

BRI 2: Sri Lanka Study

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1. Introduction

Sri Lanka - a tear drop shaped island of about 22 million people in the Indian Ocean - has been a major recipient of China's Belt and Road (BRI) investments. This is for two reasons. First, Sri Lanka and China have enjoyed decades of warm diplomatic relations dating to a barter deal known as the Rubber-Rice Pact of 1952. Second, diplomatic relations have evolved to commercial relations in the 2000s because of Sri Lanka's strategic geographical location along East-West commercial sea lanes and China's global economic rise. Interestingly, important Chinese infrastructure investments in Sri Lanka (such the Hambantota Port project) predate the 2013 BRI initiative. While Sri Lanka's sovereign debt default for the first time in its history in April 2022 has renewed concerns of a BRI 'debt trap', there is little evidence-based economic research on the country's experience of BRI investments.

This paper examines the economic impact of BRI investments in Sri Lanka. It focusses on the extent to which new directions announced by China at the landmark 2019 BRI Forum are visible at the ground level in Sri Lanka. The new directions have emphasised that BRI projects will be guided by a set of core principles including 'green, clean, debt sustainability, economic and financial viability of projects and multilateralization'. The analysis covers developments until mid-2022. The remainder of the paper is structured as follows. Section 2 defines the BRI for the purposes of the paper. Section 3 examines the changing size, scope and composition of the BRI in Sri Lanka. Section 4 discusses the economic and financial viability of projects in Sri Lanka. Section 5 considers challenges facing the BRI in Sri Lanka relating to the

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infrastructure investment gap, debt sustainability and environmental sustainability. Section 6 concludes.

2. Definition of the BRI

Quantifying BRI investment in Sri Lanka is challenging as there is no official definition of projects falling under the BRI nor are there published data on BRI investments. To enable quantification of flows, this paper narrowly defines BRI investments in hard infrastructure as those made in ports, airports, expressways and other hard infrastructure financed by infrastructure-related FDI and commercial loans. To aid standardisation, the World Bank's new taxonomy of sector codes for all lending activities, advisory services and analytics was used.² Thus, BRI investment in Sri Lanka is defined as made up of five key infrastructure sectors, a few sub-sectors within them and various projects (see Table 1):

1. Transport including roads and expressways (e.g. the Southern and Central Expressways), railways, ports (e.g. the Hambantota Port) and airports (the Mattala Rajapaksa International Airport);
2. Energy and extractives including non-renewable energy generation (e.g. the Norochcholai Coal Power Plant), renewable energy hydro and energy transmission and distribution;
3. Water and sanitation (e.g. the Kandy North Pathadumbara Water Supply Project)
4. Urban development (e.g. the Colombo Port City Project);
5. Info and communications including ICT infrastructure (e.g. the Lotus Tower);

The definition of BRI investment in Sri Lanka excludes some items found in studies of the BRI elsewhere like cultural projects (e.g. the Birds Nest Auditorium in Colombo) and defence related infrastructure. It also excludes soft infrastructure like trade deals, trade facilitation agreements, and people to people exchanges (e.g. tourism, education and military exchanges). As these items are relatively small amounts, excluding them may not matter much to cumulative BRI investment in Sri Lanka.

² See <http://projects.worldbank.org/sector>

This paper uses the data from the website of the Ministry of Finance Department of External Resources (DER) which tracks the country's external resource mobilization including from China, supplemented by data from the Central Bank of Sri Lanka, the Board of Investment (BOI) and media sources. The DER website has a useful tool which provides information by project and by development partner (including the project name, loan amount, the components, the start and end dates and the implementing and executing agencies).³ The DER data relate to commitments rather than actual inflows of BRI investment. As actual inflows tend to be less than commitments, the figures below may overestimate the magnitude of BRI investments in Sri Lanka.

3. Changing Size, Scope and Composition of the BRI

Three key trends in BRI investment into Sri Lanka are visible particularly since the announcement of the new directions by China at the 2019 BRI Forum.

First, Sri Lanka has received less infrastructure investment from China than many Asian countries. The media and academic spotlight on Sri Lanka appears to suggest that the country is one of the largest destinations for Chinese infrastructure investment in Asia. But the data suggests otherwise. The cumulative value of committed infrastructure investment from China to Sri Lanka was US\$13.2 billion between 2006 and May 2022 (see Table 1). This is equivalent to 18% of Sri Lanka's 2021 GDP. However, Sri Lanka has received less Chinese infrastructure investment than other poor economies in neighbouring South Asia like Pakistan (25%) and Maldives (33%) and in South-East Asia like Cambodia (71%) and Laos (156%). Meanwhile, upper middle-income Thailand (2%) and Malaysia (13%), which tend to fund infrastructure investment by leveraging a strong tax base and accessing capital markets, have received less Chinese investment than Sri Lanka.

Second, there has been a big fall in BRI investment into Sri Lanka since 2019. As Table 1 shows the annual average value of committed BRI investment to Sri Lanka nearly halved from US\$960 million 2013-2018 (the early BRI period) to US\$511 million in 2019-2022 May (post-2019 BRI Forum period). On a cumulative basis, committed BRI investment fell from \$5.8 billion in 2013-2018 (the early BRI period) to US\$2.1 billion (post-2019 BRI Forum period). Meanwhile, Sri Lanka received US\$897 annually

³ See http://www.erd.gov.lk/index.php?option=com_content&view=article&id=89&Itemid=312&lang=en.

during 2006-2012 or US\$5.4 billion cumulatively. The big fall in BRI investment since 2019 is striking considering that Sri Lanka received significant inflows of Chinese investment before the formal launch of the BRI in 2013. China's policy banks have recently adopted a more cautious approach to extending commercial infrastructure loans concerned about Sri Lanka's mounting levels of infrastructure debt and debt sustainability. China was also reacting to pressure as civil society groups and environmentalists have become increasingly critical of large Chinese funded projects (see below). Furthermore, the Covid-19 pandemic and the lockdown curfews disrupted construction of projects and most Chinese workers returned home.

Third, *there has been an increasing sectoral concentration in BRI investment towards transport since 2019*. As Table 1 shows, BRI investment commitments are highly concentrated in a single sector, with 86% destined for transport between 2019-2022 (i.e., the post-2019 BRI Forum period). Disaggregation reveals that roads and expressways dominate transport investment. The remaining 14% of BRI investment since 2019 was committed for urban development. The concentration on transport has increased over time. During 2013-2018 (early BRI period), transport was 56% of BRI commitments, urban development was 23%, water and sanitation was 20%, and energy and extractives was 1%. Although the concentration on transport (64%) was visible also in the pre-BRI period, there was a more balanced sectoral orientation within transport on sea ports, aviation and railways plus roads and expressways. Furthermore, investment in energy and extractives (31%) was significant. However, most was for non-renewable energy generation with little committed resources on renewable energy (like hydro and solar) or energy transmission and distribution.

The early entry and sectoral pattern of Chinese infrastructure investment in Sri Lanka reflects a mix of coincidental (e.g. bilateral ties and geography) and conscious policy factors. Warm bilateral diplomatic relations and a shared commitment towards non-alignment led to the earliest project of an international conference centre in Colombo in the early 1970s financed by a Chinese outright grant (Asirwatham, 2018).⁴ Remarkably, China provided this grant when it was still a relatively poor developing country. Bilateral diplomatic ties shifted to a more commercial ties in the early 2000s

⁴ The Chinese gift of the iconic Bandaranaike Memorial International Conference Hall (BMICH) emulated the design of the Great Hall of the People in Beijing. It was inaugurated in Colombo in 1973 in time for Sri Lanka to host the Non-Aligned Conference.

due to China's global economic rise and its emergence as a major outward investor with a large pool of capital and expertise in building infrastructure coupled with Sri Lanka's strategic geographical location in the Indian Ocean along East-West commercial sea lanes.

A pro-China tilt in foreign policy during President Mahinda Rajapaksa's administration (2005-2015) welcomed the pre-BRI entry of Chinese investment into Sri Lanka (Weerakoon and Wijayasiri, 2019). The Rajapaksa administration emphasized an infrastructure-led growth model to leverage Sri Lanka's geographical advantage. The model aimed to transform Sri Lanka into a middle-income maritime transport and logistics hub in the vibrant Indian Ocean and accelerate economic development in President Rajapaksa's underdeveloped poor home region, the Hambantota District in Southern Sri Lanka. The prime driver of the model was commercial loans from China for transport and energy projects (see Table 2). In the pre-BRI period, projects included the Norochchlai power plant, the Hambantota Port, the Mattala International Airport, the Colombo International Container Terminal (CICT). Following BRI's launch, the Colombo Port City, the revised Hambantota Port deal and several expressways were initiated. Evidence suggests that Chinese actors were proactive in seeking opportunities, often approaching public or private stakeholders with project ideas, and timing project completion to coincide with upcoming elections. This has brought them goodwill and increased the possibility of getting projects accepted by politicians (Pal, 2021).

4. Economic and Financial Viability of Projects

The sectoral analysis of the BRI can be usefully complemented by micro-level analysis on the economic and financial viability of key BRI projects in Sri Lanka.

Table 2 provides details of major Chinese projects including project financing, project actors and expected economic benefits.

Sea Ports

While the Hambantota Port in Southern Sri Lanka has grabbed the headlines, the sea port subsector is the second largest destination for Chinese investment. Building the Hambantota Port began in the early 2000s with the twin objectives of increasing Sri Lanka's transshipment capacity and developing the Hambantota District. However, the terms of project lending were erroneous to Sri Lanka. The Export Import Bank of China

(EXIM Bank China) loans totalling US\$1.4 billion came at relatively high interest rates ranging from 2% to as high as 6.5%. Furthermore, as construction was by two Chinese state-owned enterprises (SOEs) relying heavily on inputs and labour from China, there were few domestic spillovers for the Sri Lankan economy in terms of jobs or subcontracting for local SMEs. Taking much longer than expected to come on stream, the project incurred significant financial losses and strained Sri Lanka's public finances.

To stem the losses, in 2017 President Sirisena administration agreed to give China a controlling interest in managing the port on a 99-lease. Under the risk sharing agreement, Sri Lanka received a sum of \$1.12 billion which was used to bolster the country's foreign exchange reserves. The chequered history of financial losses and the long lease agreement has led to the Hambantota Port being portrayed as a case study of unprofitable infrastructure investment and China's debt trap diplomacy.⁵

It is an open question whether Hambantota Port could become a profitable venture over time. On the plus side, China Merchant Port Holdings Company Limited (CMP) - one of China's best run SOEs – has taken over port management. CMP has accelerated Hambantota Port development and is diversifying the range of port related services (e.g. ship repairing and bonded warehousing and distribution). CMP expects that a fully operational Hambantota Port over the next few years could double container traffic through Sri Lanka to some 16 million TEUs. On the minus side, the large debt owed to China from Hambantota and other BRI projects suggests net transfer payments to China (see below). Furthermore, there are adverse environmental effects.

Historically, investments in port capacity to handle containerised cargo from mega container ships have enabled Colombo Port to leverage its strategic geographical location in the Indian Ocean and become a regional trading hub. Over three-quarters of throughput through Colombo Port was for transshipment purposes in response to demand from a rapidly growing Indian market. A second sea port subsector project is the Colombo Port's third terminal. Colombo Port's success is partly due to an initial

⁵ An influential investigative story in New York Times story, for instance, traced the link between China's loan to Hambantota Port and geopolitical strategy (see Abi-Habib, 2018). It claimed that the terms of the 99-year lease on Hambantota Port favour China, that the project generated political influence for the Rajapaksa family and that Chinese debt constricts Sri Lankan policy.

investment of US\$500 million in 2011 by CMP in the Colombo International Container Terminal (CICT). This is the only state of the art deep-water terminal in South Asia which is able to handle up to Ultra Large Container Carriers (ULCC) or 20,000+ TEU vessels. Commencement of CICT operations in 2014 was critical in Sri Lanka consolidating its position in regional transshipment trade in recent years. With the geographical coverage of these services and high frequency of mainline liner service connections, CICT has helped the Colombo Port to be ranked as the 24th best port by throughput in the world in 2020 on the Lloyds list of the top 100 global ports.⁶

Roads and Expressways

The largest subsector for Chinese investment was roads and expressways and such investment has built about 116.1 kms or 68% of the length of all expressways in Sri Lanka (2018). Three major expressway projects built by Chinese SOEs have improved national road connectivity, enhancing road safety and reduced journey times.

In 2009 an EXIM Bank China loan of US\$248 million provided the majority financing for the Colombo-Katunayake Expressway, the country's first expressway linking Colombo with the main international airport. This project was completed in four years and has slashed journey times from 90 minutes to about 30 minutes along a busy route.⁷ However, the relatively high interest rate of 6.3% for the loan and the low expressway toll charges of only US\$ 1-2 per vehicle have ruled out cost-recovery for decades despite of high traffic flows. In 2014, another EXIM Bank China loan financed a crucial section⁸ of the Colombo Outer Circular Highway. This is an orbital highway which recently linked the Colombo-Katunayake Expressway and the Southern Expressway, thereby improving national connectivity.

The 222 km Southern Expressway linking Colombo with Galle and Matara, major cities in the South) has opened up Southern Sri Lanka, halved journey times from Colombo to Galle to 1.5 hours and improved road safety. Loans from the EXIM Bank China totalling US\$1.6 billion between 2014-2017 supplemented start-up loans in the early 2000s from Asian Development Bank (ADB) and the Japan Bank for International

⁶ <https://lloydslist.maritimeintelligence.informa.com/-/media/lloyds-list/images/top-100-ports-2021/top-100-ports-2021-digital-edition.pdf>

⁷ This was financed by an EXIM Bank China loan of US\$248.2 million in 2009 and US\$45 million from the Government of Sri Lanka. Construction began in 2009 and was completed in 2013.

⁸ The US\$494 million EXIM Bank China loan in 2014 was for the final phase of the Colombo Outer Circular Highway project which is a 9.6 km long stretch from Kadawatha – Kerawalapitiya.

Cooperation (JBIC). However, cost recovery is unlikely for decades due to significantly lower than expected traffic flows, low expressway toll charges and long delays in project completion. It appears that the Chinese entities did not pay sufficient attention to expressway master planning (including prudently estimating traffic flows and suggesting realistic toll charges) and capacity building during project implementation.

Non-renewable Energy Generation

The third largest sector for Chinese investment is non-renewable energy generation. In the early 2000s, Sri Lanka suffered from unreliable electricity supply and periodic power cuts which hampered the economy (Siyambalapitiya, 2017). As a temporary solution of commissioning diesel power plants did little to ensure reliable electricity supply, the Norocholai Coal Power Station in North-West Sri Lanka emerged as a longer-term solution. The project was co-financed by EXIM Bank China loans of US\$1.4 billion. Construction began in 2007 and was built in phases by a Chinese SOE. The country's largest power station has made a significant contribution to improving electricity supply making up 31.1% of the total installed capacity of Ceylon Electricity Board owned power plants and 33% of total power generation in 2018. At 2% fixed interest rates, the loans appeared to be manageable. However, as discussed below, coal fired electricity generation has created significant environmental costs.

A glaring omission, given Sri Lanka's abundance of rainfall and hours of sunlight, is the tiny BRI investment in non-renewable energy (e.g. hydro power and solar energy). This may be partly due to complex geopolitics and a lack of Chinese technical assistance in BRI projects for energy sector master planning and capacity building. In early 2021, with mainly ADB funding, Sri Lanka attempted to award a relatively small project (US\$12) to a Chinese SOE to set up three renewable energy projects (solar and wind power) in outlying islands off the Jaffna peninsula a few miles of the coast of India. Following Indian objections on national security grounds, however, the tender was withdrawn.

Urban Development

The fourth sub-sector for Chinese investment is urban development and water and sanitation. The key project is the Port City Colombo, a new city built on 269 hectares of reclaimed land as an extension of Colombo's Central Business District. The project aims to develop an international financial centre, residences and malls. When

completed in 2042, it could add 1.5 million units of A-grade office space to Colombo, a tripling of current office space capacity thereby supporting Sri Lanka's transformation into towards modern services sector development (PWC, 2021). As a Chinese SOE invested US\$ 1.3 billion as an initial investment rather than providing a commercial loan, this project has not increased Sri Lanka's debt burden. Although the Chinese investor lobbied for the project be a special economic zone (SEZ), it did not provide adequate advice on good practice regulatory frameworks or capacity building for managing a complex services SEZ.

Other Sub-sectors

The aviation subsector (e.g. the Mattala Airport) and ICT infrastructure (e.g. the Lotus Tower) also received some Chinese investment. Built near Hambantota Port by a Chinese SOE, Mattala Airport was financed by an EXIM bank China loan. This is a modern regional airport with 3.5km of runway, which are able to handle the world's biggest jets. It is expected to increase Sri Lanka's air passenger capacity by 25%, provide a second airport in case of adverse weather and promote tourism in Southern Sri Lanka.

The Lotus Tower project was a multipurpose television and telecoms tower with a leisure park. It was co-financed by an EXIM bank loan and the Government of Sri Lanka. Construction was by two Chinese SOEs. At the time of writing, however, neither the Lotus Tower nor the Mattala airport were in commercial operation and making large financial losses. Concerns have also been expressed about national security implications of the role of the Lotus Tower in Sri Lanka's telecommunications network and allegations have been made about a rouge Chinese contractor.

5. Challenges Facing the BRI in Sri Lanka

Several notable challenges have arisen during the course of implementing the BRI in Sri Lanka: (1) the infrastructure investment gap, (2) debt sustainability and (3) environmental sustainability.

The Infrastructure Investment Gap

It is revealing to examine Sri Lanka's infrastructure performance and the BRI's contribution to closing its infrastructure investment gap. The World Economic Forum's Global Competitiveness Report 2019 uses a comprehensive set of indicators to rank

overall performance of infrastructure in 141 economies in the world including Sri Lanka (WEF 2019). The data ranks Sri Lanka's overall infrastructure performance and the quality of key components of infrastructure compared with regional economies. Sri Lanka's rank of 61 means its overall infrastructure performance lags other upper-middle-income economies like Malaysia, and some components, such as air connectivity and efficiency of seaport services, are on par with low-income countries, like Pakistan. Clearly, room exists to improve Sri Lanka's infrastructure performance and quality.

That said, Sri Lanka also requires large financial outlays to modernise its infrastructure commensurate with that of a middle-income economy. Studies have attempted to quantify unmet infrastructure needs in South Asia and provide indicative estimates of infrastructure gaps. Andres *et. al.* (2014) conservatively estimated that Sri Lanka requires as much as US\$36 billion (at current prices) in 2011-2020 to close its present infrastructure gap. This is equivalent to a staggering 40.5% of Sri Lanka's 2018 GDP. When considering existing BRI investment commitments, Sri Lanka's current infrastructure investment gap is estimated at about US\$28.1 billion.⁹ Thus, BRI investment alone was insufficient to close Sri Lanka's infrastructure gap and large amounts of additional finance is required from other sources (e.g. general taxation, other donors and international capital markets) for unmet infrastructure needs.

Debt Sustainability

For the first time in its post-independence history, Sri Lanka defaulted on its foreign debt payments with serious economic consequences. Between 2018 and 2021, Sri Lanka's public debt to GDP ratio rose significantly from 91% to 119%. At end March 2022, Sri Lanka had external debt service payments of \$6 billion for the rest of 2022 against low usable foreign reserves. On 6 April 2022, most of a bloated 26-member cabinet resigned following public protests over the rising cost of living and economic mismanagement. On 12 April 2022, Sri Lanka temporarily suspended foreign debt payments pending an IMF bailout. On 18 May 2022 international rating agencies downgraded Sri Lanka to restricted default status after the country missed payments

⁹ This was estimated by subtracting the US\$7.9 billion figure for BRI investment commitments from 2013 to 2022 May in Table 1, from the estimated investment needs of US\$36 billion from Andres *et. al.* (2014).

on two sovereign bonds. In late May 2022, a new cabinet was appointed to deal with the crisis.

Sri Lanka's adverse debt dynamics including rising debt service can be explained by a combination of factors: (1) external shocks, (2) weak macroeconomic management, and (3) excessive foreign borrowing (including for low return BRI projects). The severe economic shock from Covid-19 meant an economic contraction of 3.6% in 2020. As economic recovery began, a second shock from the Russia-Ukraine hit the economy with higher import bills for fuel and food leading to double-digit inflation and a large exchange rate depreciation. These external shocks hammered an already weak economy reeling from persistent fiscal and current account deficits linked to populist spending policies and a thirty-year civil conflict (which ended in 2009) and significant tax cuts in 2019 amounting to 2% of GDP (see IMF 2022; Weerakoon et al. 2019; Weerasinghe, 2021; and Wignaraja 2021 and 2022b).

Furthermore, after graduating away from concessionary aid, Sri Lanka resorted to commercial borrowing from private creditors and China. The Chinese debt trap remains controversial. As discussed above, China is the leading provider of commercial loans for infrastructure to Sri Lanka. Some projects like the Hambantota Port involving high interest rates and long implementation delays are equated with high cost low return projects. There are also claims that by accepting such project loans, Sri Lanka is now stuck in a 'debt trap' (see Abi-Habib, 2018).¹⁰ Although the data indicate a worrying growth in external debt owed to China, the debt trap is not wholly Chinese.¹¹ As Table 3 shows, the value of Sri Lanka's external public debt to China (government, EXIM Bank China and China Development Bank) nearly tripled from US\$2.7 billion to US\$7.6 billion between 2013 and 2021. As a percentage of GDP, the rise was from 3.6% to 9.0% over the same period. Such debt multiplied from 6.2% of GDP to 9.0% between 2020 and 2021. Sri Lanka owed more to multilateral creditors (11.1%) in 2021 but the terms of multilateral loans are much less onerous. Meanwhile, private entities were the largest group of creditors (17.4%).

¹⁰ Brautigam (2020) argues that critical narratives about the China debt trap in Angola, Djibouti, Sri Lanka and Venezuela are driven more by geopolitical anxiety about China's remarkable rise than facts about Chinese projects.

¹¹ Recent data thus re-confirm the finding of Wignaraja *et. al.* (2020). Actual external debt owed to China may be underestimated in Table 3 as data from the Central Bank of Sri Lanka appear to exclude debt owed to China by state-owned enterprises in Sri Lanka. See Verite (2021).

Discussions on an IMF programme are ongoing as any IMF deal requires Sri Lanka showing its debts can be put on a sustainable path. This typically requires a restructuring or reprofiling of public debts, which in Sri Lanka's case would require cooperation from China, one of its largest bilateral creditors. Since January 2022, Sri Lanka has been requesting China to restructure its debt repayments and provide concessionary credit facilities for essential imports of food, fuel and medicine.¹² Sri Lanka's request has created a dilemma for China (Wignaraja, 2022a). China may wish to adhere to the new directions at 2019 BRI Forum regarding ensuring debt sustainability in BRI recipients like Sri Lanka. Furthermore, China does not want to lose Sri Lanka's friendship or the commercial opportunities accompanying it. However, China worries that unilaterally granting Sri Lanka moratoria or debt restructuring would create a new precedent in its lending practices. It does not want to end up in similar negotiations with other distressed developing countries that have received large amounts of BRI loans. Moreover, an economic powerhouse like China may not want to be associated with a floundering economy. Thus, it is unclear whether China will agree to Sri Lanka's request.

Environmental Sustainability

It is challenging to assess the environmental sustainability of the BRI in Sri Lanka. The National Environmental Act of 1988 stipulates that environmental impact assessments (EIAs) are required for large scale environmental projects or projects located in sensitive areas.¹³ Having large financial envelopes and often located in sensitive eco systems, most BRI projects would seem to require EIAs. However, it is unclear how many of the projects listed in Table 2 had EIAs as the reports are not publicly available from the website of the Central Environmental Agency. Nor are they available from the websites of BRI project funders like the China Development Bank or the Export-Import Bank of China.

In the absence of EIA reports, Table 4 provides insights into the environmental effects of key projects which were compiled from various sources and the likely project-level

¹² Before the country's debt default, during the visit of Chinese Foreign Minister Wang Yi to Colombo in January 2022, Sri Lanka's President Gotabaya Rajapaksa reportedly first requested that China restructure its debt repayments and award it a \$1 billion concessionary credit facility for imports.

¹³ <https://www.cea.lk/web/en/environmental-impact-assessment-eia-procedure-in-sri-lanka#:~:text=The%20legal%20framework%20for%20the,located%20in%20environmental%20sensitive%20areas>.

impacts on SDGs. Based on our subjective assessment of the environmental effects on SDGs, a positive or negative score was awarded for the SDGs for a given project. The exercise suggests a mixed picture for the Chinese projects on environmental grounds. Earlier projects such as the Norochchoali Power Plant had multiple harmful environmental effects and a negative impact on SDG 7 Affordable and Clean Energy and SDG 13 Climate Action. Likewise, the Hambantota Port project had some harmful environmental effects and a negative impact on SDG 14 Life Below Water. However, more recent projects such as the CICT Colombo Port Terminal and the Colombo Port City have adapted to stricter environmental standards partly linked to criticism from environmental activists. Accordingly, CICT Colombo Port had positive impacts on SDG 7 Affordable and Clean Energy and SDG 13 Climate Action. Furthermore, the Colombo Port City had a positive impact on SDG 11 Sustainable Cities and Communities but a negative impact on SDG 14 Life Below Water.

6. Conclusions

This paper discussed the economic impact of BRI investments in Sri Lanka looking focussing on whether the new directions announced by China at the 2019 BRI Forum are visible at ground level. Three findings are noteworthy.

First, the early entry of Chinese infrastructure investment into Sri Lanka reflects warm diplomatic ties, a strategic location and a pro-China foreign policy during President Mahinda Rajapaksa's administration. However, the country received less Chinese investment than others in Asia and annual BRI investment actually fell since 2019 compared to the early BRI period. Furthermore, the transport sector dominated investment flows and its dominance has increased since 2019.

Second, micro-level indicates a mixed record on the economic and financial viability of Chinese projects. Some good projects in terms of economic and financial viability co-exist with a long tail of under-performing projects. For instance, in the seaport sub-sector, the modern third terminal has been pivotal in Colombo Port becoming one of the world's best container ports while Hambantota Port is a loss-making project which has strained public finances. Furthermore, major expressways projects suffer from unrealistic toll pricing and traffic flow estimates which have hampered cost recovery. More generally, it seems that Chinese investments in hard infrastructure were not

accompanied by technical assistance and capacity building for infrastructure master planning and project appraisal for local counterparts.

Third, major challenges on debt sustainability and environmental sustainability have arisen during the implementation of the BRI in Sri Lanka. Sri Lanka's unprecedented foreign debt default in 2022 has renewed interest in the controversial debt trap. Although there is a worrying trend towards growing external debt owed to China, the debt trap is not wholly Chinese. Moreover, the environmental implications are mixed with more recent projects incorporating higher environmental standards than earlier projects.

Several policy implications flow from the analysis. One is that China can resolve its dilemma in bailing out Sri Lanka by adding its powerful voice in support of an IMF programme for Sri Lanka and providing the World Bank with resources to administer a cash transfer programme targeted to poor. Another is that China should commission an independent evaluation of its infrastructure projects in Sri Lanka with a view to learning lessons for designing future projects. Finally, as a part of its future infrastructure investment in Sri Lanka, China should provide capacity building assistance in infrastructure master planning, project appraisal, environmental impact assessment and anti-corruption measures.

Table 1. Cumulative BRI Investment (2006-2022 May) By Sector

	(1) Pre-BRI Period 2006-2012		(2) Early BRI Period 2013-2018		(3) Late BRI Period 2019-2022*		Total (1+2+3) 2006-2022*	
Annual Average (US\$)	897		960		511		824	
	US\$ Mn.	%	US\$ Mn.	%	US\$ Mn.	%	US\$ Mn.	%
Transport	3,430	64%	3,209	56%	1,765	86%	8,404	64%
Roads and Expressways	1,463	27%	2,524	44%	1,765		5,751	44%
Railways	96	2%	278	5%			374	3%
Aviation	190	4%	-	0%			190	1%
Sea Ports	1,681	31%	408	7%			2,088	16%
Energy & Extractives	1,649	31%	70	1%	0	0%	1,719	13%
Non-Renewable Energy Generation	1,346	25%	-	0%	0	0%	1,346	10%
Renewable Energy: Hydro and Solar	214	4%	70	1%			284	2%
Energy Transmission and Distribution	89	2%	-	0%			89	1%
Water and Sanitation	214	4%	1,179	20%			1,394	11%
Urban Development	-	0%	1,300	23%	280	14%	1,580	12%
Info & Communication	89	2%	-	0%			89	1%
ICT Infrastructure	89	2%	-	0%			89	1%
Total	5,382	100%	5,758	100%	2,045	100%	13,185	100%

*May 2022

Source: Author's own calculations from data provided by the Dept. of External Resources, Ministry of Finance, Sri Lanka

Table 2. Economic and Financial Viability of Major Chinese Projects

Project Name	Loan /Investment	Amount \$Mn.	Loan Terms	Foreign Lender/ Investor	Implementing Agency	Contractor	Economic Benefits
Southern Expressway (On-going, started construction in 2011)	Loan (4)	1,545.0	Fixed Rate – 2.00%	EXIM	Road Development Authority	CCC	<ul style="list-style-type: none"> - 48% of total Expressways - Commute to Galle from Colombo has halved from 3 hours to 1.5 hours - Better infrastructure has allowed the southern coast to develop as a tourist hotspot
Outer Circular Highway (On-going, started construction in 2014)	Loan (1)	494.0	Fixed Rate- 2.00%	EXIM	Road Development Authority	Metallurgical Corporation of China Ltd	<ul style="list-style-type: none"> - 5% of total Expressways - Easier commute to Colombo from suburbs
Colombo Katunayake Expressway (Completed in 2013, started construction in 2009)	Loan (1)	248.0	Fixed Rate – 6.30%	EXIM	Road Development Authority	China Metallurgical Group Corporation	<ul style="list-style-type: none"> - 15% of total Expressways - Reduced commuting time to Airport by 2 and 1/2 hours from Central Colombo
Mattala Rajapaksa International Airport (Completed in 2013, started construction in 2010)	Loan	190.0	Fixed Rate – 2.00%	EXIM	Airport & Aviation Lanka Limited	CHEC	<ul style="list-style-type: none"> - Emergency landings possible with 2nd airport - Saved Sri Lanka \$1.5 Mn per flight, if diverted to Southern India during an emergency - Increased national passenger capacity, reducing congestion at Colombo Airport

Hambantota Port Development (Completed, started construction in 2007)	Loan (6)	1,335.7	Fixed (2-6.50%) and Variable Rates	EXIM	Sri Lanka Ports Authority	CHEC	<ul style="list-style-type: none"> - Industrial Zone will bring in more primary industries - Diversified port operations through the addition of value-add services
CICT Colombo Port Terminal (Completed in 2014, started construction in 2011)	Investment	500.0	N/A	CMPH	Sri Lanka Ports Authority	CMPH	<ul style="list-style-type: none"> - Currently the only deep-water terminal in South Asia equipped with facilities to handle the largest vessels afloat - CICT has helped the Port of Colombo to move up the Drewry's Port Connectivity Index to be ranked the 11th best connected port in the world in 2018.
Puttallam/ Norochchoali Power Plant (Completed in March 2011, started construction in 2006)	Loan (3)	1,346.0	Fixed Rate – 2.00%	EXIM	Ceylon Electricity Board	China Machinery Engineering Corporation	<ul style="list-style-type: none"> - Accounts for 31% of total installed Capacity of CEB-Owned Power Plants - Accounts for 33% of the total power generated in 2018
Colombo Port City (On-going, to be completed in 2042, started construction in 2014)	Investment	1,300.0	N/A	CHEC	N/A	CHEC	<ul style="list-style-type: none"> - Adding 1.5 million units of A-Grade office space (tripling total office space in Colombo) - Would improve Sri Lanka's ease of doing business rankings - Likely to attract high tier financial services
Lotus Tower (Completed in September 2019, started construction in 2012)	Loan	88.6		EXIM	Telecommunications Regulatory Commission of Sri Lanka	China National Electronics Import & Export Corporation	<ul style="list-style-type: none"> - Improve telecommunications infrastructure - Reduce the number of downtime incidences - Provide leisure activities to public

Elevated Highway (New Kelani Bridge to Athurugiriya) (Ongoing, to be completed in 2023)		675.0				China Harbour Engineering Company (CHEC)	-
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Source: Author's own calculations based on data provided by the Department of External Resources, Ministry of Finance, Sri Lanka;

<http://www.treasury.gov.lk/documents/10181/12870/2011/59598a6b-ef7c-4404-b54d-d4388d7f602c#page=213>;

<https://www.nytimes.com/2018/06/25/world/asia/china-sri-lanka-port.html>, Refer to Extraordinary Gazette Notification 1846/51, <http://www.ft.lk/front-page/SLT-says-Lotus-Tower-is-its-gigantic-technological-achievement/44->

http://www.cabinetoffice.gov.lk/cab/index.php?option=com_content&view=article&id=16&Itemid=49&lang=en&dID=9248, & Various Interviews with Key Persons.

<https://economynext.com/sri-lanka-flags-off-us675mn-elevated-expressway-by-china-harbour-82845/>

Notes: EXIM: Export Import Bank of China, CMPH: China Merchant Port Holdings, CHEC: China Harbour Engineering Company, CCC: China Communications Construction Company Limited.

Table 3. Sri Lanka's External Public Debt by Holder

	2013		2019		2020		2021	
	US\$ Bn	% of GDP	US\$ Bn	% of GDP	US\$ Bn	% of GDP	US\$ Bn	% of GDP
China (Govt, EXIM, CDB)	2.7	3.6	4.4	5.3	5.0	6.2	7.6	9.0
Bilateral creditors (excl China)*	5.8	7.8	5.5	6.6	5.6	6.9	5.0	5.9
Multilateral creditors	7.0	9.4	8.1	9.8	8.8	11.0	9.3	11.1
Private creditors	9.6	12.9	16.2	19.6	13.3	16.5	14.7	17.4

*Includes Japan, India, Korea, Germany, France, United States, Canada and others

Source: Author's own calculations based on data in International Monetary Fund, 2021 Article IV Consultation—Press Release; Staff Report Table 1, p.51, Wignaraja et. al (2020) and <http://bizenglish.adaderana.lk/sri-lanka-should-have-gone-to-imf-sooner-says-central-bank-governor/>

Table 4 Environmental Sustainability of Key Chinese Projects

Project Name	Foreign Lender/ Investor	Environmental Issues	Possible Impact on SDGs (+ or -)
Puttallam/ Norochchoali Coal Power Plant (Completed in March 2011, started construction in 2006)	EXIM	<ul style="list-style-type: none"> • The construction and ongoing operations of the power station has been criticized for leading to significant carbon emissions and pollution. • Daily release of ash as sludge and harmful chemicals present in such sludge is affecting human health and livelihoods in nearby towns. • Fine ash particles emitted is linked to illness in humans and animals found in Colombo (145 km away) • Cooling water discharge into the Kalpitiya peninsula and marine sanctuary is affecting marine life. 	<p>SDG 7 Affordable and Clean Energy (-)</p> <p>SDG 13 Climate Action (-)</p>
Hambantota Port Development Project (Completed, started construction in 2007)	EXIM	<ul style="list-style-type: none"> • The Hambantota Port has been criticized for not factoring in environmental risks during construction and operation. • It was reported that studies of the Port failed to detect a rock on the seabed that impeded the access of ships to the harbour. Removal of the rock caused major delays, additional expenses of \$40 million to remove and environmental damage to marine life. • Furthermore, animal habitats were affected by the dredging of 40,000 m of sand from the Karagan Lewaya Lagoon for the port's construction and that this dredging destroyed the ecology of the lagoon and surrounding habitats. • The local marine environment is at risk from the release of chemical and physical waste, oil pollution, ballast water and other discharges from cargo ships. 	<p>SDG 14 Life Below Water (-)</p>
CICT Colombo Port Terminal (Completed in 2014, started construction in 2011)	CMPH	<ul style="list-style-type: none"> • Colombo Port's CICT terminal prioritizes green technology. • It switched to using electric cranes, and pledged to reduce overall carbon dioxide emission levels by 45% and diesel consumption levels by 95%. • The crane engines emit zero carbon dioxide and minimal greenhouse gases. • Over 80% of the electricity used in the operations of the CICT terminal is reportedly generated using solar technology. • The CICT terminal is the most profitable of the four operational terminals of the Colombo port, contributing over 70% of the port's cargo volume means there is little trade-off between commercial success and green technology. 	<p>SDG 7 Affordable and Clean Energy (+)</p> <p>SDG 13 Climate Action (+)</p>
Colombo Port City (On-going, to be completed in 2042, started	CHEC	<ul style="list-style-type: none"> • The Colombo Port City has a sustainability master plan which aims to ensure the overall design for construction and operations follows international 'green' best practices and benchmarks. 	<p>SDG 11 Sustainable Cities and Communities (+)</p>

construction in 2014)		<ul style="list-style-type: none"> • These include climate change adaption and more specifically LEED, BREEAM and Green Mark standards, while also ensuring that they meet green certifications from the Sri Lankan Green Building Council. • The project has promised independently validated compliance with all sustainability requirements of relevant authorities including ISO 9001:2015 certification for the • quality management system (QMS). • Continuing with such best international practices would serve to reduce the risk of environmental damage from this major infrastructure development project. • However, land reclamation of 269 hectares for the project and its development plans have raised environmental issues, including disruptions to marine habitats and challenges to the local fishing industry, with a reported 20% decrease in fish catches. 	SDG 14 Life Below Water (-)

Sources: Wignaraja et.al.(2020), Krishantha (2017) <https://groundviews.org/2017/10/12/the-dark-side-of-norochcholai/>

Notes: EXIM: Export Import Bank of China, CMPH: China Merchant Port Holdings, CHEC: China Harbour Engineering Company.

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