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Promoting Cross-Border Connectivity in Asia: The Role of the Asian Development Bank

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Abstract

Improvements in all forms of connectivity increases a country's competitiveness by reducing trade costs, which in turn affects trade and investment flows, and economic development. Despite significant progress, gaps in both hard and soft infrastructure remain in Asia. Cross-border connectivity (CBC) projects can generate significant benefits that cannot be realised through national initiatives alone. ADB and other international financial institutions (IFIs) have played a critical role in filling the gap. However, unless capacity utilisation is increased by software related improvements, the borrowings cannot be justified. The digital economy will also require new types of connectivity due to new modes of service delivery, and IFIs must respond.

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Promoting Cross-Border Connectivity in Asia: The Role of the Asian Development Bank¹

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I. Introduction

Improvements in all forms of connectivity increases a country's competitiveness by reducing trade costs.² Trade costs are a key component of competitiveness in affecting trade and investment flows. There is a virtuous cycle that exists between connectivity, trade, and investment. Better transport connectivity stimulates trade by reducing trade costs, which not only helps increase trade volumes but also drives export diversification. Reductions in trade costs have been one of the main factors driving the emergence of global supply chains, particularly in Asia. Increasing trade and export diversification can subsequently drive an increase in investments, eventually leading to the emergence of a trade-investment nexus, whereby trade not only encourages investment, but investment, in turn, encourages trade. This virtuous circle of increasing trade and investment eventually links back to greater demand for improved connectivity.

Beyond this virtual cycle, a meta-analysis by the World Bank (Roberts, et.al., 2018) reveals that transport connectivity can generate wider economic benefits that include employment generation, poverty reduction, and social integration. With economic linkages increasing and tariff barriers continuing to fall across the region, further improvements in transport connectivity will be necessary for the region to stay competitive and achieve sustainable and inclusive growth.

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² The World Bank (2009), for instance, estimates that a 10% increase in trade costs could reduce trade volumes by as much as 20%. Certain products such as agricultural goods and intermediate products are particularly sensitive to transport costs and time spent in transit: the OECD estimates that an extra day spent at sea on an average sea voyage of 20 days implies a 4.5% drop in trade in agricultural products between two trading partners (Korinek and Sourdin 2009). Moreover, an ESCAP (2014) study has shown that improving shipping liner connectivity of lagging countries to match the developing country average can result in a significant increase in foreign direct investment (FDI).

This paper focuses on the provision of cross-border connectivity (CBC), especially transport connectivity, which is specifically geared at fostering integration in Asia. CBC maximises the benefits of domestic transport and other infrastructure, supports the development of supply chains, and facilitates the connection of production clusters in different countries (ADB 2020a; Sharan et. al., 2007; Kuroda et. al., 2007; Fujimura 2004). Strategic investments in CBC are particularly important for landlocked and island countries which face high transport costs and great difficulty in connecting to international markets (Radelet and Sachs 1998; Fujimura 2004; and World Bank 2009). UNCTAD (2007), for instance, estimates that the GDP per capita in landlocked developing countries is around 43% lower than in their neighboring transit countries.

Despite CBC's benefits, however, certain risks associated with CBC projects typically leads to its underprovision. For this reason, the majority of viable transport infrastructure investments remain domestic. International financial institutions (IFIs) such as the Asian Development Bank (ADB) and World Bank can be instrumental in mitigating these risks and supporting the development of CBC in Asia.

The paper is in five sections. Following this short introduction, Section II discusses progress and remaining gaps in building CBC in Asia and summarises the characteristics of CBC which typically lead to its under-provision. Section III describes how an IFI like ADB can help mitigate some of these risks inherent in CBC projects and provides an overview of ADB's support for CBC. Section IV presents the findings of selected evaluations and studies that measure the impact of ADB's support for CBC. Section V concludes with a summary of key points.

II. Cross-border Connectivity in Asia: Progress and Remaining Challenges

Improvements in transport and other forms of connectivity require actions on two fronts: (i) building, upgrading or modernising physical infrastructure through increased investments in brick-and-mortar projects; and (ii) increasing the utilisation of physical infrastructure through improvements in related soft infrastructure. The latter refers to reforms aimed at facilitating the movement and clearance of goods across borders, such as simplifying and harmonising transport procedures and regulations, strengthening regulatory mechanisms and institutional frameworks, modernising Customs and logistics, and enhancing the efficiency of transport services, among others.

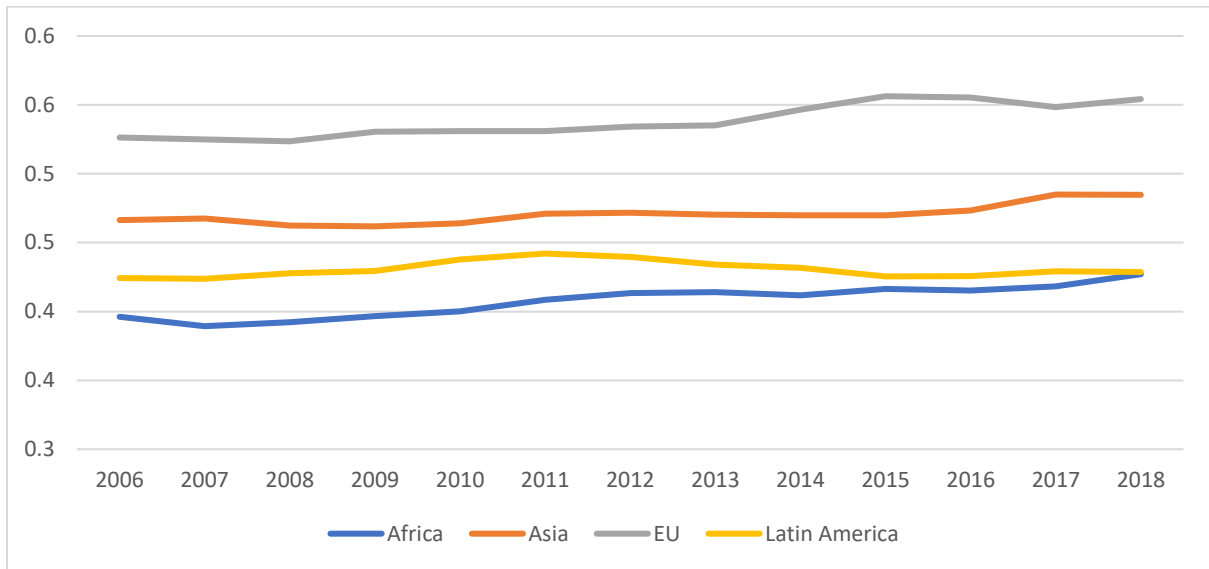
Efforts to improve connectivity have traditionally focused on hard infrastructure investments, but the software aspects are now being given equal importance given their significant economic benefits. For instance, the OECD (2018) estimates that the implementation of the WTO Trade Facilitation Agreement (TFA) could reduce global trade costs by 10-18%, depending on whether the agreement is implemented partially or fully. Meanwhile, computable general equilibrium (CGE) simulations by the WTO estimate gains of between US\$ 750 billion and well over US\$ 1 trillion per annum from the TFA, depending on the implementation time frame and coverage. Over the 2015-2030 horizon, the TFA could add around 2.7% per year to world export growth and more than half a per cent per year to world GDP growth (WTO 2015).

To assess Asia's progress in improving both the hard and soft aspects of connectivity, we examine two different indices below: the ADB's Asia-Pacific Regional Cooperation and Integration Index (ARCII); and the World Bank's Logistics Performance Index (LPI).

The ADB's ARCII makes use of 26 socioeconomic indicators categorised into six different dimensions to measure the progress in RCI in Asia. These dimensions are: (i) trade and investment; (ii) money and finance; (iii) regional supply chains; (iv) infrastructure and connectivity; (v) movement of people; and (vi) institutional and social integration. The infrastructure and connectivity dimension is a composite measure made up of the following indicators: (i) ratio between the averaged trade cost over regional trading partners and the averaged trade cost over all trading partners; (ii) ratio between the averaged liner shipping connectivity index over regional trading partners and the averaged liner shipping connectivity index over all trading partners; (iii) proportion of passenger seats sold on regional flights to those sold on all international flights; (iv) overall score on the LPI; and (v) overall score on the Doing Business Index (ADB 2021a).

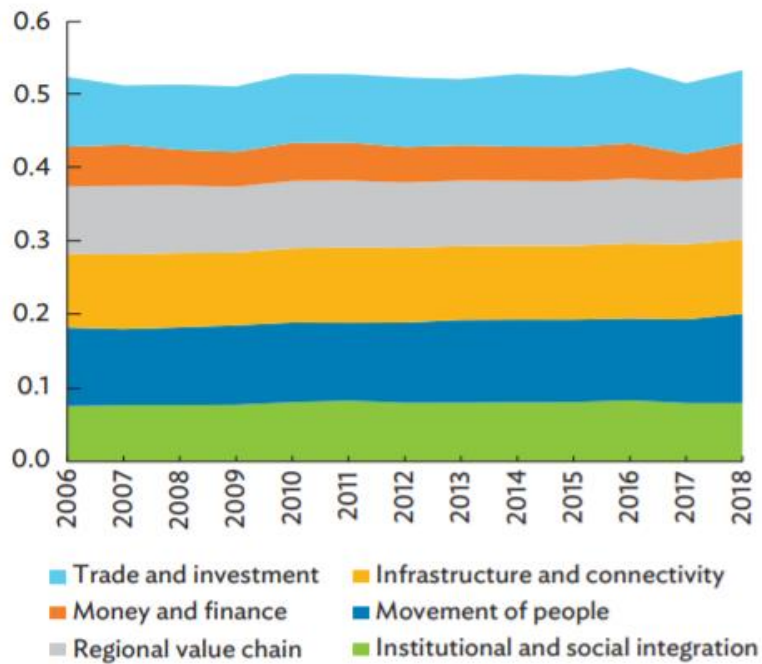
The latest ARCII data from the ADB shows sustained improvement in Asia's performance in the infrastructure and connectivity dimension, as well as in the dimension's contribution to the overall ARCII between 2006-2018 (Figures 1 and 2). However, a closer look at subregional data reveals wide variances across subregions in all of the dimensions of the ARCII, with South Asia significantly trailing behind in the case of infrastructure and connectivity. (Figure 3).

Figure 1. Infrastructure and Connectivity in Asia vs. Other Regions, 2006-2018



Source: ADB ARCII database, <https://aric.adb.org/database/arici>

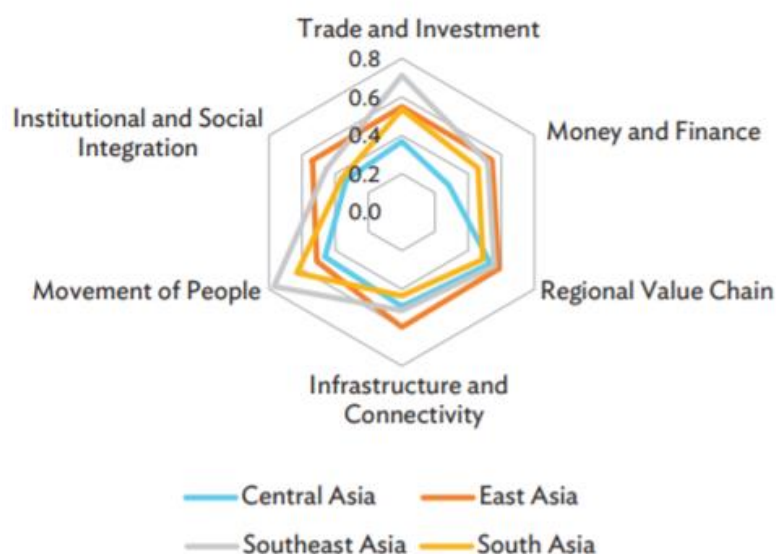
Figure 2. Dimensional Contribution to the ARCII



Note: Dimensional contribution is computed as the weight of the dimension multiplied by the dimensional score.

Source: ADB 2021a

Figure 3. Dimensional Indexes by Subregions, 2018

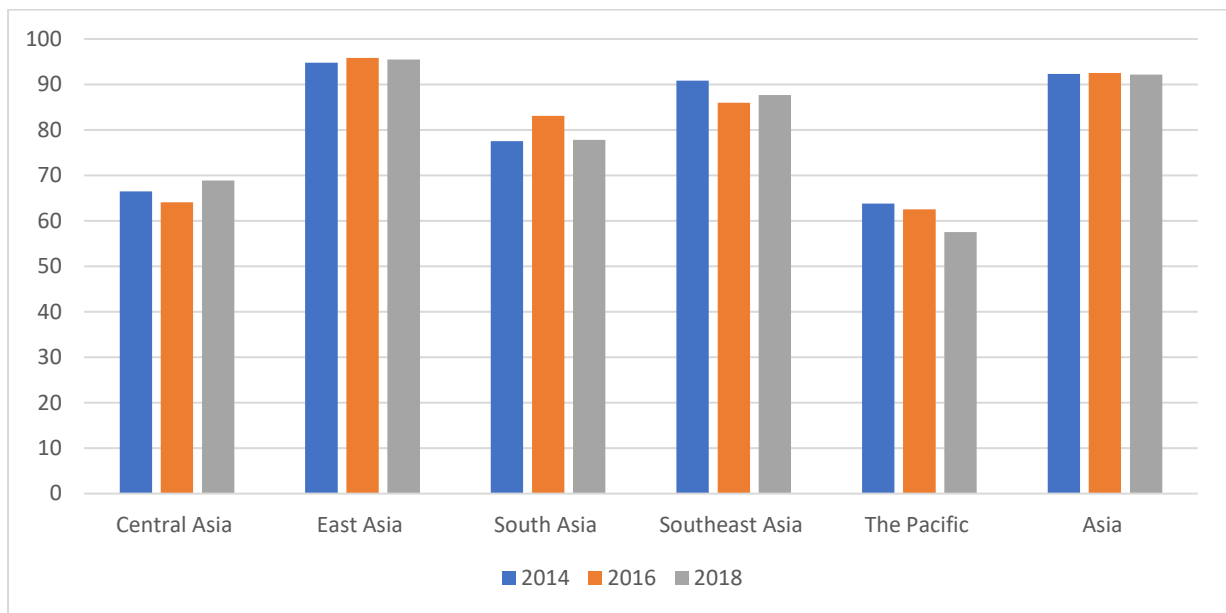


Source: ADB 2021a.

The World Bank’s Logistics Performance Index (LPI) is a summary indicator of logistics performance based on the following dimensions: (i) efficiency of border control and customs process; (ii) quality of transport and trade-related infrastructure; (iii) competitively priced shipments; (iv) ability to track and trace consignments; and (v) timeliness of shipments. The chart below presents the regional and subregional LPI scores for Asia and the Pacific, computed using total trade as weights. A score above 100 means that it is easier to export or import from that country compared with the EU (ADB, 2021a). As with the ARCII, Asia’s commendable performance at the aggregate level masks wide differences across subregions. Perhaps more worryingly, the data also reveals deterioration in the LPI scores of South Asia, Southeast Asia, and the Pacific between 2014-2018.

Trends in the ARCII and the LPI suggest that the gaps in CBC in Asia remain substantial, and this is borne out by estimates of investments needed to finance CBC projects in the region. The ADB reckons that, beyond 2020: (i) \$140.5 billion would be needed to finance cross-border transport infrastructure projects; and (ii) \$1.83 billion would be needed for trade facilitation projects under its various subregional programs. This is over and above the estimated \$8.4 trillion needed to meet the climate-adjusted investment requirements for domestic transport infrastructure between 2016–2030 (ADB 2017a).

Figure 4. Logistics Performance Index (LPI) Scores—Asia (% EU-28)



Source: ADB 2021a.

Financing and implementing transport connectivity projects have always been difficult because of their public goods characteristics, long gestation periods, and large sunk costs. In the case of CBC projects, additional challenges and risks typically lead to their underprovision. These include geopolitical considerations; asymmetric costs and benefits; cross-country differences in regulatory frameworks and capacities; challenges in standardising and harmonising both hard and soft aspects; more complex governance, financing, and procurement arrangements; and potential negative externalities that will have to be mitigated, such as human trafficking, health, crime, and environmental spillovers (OECD 2018; ADB 2018; Sharan et. al., 2007). These factors can result in a significant difference between private and social returns, which justify the intervention by IFIs in the provision of CBC.

III. ADB’s Support for Cross-Border Connectivity: Roles and Strategic Priorities

The complexities inherent in CBC projects create a space for IFIs such as ADB to support and facilitate their optimal provision. ADB is particularly well-suited to this task, given two of ADB’s comparative strengths: the development of transport infrastructure and the promotion of regional cooperation and integration (RCI). ADB has always been known as Asia’s infrastructure bank, with infrastructure traditionally constituting the bulk of ADB’s lending portfolio. In the same way, transport has been a key sector of importance to ADB member

countries since ADB's establishment, with its share in ADB's operations rising significantly from the late 1980s in response to increasing requests for loans for road projects (McCawley, 2017). Meanwhile, RCI is one of ADB's key mandates under its Charter.³

For the first two decades of its existence, however, ADB's support for transport connectivity went primarily to national projects.⁴ ADB's support for cross border transport connectivity only started to take off in the 1990s, beginning with the launch of the Greater Mekong Subregion (GMS) Program---ADB's very first subregional initiative---in 1992. Shortly after, ADB's RCI operations expanded to cover other subregional initiatives: the Brunei, Indonesia, Malaysia, Philippines East ASEAN Growth Area (BIMP-EAGA) was launched in 1994; the Central Asian Regional Economic Cooperation (CAREC) Program and the Indonesia, Malaysia, Thailand Growth Triangle (IMT-GT) were both established in 1997; and finally, the South Asia Subregional Economic Cooperation (SASEC) Program was launched in 2006. Improvements in CBC constitute a major pillar in all of these subregional programs, with interventions designed to address both the hard and soft aspects of connectivity. Investments in CBC are typically focused on the development of transport or economic corridors that aim to improve connectivity to centres of economic activity.

ADB's Roles in Supporting and Promoting CBC

ADB plays a number of mutually reinforcing roles to support and promote CBC. In its main function as a financial intermediary, ADB has been instrumental in mobilising financing for CBC projects by providing loans, grants, and technical assistance. Loan financing is primarily derived from ADB's ordinary capital resources (OCR). OCR loans are provided at regular, market-based rates; quasi-market rates; or concessional rates, depending on the borrowing country's level of development. The OCR is financed through paid-in capital, reserves, and debt securities issued in international and domestic capital markets (ADB 2021b).

³ Article 1 of the ADB Charter (ADB 1966) provides that "the purpose of the Bank shall be to foster economic growth and co-operation in the region of Asia and the Far East (hereinafter referred to as the "region") and to contribute to the acceleration of the process of economic development of the developing member countries in the region, collectively and individually." Article 2, which defines the Bank's functions, mandates the Bank to "utilize the resources at its disposal for financing development of the developing member countries in the region, giving priority to those regional, sub-regional as well as national projects and programmes which will contribute most effectively to the harmonious economic growth of the region as a whole[.]"

⁴ ADB prepared a Southeast Asian Regional Transport Survey between 1968-1971 in response to requests from governments in the subregion, but the Survey's regional investment program did not translate into actual ADB loans or operations (McCawley, 2017).

The Asian Development Fund (ADF) is a donor fund that provides grants to ADB's poorest member countries. The ADF is financed by member countries' contributions which are replenished periodically. The ADF used to be ADB's concessional lending window, but it became a grant-only facility after concessional lending operations were combined with the OCR balance sheet in 2017. The latest replenishment, ADF 13, will support grant operations between 2021-2024 (ADB 2021c).

Both the ADF and the OCR used to have a special set-aside for RCI that was meant to incentivise financing for regional projects. The ADF set-aside was initiated in 2009, while the OCR set-aside was introduced in 2015 for a pilot period of three years. Evaluations of the ADF set-aside revealed that it was helpful in improving diversification of RCI projects, facilitating collaboration among DMCs, and addressing the growing demand for RCI financing. While the ADF set-aside served its purpose and had good utilisation rates, the OCR set-aside performed poorly during the pilot; only half of it was utilised annually and financing was heavily skewed toward transport (ADB 2017b). The OCR set-aside was eventually discontinued. Similarly, ADF 13 no longer includes a set-aside for RCI, although it does feature a thematic pool that is designed to provide support for projects that generate strong regional positive externalities. RCI projects remain eligible for financing under the thematic pool (ADB 2021b).

In addition to OCR and ADF resources, ADB also manages special funds that are dedicated to facilitating RCI and infrastructure development. These include the following:

- (i) The People's Republic of China Regional Cooperation and Poverty Reduction Fund (PRC Fund). Established by the Government of the PRC in 2005, the PRC Fund supports poverty reduction, regional cooperation, and knowledge-sharing activities, primarily under the GMS and CAREC programs.
- (ii) The Regional Cooperation and Integration Financing Partnership Facility. Established in 2007, this multi-donor facility pools financing for technical assistance. As of August 2021, there are three funds under the facility⁵, two of which include support for CBC projects:
 - a. The Regional Cooperation and Integration Fund (RCIF). The RCIF is a multi-donor special fund established in February 2007 that aims to improve regional cooperation and integration by prioritising support for cross-border

⁵ The third fund is the Investment Climate Facilitation Facility (ICFF) established in 2008 by the Government of Japan. ICFF primarily supports the promotion of investments and financial cooperation and development.

infrastructure and regional public goods. Although the RCIF is designed to attract financing from external sources, in reality it has been mostly financed by ADB's OCR net income allocation (ADB 2020b).

- b. The Asia Regional Trade and Connectivity Fund (ARTCF). The ARTCF a trust fund established in April 2018 by the United Kingdom Fund for Asia Regional Trade and Connectivity. It supports RCI activities in selected DMCs in Central and South Asia. Priority areas related to CBC include transport connectivity; regulatory reform and regional trade facilitation; and broader strategic issues related to connectivity investments.
- (iii) The ASEAN Infrastructure Fund (AIF). Established in 2013, the AIF provides loans to infrastructure projects that support the implementation of the Master Plan on ASEAN Connectivity (MPAC). MPAC has five strategic areas: sustainable infrastructure, digital innovation, seamless logistics, regulatory excellence and people mobility (MPAC 2025). The AIF is funded by equity from ASEAN member states and the ADB.

Apart from mobilising significant financial resources, ADB also supports CBC by providing high-quality advisory, knowledge, and capacity building assistance to DMCs. Activities include, among others: researching and pilot testing innovative CBC operations and interventions; supporting the preparation of sectoral and subregional development plans and programs; supporting the design and development of trade facilitation policies and measures; coordinating and facilitating the harmonisation of regulations, procedures and standards; conducting studies on improving transport and other forms of connectivity and trade facilitation; and conducting training or capacity building programs.

But perhaps one of the most valuable roles played by ADB in CBC development and RCI in general is that of honest broker. ADB has established itself as a respected facilitator and intermediary that is able to foster collaboration among a diverse set of players: governments, the private sector, civil society and other development partners. This role is particularly important since all of the subregional programs being supported by ADB are a classic case of market, as opposed to institutional integration. Unlike institutional integration, which is characterised by legal instruments and institutional arrangements, market integration primarily relies on less binding cooperation agreements for the provision of public and quasi-public goods (see Menon 2007; Menon and Melendez, 2011). In this context, ADB's involvement has

proven indispensable for catalysing cross-country dialogue, building consensus on priorities, and facilitating the adoption of cross-border agreements and harmonised standards.

ADB's Priorities in Cross-Border Connectivity

ADB's strategic priorities in CBC have evolved over time in response to the changing needs of DMCs, as well as the changing landscape for regional and global trade. ADB's support for physical infrastructure development has been solid from the beginning, but beyond this, there have been five forms of diversification that have taken place since ADB's foray into RCI in the early 1990s.

The first relates to the growing emphasis on the soft elements of connectivity. Although attention to these elements was included to some extent in the early days of ADB's support for subregional programs, in practice they were not given as much prominence as brick and mortar investments. This began to change with the adoption of ADB's Regional Cooperation and Integration Strategy (RCI Strategy) in 2006, which sought to establish a better balance between the two elements.

The RCI Strategy had four interrelated pillars: cross-border infrastructure and related software; trade and investment cooperation and integration; monetary and financial cooperation and integration; and cooperation in regional public goods. The RCI Strategy identified Pillar 1 as the core component of ADB-supported RCI activities. Although most of the software aspects related to cross-border connectivity were included under Pillar 1, certain trade facilitation elements, such as modernising customs procedures, were actually categorised under Pillar 2 of the RCI Strategy.

A 2015 independent evaluation of ADB's RCI operations and the RCI Strategy found that "ADB's track record in the field of infrastructure development gives it an advantage and its well-established subregional cooperation programs have been successful (albeit in varying degrees) in coordinating the planning and implementation of infrastructure projects and the associated software (ADB 2015, p.82)." However, the evaluation also highlighted the need to broaden trade facilitation activities to maximise the impact of Pillar 1 interventions. This echoed the findings of other evaluations and studies that also recommended increased support for associated software, particularly in more mature regional cooperation initiatives such as the GMS Programme (Srivastava and Kumar 2012, ADB 2009 and 2008a). As a result, there is

now a much greater focus on strategic and comprehensive soft infrastructure interventions, particularly in the area of trade facilitation.

The second diversification involves growing emphasis on the transformation of transport corridors into trade and economic corridors. ADB's traditional approach to corridor development focused on improving physical infrastructure first, with subsequent investments in trade facilitation, logistics, corridor towns, and other elements of corridor development coming later. Although this approach helped create some productive activity as a result of improved connectivity, the relative lack of success in developing growth nodes within corridors led to less-than-expected use of cross-border road infrastructure and a failure to develop meaningful economic corridors that support widespread economic corridor activity (see Hill and Menon, 2020). For this reason, ADB's approach to corridor development has evolved into a more holistic strategy, one that synchronises infrastructure, trade facilitation, transport development, and multi-sector industrial and spatial planning, to encourage cluster development and maximise agglomeration effects. Increased support is also being given for mechanisms for multisector economic corridor development coordination.

The third diversification involves efforts to improve inter-subregional connectivity. ADB's activities and investments in CBC have traditionally focused on improving connectivity within subregions; the development of linkages across subregions has lagged by comparison. However, ADB has begun to push for more support in this area in order to further exploit economic comparative advantages and facilitate the development of regional supply chains. Intersubregional economic corridors are being explored as one way to promote such linkages, among other means⁶.

The fourth diversification relates to the sectors within physical infrastructure and transport. ADB's infrastructure and transport operations have traditionally focused on roads, but over time there has been a shift to promote multimodal transport in order to achieve seamless multimodal connectivity. This would entail investments in railways, aviation, maritime transport, and ports, as well as support for the effective integration of different modes. These multimodal transport systems will play an important role in supporting the development of economic corridors and facilitating inter-subregional linkages.

⁶ See, for instance, the various studies on increasing integration between South Asia and East Asia in Menon and Srinivasan (2018).

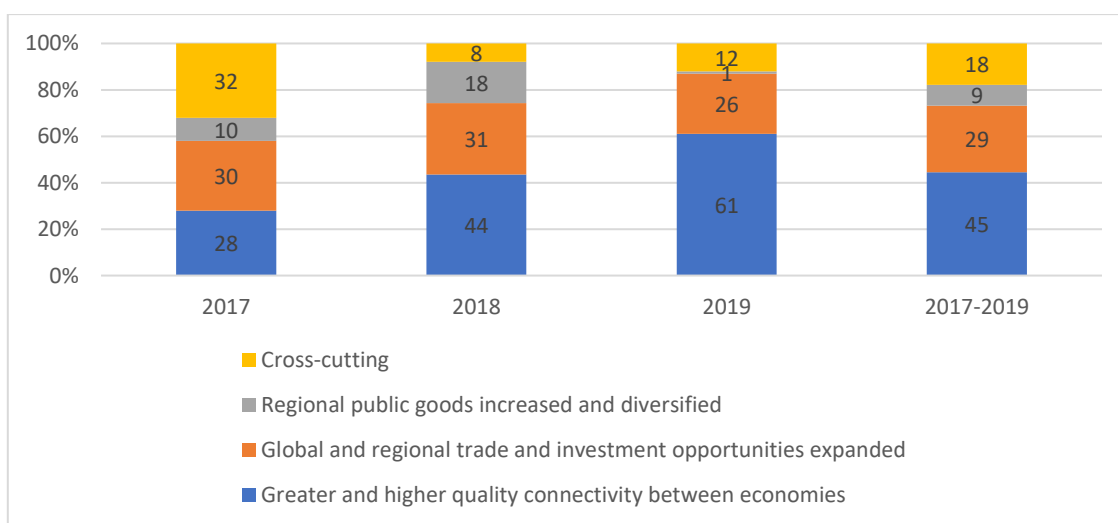
The fifth diversification relates to the growing emphasis on sustainable CBC to mitigate the negative impacts of cross-border infrastructure and transport on the environment. This includes mainstreaming climate adaptation measures into infrastructure and transport operations. The shift to railways and inland waterways as part of efforts to promote multimodal transport would also contribute to a reduction in carbon emissions.

These changes in ADB’s approach to CBC are encapsulated in ADB’s current corporate strategy called Strategy 2030, and its accompanying Operational Plan for RCI. RCI is one of seven strategic priorities under the Strategy.

The Operational Plan for Priority 7: Fostering Regional Cooperation and Integration, 2019–2024 (OP7) identifies three strategic operational priorities under RCI: (i) greater and higher quality connectivity between economies; (ii) global and regional trade and investment opportunities expanded; and (iii) regional public goods increased and diversified. The table below summarises the strategic operational approaches that have been identified to achieve these operational priorities.

Recent data on ADB’s RCI operations highlight that CBC remains central to the Bank’s RCI agenda. Figure 5 below shows that support for greater and higher quality connectivity between economies made up nearly half of total loan and grant commitments under RCI between 2017-2019.

Figure 5. RCI Loans and Grants by Strategic Operational Priority, Commitments, 2017-2019



Note: Cross-cutting refers to support that straddles more than one strategic operational priority.

Source: ADB RCI Thematic Group Secretariat. Data as of July 2021.

Table 1: Operational Plan for Strategy 2030 Priority 7: Fostering Regional Cooperation and Integration, 2019–2024: Vision, Operational Priorities and Operational Approaches

VISION (Impact)	A region where sustained cooperation among countries is a foundation for advancing trade, investment, and provision of regional public goods		
STRATEGIC OPERATIONAL PRIORITIES (Expected Results)	Greater and higher quality connectivity between economies	Global and regional trade and investment opportunities expanded	Regional public goods increased and diversified
STRATEGIC OPERATIONAL APPROACHES (Major Outcomes and Operational Activities)	<ul style="list-style-type: none"> • Technologically advanced, multimodal transport, and information and communication technology cross-border infrastructure • Soft infrastructure for increasing the efficiency and/or productivity of existing and new cross-border connectivity • Renewable energy and sustainable transport connectivity infrastructure that reduces greenhouse gas emissions, air and on-land and coastal water pollution, wastes, and land degradation 	<ul style="list-style-type: none"> • Developing member country implementation of global and regional trade and investment agreements • Policy, infrastructure, and business investments to develop existing and/or new cross-border economic corridors • Strengthening regional financial cooperation and stability and the reduction of risks among financial intermediaries 	<ul style="list-style-type: none"> • Regional climate change mitigation and adaptation • Shared environmental management • Expanding and diversifying access to regional education and health services

Source: ADB 2019.

IV. Impact of ADB's Support for CBC

Empirical studies analysing the macroeconomic and social impacts of RCI projects suggest CBC can increase trade, enable faster economic growth, and contribute to poverty reduction, given the right conditions, including the right type of intervention, and enabling policy environment. Most of these studies have focused on the GMS Program, given its maturity compared to the other subregional programs.

Fujimura (2017) uses panel data analysis and gravity modelling to examine the socioeconomic impact of economic corridors under the GMS program. The panel data analysis focused on the impact on living standards at the subnational level. Results reveal that in general, traffic growth at the subnational level and the development of economic corridors have contributed to improved living standards in the GMS. The gravity model analysed how the economic corridors have affected intra-GMS trade in electrical and transport machinery, through a presumed reduction in service-link costs. The results show that economic corridors have enhanced intra-GMS trade in intermediate goods and facilitated vertical integration across borders, particularly for electrical machinery.

Stone, Strutt, and Hertel (2012) also assess the socio-economic impacts of cross-border physical road infrastructure and trade facilitation measures in the GMS. The authors use a multi-region general equilibrium model based on the Global Trade Analysis Project (GTAP), and supplement data from the GTAP database with household survey data to capture the poverty impacts. They concentrate on quantifying the effects of improvements in infrastructure and trade facilitation on economic growth, incomes, and poverty levels. The findings suggest strong gains to the GMS countries, as follows: (i) changes in real GDP are highest for those countries with relatively large transport costs, namely Cambodia and Lao PDR; (ii) for all GMS economies with improved infrastructure, the change in economic welfare, as measured using equivalent variation in income, is positive; (iii) improvements in trade facilitation can generate larger welfare effects than improvements in physical infrastructure; and (iv) road improvements and improved connectivity contribute to poverty reduction, with the bulk of the poverty reduction happening in the rural areas.

Menon and Warr (2008) develop a CGE model for Lao PDR and link it to the Lao Expenditure and Consumption Survey (LECS) data to analyse the socio-economic impacts of different types of road improvement. While the results indicate that all forms of road improvement reduce poverty incidence, reducing transport costs for households without road access is highly pro-

poor compared with road improvement for households already having dry season road access. That is, when no vehicle access areas are provided with dry season access roads, the reduction in poverty incidence is about 17 times the reduction that occurs when dry season access roads are upgraded to all-weather access roads. While the ratio of the effect of these two types of road improvement on GDP is about 6, the cost differential is less than 3 times. These findings suggest that there are grounds to reconsider the way in which resources are allocated among these different types of road improvement, especially since the overwhelming share of interventions by ADB and other IFIs has focused on paving and sealing roads rather than providing road connectivity where none exists.

Warr, Menon, and Yusuf (2010) develop a two-region CGE model to estimate the economic impacts of the Second Mekong International Bridge between Mukdahan Province in Thailand and Savannakhet Province in Lao PDR. Their analysis highlights the differences in impacts over time. In the short-run, transport cost reductions that are consistent with the improvement of interregional transport facilities will produce a modest increase in inter-regional trade volumes in both directions and a small increase in real consumption in both regions. Over a longer period of time, the economic benefits to both regions are very much larger, as investors respond to the changed structure of incentives with new capital investments, and as workers move to regions of greater return to their labour. The absolute gain in welfare (aggregate real consumption) that arises in the long-run is larger than the short-run impact by a factor of 23 in Mukdahan and 28 in Savannakhet. Both the absolute and proportional gains in welfare are considerably larger in Savannakhet. Because these benefits are significant in both regions, the results debunk the common presumption that the benefits from cross-border infrastructure projects occur only, or overwhelmingly, in the richer region.

Project and program evaluations indicate significant benefits from ADB's support for CBC, such as: (i) reducing transport costs and travel times; (ii) promoting cross-border transit, trade, and tourism; (iii) creating employment and business opportunities; (iv) facilitating access to markets and basic goods and services; and (iii) increasing economic growth and reducing poverty. However, these same evaluations also reveal that even projects with benefits can face significant implementation bottlenecks as a result of poor project preparation; the lack of proper coordination mechanisms; and weak complementary reforms in trade facilitation and institutional capacity building (ADB 2021d, ADB 2017b, ADB 2017c, ADB 2015, ADB 2009, ADB 2008a, ADB 2008b, ADB 2004).

In the CAREC subregion, for instance, the rehabilitation of the road between Almaty in Kazakhstan and Bishkek in the Kyrgyz Republic reduced travel time and vehicle operating costs; increased cross-border road traffic; and facilitated trade between the two countries, but the lack of requisite capacity in executing agencies led to delays in project implementation, a reduction in the project scope, and cost overruns: “the limited capacity and inexperience of the executing agencies in managing ADB projects impeded the transition from project planning to implementation. During the significant amount of time that had elapsed before project implementation, the Almaty– Bishkek Road sustained further deterioration, requiring more improvement works. Road redesign with a reduced project scope resulted in further delays and additional costs.” (ADB 2017c, p. 85).

The failure to integrate social and environmental considerations into project planning could give rise to unintended negative impacts. For instance, an evaluation of the GMS program conducted in 2008 identified a number of negative effects from cross-border road projects such as illegal logging, wildlife trade, deforestation, watershed damage and increased soil erosion, deterioration in road safety, and the spread of communicable diseases (ADB 2008).

Finally, long-run sustainability can also be compromised by insufficient attention to asymmetric costs and benefits. For instance, an evaluation of the GMS Northern Economic Corridor Project in Lao PDR revealed that while the project helped reduce transport costs and travel time, most of these benefits accrued to China and Thailand. Meanwhile, the maintenance costs were fully borne by the Lao PDR due to the lack of an agreement on the collection of tolls for transit vehicles. Without tolls or road user charges to raise funds for recurrent maintenance costs, the project’s benefits are unlikely to be sustained in the long term (ADB 2014).

These outcomes underscore the complexities that typically face CBC projects and the challenge that ADB and other IFIs continue to face in promoting all kinds of connectivity.

V. Conclusion

Asia has made significant progress in improving cross-border connectivity, focusing on transport infrastructure. However, gaps in both hard and soft infrastructure remain. CBC projects can generate significant benefits that cannot be realised through national initiatives alone. However, CBC projects are often saddled with a number of challenges that tend to lead

to their underprovision. ADB and other IFIs have played a critical role in promoting connectivity by reducing many of the risks inherent in CBC projects.

ADB's priorities in CBC have evolved in response to changing needs of its DMCs, but it is clear that supporting connectivity remains central to its overall operations as well as its RCI agenda. The types of support as well as the types of connectivity is continuously changing, and ADB and other IFIs need to be responsive if they are to serve client needs. A case in point is the shift toward a more digitalised economy, accelerated by the COVID-19 pandemic, requiring new types of connectivity due to new modes of service delivery.

There is a large body of empirical evidence that demonstrates how RCI projects that increase CBC can increase trade, enable faster economic growth, and contribute to poverty reduction, given the right conditions and enabling policy environment. These outcomes are usually only fully realised in the long run, and can be quite substantial with the right type of intervention. For instance, although it is about 3 times more expensive to provide dry season road access to isolated regions in Lao PDR compared to paving existing roads, this is still more than justified by the impact on GDP, which is 6 times higher, or the decrease in poverty, which is greater by a factor of 17. Nevertheless, most of the interventions by ADB and other IFIs have concentrated on the less challenging and less risky task of paving and sealing roads. This needs to change if ADB and other IFIs are to realise their overarching objective of poverty reduction.

Accelerating efforts to address software and policy related aspects of connectivity will be required in order to realise the benefits from the massive investments associated with developing physical infrastructure. Unless the utilisation of the installed capacity can be increased by software related improvements to sufficiently high levels, the increase in borrowings and debt levels of DMCs will not be justified. ADB's experience in this area reveals that these software aspects take a much longer time to address, and so efforts may need to be redoubled.

There is also a need to continue addressing the remaining gaps in cross-border physical infrastructure. New modes of connectivity linked to the digital economy will require new investment, still lacking in the poorest countries. Financing has become even more challenging, with resources dwindling in the wake of COVID-19. ADB's own financing envelope for RCI has been reduced in recent years with an increase in competing demands, leading to the discontinuation of the OCR set-aside for RCI. Although some of this shortfall has been made

up through an increase in the number and volumes of financing from special funds, it does raise questions relating to long-term sustainability.

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