the project permanently damages marine biodiversity and any mitigation measures will not restore the region to its original health. The project was not halted and construction in 2019 further worsened the situation. For the BRI to be green concrete measures are needed, not mere words in guidelines. Host countries must be more attentive to project EIAs and protect the environment from future degradation. They must also stop incoming funding for projects immediately when impacts on the environment threaten biodiversity. There are several opportunities to conserve biodiversity, with both China and local governments playing a role in enforcing them.

Hence, it is important that positive cooperation and trust with China be developed further. Instead of having aspirational and oblique commitments towards making the BRI sustainable, which is incorporated in 'green' guidelines and policies, host countries should compel China to have rigorous site selection processes to diminish environmental impacts before agreeing to the project. It is, hence, evident that the implications of the BRI are to a great extent likely harmful to the environment. Further research into which specific policies and mitigating measures are required to serve the purpose of protecting the ecology of SE Asian Countries is needed.

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