

Economic Rationale for the Proposed Bridge Between India and Sri Lanka: An Analytical Perspective

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Abstract: The Governments of India and Sri Lanka signed a Memorandum of Understanding (MoU) to build a bridge across the Palk Strait in July 2002 to join the island nation with the mainland of South Asia by road and rail. The objective of this article is to highlight the likely impact the proposed bridge would have on trade in goods and services and travel between the two countries and beyond. The overall argument herein is that any development activity would have positive and negative outcomes and that on a balance of probability, the positive outcomes of the proposed bridge could outweigh the negative outcomes. The proposed bridge across the Palk Strait could be an alternative to the proposed Sethusamudram project (that could potentially cause environmental damage) rekindled by the Tamil Nadu state assembly in January 2023 in order to stimulate economic growth in the lagging southern parts of Tamil Nadu.

Background

The Government of Sri Lanka (GoSL) and the Government of India (GoI) signed a Memorandum of Understanding (MoU) to build a bridge across the Palk Strait in July 2002 to join the island nation with the mainland of South Asia by road and rail. Atal Bihari Vajpayee and Ranil Wickremasinghe were then the Prime Ministers of India and Sri Lanka respectively. In 1998, Prime Minister Atal Bihari Vajpayee, and then President of Sri Lanka, Chandrika Bandaranaike Kumaratunga, signed the India-Sri Lanka Free Trade Agreement (ISLFTA) which came into effect in 2000. The original proposal for the land bridge was reportedly mooted by Ranil Wickremasinghe in 1991 when he was the Minister of Industries under President Ranasinghe Premadasa.

The proposed bridge is situated between Talaimannar (North-West Sri Lanka) and Dhanushkodi (South-East of Tamil Nadu). The envisaged bridge is expected to be 23 km in length.¹ (For excellent satellite images of the area, see the Earth Watching project of the European Space Agency).

Though the 2002 MoU has remained just an MoU to date, a few years ago, the Government of India and the Indian corporate sector expressed interest in realizing that MoU.² This renewed enthusiasm on the part of the Government of India to build the bridge has surfaced in the context of the involvement of China in mega

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infrastructure development projects in Sri Lanka in the last decade, under its flagship Belt and Road Initiative (BRI) or One Belt One Road (OBOR) project.³ However, the sentiments expressed by the political authorities in Sri Lanka towards the proposed bridge have been lacklustre.⁴

In light of the recent passing of a motion, unanimously, in the Tamil Nadu state assembly in January 2023 asking the central government to revive the Sethusamudram Shipping Canal Project, the proposed bridge across the Palk Strait has once again emerged as a potential alternative to the Sethusamudram project. The economic rationale for the unanimous passing of the motion to revive the Sethusamudram project is that it would boost economic development in the lagging southern regions of Tamil Nadu. Though Tamil Nadu is one of the most industrialized and fastest growing states in India, such economic growth is by and large concentrated in the northern parts of the state.

Objective

The objective of this article is to highlight the likely impact the proposed bridge would have on trade in goods and services and travel between the two countries and beyond. The overall argument herein is that any development activity would have positive and negative outcomes⁵ and that on a balance of probability, the positive outcomes of the proposed bridge could outweigh the negative outcomes.

Methodology

This is a rapid, descriptive, qualitative assessment undertaken in consultation with some key stakeholders in Sri Lanka by using secondary data, and therefore should be treated cautiously. The spillover effects of infrastructure development are the analytical lens through which this assessment is undertaken. A thorough socio-economic cost-benefit analysis should be undertaken to better understand the implications of the proposed bridge to both countries.

A framework of analysis

Infrastructure is the foundation on which an economy is built. Infrastructure could be subdivided into economic and social infrastructure, both of which are *sine qua non* for an economy to grow sustainably. Economic infrastructure refers to airports, electricity, gas, railways, roads, seaports, telecommunications (fixed/mobile and internet), water, etc. Social infrastructure refers to hospitals, media (electronic and print), places of worship, schools, etc. Sound economic and social infrastructure facilitate economies of scale, human capital formation (education and health), market information flows (media), reduction in the cost of internal and international trade, reduction in the transaction costs of goods and services *inter alia*, thereby facilitating efficient production and consumption of goods and services.⁶

The infrastructure in an economy is similar to a skeleton on which the human body is built, or a house on which a home is built. Infrastructure should be regarded as one of the factors of production in addition to land, labour, capital, and technology. Investments in infrastructure spur intra-regional and inter-regional economic integration within countries as well as across countries.

Investments in transport infrastructure (air, rail, road, and sea) contribute to economic efficiency by reducing transportation costs that facilitate the creation of new markets and realization of agglomeration economies, which in turn raises productivity and lowers prices resulting in improved living standards for the people.⁷ Studies have also shown that a spillover effect of transport infrastructure is that it significantly reduces inventories thereby resulting in cost efficiencies due to lower storage and warehousing costs for businesses, and reduces wastage of perishable agricultural produce to farmers.⁸

A multi-country study by the World Bank reveals that lowering transaction costs of trade (or trading costs) by 10 per cent,⁹ through infrastructure investment, could increase exports by over 20 per cent.¹⁰

There is considerable evidence that geographic economic clusters spur economic growth through spillover effects. That is, countries could benefit from economic growth in neighbouring countries and neighbouring regions within countries and vice-versa.¹¹ For example, when China started its economic liberalization in the 1980s, the first special economic zone was set up in Shenzhen which is closer to Hong Kong, to take advantage of the spillover effects of Hong Kong's vastly successful economy.

Economic geography theories suggest that economic growth and development are usually concentrated in specific geographic clusters or regions, which are termed agglomeration economies.¹² This is why the Western Province in Sri Lanka is the economic hub of the country because both the Colombo international harbour and the Colombo international airport are located there. Similarly, geographically-specific economic clusters or regions across countries could also create agglomeration economies that could spur economic growth in territories adjoining both countries. Two critical studies in Africa have revealed that a one per cent rise in the economic growth of a neighbouring country raises the economic growth of the country by 0.4 to 0.7 per cent.¹³

International trade dynamics of Sri Lanka

Sri Lanka's trading pattern has been such that the two largest markets for its exports are the United States of America (USA) followed by the United Kingdom (UK). Regionally, Europe is the single largest market for Sri Lanka's exports. As regards the imports of Sri Lanka, India, followed by China, is the largest source of imports into Sri Lanka, and the top ten sources of Sri Lanka's imports are all Asian countries (barring the US) (see [Tables 1 and 2](#)). Consequently, Sri Lanka has had a trade surplus with many Western countries while having trade deficits with many Asian countries for more than three decades now.

Trade data used herein are in US dollars, which is the prevalent currency for Sri Lanka's international trade with all countries. However, it should be noted that, in the trade between India and Sri Lanka, Indian rupees was the currency used until the early 1990s. With the liberalization of its economy in 1991, India insisted that trade with Sri Lanka be conducted in US dollars. However, since late 2022, India is promoting rupee trade with selected South Asian (including Sri Lanka) and West Asian countries in order to promote the Indian rupee (INR) as a regional currency. This is because the unprecedented rise in interest rates in the US has appreciated the

Table 1. Sri Lanka's Exports by Country 2015–2019.

	2015	2016	2017	2018	2019	Average
	US\$	US\$	US\$	US\$	US\$	2015–19
	Million	Million	Million	Million	Million	\$ Million
1 United States of America	2,810 (26.6)	2,810 (27.3)	2,909 (25.6)	3,085 (25.9)	3,141 (26.3)	2,951 (26.0)
2 United Kingdom	1,029 (9.8)	1,044 (10.1)	1,036 (9.1)	980 (8.2)	998 (8.4)	1,017 (9.0)
3 India	643 (6.1)	554 (5.4)	691 (6.1)	777 (6.5)	768 (6.4)	687 (6.0)
4 Germany	476 (4.5)	500 (4.9)	540 (4.8)	614 (5.2)	648 (5.4)	556 (5.0)
5 Italy	434 (4.1)	430 (4.2)	524 (4.6)	572 (4.8)	528 (4.4)	498 (4.5)
6 Belgium-Luxemburg	283 (2.7)	338 (3.3)	347 (3.1)	361 (3.0)	357 (3.0)	337 (3.0)
7 China, People's Republic of	308 (2.9)	211 (2.0)	247 (2.2)	239 (2.0)	240 (2.0)	249 (2.0)
8 Netherlands	220 (2.1)	208 (2.0)	221 (1.9)	258 (2.2)	301 (2.5)	242 (2.0)
9 Canada	181 (1.7)	180 (1.7)	210 (1.8)	211 (1.8)	241 (2.0)	205 (2.0)
10 Turkey	180 (1.7)	151 (1.5)	233 (2.1)	218 (1.8)	210 (1.8)	198 (2.0)

Source: Central Bank of Sri Lanka, *Annual Report 2020*, Colombo. Statistical Appendix Table 82 at https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/annual_report/2020/en/15_Appendix.pdf (Accessed on 20 June 2022).

Numbers in the parentheses are percentages of total exports.

US dollar globally, thereby depreciating the domestic currencies of many countries (including the INR) and causing volatility in the global foreign exchange markets.

The trade between Sri Lanka and India, both formal and informal, has a history that is centuries old. In the present millennium, the bilateral trade between Sri Lanka and India has soared, only marginally induced by the free trade agreement between the two countries that came into effect in 2000.

India continues to be Sri Lanka's single-largest trading partner for a very long time, especially since 1977; however, China appears to be catching up fast and has become the second-largest trading partner in the last decade or so. China's rapid rise to being Sri Lanka's second-largest trading partner in the last decade is mainly due to the significant loans lent for major infrastructure projects.

The bulk of the loans for major infrastructure projects by any country (including China and India) is not in terms of cash but in kind, such as consultancy services, equipment, machinery, and labour. Whilst foreign donor-funded infrastructure projects do not usually involve semi-skilled and unskilled labour from the donor country, in the case of loans from labour-surplus economies such as China, negligible number of semi-skilled and unskilled workers from those countries are involved in projects in Sri Lanka. According to one recent study, there were round 7,500 Chinese workers (including skilled, semi-skilled, and unskilled; just 0.1 per cent of the total labour force of Sri Lanka in 2019) in Sri Lanka on work visa.¹⁴

Table 2. Imports of Sri Lanka by Country 2015–2019.

	2015	2016	2017	2018	2019	Average
	US\$	US\$	US\$	US\$	US\$	2015–19
	Million	Million	Million	Million	Million	\$ Million
1 India	4,268 (22.5)	3,815 (19.9)	4,527 (21.6)	4,231 (19.0)	3,899 (19.6)	4,148 (20.5)
2 China, People's Republic of	3,712 (19.6)	3,996 (20.8)	3,995 (18.9)	4,116 (18.5)	4,034 (20.2)	3,971 (20.0)
3 United Arab Emirates	1,067 (5.6)	1,119 (5.8)	1,697 (8.1)	1,835 (8.3)	1,669 (8.4)	1,477 (7.0)
4 Singapore	1,063 (5.6)	1,175 (6.1)	1,352 (6.4)	1,372 (6.2)	964 (4.8)	1,185 (6.0)
5 Japan	1,389 (7.3)	950 (5.0)	1,038 (4.9)	1,585 (7.1)	875 (4.4)	1,167 (6.0)
6 Malaysia	508 (2.7)	638 (3.3)	638 (3.0)	794 (3.6)	853 (4.3)	686 (3.5)
7 United States of America	471 (2.5)	539 (2.8)	492 (2.3)	519 (2.3)	542 (2.7)	513 (2.5)
8 Thailand	497 (2.6)	515 (2.7)	518 (2.5)	497 (2.2)	437 (2.2)	493 (2.5)
9 Taiwan	460 (2.4)	496 (2.6)	482 (2.3)	474 (2.1)	410 (2.1)	464 (2.0)
10 Hong Kong	365 (1.9)	466 (2.4)	422 (2.0)	393 (1.8)	304 (1.5)	390 (2.0)

Source: Central Bank of Sri Lanka, *Annual Report 2020*, Colombo. Statistical Appendix Table 83 at https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/annual_report/2020/en/15_Appendix.pdf (Accessed on 20 June 2022).

Numbers in the parentheses are percentages of total imports.

Whilst the total trade (exports + imports) between India and Sri Lanka has been in the region of US\$ 5,000 million (\$5 billion) per annum during the five years between 2015 and 2019 (the annual average was \$4,800 million), it has been in the region of US\$ 4,000 million (\$4 billion) with China during the same period (the annual average was \$4,200 million) (see [Tables 1 and 2](#)). According to provisional estimations, the total trade (exports + imports) between China and Sri Lanka (\$3,804 million) had marginally surpassed that between India and Sri Lanka (\$3,685 million) in 2020 for the first time in history.¹⁵ However, due to the COVID-19 pandemic, there have been severe disruptions to the international trade of all countries, including between India and Sri Lanka. Therefore, we are not taking into consideration the data for 2020 and 2021 herein (though provisional estimates are available). Besides, five-year average figures are used here, in order to smoothen annual fluctuations in trade and business cycles.

More importantly, the trade deficit between China and Sri Lanka as a proportion of the total trade between the two countries, has been greater than the trade deficit between India and Sri Lanka as a proportion of the total trade between the two countries. Moreover, while the trade deficit between China and Sri Lanka has been rising, the trade deficit between India and Sri Lanka has been falling in the last five years (2015–2019). In 2015, while the trade deficit between China and Sri Lanka was 85 per cent of the total trade between the two countries, the trade deficit between India and Sri Lanka was 74 per cent of the total trade between India and Sri Lanka.

In 2019, the trade deficit with China had risen to 89 per cent of the total trade, whereas the trade deficit with India has fallen to 67 per cent of the total trade (see [Tables 1 and 2](#)). This is primarily because, while Sri Lanka's exports to China have been between US\$ 211 million (lowest in 2016) and US\$ 308 million (highest in 2015) during the last five years, Sri Lanka's exports to India have been between US\$ 554 million (lowest in 2016) and US\$ 777 million (highest in 2018) during the same period (see [Tables 1 and 2](#)).

Sri Lanka's trade deficit with China is expected to continue to rise in the next decade (and probably beyond) because of the large-scale infrastructure projects undertaken by Chinese State-owned companies such as the China Harbour Engineering Corporation Ltd (CHEC), China State Construction Engineering Corporation (CSCEC), etc.

Similarly, imports from India include goods imported for the infrastructure and other projects across the country funded by the Government of India.

Sri Lanka's exports in the past five years (2015–2019) to the top ten destinations in terms of monetary value (in million US dollars) are catalogued in [Table 1](#). Accordingly, India was the third largest destination for Sri Lanka's exports accounting for a five-year average of 6 per cent of Sri Lanka's total exports per annum between 2015 and 2019. The US was the single largest destination accounting for an average of 26 per cent per annum during the period 2015–2019. The United Kingdom is the second largest destination for Sri Lanka's exports accounting for 9 per cent (on average) of the total exports of Sri Lanka per annum during 2015–2019. China accounted for just 2 per cent (on average) of Sri Lanka's the total exports per annum during 2015–2019 (seventh largest destination) (see [Table 1](#)).

Although China emerged as the single largest source of imports into Sri Lanka in 2016 and 2019 (marginally higher than India), during the five years between 2015 and 2019, on average, India remained the single largest source of imports into Sri Lanka (marginally higher than China) accounting for 20.5 per cent of Sri Lanka's total imports. China accounted for 20 per cent of Sri Lanka's total imports (see [Table 2](#)).

India was the single largest source of imports to Sri Lanka during the five years between 2015 and 2019, averaging US\$ 4.1 billion per annum, accounting for 20.5 per cent of the total imports of Sri Lanka. China was the second largest source of imports to Sri Lanka between 2015 and 2019, averaging US\$ 4.0 billion per annum, accounting for 20 per cent of the total imports. The United Arab Emirates (UAE) (7 per cent or US\$ 1.5 billion), Singapore (6 per cent or US\$ 1.2 billion), and Japan (6 per cent or US\$ 1.2 billion) were the next largest sources of imports to Sri Lanka (see [Table 2](#)).

It is important to note that, while the UAE hardly produces anything of interest, Sri Lanka imports Chinese and other third-country goods from UAE. A significant amount of such imports is financed through *hawala* transactions, which has had severe implications for the dollar shortage experienced by Sri Lanka during the 2020–2022 period and the resultant sovereign default in April 2022.

Sri Lanka has had a trade deficit with India ever since its independence. The only time Sri Lanka had a trade surplus with India was during the Second World War, as the latter had to import food, primary products, and raw materials from the former to feed the war effort.¹⁶ Sri Lanka's trade deficit has been increasing in absolute terms almost every year since 1977. The ever-growing trade deficit with India has been an

irritant in Indo-Lanka relations in the same way as India's relations with other neighbouring South Asian countries.

It is also important to note that, while around two-thirds (66 per cent) of the total exports to India by Sri Lanka between 2001 and 2019 were under the India-Sri Lanka Free Trade Agreement (ISLFTA), the total imports from India covered by the ISLFTA during the same period were just around 10 per cent (Department of Commerce, 2021). In other words, Sri Lanka benefitted significantly more than India as a result of the ISLFTA.

The bulk of the export/import trade with India takes place via sea, between the Colombo and Chennai (Madras), Kolkata, Mumbai, and Tuticorin seaports. Tuticorin, in Tamil Nadu, is the closest and single most important port for trade with Sri Lanka. Low-value high volumes of goods such as textiles and foods (the most prominent import items from India) are transported in 'country crafts' from Tuticorin to Colombo.¹⁷

According to the trading community, if the proposed bridge becomes a reality then the current transport cost could be halved. This could be achieved by various means. At present, ocean freight transport is time-consuming. The travel time between Tuticorin and Colombo is between 12–18 hours (from other Indian ports it is even longer). Moreover, there is a waiting time outside Colombo port to unload the cargo that varies depending on the traffic. Besides, customs clearance (particularly under the FTA that may require verification of the 'rules of origin' clause) may cause further delay resulting in demurrage charges. Hence, the total transaction cost involved in ocean freight transport could be more than 5 per cent of the FOB (Free-On-Board)/CIF (Cost, Insurance and Freight) value.¹⁸

The halving of transport costs would result in an uptick in trade volumes as well as values. Lower transport costs would also depress the prices of goods and services, which in turn would lower the cost of living in both countries; a lower cost of living has the potential to lower poverty levels in both countries. Furthermore, an uptick in the two-way trade via the proposed bridge is expected to create thousands of direct and indirect jobs that would result in the reduction of poverty in both territories.

One could argue that bilateral trade liberalizations (like the FTA) and trade facilitations (such as the proposed bridge) would result in trade diversion rather than trade creation. To elaborate this argument further, bilateral liberalizations/facilitations may divert trade from other more competitive sources of import rather than creating additional trade between any two countries. However, several studies (including sectoral studies) on Indo-Lanka trade have shown that India is the main/major source of goods that are imported to Sri Lanka because it is more competitive (least cost) than other sources and that the Indo-Sri Lanka Free Trade Agreement (ISLFTA) has, in fact, resulted in trade creation rather than trade diversion.¹⁹ In other words, the likely impact of the proposed bridge is expected to be that trade creation would far outweigh trade diversion.

Commodity composition of Indo-Lanka trade

While Sri Lanka exports only a handful of items in considerable quantity/value to India, it imports a variety of items in significant quantity/value from India. Traditionally, Sri Lanka has been exporting primary products and raw materials to India; cardamom, cinnamon, cloves, pepper, rubber, and coconut products are the

traditional export commodities to India. In the past decade or so, scrap metal, waste paper, and glycerol have been added to the list of exports. After the ISLFTA came into effect in 2000, furniture and rubber tyres (both manufactured products) joined the major export list of Sri Lanka to India.²⁰

On the other hand, imports from India include primary and manufactured products, and raw materials,²¹ dry food items like rice (occasionally), potato, onion, chilli, Mysore dal, chickpeas, garlic, all types of vehicles (bicycles, motorcycles, three-wheel taxis, passenger cars, buses, trucks, and lorries), variety of machinery and parts thereof, electrical and mechanical equipment, plastic products, chemicals, and textiles and garments including accessories.²² India is the single largest source for most of these imports to Sri Lanka.

By and large, the commodity composition of Sri Lanka's imports from India has not undergone much change; exports to India have undergone some change, particularly since the FTA came into effect in March 2000.

India has been historically exporting over one thousand items to Sri Lanka in the past several decades.²³ Therefore, the proposed bridge would have little impact on the commodity composition of imports from India to Sri Lanka. However, there is tremendous scope for Sri Lanka to expand the commodity composition of its exports to India, as it comprises only a handful of goods at present to any considerable volume and value.²⁴ Already, in the aftermath of the ISLFTA, the commodity composition of Sri Lanka's exports to India has begun to widen.

The two post-ISLFTA Sri Lankan exports to India are readymade furniture and rubber vehicle tyres. Damro, a major furniture manufacturer in Sri Lanka, to date has opened 62 sales outlets (including franchise stores) in Andhra Pradesh, Goa, Karnataka, Kerala, Tamil Nadu, Telangana, and West Bengal.²⁵ Associated Motorways, an Indian company, bought the State-owned Kelaniya tyres in the 1990s and is producing vehicle tyres using local rubber and exporting them to India, Pakistan, and other countries. Similar Indian investments in Sri Lanka with buy-back arrangements could become financially viable as a result of the proposed bridge between India and Sri Lanka.

Transportation time and cost

Bulk of Indo-Lanka trade takes place by sea, particularly between Tuticorin and Colombo. The cargo is transported in 'country boats'. Traders prefer this mode of transport because they can import in smaller quantities, which would save them storage/warehouse space as well as spoilage and financial capital. It takes between 12–18 hours for the country boats to ply between Tuticorin and Colombo. In addition to the foregoing sailing time, on average it took another 1.8 hours to enter Colombo port for non-container ships and 1.5 hours for container ships in 2019. Besides, the turnaround time at the Colombo port (i.e. time taken between entry and exit) was about 96.4 hours on average for non-container ships and 20.6 hours for container ships in 2019 (see [Table 3](#)). Moreover, at least 6 hours should be added for loading at the Tuticorin port. Hence, the total time taken to transport goods from Tuticorin to Colombo is between 116 and 122 hours (i.e. around five days) for non-container ships, and between 40 and 46 hours (i.e., nearly two days) for container ships. Thus, it takes between two and five days to transport goods from Tuticorin to Colombo, which is excessive.

Table 3. Time Taken at Colombo Port 2019.

	Time (number of hours)
Average waiting time at Colombo port	1.8 hours
Non-container ships	1.5 hours
Container ships	
Average service time at Colombo port	90.2 hours
Non-container ships	17.7 hours
Container ships	
Average turnaround time at Colombo port	96.4 hours
Non-container ships	20.6 hours
Container ships	

Source: Sri Lanka Ports Authority cited in Department of Census and Statistics, *Statistical Abstract 2019*, Chapter 7, Table 7.15, Colombo at <http://www.statistics.gov.lk/abstract2020/CHAP7/7.15> (Accessed on 20 June 2022).

The freight charges vary depending on the type of goods and the route taken, and are subject to seasonal and yearly variations in freight costs. According to a shipping company, in 2019, the freight charge plus terminal handling charges (at both ends) for a 20 feet general purpose container was \$625 and for a 40 feet high cube container was \$1,050 from Tuticorin to Colombo. A container would take 18–28 tonnes of goods depending on the type of goods. Thus, to transport a ton of goods from Tuticorin to Colombo by sea freight would cost between \$27 (general purpose container) and \$46 (high cube container). In addition, demurrage charges may be incurred due to the delay in the verification of the ‘rules of origin’ certificates under the FTA. However, the ocean freight costs from Chennai and Mumbai are lower (see Table 4).

One of the potential benefits of the proposed bridge would be a considerable reduction in the transportation time and freight cost noted above. The planned bridge is expected to be 23 km in length, which could be covered in less than an hour. From the arrival point in Talaimannar, it would take another 7–8 hours to reach Colombo by road (roughly 367 km). Hence, the total of 9 hours of travel time by road would be a tiny fraction of the 40–122 hours’ time taken by ocean currently. The waiting time for customs clearance and other formalities could also be significantly reduced because the land route will involve only exports/imports to/from India whereas the Colombo Harbour handles trade to and from all over the world.

In container shipping, the terminal handling charges at origin and destination ports were considered to exceed the freight rates, particularly in Asian countries.²⁶

Table 4. Freight Charges 2019.

Shipping Route	Freight charges + terminal handling charges for 20’ general purpose container US\$	Freight charges + terminal handling charges for a 40’ high cube container US\$
Tuticorin – Colombo	625	1050
Chennai – Colombo	350	585
Mumbai – Colombo	325	550

Source: Neon Maritime (Pvt) Ltd, Colombo.

One of the major services in demand at Colombo port is facilitating transshipments from and to Indian ports.²⁷ By switching to road transport, the costs at ports can be avoided (destination port charges, destination terminal charges, and terminal charges if different terminals are used for transshipment discharge and load, etc.).

These transshipment trade volumes have been falling over the last few years,²⁸ due to India's focus on cabotage reforms. If Sri Lanka were to provide lower-cost transport alternatives by road and rail, it would be advantageous for the Sri Lankan economy, as it will be able to retain at least part of these transshipments, especially those transported by international shipping liner services.

Importers/traders estimate that 25–30 per cent of the freight cost could be saved if cargo is transported via road/s. In addition, another 50 per cent could be saved in transaction costs in terms of time saved. Hence, overall 75 per cent savings could be made in transportation costs if a bridge is built across the Palk Strait.

In addition to ocean transport, Indo-Lanka trade takes place by air as well. However, the bulk of the trade by air is undertaken informally/unofficially.²⁹ According to an estimate, the two-way informal trade between India and Sri Lanka had been US\$ 249 million in 1992, increased to US\$ 277 million in 1996 and then declined to US\$ 205 million in 2000.³⁰ It appears that the trade liberalization in India underway since 1991 has made a dent in the two-way informal trade, especially in Sri Lanka's informal exports to India. One of the major reasons attributed to informal trade in the age of trade liberalization on both sides, was the lower time taken to reach the markets.³¹ Although air transport is the shortest in terms of time, it is very costly. Table 5 catalogues the air freight charges by Sri Lankan Airlines for imports³² as well as exports.³³ Of course, these costs have increased enormously since March 2022 due to a huge rise in the prices of fuel globally and the sharp depreciation of the Sri Lankan rupee. Hence, we would argue that the proposed bridge would facilitate quicker reach to the markets at markedly lower transportation costs.

Rail transport is the most cost-effective for freight transportation. Rail is widely considered the least costly mode for freight transportation, especially for distances

Table 5. Air Cargo Charges 2019.

Charge	Import		Export
	Per Kg (LKR)	Minimum Charge (LKR)	Per Consignment (1 US\$ = LKR 177)
Documentation	1,500 per consignment		1,416
Handling Charges			
General Cargo	13.50	1,250	708
Special Cargo	20.00	3,000	14,160
A Courier	20.00	1,500	
B Courier Detained	09.00	1,500	
Express Courier	25.00	3,000	15per cent of freight charges Minimum Rs. 3,000
Fuel Surcharges	Not Applicable		53.10

Source: Sri Lankan Airlines, Colombo, Sri Lanka. <https://www.srilankancargo.com/hub-in-the-ocean/import-charges>, <https://www.srilankancargo.com/hub-in-the-ocean/export-charges> (Accessed on 20 June 2021).

Table 6. Freight Rates by Rail 2019.

	Rate per km (Rs.)	Rate per ton per km (Rs.)
Reserving Wagon		Not Available
Four Wheeled Wagon	2,500	
Eight Wheeled Wagon with loading capacity;		
• 28 Tons	3,000	
• 39.6 Tons	4,000	
• Above 39.6 Tons	4,500	
Transportation		5.25
Raw Material		6.00
Bulk Goods		

Source: Sri Lanka Railways, Colombo at http://www.railway.gov.lk/web/images/pdf/charges_transporting_goods.pdf (Accessed on 20 June 2021).

over 200 kilometres. The freight rates for transportation by rail in Sri Lanka are given in Table 6. In comparison with air freight rates, which costs Rs.13.50 per kilogram, rail freight costs only Rs. 6 per ton (1,000 kilograms) per kilometre. Of course, these costs would have increased since 2022 because of the global oil price rise and the sharp depreciation of the Sri Lankan rupee.

The South Asian countries that trade with Sri Lanka, such as India, Pakistan, and Bangladesh, have well-developed railway networks. Furthermore, all these countries have the same rail gauge (broad gauge). Up to the Talaimannar Pier, the railway tracks and stations are well maintained to this date. That is, Indo-Lankan trade by rail can be undertaken using existing rolling stock; the only cost being the construction cost of the land bridge between Talaimannar and Dhanushkodi. Therefore, the connectivity offered by the proposed bridge between Sri Lanka's railway network and South Asia will reduce the transportation cost of trade even more.

Research reveals that transportation of freight by rail offers not only financial but many economic and environmental benefits as well. This reduction is in terms of reduced accident costs, emission costs, and vehicle operating costs (a train of 60 cars can carry around 4000 tons of cargo).³⁴

The air travel cost to/from India is expensive. The main route through which Indo-Lanka trade by air takes place is the Chennai-Colombo route. In 2019, the return airfare to Chennai was around LKR 30,000 (inclusive of all taxes). This price has increased by almost three times in 2022 for reasons noted above. Colombo-Chennai-Colombo is the busiest route for Sri Lankan Airlines deploying the largest number of flights per week and carrying the largest number of passengers.

The airfares to/from India are excessive in comparison to the airfares to the South East Asian countries. Table 7 catalogues the cheapest airfares between Colombo (CMB) and Bangkok, Chennai, and Singapore in 2019 (please note that airfares fluctuate during the course of any year and between years). Accordingly, an air mile to Chennai costs Rs.32, whereas it costs only Rs.13 to Bangkok, and Rs.10 to Singapore.

The proposed bridge between Dhanushkodi and Talaimannar would drastically reduce the travel costs between Sri Lanka and India. The reduction in travel costs would in turn drastically reduce the transportation cost of informal/unofficial trade

Table 7. Comparison of Airfares to Selected Routes 2019.

Route	Distance (Roundtrip) (Air miles)	Airfare (Roundtrip) (LKR)	Airfare Per Air Mile (LKR)
CMB-Chennai-CMB	964	30,798	32
CMB-Bangkok-CMB	3,556	44,694	13
CMB-Singapore-CMB	4,100	38,409	10

Source: Average price by <https://www.faredetective.com/farehistory/flights-from-Colombo-CMB-to-Chennai-MAA.html> (Accessed on 20 June 2021).

between India and Sri Lanka resulting in lower prices (by extension lower cost of living) in both countries. Besides, there is a weight limit for goods carried in accompanied baggage via air, which would not be the case via road. However, road transport would take longer time than air, and therefore, for goods that are time-sensitive, air transport may still be preferred. The building of the bridge would almost completely divert the trade via air (both formal/official and informal/unofficial) to via road, which would have a significant reduction in the cost of goods and services. This diversion of trade from air to road transport would also have a multiplier effect, especially on the services sector in these countries.

In 2019, nearly two-thirds of the cargo handled by the Colombo port was transshipments trade from India. That means, considerable Indian exports to the rest of the world are transshipped through the Colombo port. If the proposed land bridge materializes, India's transshipments trade can use the road and/or rail up to Colombo and then ship to other countries. This would reduce the freight cost of such transshipments trade. However, the economic cost of both modes of transshipment has to be worked out considering the city/town of origin of such transshipments trade in India.

Domestic road network

To reap the maximum benefit of the proposed bridge between India and Sri Lanka, domestic road networks in both countries need be upgraded. Here, we concentrate on the domestic road network on the Sri Lankan side. At present, the Talaimannar-Colombo stretch is almost 370 km by road, because vehicles have to travel via Anuradhapura (see Table 8).

There is a direct route from Talaimannar to Colombo along the coast (through the Wilpattu wildlife sanctuary), which is currently not in use. This direct route is about 80 km shorter than the route via Anuradhapura. Since it has not been in use for a very long time (due to the civil war), this direct road is in very bad condition for vehicular traffic. If this direct route is rehabilitated and upgraded then it could save nearly 90 minutes of travel time to/from Colombo.

Jaffna would be another major market for the proposed Indo-Lanka Bridge, next only to Colombo. At present, Jaffna is about 250 km from Talaimannar via Vavuniya (see Table 8). However, there is a shorter coastal route to Jaffna from Talaimannar via Uyilankulam (in the Mannar district), Pooneryn (Kilinochchi district), and Sangupitty bridge (A32). This route is about 50 km shorter than via Vavuniya. In other words, it will save at least one hour of travel time to Jaffna from Talaimannar

Table 8. Land routes by distance.

Land Route	Distance (kilometres)
Talaimannar – Colombo (via Anuradhapura)	367
Talaimannar – Colombo (direct route)	287
Talaimannar – Jaffna (via Vavuniya)	246
Talaimannar – Jaffna (direct route)	196
Talaimannar – Trincomalee	201
Talaimannar – Batticaloa	200

Source: Department of Survey, Colombo, Sri Lanka.

via the coastal route. This road has been rehabilitated and upgraded in the post-civil war period, but has not been used much by passenger and goods vehicles.

A highway from Talaimannar to Katunayake along the north-western/western coast could be built to join the Katunayake-Colombo Expressway. This could cut down travel time considerably. Besides, a highway linking Talaimannar and Trincomalee (via Vavuniya and Horowpathana) would provide speedier and easier access to Sri Lanka's Eastern Province. The foregoing are potential positive multiplier effects of the proposed land bridge.

Potential positive impacts of the proposed bridge

The Northern Province (encompassing the Jaffna, Kilinochchi, Mannar, Mullaitivu, and Vavuniya districts) and the North Central Province (encompassing the Anuradhapura and Polonnaruwa districts) of Sri Lanka are the lowest contributors to the national economy for a very long period. The poverty and unemployment rates of these provinces are the highest in the country and the human development index of these provinces is the lowest in the country.³⁵

The business communities in the Northern and North Central Provinces have long complained about their inability to directly engage in international trade. Presently, the businesspersons in the Northern and North Central Provinces can engage in export/import trade only through exporters/importers in Colombo. For instance, Letters of Credit (LC) for international trade cannot be opened in the banks in these provinces. Hardly any commercial international trade takes place from the ports such as Kankesanthurai and Trincomalee in the Northern and Eastern Provinces.

The proposed bridge is expected to boost direct international trade between the northern, north-central, and eastern regions of Sri Lanka and India (particularly Southern India), which would considerably reduce the transportation and transaction costs involved in such direct trade. Moreover, the trade flows through the proposed bridge would generate thousands of direct and indirect jobs in these regions of Sri Lanka that have one of the largest unemployment and under-employment rates in the country.

Moreover, southern parts of the Tamil Nadu are lagging behind the northern parts of the state where the economic activities are concentrated such as the special economic zone in Sriperumbudur on the outskirts of Chennai (formerly known as Madras), which has become an automobile cum electronics industrial hub in India. The proposed Indo-Lanka Bridge would be an economic driver for the lagging southern parts of Tamil Nadu as well. Although the southern Indian states (Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu) have outperformed northern Indian

states in terms of economic growth and human development during the post-economic reform period (post-1991),³⁶ there has been unbalanced growth in each of the southern Indian states, resulting in leading and lagging regions within every southern Indian state.

India has been the largest single source of tourists to Sri Lanka for the past decade or more. Sri Lanka recorded over two million (2,333,796) tourist arrivals in 2018. By region, Europe was the largest source of tourist traffic to Sri Lanka (840,956 or 36 per cent) followed by South Asia (543,160 or 23 per cent) and East Asia (423,571 or 18 per cent). By country of origin, India (424,887), China (265,965), and the UK (254,176) were the three highest sources of tourists to Sri Lanka in 2018 (Central Bank of Sri Lanka, 2021). In 2019, tourist arrivals in Sri Lanka dropped considerably in the aftermath of the Easter Sunday suicide bombings. In 2020, tourist arrivals dropped by 75 per cent due to the COVID-19 pandemic. Hence, we have used the 2018 data here. Similarly, visitors from Sri Lanka are the second largest source of tourists to Tamil Nadu after Malaysia.³⁷

However, only a small fraction of Indian tourists visits the Northern, North Central, and Eastern Provinces of Sri Lanka due to the long distance from Colombo, where the main international airport is located. Therefore, the proposed bridge would boost tourist traffic to the marginalized Northern, North Central, and Eastern Provinces of Sri Lanka.

Tamil Nadu has emerged as the second most industrialized state in India (out of its 29 states and 7 union territories) in terms of industrial output after Maharashtra.³⁸ Tamil Nadu is the automobile hub of India where American, French, German, Japanese, and Korean automobile manufacturers have set up manufacturing plants, and is aptly dubbed the 'Detroit of India'.³⁹ If Sri Lanka could hook up to the supply chains of the automobile industry in Tamil Nadu by producing certain parts for the automobile industry there, it would be a major boost to the Sri Lankan economy in general and the Northern, North Central, and Eastern provincial economies in particular.

Potential negative impacts of the proposed bridge

According to Sir Isaac Newton's third law of motion, every action would have an equal and opposite reaction. Similarly, all development activities like the proposed bridge would have positive and negative impacts. Two potential negative impacts that could be envisaged are the potential rise in narcotic drug (heroin, marijuana, etc.) trafficking from India to Sri Lanka and the trafficking of children and women in both directions. Trafficking in heroin is a big transit trade from India to Sri Lanka.⁴⁰ This may receive a boost if the two countries have a road link. However, detection of such illicit activities would be relatively easier on land than at sea, if modern detection methods are used by the Customs.

Trafficking in women and children from Nepal and Bangladesh to India through their respective porous land borders is well documented. However, trafficking in women and children between India and Sri Lanka is absent mainly because of the lack of a land border between the two countries. But if the proposed bridge becomes a reality then the likelihood of trafficking in women and children may become real, especially from India (and other South Asian countries) to Sri Lanka.

Therefore, the two potential negative impacts of the proposed bridge should be weighed-in with the potential positive ones.

Conclusion

Any infrastructure development project such as the proposed Indo-Lanka Bridge would have benefits and costs. On the benefit side, the likelihood of increased and improved trade relations in goods and services, enhanced investment opportunities, greater tourist traffic, new employment generation, considerable reduction in the cost of living and consequent rise in the nutritional level of the people, and above all, accelerated people-to-people contact in both countries could be identified. On the cost side, the possibility of a rise in narcotic drug trafficking (especially heroin), trafficking in women and children, loss of productive activities in the agriculture and small and medium industries due to non-competitiveness in both countries, and the decline in air and shipping traffic, could be identified.

We would argue that, on a balance of probability, the likely total benefits that could accrue from the planned Indo-Lanka Bridge would outweigh the likely total costs. Nonetheless, a more thorough socio-economic cost-benefit analysis is required to confirm this analytical perspective. We also appreciate the fact that there could be political impediments to the realization of this mega infrastructure project on the Sri Lankan side.⁴¹

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