

Assessing the Benefits and Costs of Mega Infrastructure Initiatives in Asia

Ganeshan Wignaraja

INTRODUCTION

Much of the academic and policy debate on Asia's infrastructure development has focused on China's Belt and Road Initiative (BRI), which aims to improve regional connectivity and cooperation on a trans-continental scale (see Jinping, 2017; Hillman, 2018; Prasad, 2018). But several large-scale BRI infrastructure projects have come under greater scrutiny recently, as Asian economies reassess their benefits (Saara, 2019). Yet the BRI is only one of many competing initiatives started by major economies that are seeking to exploit new infrastructure investment opportunities in Asia (Shepard, 2017). The impact of these initiatives on Asian economies is not well understood, due to, among various reasons, their recent origin, the lack of available data and gaps in national infrastructure capacity.

This article attempts to assess the benefits and costs of mega infrastructure initiatives in Asia. It examines four related issues: (1) the role of infrastructure investment in Asia's development and the infrastructure investment gap, (2) the spread of mega infrastructure initiatives across Asia, (3) emerging risks to Asia from such initiatives, and (4) national strategies to mitigate risks.

WHY INFRASTRUCTURE INVESTMENT MATTERS

One of the key lessons from Asia's economic miracle story is that investing in national infrastructure (transportation, power, water, and telecommunications systems) facilitates trade, people movement and growth. Famous examples of trade-related infrastructure projects are available from newly industrialising economies (NIEs) in East Asia. South Korea invested US\$10 billion to build the Busan Port, which today handles about three-quarters of the country's container traffic. Singapore invested around US\$6 billion to construct Changi Airport, which has become one

of Southeast Asia's busiest transport hubs, annually moving over 60 million people and over 2 million tonnes of air freight. These investments have helped both economies to experience rapid structural transformation and growth over several decades. Per capita incomes have risen rapidly and enabled Korea and Singapore to become high-income economies.

More recently, Asia has invested in regional infrastructure which has traditionally linked neighbouring countries for trade-led development. This has roots in the economic literature on geography and trade pioneered by Krugman (1991) and others. It highlights the notion that distance matters for trade and that trade costs between neighbours can be reduced by building roads, railways, power transmission lines and other means for regional connectivity. The Kunming-Singapore railway, often labelled the Pan-Asian Railway Network, which links China, Singapore and other Southeast Asian countries, is an important example. This builds upon a fragmented railway network that originated in British and French colonial times. Another is the Central Asia Road Links Programme of the World Bank, which aims to improve road connectivity between Tajikistan, Kyrgyz Republic and Uzbekistan.

There is little doubt that such cross-border projects have contributed to Asia's rapid economic development, by stimulating flows of goods, services, investment, and people across the borders of neighbouring countries. By improving connectivity, they have also fostered regional peace and cooperation among the region's small and large countries alike. Safeguards and public policies have been pursued to reduce negative effects from such projects, including displaced people, environmental degradation, and crime.

Recent research has examined the plethora of infrastructure challenges globally and in Asia. The enormous infrastructure investment gap – the difference between investment needs and current investment levels – has been identified as one of the most pressing issues (Peel and Mitchell, 2017). McKinsey Global Institute (2016) found that the world invests US\$2.5 trillion a year in infrastructure while US\$3.3 trillion is required annually from 2016 until 2030 to support projected growth. A particularly glaring infrastructure investment gap exists in Asia. The Asian Development Bank (ADB) (2017) found that Asia annually invests US\$881 billion a year in infrastructure while US\$1.7 trillion a year is needed until 2030 to maintain regional growth and respond to climate change. The region's infrastructure investment gap is thus US\$819 billion per year until 2030.

THE SPREAD OF MEGA INFRASTRUCTURE INITIATIVES

Asia's large investment gap has also led to several competing mega infrastructure initiatives led by major economies in Asia (China, Japan, ASEAN, Korea and India) and elsewhere (the EU and the US). Being much more ambitious and complex than arguably simpler two-country infrastructure projects, these large initiatives will likely have significant implications for Asian economies and businesses within them. The motives for mega infrastructure initiatives range from narrowly promoting the commercial interests of state-owned enterprises (SOEs) and multinational enterprises of major economies to providing broader philanthropic support to develop poorer Asian countries. Other motives include export of surplus capital and manpower, defence-related interests, strategic competition between major powers, and global domination of critical Asian sea-lanes and land corridors.

Table 1 provides an overview of five mega infrastructure initiatives criss-crossing Asia on which some data was available from different sources. Some observations should be noted.

First, these are all relatively recent. The first movers in 2013 were China's ambitious Belt and Road Initiative (BRI) and the much smaller ASEAN Infrastructure Fund (AIF). These were followed in 2015 by Japan's significant Partnership for Quality Infrastructure (PQI) and in 2016 its Enhanced Partnership for Quality Infrastructure (EPQI). In 2017 the US-led Free and Open Indo-Pacific Strategy (FOIP) was launched and in 2018 the EU Strategy for Connecting Europe and Asia.

Second, these five mega infrastructure initiatives collectively make only a modest contribution to financing Asia's enormous infrastructure needs. A conservative estimate (assuming a BRI lower bound estimate of US\$340 billion) of the combined value of the five initiatives in Table 1 gives a figure of about US\$754 billion over a 5-7 years time horizon. This works out to between US\$108 to US\$151 billion annually. Assuming that the financing in mega infrastructure initiatives is additional money and only spent in Asia, the region's infrastructure investment gap only reduces to between US\$668 to US\$711 billion annually until 2030.¹ Financing Asia's unmet infrastructure needs thus remains a significant development challenge for regional economies.

¹ The annual value of the five mega infrastructure initiatives (US\$108 billion to US\$151 billion) was added to the annual regional infrastructure spending figure of US\$881 billion from ADB (2017) and subtracted from the estimated regional needs of US\$1.7 trillion.

Table 1: An Overview of Selected Mega Infrastructure Initiatives in Asia.

Launch Date and Major Economy	Name	Size (US\$)	Focus Sectors and Key Actors
2013 September, China	Belt and Road (BRI) Initiative	\$340 billion – \$1 trillion (1)	Port, transport and energy infrastructure across Asia, Africa and Europe. China's state-owned enterprises (SOEs), China Development Bank (CDB), Export-Import Bank of China (EIBC), a Silk Road Fund, and the Asian Infrastructure Investment Bank (AIIB).
2013 December, ASEAN	ASEAN Infrastructure Fund (AIF)	\$4 billion 2013-2020 (2)	Projects listed under the ASEAN Master Plan for Connectivity (like power and water) exclusively for Southeast Asian economies. Multinational corporations (MNCs) from ASEAN and elsewhere and co-financing by the AIF, ASEAN economies, the ADB and the World Bank.
2015 May, Japan	Partnership for Quality Infrastructure (PQI)	\$110 billion 2016-2020	Port, transport and energy infrastructure projects across the world. Japan's MNCs, Asian Development Bank, Japan International Corporation Agency (JICA) and Japan Bank for International Corporation (JIBC).
2016 May, Japan	Enhanced Partnership for Quality Infrastructure (EPQI)	\$200 billion 2017-2021 (2)	
2017 November, US	Free and Open Indo-Pacific (FOIP) Strategy	\$70 billion (1)	Energy infrastructure (LNG plants), digital connectivity and cybersecurity, safe storage/transport of nuclear materials across Indo-Pacific region. US MNCs, International Development Finance Corporation (IDFC), Millennium Challenge Corporation (MCC) and the World Bank.
2018 October, EU	EU Strategy on Connecting Europe and Asia	\$140 billion (Euro 123 billion) 2021-2027 (3)	Transport, energy and digital infrastructure to link Europe with Asia. European MNCs, European Union, European Investment Bank (EIB), and the European Bank for Reconstruction and Development (EBRD).

Notes: (1) Estimate. (2) Official Pledge. (3) Proposed.

Sources: Hillman (2018); Izumi (2017); http://europa.eu/rapid/press-release_MEMO-18-5804_en.htm; <https://www.state.gov/secretary/remarks/2018/07/284722.htm>; <http://icr.unwto.org/fr/content/asean-infrastructure-fund-aif-asian-development-bank>.

Third, China and Japan's mega infrastructure initiatives are more ambitious geographically and in size than those of the US and EU. In fact, China's initiative is larger in terms of US\$ than those of the US and EU combined while Japan's is about the same size. Meanwhile, ASEAN's initiative is much smaller than that of either the US or EU.

Fourth, financial commitments and scope, although not yet determined, are likely to be relatively small for three other mega infrastructure initiatives that are known to exist – Russia’s Trans-Eurasian Belt Development of 2015; the Asia-Africa Growth Corridor of 2017 led by India and Japan; and South Korea’s Northern and Southern Policy of 2017 (Shephard, 2017).

As Asia’s mega infrastructure initiatives are still in the initial phase of development, detailed information about them and the project pipelines within them are generally lacking. For instance, neither China’s BRI nor Japan’s PQI post online a complete list of projects and the terms granted to recipient economies in Asia. Likewise, official information is absent about plans for Korea’s Northern and Southern Policy or Russia’s Trans-Eurasian Belt Development. That said, some initiatives seem better designed than others; with deep project management, high-quality engineering solutions, strong buy-in from recipients, sizable financial commitments and support from multilateral development banks (MDBs) with high standards. As good management, engineering, and donor practices spread, laggard initiatives may well emulate their predecessors; a coherent and transparent architecture of mega-regional infrastructure initiatives might one day emerge in Asia.

EMERGING RISKS

Aside from an information deficit, multiple and overlapping mega infrastructure initiatives in Asia also risk creating a “noodle bowl” phenomenon. The “noodle bowl” effect, which is more typically associated with free trade agreements (FTAs) in Asia, refers to a situation in which a growing number of overlapping arrangements generate increasingly complex rules and standards which give rise to significant transaction costs for economies and business (Kawai and Wignaraja, 2011). A similar analogy can be applied to the more recent spread of mega infrastructure initiatives (Wignaraja, 2015). These initiatives share the goal of financing infrastructure in Asia and largely focus on similar sectors. However, they differ significantly in their vision, scale and terms of financing, implementation strategies, procurement approaches and the actors involved.

The risk of an entangled “noodle bowl” of mega infrastructure initiatives in Asia may be exacerbated by three factors.

First, scarce finance may be packaged in a complex way that could make the “noodle bowl” effect more pronounced. As mentioned above, Asia has a large infrastructure investment gap. Recipients and donors want to stretch these limited funds in clusters of projects and individual projects through innovative financial means; such as procurement rules favouring single sourcing by SOEs and MNCs

from the donor economy, co-financing mega projects with MDBs, state guarantees to incentivise private investors, fully-fledged public private partnerships (PPPs), and re-packing of various financing instruments. Governments often need to finance increased spending for mega infrastructure projects in cash-strapped national budgets through international bond issues. Indeed, a bewildering array of partnerships, instruments and financial terms will likely make managing the financing of infrastructure projects more difficult to fathom by recipients and to coordinate among the various actors. The more complex the project and the larger the number of bidders, the more difficulties for recipients.

The potential “noodle bowl” problem is illustrated by a high-speed rail (HSR) project in Indonesia, Southeast Asia’s largest economy. Indonesia wished to build a 150km HSR link from Jakarta to the country’s fourth largest city, Bandung, and attracted the interest of Chinese and Japanese consortiums during tendering (see Prasad, 2018). This was a new technology to the country, which lacked the capability. The Japanese side undertook careful feasibility studies over five years and thought the deal was clinched in 2015. However, a Chinese bid undercut Japan’s offer and altered the project specifications. Unlike the Japanese offer, the Chinese one did not need a full sovereign guarantee from Indonesia. A bidding race followed with each consortium offering more financing and reducing the implementation timeline. Construction began in 2016 after the Chinese side won the contest but stalled due to mounting project costs and financing problems. It is expected to be completed in 2021 at an escalating cost from the initial figure of about US\$6 billion. The next rail project – to upgrade the railway line between Jakarta and Surabaya – was awarded to Japan, which signalled that Indonesia wanted to maintain a competitive environment for rail tenders. However, it meant that Indonesia now had two vastly different HSR rail systems, which could strain its limited technical and operating capacity. If future HSR projects are awarded to consortiums from other major economies, the “noodle bowl” problem could be exacerbated for Indonesia.

Second, intense selling by some bidders from major economies under mega infrastructure initiatives can lead to “white elephant” projects which poses economic risks to participating economies. Lucrative project contracts coupled with a lack of transparency in tendering procedures provide incentives for rent-seeking activity in recipients. A recipient’s infrastructure landscape could become littered with large infrastructure projects which are over-budget, loss-making and low-return generating. The consequences are debt sustainability, governance, and transparency issues in participating countries. Asian economies, with weaker financial capacity and governance standards, may be more susceptible than richer countries to these risks, and may find that their implementation capacity is overstretched.

The problem of white elephant projects is illustrated by the Sinamale bridge project² in the Maldives, a strategically located group of dispersed atolls in the Indian Ocean. The Maldives wanted to build its first inter-island sea bridge, 2.1km long, between the airport and the wider metropolitan island of Hulumale and the capital city, Male (Saara, 2019). An Indian and a Chinese company bid for the project, which the latter won. The bridge opened in 2018. The original project cost of US\$210 million – which allegedly over-ran to US\$300 million – was financed by a part grant and part commercial loan from China under the BRI initiative during the administration of former President Yameen Abdul Gayoom. Cost-recovery was limited due to nominal toll fees for vehicles. The project is also clouded by allegations of corruption and debt trap diplomacy (Macan-Markar, 2019). The incoming administration of President Ibrahim Mohamed Solih alleges that the Maldives paid for a four-lane vehicular bridge but only got two lanes. An investigation is planned into BRI projects in the Maldives.

Third, mega infrastructure initiatives will likely create winners and losers. Winners arise when initiatives (i) reinforce comparative advantage reflected in trade and foreign direct investment (FDI) patterns in Asia, to avoid the risk of “building ports and airports to nowhere”; (ii) are backed by open regionalism initiatives and domestic structural reforms; (iii) incorporate adequate safeguards (e.g., for the environment and resettlement) in formulating projects; and (iv) coordinate among themselves in key areas such as planning, project formulation, procurement practices, financing, and implementation.

Losers from initiatives are hard to predict, as the devil is in the detail for specific projects. Landlocked countries like Nepal, or island states like the Maldives or Fiji, that are somewhat excluded from mega infrastructure initiatives may be marginalised. The same might apply to distant provinces within large Asian economies like Indonesia or Bangladesh. Some transport routes – either land or maritime transport, for instance – and some workers, such as port workers, may also fail to benefit from efficiency-seeking PPPs.

Ironically, the quest to maximise the benefits of mega infrastructure measures could contribute to the “noodle bowl”. Asian economies should collectively adopt offsetting measures in order to avoid this outcome and mitigate the negative effects of such initiatives. Creating Asian variants of the EU’s regional development funds would address regional development imbalance; these funds are best established under the framework of sub-regional cooperation bodies like ASEAN, Bay of

² Also referred to as the China-Maldives Friendship Bridge.

Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) or Indian Ocean Rim Association (IORA).

NATIONAL STRATEGY

As more mega infrastructure initiatives are established, the likelihood of Asian “noodle bowl” risks increases as well as the transactions costs for economies and business. Several actions are needed to mitigate these risks and costs in Asian economies.

First, Asian economies need to do their homework to efficiently utilise the package of finance and expertise from mega infrastructure initiatives to raise national economic development. This means the following measures:

- developing a medium-term national infrastructure master plan which carefully assesses needs, priorities and projects;
- ensuring that the projects in the national budget originate from the master plan;
- investing infrastructure management and financing capacity in ministries of finance particularly for international procurement practices for infrastructure projects and the capability to evaluate the financial costs and benefits of alternative bids;
- formulating enforceable anti-corruption laws with credible penalties to deter offenders; and
- implementing prudent macroeconomic policies which emphasise careful debt management, build-up of foreign exchange reserves and efficient tax revenue administration.

Second, in view of the long gestation period of infrastructure projects and the potential risk of white elephant projects under mega infrastructure initiatives, holding a national dialogue on infrastructure development can help to reduce economic risks. The draft national infrastructure master plan should be the basis for such a dialogue, which should be attended by all political parties, ministries of finance and central bank officials, academics, businesses, civil society and the media. Successful Asian economies have managed the difficult exercise of forging a national consensus on infrastructure development in a transparent manner.

Third, embedding the financing requirements for infrastructure projects in economic reform programmes – either home-grown or under the preview of the IMF

and the World Bank – is a necessary task for implementing a stable and predictable macroeconomic policy.

Fourth, major economies behind mega infrastructure initiatives should be more transparent about releasing project-level data (including agreements with governments, financial terms and feasibility studies), provide training for national counterparts and adhere to strict anti-corruption standards.

CONCLUSION

Major economies in Asia and elsewhere deserve praise for attempting to solve Asia's large infrastructure investment problem with mega infrastructure initiatives and various project pipelines. However, the proliferation of such initiatives may give rise to an Asian "noodle bowl", which could raise transactions costs for regional economies. It is important for Asian economies to develop coherent national strategies to reap the benefits while minimising the costs of mega infrastructure initiatives. Major economies should be supportive of these efforts through data, training and anti-corruption measures. Clearly, more thought and time are needed to ensure that these mega infrastructure initiatives support Asia's transition to successful middle-income and high-income status in the future.

Ganeshan Wignaraja is Executive Director, Lakshman Kadirgamar Institute of International Relations and Strategic Studies (LKI), Sri Lanka and Senior Research Associate, Overseas Development Institute (ODI), UK. The views expressed here are solely by the author and should not be attributed to either the LKI or ODI.

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