Thematic Evaluation

Evaluation of ADB Support for the Central Asia Regional Economic Cooperation Program, 2011–2021

Independent Evaluation ADB

Raising development impact through evaluation

Thematic Evaluation
April 2023

PUBLIC

Evaluation of ADB Support for the Central Asia Regional Economic Cooperation Program, 2011–2021

Independent Evaluation: TS-17

Independent Evaluation ADB

NOTE

In this report, "$" refers to United States dollars.

Director General	Emmanuel Jimenez, Independent Evaluation Department (IED)
Deputy Director General	Sona Shrestha, IED
Director	Joanne Asquith, Thematic and Country Division, IED
Team leader	Houqi Hong, Senior Evaluation Specialist, IED
Team members	Michelle Angieline Dantayana, Evaluation Assistant, IED Eoghan Molloy, Senior Evaluation Specialist, IED Alvin Morales, Senior Evaluation Officer, IED Sung Shin, Senior Evaluation Specialist, IED

The guidelines formally adopted by the Independent Evaluation Department on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. To the knowledge of the management of the Independent Evaluation Department, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

In preparing any evaluation report, or by making any designation of or reference to a particular territory or geographic area in this document, the Independent Evaluation Department does not intend to make any judgments as to the legal or other status of any territory or area.

Abbreviations

ABEC	–	Almaty Bishkek Economic Corridor
ADB	–	Asian Development Bank
BCP	–	border-crossing point
CAP	–	Comprehensive Action Plan
CAPS	–	Central Asia Power System
CAREC	–	Central Asia Regional Economic Cooperation
CAREC 10	–	CAREC member countries, excluding the People's Republic of China
CATCA	–	Central Asia Transmission Cooperation Association
CFCFA	–	CAREC Federation of Carriers and Forwarders Associations
COVID-19	–	coronavirus disease
CPMM	–	Corridor Performance Measurement and Monitoring
DEFR	–	Development Effectiveness Review
GCI	–	Global Competitiveness Index
IED	–	Independent Evaluation Department
NDC	–	nationally determined contribution
NTL	–	nighttime light
RCI	–	regional cooperation and integration
RPG	–	regional public good
SPS	–	sanitary and phytosanitary
TA	–	technical assistance
TTFS	–	Transport and Trade Facilitation Strategy
TUTAP	–	Turkmenistan–Uzbekistan–Tajikistan–Afghanistan–Pakistan
WTO	–	World Trade Organization

Contents

Acknowledgments

The evaluation was prepared by a team comprising Independent Evaluation Department (IED) staff led by Houqi Hong (team leader) with support from Michelle Angieline Dantayana, Eoghan Molloy, Alvin Morales, and Sung Shin.

The team worked under the guidance of Director General Emmanuel Jimenez, Deputy Director General Sona Shrestha, and Director Joanne Asquith.

The evaluation was supported by Walter Kolkma, Charles Melhuish, Brahm Prakash, Benjamin Shepherd, and Kapil Thukral who prepared sector, thematic, and background papers. Barbara Befani assisted with case studies using the contribution-tracing methodology. Sebastian Krapohl conducted a literature review. Jennifer Albers, Alexis Arthur Garcia, Brenda Katon, Ernalyn Lising, and Homer Pagkalinawan supported data collection and analysis. Muhammad Ali (Pakistan), Aidana Berdybekova (Kyrgyz Republic), Bujinlkham Erdenebaatar (Mongolia), Ashraf Guliyev (Azerbaijan), Durdymuhammet Ilamanov (Turkmenistan), Ekaterine Koroshinadze (Georgia), Guldana Sadykova (Kazakhstan), Nadir Safaev (Uzbekistan), Aziza Tukhtabaeva (Tajikistan), and Laifei Xiong (People's Republic of China) provided in-country support to the evaluation team during the evaluation's virtual evaluation missions.

Toshiyuki Yokota, principal evaluation specialist at IED, provided comments on the draft report as an internal commenter. Shahrokh Fardoust and Poonam Gupta provided comments as external peer reviewers.

The team thanks the Management and staff of the Asian Development Bank for their useful discussions and feedback. The team acknowledges the support and inputs received from government officials, development partners, and other stakeholders during the evaluation's virtual missions to Azerbaijan, the People's Republic of China, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.

IED remains fully responsible for the report.

Foreword

As mandated by its charter, the Asian Development Bank (ADB) gives a high priority to supporting regional cooperation and integration (RCI) in Asia and the Pacific. The Bank recognizes that RCI is essential for achieving sustainable growth and poverty reduction. It has helped to finance and facilitate various key RCI programs, most notably the Greater Mekong Subregion (GMS) Economic Cooperation Program, the Central Asia Regional Economic Cooperation (CAREC) Program, and the South Asia Subregional Economic Cooperation (SASEC) Program. The Independent Evaluation Department is evaluating ADB support to each of these programs, and this evaluation is the second in this series of three evaluative studies aiming to draw lessons for future ADB support for RCI.

The CAREC subregion is one of the least integrated in the world, with more difficult preconditions for RCI than other developing regions. It also has enormous potential for RCI, given its strategic location as a land bridge connecting some of the world's largest economic centers, and the underdeveloped trade and economic links among CAREC member countries. The CAREC Program aims to accelerate growth and poverty reduction by supporting RCI to improve connectivity, economic competitiveness, and the provision of regional public goods.

The evaluation assesses ADB's contribution towards achieving the CAREC Program's objectives during 2011-2021. It found that ADB has made significant progress in helping improve connectivity in the subregion but contributed modestly to improving regional economic competitiveness, due to continuing challenges in removing barriers to trade. Except for some promising advancements in climate change mitigation in the energy sector, achieving outcomes of improved supply of regional public goods remains a long-term objective given that ADB's support is still nascent and the continuing need for institution and consensus building. Overall, the CAREC Program has the generally appropriate institutional setup, strategies, and instruments to deliver its objectives. However, as the CAREC Program expands into new non-infrastructure sectors, and as the delivery of global and regional public goods such as climate change takes greater priority, ADB staff and technical assistance resources could face increased pressure.

To improve future performance, the evaluation highlights the importance of strengthening support for investment climate and trade policy reforms, modernization of border crossing points and customs processes, development of a multimodal corridor network, climate change mitigation and adaption, and better results monitoring.

Emmanuel Jimenez
Director General
Independent Evaluation

Executive Summary

The Central Asia Regional Economic Cooperation (CAREC) Program is a partnership of 11 member countries comprising Afghanistan, Azerbaijan, the People's Republic of China, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan. The program aims to accelerate growth and reduce poverty through regional cooperation.

The CAREC subregion, as represented by the CAREC member countries, is one of the least integrated in the world, with more difficult preconditions for regional cooperation and integration (RCI) than other developing regions. While RCI has enormous potential to contribute to socioeconomic development, the obstacles are huge: intra-regional economic interdependence is low; security threats and conflict risks are significant; and countries remain highly centralized, economically and politically.

ADB has provided loans and grants to support the CAREC Program since the early 2000s, mainly by financing projects and technical assistance to achieve the RCI objectives of connectivity, economic competitiveness, and provision of regional public goods. The CAREC subregion has the potential to achieve results in those areas not only because of its current low intra-regional trade but also because of its strategic location as a land bridge connecting some of the world's largest economic centers. ADB support brings together the diverse CAREC member countries on a common platform to coordinate strategies and share knowledge and experience.

The evaluation assesses the extent to which ADB support for the CAREC Program contributed to achieving the RCI objectives during 2011–2021 (the evaluation period).

Findings

Through support to develop transport and energy infrastructure, ADB has made significant progress in helping improve regional connectivity. The program's transport output targets covering investments in roads and railways were exceeded, and ADB made a substantial contribution to this achievement. ADB support also increased the quality of travel, travel speeds, and traffic volume in the corridor network. Cross-border traffic flows saw an increase at border-crossing points (BCPs) that benefited from ADB support. Growth of the CAREC subregion's nonfuel trade volumes suggests that cross-border flows of goods and services in the subregion likely increased as well.

ADB energy portfolio will likely make a substantive contribution to improving energy flows across CAREC member countries. Two regional initiatives supporting energy exports from Central Asia to Afghanistan and Pakistan are currently suspended because ADB placed its regular assistance to Afghanistan on hold effective 15 August 2021due to the Afghanistan situation. Many other energy projects are still under implementation. However, energy physical connectivity increased during the period of ADB support, and it will continue to increase in the foreseeable future as ongoing projects are completed and commissioned. This will increase the possibility for improving energy exports and imports in the subregion.

ADB support to the CAREC Program contributed only modestly to improving economic competitiveness. Support for infrastructure has contributed to improving the business and investment environment in key regions and districts that benefited from ADB infrastructure projects. Improvements to CAREC transport corridors have reduced vehicle operating costs and increased passenger time savings. Road investments have contributed to increased economic activity in the jurisdictions adjacent to project roads. In addition to increasing power supply and exports, support in the energy sector is likely to increase efficiency, reduce costs, and boost the reliability of electricity services.

Despite these gains, ADB's contribution to improving competitiveness at the regional level was likely modest. The CAREC subregion's competitiveness moderately improved over the evaluation period. Infrastructure was only one of the contributors. Others included technology readiness, information and communication technology adoption, innovation and business

dynamism, higher education and training, and institutions. The size of the contribution to competitiveness by each of the other factors was similar to that made by infrastructure improvement. But ADB support is still in the early stages and has not yet achieved tangible results in those non-infrastructure sectors.

ADB has provided important technical assistance for enhancing trade facilitation and trade policy during the evaluation period, but against the challenging scale of trade bottlenecks and barriers in the CAREC subregion, results were limited. Border-crossing times and costs remain major bottlenecks, hindering trade and investment flows and market and value chain integration. Barriers to intra-regional trade have increased rather than decreased over the past decade. Although the CAREC 2030 Strategic Framework highlighted the need to support investment climate reforms to promote economic diversification, ADB has not yet provided substantive support in the area. There are some promising signs of upcoming ADB investment support for value chain development in diversified sectors such as tourism, digital services, agriculture, and economic corridors. But, overall, ADB activities are still in the early stages, and it remains to be seen if investments will match those planned under CAREC strategies.

ADB support for CAREC to improve supply of regional public goods is still nascent. ADB CAREC support has contributed to propagating renewable energy and clean technologies in national energy systems and informing formulation of energy policies to reduce greenhouse gas emissions in CAREC member countries. Otherwise, ADB support for regional public goods, including climate change proofing, is still limited to strategy development and scoping studies, although investment proposals have been generated in some sectors. Outcome achievement remains a long-term objective given that ADB's support is still at an early stage and given the continuing need for institution and consensus building in those areas. Results will depend on significant future investments and financing as well as sufficient staff and technical assistance resources. Investments in those areas have been partly affected by the shocks caused by the coronavirus disease (COVID-19) pandemic and the Russian invasion of Ukraine, which have concentrated country efforts on domestic economic recovery.

The CAREC Program has the generally appropriate institutional setup, strategies, and instruments to deliver on its strategic objectives, and ADB has generally fulfilled the role of the CAREC Secretariat well. Government counterparts saw value in the CAREC Program's approach of promoting project-based economic cooperation: one that does not require formal consensus. They rated as *high* the importance of ADB's role as an honest broker and as the secretariat. However, ADB staff and technical assistance resources could be under increased pressure as the Program expands into new non-infrastructure sectors, and as the delivery of global and regional public goods such as climate change is now fundamental. This is an issue that deserves to be monitored. ADB support for the CAREC platform could have been more effective by strengthening coordination and engagement with stakeholders, such as development partners and the private sector, as well as by improving results monitoring.

Recommendations

The evaluation makes the following recommendations for effective implementation of the CAREC 2030 Strategic Framework.

Strengthen support for investment climate and trade policy reforms to promote economic diversification across the CAREC subregion. Strengthening support for market-oriented reforms to promote private sector development and improve the investment climate and trade in the non-commodity industries, including through the strategic use of policy-based lending and non-sovereign operations, can help address limited economic diversification in CAREC member countries. The reforms need to be coordinated to address regulatory heterogeneity across countries and promoted through a regional approach that is supported by ADB country programs to implement projects at the national level, leveraging the use of different financing instruments, products, and modalities.

Increase support for modernization of BCPs and customs processes. The Regional Improvement of Border Services projects provide a suitable model of an integrated and holistic approach combining infrastructural, technical, and capacity-building elements. The model can be scaled up to more countries in the CAREC subregion, covering more

BCPs. Future modernization support could revisit existing BCPs to better incorporate digital innovations and green and safe trade. Opportunities could be explored to upgrade BCPs that have not been covered by previous assistance yet are essential to alternative trade routes, such as the BCPs along the middle corridor, as protracted and intensified geopolitical crises risk fragmentating trade and investment. Investments and technical assistance for the "software" aspects of BCPs and trade facilitation are just as important as those related to physical infrastructure. To deliver higher impact, there is also a need to strengthen the coordination and collaboration between the trade and transport sectors. For example, transport operations need to be developed by fully considering the need for BCP improvement.

Give a higher priority to developing a multimodal corridor network in the CAREC subregion by increasing support for the railway network and aviation. Investment priorities in transport have largely focused on roads, and relatively few investments have been made in the railway network. However, the vast distances to markets outside and within the subregion, and the landlocked nature of many countries, are likely to provide cost advantages for rail freight if efficiencies in railway operations can be achieved and border delays reduced. While the road subsector still plays a key role in transport and trade facilitation in the CAREC region, ADB should explore opportunities to increase its CAREC support for railway improvement. Upgrading the middle corridor could be given a priority to mitigate the risks associated with the northern corridor. Increased support for the aviation sector has the potential to significantly enhance tourism and business services development and contribute to trade diversification. There is a growing demand for developing the sector in the subregion.

Use the CAREC platform to support climate change mitigation and adaptation in all sectors through regional cooperation. The cost and effectiveness of clean technologies will keep on changing as new technologies and applications emerge. By increasing its focus on propagating renewable energy and clean technologies in national energy systems and informing energy policy changes to mitigate climate change in CAREC member countries, ADB can build on the promising progress already made so far. The effort under the CAREC Program can be expanded to cover adaptation issues in energy. ADB should also strengthen its CAREC support for climate change mitigation and adaptation in all other sectors, given the rising urgency to combat climate change. In transport, for example, adaptation topics such as climate proofing road construction and improvements should continue to be scaled up as well as mitigation measures such as policy changes to reduce vehicle emissions, effect transport modal shift and promote renewable energy vehicles.

Strengthen the CAREC Program's results monitoring system and tools. CAREC 2030 Program Results Framework and sector results frameworks could be strengthened with indicators, baselines, and targets for outcomes and intermediate outcomes to monitor the contribution of CAREC operations to achieving results. Measures could be taken to ensure that the monitoring reports are adequately discussed in the Ministerial Conference and the Senior Officials' Meeting, and that only those projects that promote substantive cross-country cooperation are classified as CAREC projects. ADB can also help countries gather and share customs and trade-related data to assess the progress in achieving results of transport and trade facilitation investments, and to better identify border-crossing bottlenecks. While the Corridor Performance Measurement and Monitoring system data provide a useful snapshot of bottlenecks along CAREC transport corridors, there is a paucity of official data from individual BCPs that would allow for better performance monitoring and estimation of regional benefits.

Linkage between Findings and Recommendations

Findings, Issues, and References	Recommendations
Nearly all CAREC member countries are vulnerable to external shocks and prone to domestic rent-seeking because of dependence on commodity exports. The incomplete transition to a market economy hampers the business environment, where institutional gaps constitute a major development challenge (main text, para. 4). Progress on diversification in trade flows among CAREC economies has been limited, and CAREC trade continues to be dominated by fuel exports and exports of minerals and raw materials (main text, para. 67). The recently introduced CAREC Integrated Trade Agenda 2030 underlined the need for a stronger policy and regulatory environment for greater economic diversification, through policy and regulatory reforms to promote cross-border investment and improve the business operating environment. Overall, however, ADB has not yet provided substantive support in this area (main text, para. 64). The CAREC Program has provided no substantive support for investment climate reforms, which are planned in CAREC 2030 to promote private sector investment and economic diversification (main text, para. 63).	Recommendation 1: Strengthen support for investment climate and trade policy reforms to promote economic diversification across the CAREC subregion.
ADB provided limited and fragmented support for trade facilitation and trade policy during the evaluation period (main text, paras. 56–58). Data from the CAREC Program's Corridor Performance Measurement and Monitoring (CPMM) system indicate that border-crossing time and costs still significantly impede the subregion's business and investment environment and have seen limited improvement over the evaluation period (main text, para. 52). Government counterparts interviewed for the evaluation underlined the strong need for further investments to modernize border-crossing points and harmonize customs procedures (main text, para. 55).	Recommendation 2: Increase support for modernization of border-crossing points and customs processes.
Railways received significantly less investment than road transport and aviation received no investment from ADB CAREC program, although both railways and aviation are CAREC Transport Strategy 2030 strategic pillars (main text, para. 20-22). Several factors favor the use of railways rather than roads to move commodities. Distances to major markets are long. Railways are more suitable than roads, and the use of low-cost sea freight is not feasible for most countries in the CAREC subregion because they are landlocked. For the transit traffic generated by the People's Republic of China's trade with Europe through the Russian Federation, containerized rail traffic was emerging as a competitive alternative to sea transport given the potential shorter time for block trains to travel the route. The emerging transit route was severely impacted by the Russian invasion of Ukraine in 2022, and rerouting trains from the northern route to the middle corridor has been constrained largely by the many border crossings and transit bottlenecks along the middle corridor (main text, para. 21). To improve access to the international tourism and business services market, the subregion needs more international direct flights from a greater range of destinations, especially in the current geopolitical and trade environment. It also needs more direct and safer aviation linking CAREC member countries themselves, which would be more cost efficient (main text, para. 22).	Recommendation 3: Give a higher priority to developing a multimodal corridor network in the CAREC subregion by increasing support for the railway network and aviation.
ADB support has helped propagate renewable energy and clean technologies in national energy systems and inform energy policies to reduce greenhouse gas emissions in CAREC member countries (main text, para. 78). CAREC Transport Strategy 2030 does not highlight the need to address climate change issue as an important policy for the transport sector. ADB's transport operations incorporate climate change mitigation measures in line with ADB's operational guidelines and have largely been confined to adjusting transport infrastructure. No operations support policy-driven actions in shifting transport demand to more efficient and effective modes such as public transport and use of railways, measures to reduce demand for transport services, and increased use of renewable energy resources (main text, para.79). ADB support through the CAREC Program to regional climate change adaptation has been limited (main text, para. 80).	Recommendation 4: Use the CAREC platform to support climate change mitigation and adaptation in all sectors through regional cooperation.
The CAREC Program's results monitoring system has some substantial gaps. The current triennial Development Effectiveness Review does not adequately provide timely information on results needed to inform program decision-making. CAREC Results Framework 2030 and most sector results frameworks generally lack adequate indicators, baselines, and targets for outcomes and have no intermediate outcome targets at all. This makes it difficult for the Development Effectiveness Review and sector progress reports to monitor how CAREC operations have contributed or would contribute to achieving results and whether progress is on track (main text, para. 94). The recently introduced CAREC project classification system has some limitations. While the system highlights that a CAREC project should promote cross-country collaboration, the requirement is not explicitly included in the classification criteria. The classification methodology does not clearly require the contribution to regional economic benefits to be substantive (main text, para. 95). The CAREC Program does not record actual cross-border information. The CPMM system collects only data on sample trucks transporting cargo along the six CAREC corridors to assess border-crossing time and costs. It does not collect data on other vehicle types or on actual total traffic throughputs at border crossings (main text, para. 107).	Recommendation 5: Strengthen the CAREC Program's results monitoring system and tools.

I. A Complex Region

1. The Central Asia Regional Economic Cooperation (CAREC) Program is a partnership of 11 member countries in Central Asia and surrounding regions that aims to accelerate growth and reduce poverty through regional cooperation. These countries include Afghanistan, Azerbaijan, the People's Republic of China, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.[1] The Asian Development Bank (ADB) has supported the CAREC Program since 1996. ADB assistance in the first 5 years or so centered on helping establish the CAREC Program, which was formally launched in 2001.

A. Challenges Facing the CAREC Subregion

2. The CAREC subregion, as represented by the CAREC member countries, is one of the least integrated in the world, economically and politically. It faces more significant challenges in regional cooperation and integration (RCI) than other regions. Most countries in the subregion are landlocked and distant from the world's major markets; infrastructure connections are underdeveloped; and border controls are stringent, especially for the former Soviet republics, which formed new borders when they became independent in the early 1990s. The situation poses enormous challenges for cross-border movement of goods and services and for international trade. Most CAREC member countries are dependent on commodity exports to large markets outside the subregion. They have similar economic structures, and the economic interdependence among them and intra-regional trade are low, limiting public demand for cross-country cooperation to facilitate connectivity and trade.

3. Security threats, conflict risks, and political instability among CAREC member countries are significant in the subregion. Many CAREC member countries remain highly centralized politically and economically, further reducing demand for regional cooperation. Trading patterns and trade flows between CAREC member countries are often affected by shifting geopolitical dynamics, conflict, and external factors. Instability and regime change in Afghanistan have affected Pakistan's connectivity with other CAREC member countries, as security concerns have led to frequent border closures and increased border-crossing costs and delays. Localized border disputes, for example, between Tajikistan and Kyrgyz Republic, have resulted in border closures. Most notably, the Russian invasion of Ukraine in 2022 and the resulting sanctions have further disrupted trade flows, potentially diverting trade through the middle corridor Caspian Sea route to Europe. Various regional organizations operate in the CAREC subregion, but all include extra-regional member states, and none include all CAREC member states or even all the core Central Asian countries, which further fragments the region.[2]

4. Dependent on commodities, CAREC member countries are vulnerable to external economic shocks and prone to domestic rent-seeking that results in an unfavorable business and investment environment for non-commodity industries as well as reduced economic growth, welfare, and economic efficiency. The incomplete transition to a market economy in CAREC member countries further hampers the business environment, where institutional gaps constitute a major development challenge, and structural reforms are needed to boost productivity and competitiveness and improve economic

[1] (a) The original eight members are Afghanistan, Azerbaijan, the People's Republic of China (Xinjiang joined in 1997; Inner Mongolia in 2008), Kazakhstan, the Kyrgyz Republic, Mongolia, Tajikistan, and Uzbekistan. Pakistan and Turkmenistan joined in 2010; and Georgia joined in 2016. (b) ADB placed its regular assistance to Afghanistan on hold effective 15 August 2021. All references to Afghanistan in this report are based on information available as of 30 July 2021 and interviews with entities in Afghanistan's neighboring countries, development partners, and relevant ADB staff.

[2] An example of regional organizations is the Commonwealth of Independent States (CIS), which was established after the dissolution of the Soviet Union to foster political, economic, and security cooperations among former Soviet republics (Kubicek. 2009. The Commonwealth of Independent States: an example of failed regionalism? *Review of International Studies.* 35. 237-256; M. Rakhimov. 2010. Internal and external dynamics of regional cooperation in Central Asia. *Journal of Eurasian Studies* .1:95-101). The original member states were Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russian Federation, Ukraine, Uzbekistan, and Tajikistan. The Baltic countries—Estonia, Latvia, and Lithuania—did not join the organization, and Ukraine and Turkmenistan became only associated members. Georgia left the CIS in 2008 and Ukraine left in 2014.

diversification. Many CAREC member countries, especially those dependent on fossil fuel exports, face the conundrum of being both highly vulnerable to climate change and exposed to international efforts to mitigate it by decarbonizing their economic activities. An accelerated shift from fossil fuels to renewable energy and taxation of carbon could lead to a substantial decline in the real price of oil and gas. The decline would have negative economic and financial impacts on fuel-exporting countries unless they diversify their economies at an accelerated pace. Under the net zero emission (2050) scenario, the decline in demand for oil and gas and the consequent fall in their prices could reduce per capita income from oil and gas sales in fuel-exporting countries by nearly 76% from the 2011–2020 level of about $1,660 to about $400 in 2031–2040.[3] Massive declines in hydrocarbon revenues will cause sharp deterioration in the fiscal and current account balances and economic growth in fuel-exporting countries without fundamental structural reforms and economic diversification.

B. ADB Support for the CAREC Program

5. ADB support for the CAREC Program has followed a bottom-up approach, focusing on programs and projects rather than establishing a formal regional organization.[4] ADB has supported the CAREC Program by financing projects and technical assistance (TA) that potentially have transnational effects on improving connectivity, trade, and economic competitiveness. The CAREC subregion has great potential to achieve results in those fields, not only because of current low intra-regional trade but also because of its strategic location as a land bridge connecting some of the world's largest economic centers.[5]

6. ADB has supported the provision of regional public goods (RPGs) that tackle social and environmental concerns common across countries in the subregion, such as the control of communicable diseases, disaster risk management, and mainstreaming of climate change in policies and projects. ADB supports the development of CAREC strategies and sector policies to provide strategic direction for the CAREC Program and sector programs. Projects financed by all actors, such as development partners and governments in various sectors, have been grounded in CAREC strategic documents. ADB acts as the secretariat to the CAREC Program, providing technical, administrative, and coordinating support for the program's implementation.[6] However, the CAREC Program does not constitute a formal regional organization on its own and is not governed by a charter.

7. Five other development partners have participated in the CAREC Program since its launch, including the European Bank for Reconstruction and Development, the International Monetary Fund, the Islamic Development Bank, the United Nations Development Programme, and the World Bank. They have provided financing for investment projects, extended TA, contributed to policy dialogue and strategy setting, and participated in working groups.[7] In 2017, the CAREC Program was opened to any development partner that supported CAREC's mission. The Japan International Cooperation Agency, the United States Agency for International Development, and the Asian Infrastructure Investment Bank, among others, have attended CAREC meetings since then. The program provides space for development partners to support policy and institutional development and finance investment projects. Other development partners financed $4.9 billion for 26 investment projects during 2011–2021.

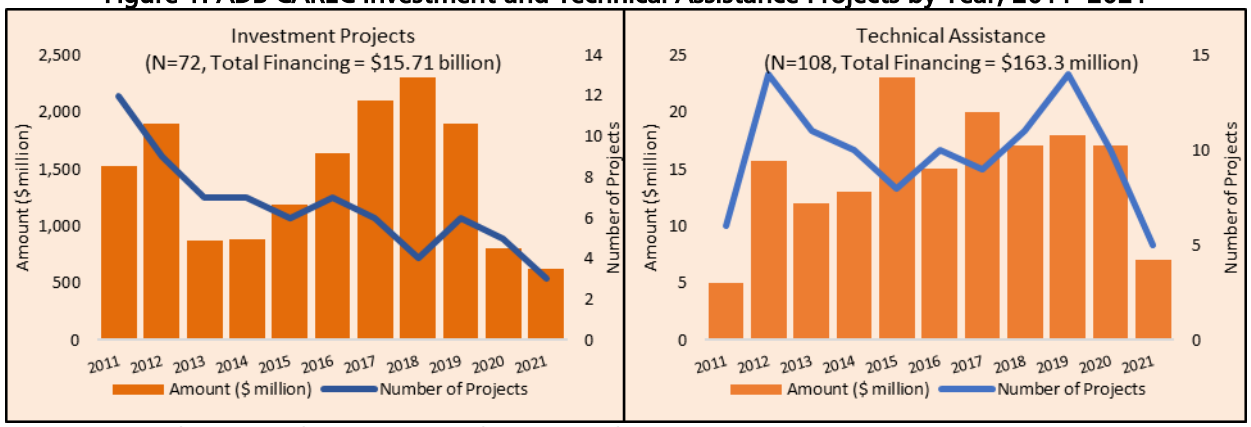
8. Since 2011, the CAREC Program has been guided by two strategic frameworks: the CAREC Strategic Framework 2011–2020 (CAREC 2020) and the CAREC Strategic Framework 2018–2030 (CAREC 2030). CAREC 2020 was replaced by CAREC 2030 in 2018, which was developed in the context of a fast-changing development landscape in the CAREC subregion and was inspired by a mission to align with the 2030 global development agenda. CAREC 2030 adopted a more comprehensive regional economic

[3] Under the net zero emission (2050) scenario, global carbon dioxide emissions would reach net zero by 2050. International Energy Agency. 2021. *Net Zero Emission by 2050 Scenario*. Paris. pp. 155–7.
[4] Preliminary work to establish CAREC started in 1996, but investment programming started in 2001.
[5] Including the European Union, East Asia, South Asia, the Middle East, and the Russian Federation.
[6] Appendix 6 describes in detail the CAREC Program's institutional framework.
[7] Partners such as the World Trade Organization, the World Customs Organization, United Nations agencies, and donor-funded programs have collaborated with CAREC trade initiatives.

cooperation approach and significantly expanded CAREC's operational priorities in select non-infrastructure sectors. While the program's operational priorities have evolved and expanded over the evaluation period, they are broadly aligned with three key strategic pillars of ADB's RCI Strategy, as articulated in RCI Strategy 2006; the Operational Plan for RCI, 2016–2020; and Strategy 2030 Operational Plan for Priority 7, 2019–2024. These pillars include (i) greater and higher-quality connectivity between economies, (ii) increased competitiveness with global and regional trade and investment opportunities expanded, and (iii) increased and diversified RPGs. The broad vision of the program is "Good Neighbors, Good Partners, and Good Prospects."

9. ADB approved $15.7 billion for 72 investment projects for the CAREC Program in 2011–2021, of which about $4.2 billion was cofinancing. About $11.4 billion (72.6%) was for transport and $3.6 billion (23.1%) for energy, with the remaining $680 million (4.4%) mainly for trade facilitation. About 1.1% of the total CAREC portfolio was TA grants. ADB approved $163.3 million for 108 TA projects for the program in 2011–2021, including $56.0 million in cofinancing. The decline in 2020 and 2021 coincided with the global coronavirus disease (COVID-19) pandemic, during which CAREC member countries focused on their pandemic response (Figure 1).

Figure 1: ADB CAREC Investment and Technical Assistance Projects by Year, 2011–2021



ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

10. Investment projects are mainly designed as one-country projects with expected spillover benefits for neighboring countries. In contrast, more than half the TA projects (56%) are designed to cover multiple countries. The largest recipient of the CAREC Program was Uzbekistan, followed by Afghanistan and Georgia (Table 1). Kazakhstan received $1.6 billion and Pakistan $1.5 billion, accounting for 10% of the total portfolio.

Table 1: ADB CAREC Support by Country, 2011–2021 (Total Volume [%])

Country	Investment Projects		Technical Assistance		Total		Share of Total (%)	
	No.	Value ($ million)	No.	Value ($ million)	No.	Value ($ million)	No.	Value
Uzbekistan	11	2,945.2	11	11.1	22	2,956.3	12.2	18.6
Afghanistan	14	2,596.4	6	4.6	20	2,601.0	11.0	16.4
Georgia	5	2,450.2	3	1.6	8	2,451.8	4.4	15.4
Kazakhstan	6	1,580.1	5	1.8	11	1,581.9	6.1	10.0
Pakistan	6	1,496.0	6	21.5	12	1,517.5	6.6	9.6
Azerbaijan	5	1,320.0	4	3.4	9	1,323.4	5.0	8.3
Kyrgyz Republic	8	1,051.6	6	5.3	14	1,056.9	7.7	6.7
Tajikistan	9	1,060.9	5	4.0	14	1,064.9	7.7	6.7

Country	Investment Projects		Technical Assistance		Total		Share of Total (%)	
	No.	Value ($ million)	No.	Value ($ million)	No.	Value ($ million)	No.	Value
Turkmenistan	2	625.0	2	1.0	4	626.0	2.2	3.9
Mongolia	6	389.0	3	2.7	9	391.7	5.0	2.5
People's Republic of China	1	196.3	1	0.2	2	196.5	1.1	1.2
Regional	0	0.0	56	106.2	56	106.2	30.9	0.7
Total	**73**	**15,710.7**	**108**	**163.3**	**181**	**15,874.0**	**100**	**100**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Note: Only technical assistance projects are designated as "regional." Investment projects are country based. The investment project total does not sum up to 72 since 1 project was implemented in two countries. Numbers may not sum precisely because of rounding.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

11. In 2020–2021, ADB provided $2.7 billion in budget support loans and grants for 11 COVID-19 Pandemic Response Option programs in 9 CAREC member countries. The operations are aligned with CAREC's 2030 economic and financial stability cluster, and the human development cluster, which includes regional cooperation in health services and control of communicable diseases. Of the 11 programs, 10 are classified as RCI projects, as ADB budget support is expected to prevent negative regional spillovers that might arise from lack of pandemic response. However, all were prepared outside the CAREC Program and not classified as part of the CAREC portfolio.

C. Evaluation Questions and Methodology

12. The evaluation assesses the performance and results of ADB support for the CAREC Program in 2011–2021 (the evaluation period).[8] The main thrust of the theory of change underpinning the evaluation is that ADB investment and TA support for infrastructure, policy, and institutional reforms through a regional approach would remove constraints and barriers to trade and investment across borders. The approach would, in turn, contribute to improved regional connectivity and competitiveness and supply of RPGs. ADB inputs and activities include investment financing, TA, secretariat support for strategy and program development, and broker services to facilitate policy dialogue and knowledge sharing. They contribute to achieving the expected CAREC outputs and intermediate outcomes, including cross-border infrastructure and economic corridors; improved trade and investment policies and institutions; strengthened cooperation in health, education, digital technologies, and climate change; and integrated management of agriculture, water, and tourism.

13. The envisaged connectivity outcomes include improved cross-border linkages and increased flows of goods, services, and people. The outcomes are mainly achieved through improved cross-border infrastructure, development of economic corridors, and conducive trade and investment policies. Competitiveness outcomes encompass improved trade, private sector investment, more integrated value chains, and greater economic diversification. The outcomes are achieved through many of the measures that contribute to connectivity, as well as policies favorable to the business climate and economic diversification, and collaboration in education to expand the supply of skilled labor across member countries. In RPGs, the expected outcomes are better control of communicable diseases, effective transboundary resource management, and reduced carbon emissions and improved climate resilience, to be achieved through greater cooperation across CAREC member countries to address shared concerns in the three areas.[9]

[8] The evaluation covers ADB approvals for the CAREC Program in 2011–2021 but uses data on project implementation progress published in the ADB eOps database and information from project completion reports and IED validation reports available as of 30 June 2022. IED validation ratings are as of 29 November 2022.
[9] Appendix 5 describes in detail the CAREC theory of change constructed for the evaluation.

14. The overarching evaluation question is, to what extent has ADB support for the CAREC Program strengthened the subregion's development? Three sub-questions explore the extent to which ADB support for the CAREC Program has improved connectivity, increased regional competitiveness, and improved the provision of RPGs. How well the CAREC Program has functioned and how well ADB has fulfilled its role as the CAREC Secretariat are examined.

15. The evaluation is based on triangulation of evidence gathered from different sources analyzed using various methods. The methods included (i) a review of ADB and CAREC strategies, action plans, results monitoring documents, meeting notes and progress reports, as well as academic literature on regionalism; (ii) CAREC project database analysis and project document review; (iii) IED evaluation databases, documents, and reports; (iv) an analysis of feedback collected from interviews with government counterparts (in 10 CAREC member countries), project executing agencies, development partners, nongovernment organizations, and ADB staff; (v) an assessment of survey results of government counterparts and development partners; (vi) an analysis of secondary data, including from within ADB and publicly available external sources; (vii) remotely sensed data and geographic information system analysis; and (viii) case studies using contribution tracing.[10]

16. ADB is one of many actors that contribute to the CAREC Program's strategic outcomes, which limits the extent to which results can be attributed to ADB alone. The issue is partly resolved by using contribution tracing to assess the strength of evidence that links ADB investment and TA support with the change or outcome achieved and to estimate the level of confidence in evaluative findings (footnote 12). Because of the COVID-19 pandemic, the evaluation team was unable to hold face-to-face meetings with stakeholders or undertake field visits. In-country consultants arranged virtual interviews with and helped survey country stakeholders and collected additional evidence. The evaluation could not interview officials, other stakeholders and beneficiaries in Afghanistan. The limitation was partially overcome by interviewing entities in Afghanistan's neighboring countries, development partners, and relevant ADB staff and by reviewing project documents.

II. Significant Progress toward Enhancing Connectivity

17. The primary focus of the CAREC Program is to strengthen regional connectivity through support for improving infrastructure, mainly in transport and energy. Transport and energy infrastructure accounted for 95.7% of the total volume of ADB investment approvals during the evaluation period (Appendix 1, Table A1.1). The chapter assesses the contribution of ADB support to improving connectivity in the CAREC subregion.

A. Boosting Transport Connectivity

18. The main thrust of ADB's support for the CAREC Program is to improve transport connectivity between CAREC member countries to facilitate trade between them as well as with regional and global markets. A good transport network is vital not only for domestic movement but also international movement to link individual economies with each other and with international markets. The CAREC subregion needed the transport links not only to ease north–south movement but also to accommodate east–west traffic. Major markets outside the traditional links with Moscow needed greater access to Europe, the People's Republic of China, and the rest of Asia. The vast network required significant investment to rehabilitate and improve transport links, which became the core element of the CAREC strategy.

[10] Contribution tracing is a qualitative–quantitative approach for assessing an intervention's contribution to outcome and impact. It entails constructing contributing causal pathways through a systematic search and cross-checking of all available confirming and disconfirming evidence, including possible alternative causes outside the intervention, testing the validity of contribution claims by analyzing evidence using Bayesian updating, and estimating the level of confidence in the claims. Appendix 6 describes in detail the contribution-tracing approach and its application in the evaluation.

19. ADB's transport support mainly consisted of project assistance and strategy coordination to improve priority road and railway segments along the six CAREC corridors. ADB helped identify 108 priority transport links for the CAREC Transport and Trade Facilitation Strategy (TTFS) 2020 in discussions with CAREC member countries and development partners, and used network screening criteria to ensure that CAREC projects included priority segments in the six CAREC corridors.[11] The individual projects were identified through a screening methodology that determined the priorities for improvement based on economic criteria related to costs, traffic, and potential economic benefits. ADB's resource allocation process earmarks funds for regional projects and gives countries incentives to support CAREC projects.

20. ADB approved 50 transport CAREC projects totaling $11.4 billion over the evaluation period, of which 23 were completed and 27 are ongoing; 42 were related to road improvement, 8 to rail, and none to aviation.[12] Railways received less investment because (i) several member countries directly invested in railways without ADB support, (ii) countries prioritized road improvements, (iii) railway projects require significant financial resources, often beyond the reach of any single financier hence coordination and filling financial gaps take time; (iv) railways have a longer investment decision-making process considering its significant structural impact on a country's economy and decisions are closely interlinked with geopolitical decisions; (v) the complexity of railways projects is significantly higher than road projects, and railway projects require more extensive project preparation; and (vi) national railway companies demonstrated poor financial and operational performance. A separate railway strategy, however, was required given that the condition and operating characteristics of each country's railway system varied widely and performed different functions within the regional network. ADB supported the development of a railway strategy, which was endorsed by the CAREC Ministerial Conference in 2016. The strategy highlighted six railway corridors: the same ones identified in the CAREC TTFS 2020 as multimodal corridors. The principal purpose of the corridors was to prioritize railway infrastructure projects.

21. Several factors favor the use of railways rather than roads to move commodities. Distances to major markets are long and, since the Central Asian republics, Afghanistan, and Mongolia are landlocked, the use of low-cost sea freight is not feasible for most countries in the CAREC subregion. For major links with Europe, the subregion's main market; the People's Republic of China, with potential onward links to South Asia and Southeast Asia; and the Russian Federation, railways are more suitable than roads. For transit traffic generated by trade between the People's Republic of China and Europe through the Russian Federation and Central Asia, containerized rail traffic was emerging as a competitive alternative to sea transport. The reason is the potential for shorter travel times for block trains than for ships, with rail transport taking only 10–12 days and sea transport taking more than 40 days. The emerging transit route, which expanded rapidly in 2016–2020, was severely impacted by the Russian invasion of Ukraine in 2022. Rerouting trains from the northern to the middle corridor is a possible option, although many constraints, largely attributable to the numerous border crossings and transit bottlenecks along the corridor, must be resolved. With the global shift away from using fossil fuels, the CAREC subregion's railways need to adapt to changing markets in the long run as they are largely dependent on the transport of fossil fuels.

22. Aviation was not a priority in the TTFS 2020. It was included as a strategic pillar in CAREC Transport Strategy 2030 as it was considered important to improve connectivity to other regions given long distances and the potential for unlocking markets for business services and tourism. To improve access to the international tourism and business services market, the subregion needs more international direct flights from a greater range of destinations, especially in the current geopolitical and trade environment. It also needs more direct and safer aviation linking CAREC member countries themselves,

[11] Selection of the corridors was based on assessment of existing baseline traffic volume, the prospect of economic and traffic growth, the capacity to increase connectivity between economic and population centers, the potential to mitigate delays and other hindrances, and economic and financial sustainability. At the same time, the network was expanded to incorporate the transport networks of Pakistan and Turkmenistan, both of which had recently joined CAREC.

[12] Of the 12 projects validated or evaluated by IED, 9 projects were rated *successful*. The three projects rated *less than successful* were affected by currency devaluation, macroeconomic downturns, and the impact of COVID-19 related lockdowns, among others.

which would be more cost efficient. At present, it is often difficult to fly inter-regionally or intra-regionally without passing a hub airport outside the subregion - which is likely a major impediment for tourists and other travelers. ADB has provided resources for a series of aviation sector scoping studies, strategy development, and capacity development and knowledge sharing under the CAREC Program.

23. **ADB support for the CAREC Program significantly strengthened regional transport connectivity.** The CAREC Program's physical output targets established in the TTFS 2020, covering investments in roads and railways, were exceeded. ADB's contribution to the achievement was significant. The targets included building or improving 7,800 kilometers (km) of expressways or national highways, building 1,800 km railways, and improving 2,000 km railways in 2008–2020. About 10,462 km of roads were built or improved, 1,995 km of railways were built, and 4,033 km of existing railways were improved in 2008–2018.[13] The total length of the ADB supported CAREC transport roadway projects that were completed between 2011 and 2018 was 4,175 km while that of ADB supported railway projects was around 503 km.

24. ADB financed about 47% of priority road and 12% of priority railway segments constructed or improved over the evaluation period. ADB's transport investment amounted to almost 80% of the total resources provided by all six development partners during 2011–2021. The investment program has increased the quality of the corridor network, although ADB support for maintenance of road assets could be strengthened. The TTFS 2020 aimed to have at least 70% of expanded road corridors, totaling 29,350 km, classified as *in good condition* by 2020. The program records indicate that the annual percentage of roads *in good condition* exceeded the target and amounted to 75%–85% each year in 2009–2018.

25. Travel speeds across the corridor network increased to appropriate levels while traffic volume grew substantially, based on data from the CAREC Program's Corridor Performance Measurement and Monitoring system (CPMM). Travel speeds on the road corridors improved marginally in 2011–2021. The speed of trucks without border-crossing delays averaged about 43 kilometers per hour (kph) with the slowest speeds recorded in 2013 of about 38 kph and the highest 46.3 kph in 2018. Given that the bulk of the corridor network is high-grade arterial roads, either dual two-lane or single two-lane and not expressway standard, the average speeds are considered acceptable. Average speeds are unlikely to increase as truck traffic shares the road with other users, many of which are fully laden long-distance trucks, some with trailers. While regional traffic flow throughout the CAREC corridor network is not monitored, evidence from individual transport investment projects indicates that traffic flows have increased substantially.[14] The overall increases in traffic might limit improved vehicle speeds on the network level. Average rail traffic speed increased from about 30 kph in 2011 to 42 kph in 2020.

26. **Cross-border traffic flows have increased at BCPs that benefited from ADB support.** Data provided by border authorities in Tajikistan indicate large increases in trade volumes and passengers across an important border with Uzbekistan at Dusti. However, an ADB-supported BCP with Kyrgyz Republic at Karamyk remained only partly functional because of an ongoing border dispute. The main crossing point with Uzbekistan at Dusti registered a 68% increase in freight volumes in 2017–2021 and an increase of more than 400,000 tons of imports and exports in 2021 compared with 289,000 tons in 2015 and 139,790 tons in 2009. ADB supported a CAREC Corridor 3 segment linking Dushanbe (the capital of Tajikistan) with Uzbekistan to the west, along with improved infrastructure and facilities at the Dusti BCPs. The support helped reduce the average waiting time for freight clearance by 4.5 hours in 2015 from an average of 15 hours in 2009.[15]

---

[13] Transport Sector Progress Report and Work Plan 2019–2021, Senior Officials Meeting, CAREC, 27–28 June 2019, Tashkent, Uzbekistan. Implementation of priority projects was monitored until 2018, when a list of 77 priority investment projects for potential implementation during the CAREC Transport Strategy 2030 period was drawn up.

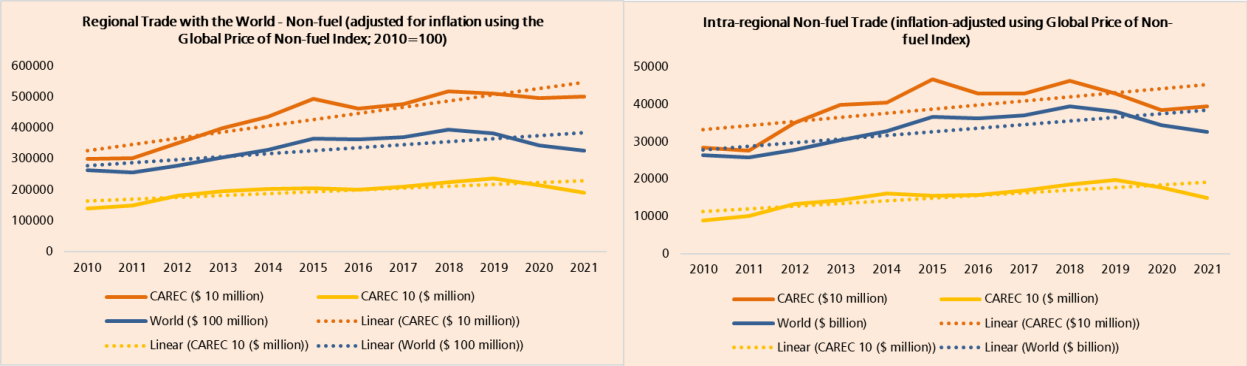
[14] Available information suggests that cross-border traffic flows have been adversely impacted by the COVID-19 pandemic, particularly passenger traffic. Freight traffic appears to have been less affected.

[15] ADB. 2017. *Completion Report: CAREC Corridor 3 (Dushanbe-Uzbekistan Border) Improvement Project in Tajikistan.* Manila (Grant 0245).

27. Data provided by the Kazakhstan authorities on cross-border traffic between Kazakhstan and Kyrgyz Republic at three BCPs, at Korday, Karasu, and Chaldovar in Kazakhstan, show that from 2011 to 2019, truck traffic grew consistently and substantially by about 17%. Bus traffic increased by almost 4% a year. Light-goods vehicle traffic has remained relatively flat at an average of about 52,000 vehicles, as has the number of people crossing the border, at 3.23 million a year. The number of people crossing the border possibly reflects the large number of migrant workers employed in Kazakhstan or other economies in the region such as the Russian Federation.

28. While no data are available on cross-border traffic volume for all BCPs, the growth of CAREC's nonfuel trade volume indicates that cross-border flows of goods and services in the subregion likely increased during the evaluation period. Overall, CAREC nonfuel trade has increased steadily, regionally and intra-regionally, as have trade numbers globally (Figure 2).[16] The global nonfuel trade of CAREC member countries, including the People's Republic of China, is growing visibly faster than that of CAREC member countries, excluding the People's Republic of China (CAREC 10) or of the world. The reason is the enormous increase in the People's Republic of China's exports since its World Trade Organization (WTO) accession in 2001. The global nonfuel trade volume of the CAREC 10 rose steadily until 2019 but declined thereafter, possibly because of the impacts of the global COVID-19 pandemic. The global nonfuel trade of the CAREC 10 countries increased by 58% from $149 billion in 2011 to $235 billion in 2019. Intra-regional nonfuel trade among the CAREC 10 countries doubled from $10 billion in 2011 to $20 billion in 2019, still much lower than their global trade.

Figure 2: Steady Growth in CAREC Nonfuel Trade Volumes



CAREC = Central Asia Regional Economic Cooperation; CAREC 10 = CAREC member countries, excluding the People's Republic of China.
Note: Total trade is calculated as the sum of exports and imports.
Source: Asian Development Bank (Economic Research and Regional Cooperation Department), Asia Regional Integration Center team; United Nations. Commodity Trade Database (accessed 13 September 2022).

29. **ADB support for the CAREC Program helped set up transport strategies and priorities to give it strategic direction and provided substantial financial support to improve priority links along the six CAREC corridors.** Physical output targets for the CAREC Program and ADB operations were exceeded, and ADB substantially contributed to the program during the evaluation period. Data from individual BCPs as well as nonfuel trade analysis show that cross-border traffic flows increased.

30. To further test the validity of the contribution claim that ADB transport support achieved significant progress in helping improve CAREC subregion connectivity, the evaluation conducted a contribution-tracing analysis. The analysis included a systematic search and cross-checking of all available confirming and disconfirming evidence from all available sources (desk reviews, data sets, interviews); rigorously associated the evidence with the contribution claim; and estimated the level of confidence in

[16] Figure 2 depicts the global and intra-regional nonfuel trade volume of CAREC member states without the People's Republic of China (CAREC 10, $ million), of the CAREC subregion including the People's Republic of China (on a reduced scale of $10 million), and of the world in total (on a reduced scale of $100 million), adjusting for inflation using the International Monetary Fund Global Price of Non-Fuel Index.

the claim using Bayesian updating. The findings from the contribution tracing substantiate with high confidence that the claim is valid, and ADB transport support significantly helped improve subregion connectivity.[17]

B. Likely Achievement of Improved Energy Connectivity

31. A key pillar of CAREC energy strategies is better energy security through regional interconnections. ADB energy support focused on the following: (i) Single-country power generation and transmission projects that have regional dimensions and constitute part of the regional power system. For example, most of the power generation projects contribute to power exports when they generate domestic surplus electricity. Large regional gas or power grids can absorb disruptions easier than small national ones. (ii) Regional or cross-border projects for power transmission and natural gas pipelines. (iii) The establishment of the Central Asia Transmission Cooperation Association (CATCA), a platform for regional power network planning, with its membership open to all CAREC member countries.

32. Investments in energy projects have focused on only five CAREC member countries. Four—Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan—were part of the Soviet-era Central Asia Power System (CAPS) until 1991. The geographical focus of CAREC energy investment projects reflects the existence of the readily available CAPS platform that can help expand power exports and imports and boost regional energy security in CAPS countries.[18] The other country in the ADB energy portfolio is energy-deficit Afghanistan, where ADB support had aimed to increase its power imports from Central Asia. Over the evaluation period, ADB approved 15 loans and grants totaling $3.6 billion for the CAREC energy sector, of which half were for Afghanistan and the rest for Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. Most of the projects are still under implementation, although nine have entered an advanced stage.[19]

33. **ADB-supported single-country energy transmission projects have increased and will likely increase regional electricity trade**. Augmenting transmission capacity to connect the Tajikistan power system to Kyrgyz Republic, along with strengthening the transmission system in southern Tajikistan, for example, led to increased exports to Central Asia and Afghanistan. Hence, total exports from Tajikistan exceeded the target of 700 gigawatt hours for 2015 every year since 2013 and reached 2,924 gigawatt hours in 2019.[20] Transmission projects that simply help reduce transmission losses have helped; when transmission losses decrease, exports tend to be higher than when transmission losses remain unchanged, as in the case of the Kyrgyz Republic Power Sector Improvement Project.[21]

34. Grant-based transmission projects in Afghanistan intended to enable increased imports from other CAREC member countries have contributed to regional energy trade. The projects include a completed grant-based Turkmenistan–Uzbekistan–Tajikistan–Afghanistan–Pakistan (TUTAP) project, although no quantitative data are available on increased imports by Afghanistan post-project completion.[22] Transmission projects have enabled the Afghanistan power utility to extend more service connections to more households and other small consumers. For example, about 48,500 new service connections were provided for households and small businesses in Kunduz and Baghlan load centers, although the connections were fewer than the target of 62,500.[23] About 23,000 new connections were

[17] Appendix 6 describes in detail the contribution-tracing analysis.
[18] Kazakhstan is the only CAPS country where ADB has not supported any investment projects under the CAREC umbrella, largely because investment opportunities there are mostly for nonsovereign operations.
[19] Only 2 of the 15 projects have been completed.
[20] ADB. 2021. *Completion Report: Regional Power Transmission Project in Tajikistan.* Manila (Grant 0213).
[21] ADB. 2010. *Kyrgyz Republic: Power Sector Improvement Project (formerly Transmission and Distribution Metering Project)*. Manila (Loan 2671, Grant 218).
[22] ADB. 2012. *Afghanistan: Energy Sector Development Investment Program - Tranche 4*. Manila (Grant 0332).
[23] ADB. 2020. *Completion Report. Energy Sector Development Investment Program—Tranche 1 in Afghanistan.* Manila (Grant 0134).

provided to households in southwest Kabul against a target of 55,000.[24] The ongoing Tajikistan Reconnection to the Central Asian Power System Project and the Turkmenistan National Power Grid Strengthening Project are being implemented generally well, albeit with delays, and are likely to achieve their objectives of increasing power trade in CAPS and increasing Turkmenistan's power exports to Afghanistan.[25]

35. Grant-based transmission projects in Afghanistan that were intended to enable increased imports from other CAREC member countries have contributed to regional energy trade; these include a completed grant-based Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan project, although no quantitative data is available on increased imports by Afghanistan post-project completion.[26] Transmission projects have also enabled the Afghanistan power utility to extend more service connections to more households and other small consumers. For example, about 48,500 new service connections were provided for households and small businesses in Kunduz and Baghlan load centers, although this was lower than the target of 62,500 service connections.[27] Similarly, 23,060 new connections were provided to households in southwest Kabul against a target of 55,000 connections.[28] A further 174,000 new connections were provided in Logar, Paktia and Khost provinces in southeastern Afghanistan, and were supplied energy imported from Tajikistan and Uzbekistan.[29] The ongoing Tajikistan Reconnection to the Central Asian Power System Project and Turkmenistan National Power Grid Strengthening Project are implementing generally well albeit with delays and are likely to achieve their objectives of increasing power trade in Central Asian Power System and increasing Turkmenistan's power exports to Afghanistan respectively.[30]

36. Some ADB-supported single-country generation projects increased power exports to the extent of producing a surplus. Most generation projects are to rehabilitate existing generation units or to add new capacity, aiming to expand regional power exports. However, other than for exporting power to Afghanistan, most generation projects are being used to meet domestic needs and export only if they have a surplus. Three completed generation projects—one each in Kyrgyz Republic, Tajikistan, and Uzbekistan—helped increase electricity output and exports to the extent that a surplus was produced (or at least did not reduce electricity exports to the extent it would have in the absence of the project),[31] although only from the Uzbekistan project did regular exports increase year on year. Power generation in Uzbekistan has increased and shortages have decreased significantly since the first Talimarjan power project was completed in 2019.[32] As the ongoing ADB-supported second Talimarjan project, the Power Generation Efficiency Improvement Project, comes on stream, it will highly likely contribute to increasing exports.[33] Although meeting domestic demand is their top-most priority, the generation projects in Tajikistan and Uzbekistan enabled exports to Afghanistan. In Kyrgyz Republic, ADB supported a project

[24] IED. 2021. *Validation Completion Report: Energy Sector Development Investment Program—Tranche 2 in Afghanistan.* Manila: ADB (Grant 0184).
[25] ADB. 2018. *Republic of Tajikistan: Reconnection to the Central Asian Power System Project*. Manila (Grant 0622); ADB. 2018. *Turkmenistan: National Power Grid Strengthening Project,* Manila (Loan 3734).
[26] ADB. 2012. *Afghanistan: Energy Sector Development Investment Program - Tranche 4*, Manila, (Grant 0332)
[27] ADB. 2020. *Completion Report. Energy Sector Development Investment Program—Tranche 1 in Afghanistan,* Manila (Grant 0134).
[28] Independent Evaluation Department. 2021. *Validation Completion Report: Energy Sector Development Investment Program—Tranche 2 in Afghanistan.* Manila (Grant 0184).
[29] ADB. 2018. *Afghanistan: Energy Sector Development Investment Program – Tranche 4*. Manila (Grant 0332); data on number of connections provided by Afghanistan Resident Mission (AFRM).
[30] ADB. 2018. *Republic of Tajikistan: Reconnection to the Central Asian Power System Project*. Manila (Grant 0622); ADB. 2018. *Turkmenistan: National Power Grid Strengthening Project,* Manila (Loan 3734).
[31] All three completed generation projects helped increase electricity output and, hence, exports (to the extent that they produced a surplus) in some way: in Uzbekistan by expanding gas-fired plants and rehabilitating some old units, in Kyrgyz Republic by rehabilitating a hydropower project and replacing its existing secondary electrical and mechanical equipment, and in Tajikistan by building a new switchyard at a secure location and connecting it to the grid.
[32] ADB. 2021. *Completion Report: Talimarjan Power Project (formerly CASAREM–Talimarjan Energy Development Project) in Uzbekistan*. Manila (Loan 2629, Loan 2630).
[33] ADB. 2017. *The Republic of Uzbekistan: The Power Generation Efficiency Improvement Project.* Manila (Loan 3621).

that accounts for about 40% of the country's generating capacity, and therefore has contributed the maximum to Kyrgyz Republic exports to date.[34]

37. **ADB support for regional initiatives is still a work in progress.** ADB supported two regional initiatives that contributed to cross-country energy connectivity but are on hold because of the situation in Afghanistan.[35] The first is the TUTAP transmission framework, which is a series of discrete individually justified investment projects that ADB supported. The projects are intended to export power from thermal and gas-fired power plants in Uzbekistan and Turkmenistan as well as from hydro plants in Tajikistan to the Afghanistan grid, and export surplus power from Uzbekistan and Turkmenistan (via Afghanistan) to Pakistan and Tajikistan. A 500-kilovolt line from Turkmenistan to Afghanistan has been operational since January 2021, although firm data on electricity imports from Turkmenistan were not available to the evaluation.[36] A 500/220 kilovolt substation in Afghanistan to facilitate imports from Turkmenistan and Uzbekistan was completed in January 2019, but can become operational only when the associated transmission lines in Afghanistan are commissioned.[37] ADB supported the construction of the transmission lines, which are now on hold because of the situation there.[38]

38. The second is the Turkmenistan–Afghanistan–Pakistan–India pipeline, to which ADB has provided TA support for processing activities and due diligence work.[39] A 214 km pipeline is being laid from the Galkynysh gas field in Turkmenistan to the Afghanistan border, but construction of the remaining 1,600 km pipeline has yet to begin and is now on hold.[40]

39. ADB support has laid the foundation to establish CATCA, which is open to all CAREC member countries, and will focus on strategic planning for a regional transmission system.[41] CATCA was envisaged in 2019 to focus on a strategic expansion of the regional power network.[42] The main benefit of CATCA will be changing the country-level transmission system planning mindset to a regional perspective to optimize regional or multicountry transmission plans. The basic concept and road map for CATCA have been prepared and are awaiting endorsement from the CAREC Ministerial Conference. Almost all CAREC member countries are in favor of the initiative. However, CATCA has not started functioning. It is not clear how soon CATCA will be able to identify new regional transmission corridors that include non-CAPS countries and are agreeable to all parties.

40. **Overall, ADB support for energy projects under the CAREC umbrella will likely substantively contribute to improving energy connectivity in the subregion** Despite the uncertainties surrounding the

---

[34] ADB. 2012. *Kyrgyz Republic: Power Sector Rehabilitation Project*. Manila (Loan 2869, Grant 0294).

[35] The World Bank–led Central Asia-South Asia power project (CASA-1000) is part of the CAREC energy program and designed to export summer surplus hydropower from Kyrgyz Republic and Tajikistan to Afghanistan and Pakistan, and is on hold because of the Afghanistan situation.

[36] ADB. Afghanistan: Energy Sector Development Investment Program—Tranche 4 (Grant 0332).

[37] ADB. Afghanistan: Energy Sector Development Investment Program—Tranche 5 (Grant 0377).

[38] The associated transmission lines are all part of the TUTAP framework and include (i) the 500 kV transmission line from Sheberghan to Dasht-e-Alwan (Grant 0464/0465-AFG: Tranche 1, 76% completed as of August 2021); (ii) the 500 kV transmission line from Dasht-e-Alwan to Kabul (Grant 0374/0375-AFG: North–South Power Transmission Enhancement Project, 93% completed as of August 2021). The contract for the third, a 500 kV transmission line from the Uzbekistan border to Dasht-e-Alwan substation (Grant 0742: Tranche 6), was approved in September 2020 and signed in December 2020, but work could not start by August 2021. Three grants to allow Afghanistan to synchronize Turkmenistan and Afghanistan power systems and to allow Afghanistan to supply power to its eastern and southern provinces, approved in December 2016, are not completed and are also on hold.

[39] One completed TA project conducted roadshows to meet prospective consortium leaders and financiers. Another, approved in May 2020 and on hold owing to the Afghanistan situation, was to conduct due diligence assessments of technical, implementation, economic, financial, legal, environmental, social and/or resettlement, and other aspects.

[40] ADB and other development partners continue to monitor the situation in Afghanistan. The current uncertainties do not allow ADB and other development partners to forecast when they can resume their regular assistance.

[41] ADB. Regional: Fostering Expanded Regional Electricity and Gas Interconnection and Trade under the CAREC Energy Strategy 2030. Manila (TA 6540).

[42] CATCA will be responsible for developing and regularly updating regional transmission network plans; and developing harmonized network codes and regulations for (among others) generator connection conditions, open access, metering, and transmission pricing. CATCA will manage detailed designing, erection, and commissioning of regional transmission projects.

two CAREC regional energy initiatives, which will affect CAREC member countries' energy exports to Afghanistan and Pakistan, the outlook for the CAREC energy portfolio and for the CAREC subregion is positive. Physical connectivity to which ADB supported projects have contributed increased during the evaluation period, and it will continue to increase in the foreseeable future as ongoing single-country projects with regional implications are completed and commissioned. While the projects are delayed for various reasons, measures have been taken to mitigate the effects of delays. The delays are likely to be resolved and project objectives achieved, based on a review of back-to-office reports and aide-memoires for the projects as well as interviews with project executing agencies and government counterparts. The measures will increase the possibility of enhancing exports and imports among CAREC member countries, even though actual electricity trade overall may not rise until existing generators have been rehabilitated and new capacity established in some CAREC member countries so that their electricity generation exceeds domestic requirements more often.[43]

41. The energy connectivity benefits are likely sustainable. Along with the physical investments, ADB provides other support, in line with the need of the power utility to enhance its ability to operate and maintain the connectivity assets over their economic lifetime. Such ADB-supported measures have focused on, among others, improving and supporting the utility in internalizing a myriad of measures for improved financial and operational performance, strengthening the utility's financial management capacity, training utility staff in improved environmental management, and instituting transparent accounting standards. Interviews with government counterparts confirmed the commitment of member countries to the CAREC energy strategic objectives and operations.

* * * * * * *

42. To sum up, ADB support for the CAREC Program made significant progress in helping improve regional connectivity through transport and energy investments and TA. The CAREC Program made considerable progress in strengthening transport connectivity, and ADB's support contributed substantially to the achievement. Despite two regional initiatives being on hold because of the situation in Afghanistan, and many other energy projects still under implementation, ADB support for energy overall will likely have a substantive positive impact on improving energy connectivity.

III. Modest Contribution to Competitiveness

43. The main intended outcomes of improved competitiveness are increased trade and cross-border investment, more integrated markets and value chains, and greater economic diversification, based on CAREC strategic frameworks and sector strategies over the evaluation period. The outcomes are expected to be achieved through investments in infrastructure, trade facilitation, and trade policy reforms to remove constraints on infrastructure use and movement of goods and services across borders, increase market access, and improve the business and investment environment. Complementary support in other non-infrastructure areas such as economic corridors, tourism, digital innovation, and macroeconomic and financial stability, including investment climate reforms, is highlighted in CAREC strategies as crucial for enhancing competitiveness.

44. Over the evaluation period, ADB support to the CAREC Program boosted infrastructure efficiency and accessibility and local economic development. The support, however, did not achieve substantive results in critical non-infrastructure areas such as border regimes, trade regulations, value chain development, and investment climate reforms. As a result, ADB's contribution to improving regional economic competitiveness was modest.

[43] Indeed, power exports and imports among CAPS countries were declining because of increased domestic electricity consumption and falling reliability of the transmission system during the evaluation period.

A. Enhanced Infrastructure Efficiency and Accessibility

45. **Improved CAREC transport corridors have reduced vehicle operating costs, increased passenger time savings, and contributed to increased economic activity**. A review of available data from IED project evaluations, comprising nine project validation reports and a project performance evaluation report, indicated that most ADB CAREC transport projects assessed during the evaluation period achieved targeted vehicle operating cost reduction and passenger time savings expected from the investments.[44] The outcomes ultimately helped reduce transport costs and increase efficiencies over the long term, thereby increasing economic competitiveness. Transport and logistics costs in the CAREC subregion, however, are still among the highest in the world, suggesting that improved connectivity has had limited impact on regional competitiveness. An improved transport network should have reduced vehicle emissions by enabling the utilization of larger and more fuel-efficient trucks operated at a more constant speed, but evidence to support that was not found.

46. To identify some of the wider effects of project investment, the evaluation undertook a geographic information system assessment of the hinterlands of three stretches of CAREC corridors where ADB had substantially invested in several segments. Data on changes in nighttime light (NTL) show that ADB's support to the stretch along CAREC Corridor 2 in Uzbekistan has benefitted key regions or districts traversed by it. NTL growth was greater after than before project completion and greater than in other comparable regions. For the stretch along CAREC Corridor 1 in Kazakhstan, most districts it traversed showed slowing NTL growth. However, a more granular assessment found that the districts were dominated by grids showing an increase in NTL growth. Many of the grids were on edges of cities, and their NTL growth was likely not affected by the same set of factors that affected cities and districts. Most districts traversed by the stretch along Corridor 3 in Tajikistan saw a slowing in NTL growth after project completion, but about half the grids in the districts saw an increase in NTL growth.

47. The findings show that in general, many areas in the regions and districts traversed by the three stretches of the CAREC corridors in Kazakhstan, Tajikistan, and Uzbekistan saw more NTL growth after than before project completion. Increased economic activity along the stretches was evident in the increased traffic levels along the improved roads. Within the CAREC subregion, road investments are likely to have had a similar impact on towns and economic centers along the CAREC corridors. The increased economic activity indicates that investment and trade likely improved in the jurisdictions around ADB-supported roads, contributing to local economic development, but it may not indicate increased competitiveness and is not evidence of regional impact.

48. **In addition to increasing power supply and exports, ADB support for energy is likely to help boost efficiency, reduce costs, foster reliability of electricity services, and thereby improve the business environment and economic competitiveness.** Based on the evaluation's assessment of project completion reports, ADB completed projects have contributed to (i) reducing load shedding in Tajikistan, which means fewer power supply interruptions and more reliable power supply; (ii) increasing power plant availability in Kyrgyz Republic and Tajikistan so that power plants can better respond to instructions from the grid operator regarding when and how much to generate, which helps improve power supply reliability; and (iii) increasing generation efficiency in Uzbekistan, which makes possible achieving a certain level of generation with a lower level of fuel usage, thereby reducing generation costs (Power Sector Rehabilitation Project).[45] According to the IED validation report for the Kyrgyz Republic Power Sector Improvement Project, which was completed during the evaluation period, the project reduced

[44] The project performance evaluation report covers two projects, one of which does not have a project validation report.

[45] Six projects approved during 2008–2010 but completed during the evaluation period are included in the discussion in the paragraph. CAREC 2020 relied on the 2008 CAREC Energy Strategy approved at the Ministerial Conference in 2008 to define the vision, implementation focus areas, and action plan for energy. ADB. 2017. *Completion Report: Nurek 500 kV Switchyard Reconstruction Project in Tajikistan*. Manila (Grant 0124). ADB. 2021. *Completion Report: Power Sector Rehabilitation Project in Kyrgyz Republic*. Manila (Grant 0294 and Loan 2869); ADB. 2021. *Project Completion Report—Uzbekistan: Talimarjan Power Project*. Manila (Loans 2629, 2630).

transmission and distribution losses and, hence, costs of operating the power system.[46] ADB support has helped improve cost recovery and adoption of international standards in corporate and financial management in several companies across CAPS countries.

49. The same types of benefits are expected from various ongoing projects that were approved during the evaluation period. Ongoing projects support market-oriented reforms to increase competition, bring down costs, and generate efficiency. Based on the evaluation's assessment of their implementation progress, the projects are likely to achieve their objectives, although with delays. The contribution to competitiveness will spill over to the regional level only when regional energy trade has increased substantially.

50. **The Global Competitiveness Index (GCI) shows that the quality of road infrastructure and quality of electricity supply improved significantly during the evaluation period**. The GCI ranks country transport infrastructure based on perceptions of connectivity and infrastructure quality. The assessment compared the country scores and rankings in the 2011–2012 survey with those reported in 2019. Seven out of the eight countries where data are available showed an increase in GCI rankings for quality of road infrastructure, although only four out of the eight showed improved ranking for quality of railway infrastructure. Kyrgyz Republic and Tajikistan, two CAPS countries where GCI data on energy sector are available, showed a significant increase in GCI rankings for quality of electricity supply. During the evaluation period, ADB and CAREC invested in a large proportion of new road infrastructure and supported a large share of new power infrastructure in the two countries where energy GCI data are available. The investment, therefore, should have helped improve road infrastructure and electricity supply quality in those countries.

B. Border Bottlenecks and Trade Barriers Continue to Hamper Regional Competitiveness

51. While substantial investment has been made in improving infrastructure, the tough border regimes of the CAREC member states still impede international trade and market integration,[47] making the subregion unattractive for international investors aiming to integrate new production locations into their value chains.

52. **Border-crossing time and costs are still significant impediments to the subregion's business and investment environment and saw limited improvement over the evaluation period.** The CPMM data for 2010–2020 show that border-crossing time and costs were little improved. The average time for road border crossings over the decade more than doubled from 6.3 hours; the CAREC TTFS 2020 target, 35% reduction to 5.7 hours, was far from achieved.[48] The average border cost remained relatively steady at about $150, close to the TTFS target of $149, but occasionally trending upward to $200. Informal payments are quoted as a significant proportion of the cost components and are reportedly often higher in times of crisis when border checks can be more stringent. Average truck speeds on the six CAREC corridors remained relatively constant over time, attaining speeds of 42–43 kph without border delays but 22–24 kph with delays. TTFS 2020's target of 30 kph with delays by 2020 was not met. Over the decade, the differences between speed with and without delay on the road corridors remained large and were attributable to lengthy border procedures.

[46] IED. 2020. *Validation Report: Power Sector Improvement Project in Kyrgyz Republic*. Manila: ADB (Loan 2671, Grant 0218).

[47] R. Pomfret. 2014. Trade Costs and Agricultural Trade in Central Asia. Halle, Germany: Leibniz Institute of Agricultural Development in Transition Economies. *Discussion Paper.* 146; G. Samad and Q. Abbas. 2020. Infrastructure in Central Asia and Caucasia. *ADBI Working Paper*. 1202. Tokyo: ADB Institute; K. Kim, P. Mariano, and J. Abesamis. 2022. Trade Impact of Reducing Time and Costs at Borders in the Central Asia Regional Economic Cooperation Region Emerging Markets*. Finance and Trade.* 58. pp. 2602–19.

[48] The CPMM 2010 baseline data originally covered eight member countries and in 2014, CAREC corridor routes were extended into Pakistan and Turkmenistan. The inclusion of Pakistan's borders substantially increased the average border crossing time, which was further affected by the COVID-19 inspection at the borders in 2020. However, the general trend over the period demonstrates a decline in performance.

53. Railways have not demonstrated a substantially different result. The time taken to clear a border crossing decreased by almost 10% over the decade but remains high at an average of 23 hours. The cost associated with travel over the rail network has indicated modest decreases over the past 5 years, but the cost adjustments reflect the People's Republic of China subsidies for Asia–Europe trade, which were eliminated at the end of 2021. Average railway speeds have increased over the decade, but the data indicate that border-crossing delays reduced speeds between origins and destinations by more than 50%, resulting in longer travel time.

54. An assessment of non-tariff measures indicated that barriers affecting CAREC intra-regional trade have in fact increased rather than decreased over the past decade.[49] The data shows that while quantitative restrictions have remained at about 20% of the barriers and sanitary and phytosanitary measures have comprised another 25%, a large increase has occurred in the number of technical barriers to trade which currently amount to almost 50% of the regulations. The technical barriers have increased by over 300% during the past decade.[50]

55. Government counterparts interviewed for the evaluation underlined the strong need for further investments to modernize BCPs and harmonize customs procedures. Positive results were achieved by ADB support to modernize customs services and BCPs, and to establish national single window information systems in various CAREC member countries. While government counterparts appreciated the achievements, they expressed the need for further support from ADB and other development partners.

56. **ADB has provided technical assistance for enhancing trade facilitation but given the challenging scale of trade bottlenecks in the CAREC region, far greater investment is needed.** In terms of volume, ADB's investment in trade facilitation has been dominated by several Regional Improvement of Border Services (RIBS) projects categorized under trade facilitation and trade policy by the CAREC project classification. RIBS projects were approved for Kyrgyz Republic, Mongolia, Pakistan, and Tajikistan. In total, ADB approved $640 million for seven investment projects for trade facilitation and trade policy, accounting for 3.6% of total ADB investments in the CAREC portfolio for 2011–2021. The projects supported establishment of national single windows, joint customs control, and regional improvement of border facilities, and are steps in the right direction to loosen trade bottlenecks and ease the movement of goods and services.[50] However, most of ADB's support for trade facilitation has been delivered through a broad range of small-budget TA projects, spread across many trade facilitation areas, with an emphasis on capacity development, knowledge generation, and improvements to customs procedures and process enhancement.

57. Despite limited staff resources for trade facilitation support, ADB's regional technical assistance was appreciated by stakeholders interviewed for the evaluation, but it needs to be better linked to investment lending, and more needs to be done to enhance information-sharing between countries. While there are some evident country-level achievements in improving the efficiency of trade and customs procedures, collectively, these activities have not yet translated into regional-level outcomes. The potential gains from ADB investments in hard infrastructure in road and rail improvements have been offset by enduring delays at border crossing points, due to outdated physical infrastructure, and cumbersome customs clearance procedures. ADB's support varied from country to country, with larger investments in some (Kyrgyz Republic, Mongolia, and Tajikistan) and smaller in others (Kazakhstan, Turkmenistan, and Uzbekistan). Some projects focused on border services only on one side of the border, and most projects were approved only recently.

58. **ADB support to trade policy reform has faced challenges in ensuring sufficient buy-in amongst member countries**. ADB provided support to CAREC member countries in implementing their

[49] D.M. Ramizo. Nontariff Measures and Time and Costs at Border-Crossing Points of Perishable Goods. In ADB. 2022. *Trade Facilitation in CAREC: A 10-Year CPMM Perspective*. Manila.

[50] The increase in the number of technical barriers to trade has shown a steady increase over the decade and was not attributable to pandemic conditions.

commitments under World Trade Organization (WTO) agreements, and is assisting Azerbaijan, Uzbekistan, and Turkmenistan, which are still in the process of WTO accession. The CITA 2030, endorsed in 2018, consolidated trade facilitation and trade policy under one strategy. For much of the evaluation period, however, there has been a lack of flagship projects to provide knowledge support on trade policy, and consistent cooperation on trade policy under CAREC, especially in the more challenging areas of trade in services, non-tariff measures, and post WTO-accession adaptation. ADB's CAREC support on trade policy was primarily focused on information exchange on accession to WTO through the CAREC Trade Policy Coordinating Committee, with unclear linkages to ADB investment projects. As more CAREC member countries gained WTO accession, the Trade Policy Coordinating Committee's primary focus on WTO-accession became less relevant.

59. The establishment of the Regional Trade Group in 2017 reoriented CAREC trade policy support to capacity development for regional trade agreements and cooperation on SPS measures. The shift in focus was appreciated by trade policy focal points interviewed for the evaluation. Modernization of SPS measures for trade has gained momentum in recent years, notably through the establishment of the SPS Regional Working Group. In general, however, interviews with government representatives revealed mixed levels of CAREC member countries' ownership of CAREC trade policy initiatives and efforts to establish a CAREC-wide free trade agreement. Challenges lay in ensuring open exchange of information between countries on SPS-related national conditions and regulations that would inform the design of a regional network for SPS cooperation.

C. Support for Value Chain Development and Investment Climate Reform Is Still Nascent

60. ADB pursued opportunities to promote value chain development and improve the investment climate. Supported areas included tourism, economic corridor development, digital innovation, agriculture, regional cooperation on training and education, and macroeconomic and financial stability under the CAREC Program. However, most ADB activities in those areas are still nascent and have yet to achieve tangible results.

61. **ADB CAREC support for value chain development over the evaluation period was restricted to scoping studies and the development of sector strategies.** Support was provided through a few regional TA projects, covering tourism, economic corridors, digital innovation, agricultural value chains, and education and skill development. While project implementation has generally been satisfactory, it has faced setbacks and challenges, mainly because of the complexities of coordinating across countries. No investment projects have been approved for the sectors, and it remains to be seen if investments will follow. At the time of the evaluation, several project proposals were under development, and stakeholders were optimistic that the sector strategies could potentially bring significant investment in the coming decade. Appendix 2 assesses in detail the progress of ADB support in the sectors.

62. **Substantive support for investment climate reforms is lacking.** The economic and financial stability cluster of CAREC 2030 envisages focusing on macroeconomic policy coordination, financial stability, and investment climate reforms. ADB's support for economic and financial stability in the CAREC context has been confined to a few policy dialogue events and meetings, financed under ADB TA managed by the CAREC Secretariat. A June 2021 progress report for the cluster showed that several knowledge products were planned but not yet available.[51] Many of the planned meetings were postponed because of COVID-19, although progress reports highlighted agreements to hold more policy dialogue and high-level meetings.

63. Apart from the few meetings, there is no support for investment climate reforms. Such reforms are planned in CAREC 2030 to promote private sector investment and economic diversification. Indicators and targets for the cluster have been defined, but they generally represent low-level output results (e.g.,

[51] CAREC. 2021. *Economic and Financial Stability Cluster Progress Report and Work Plan*. Manila: ADB.

number of meetings to be held, number of reports to be published) and do not specifically cover investment climate reforms. Budget support under ADB's countercyclical support facility has been approved for many CAREC member countries to respond to recent crises caused by the COVID-19 pandemic and the Russian invasion of Ukraine. But the support is not categorized as a CAREC program and does not support reforms, and the regional cooperation element of such country-level support is not clearly defined.[52]

64. More recently, the CAREC Integrated Trade Agenda 2030 underlined the need for an enhanced policy and regulatory environment for greater economic diversification, through policy and regulatory reforms to promote cross-border investment, develop regional trade in education services, promote innovation, and improve access to finance. ADB is beginning to provide support in these areas, subject to rolling strategic action plans and country priorities. Overall, however, ADB has not yet provided substantive support in those areas.

D. Achievement of Regional Competitiveness Outcomes Is Modest

65. **Over the evaluation period, the CAREC subregion made slight progress in integrating markets and value chains, improving trade, and diversifying economies**. Regional value chains are still severely lacking in the CAREC subregion, which is not well integrated into global value chains.[53] Regional market integration makes a region more attractive to foreign direct investment.[54] The trade of intermediate products rather than final consumer goods is one of the main drivers of the relatively strong intra-regional trade in East Asia and Southeast Asia.[55] However, transnational production networks are still largely missing in the CAREC subregion. The Asia-Pacific Regional Cooperation and Integration Index substantiates that the CAREC subregion made little progress in regional value chain development in 2011–2019 where data are available.[56] The World Bank Logistics Performance Index shows that the CAREC subregion performs below many other regions in terms of trade logistics, where individual CAREC member countries are in the lower half of the global rankings, without much improvement.[57]

66. Trade performance in the CAREC subregion was mixed, especially during the evaluation period, in the fallout from the 2008 financial crisis, and considering several more recent oil price shocks. Before 2008, trade saw a marked and steady increase in the CAREC subregion, even excluding the People's Republic of China. However, in subsequent years, trade stagnated, particularly in CAREC 10. While nonfuel trade saw significant growth in CAREC 10, it was much on par with the world average. At about 8%, the share of intra-regional trade in the CAREC subregion is much lower than in other developing regions.[58] Inward foreign direct investment flows to CAREC 10 decreased during 2011–2019.

67. Progress on diversification in trade flows among CAREC economies has been insignificant. Exports of CAREC 10 continue to be dominated by fuels and natural resources, although the share of fuel

---

[52] The operations were prepared outside the CAREC Program. They are classified as RCI projects, as ADB budget support is expected to prevent negative regional spillovers that might arise from a lack of action on a balance of payments crisis in a CAREC member country.

[53] Y. Babych, D. Keshelava, and G. Mzhavanadze. 2020. Assessing participation of CAREC member countries in Global and Regional Value Chains. *CAREC Institute Working Paper Series*. Urumqi, People's Republic of China.

[54] S. Schirm. 2002. *Globalization and the New Regionalism: Global Markets, Domestic Politics and Regional Cooperation*. Cambridge, United Kingdom: Polity Press.

[55] N. Yamashita. 2021. *East Asian Trade Integration in the Era of Global Value Chains: Prospects and Challenges.* Bangkok: Asia-Pacific Research and Training Network on Trade.

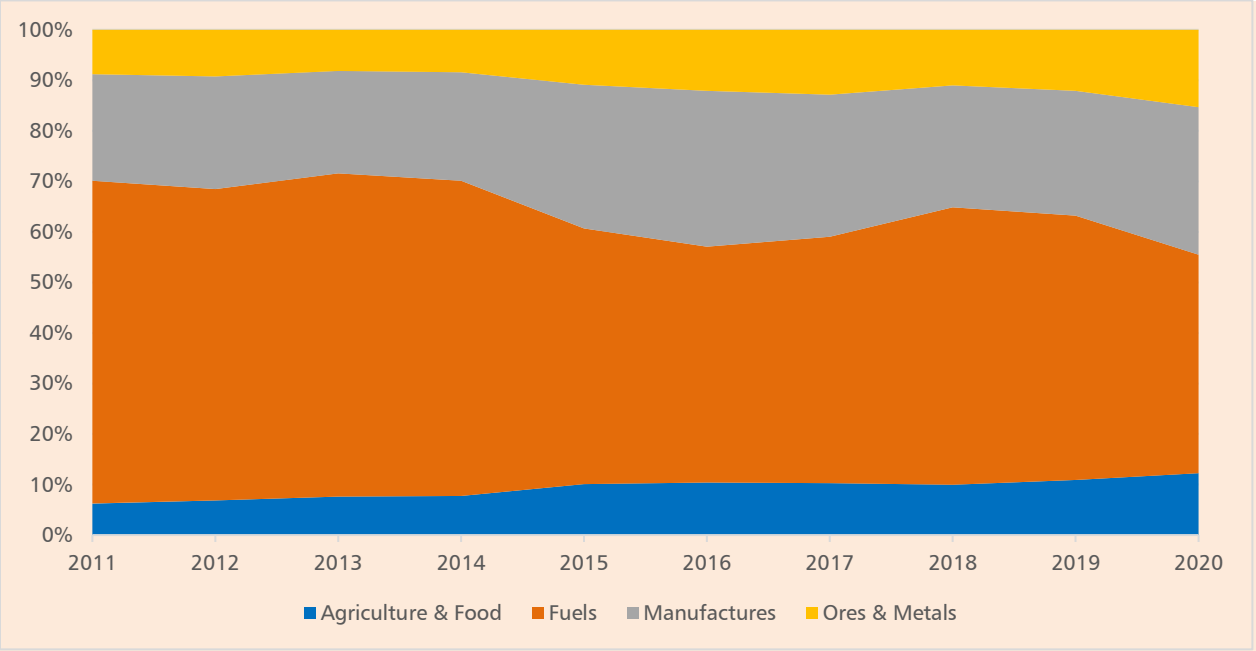
[56] ADB. Asia Regional Integration Center. Asia-Pacific Regional Cooperation and Integration Index Dataset.

[57] The components analyzed in the World Bank Logistics Performance Index include efficiency of customs and border management clearance, and quality of trade and transport infrastructure, among others.

[58] In the Association of Southeast Asian Nations region, for example, the share of intra-regional trade has been 21%–25% since the turn of the millennium.

in total exports of merchandise goods declined over the evaluation period (Figure 3).[59] The product concentration index across all CAREC member countries during 2011–2020 shows that exports became less diversified and more concentrated among several products. The CAREC strategy indicator for trade diversification shows backsliding against 2023 targets, with a higher concentration of exports in the top five still dominated by fuels and natural resources.[60] Trade in services as a share of GDP was 11% in 2019, behind the 2023 target of 13.7% and, therefore, unlikely to be achieved.

Figure 3: Fuel Exports Continue to Dominate CAREC Exports, 2011–2020 (excluding the People's Republic of China)



CAREC = Central Asia Regional Economic Cooperation.
Notes:
1. Figure excludes 2021 because of limited available data.
2. Figure excludes Afghanistan and Turkmenistan because of no or limited available data.
Source: United Nations Comtrade. Total trade in dollar terms, exports.

68. **The GCI substantiates that the CAREC subregion's competitiveness improved moderately in 2011–2019, and ADB support contributed only modestly to the improvement**. GCI data before 2018 were available for eight CAREC member countries.[61] The index comprises 12 pillars by which its value is measured; its values range from 1 (worst) to 7 (best). The index shows some moderate improvements in competitiveness in CAREC member countries. The average value of GCI was 4.2 in 2017 and 4.0 in 2011, or, excluding the People's Republic of China, 4.1 in 2017 and 3.9 in 2011. In 2011–2017, the GCI world average increased from 4.2 to 4.3. Following a change in methodology, the new GCI has had a scale of 1–100 since 2018. The GCI regional average, excluding the People's Republic of China, increased to 56.7 in 2019 from 56.0 in 2018.

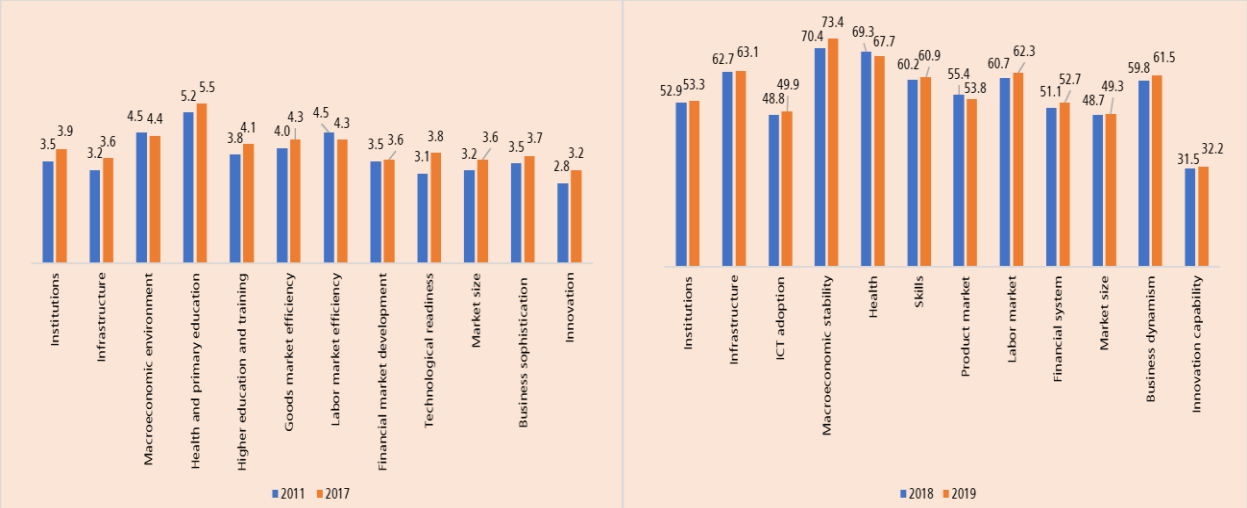
[59] The declining share of fuel exports is a measure of their value and not their quantity, and was affected by the falling dollar value of fuels (oil and gas) during the period, including the 2015 oil price shock and the COVID-19 pandemic in 2020. While evidence exists that diversification took place in the usual economic sense (measured in value), it is more likely attributable to external causes, such as price changes.

[60] United Nations Conference on Trade and Development Statistics (accessed September 2022). CAREC. 2021. *Trade Sector Progress Report and Work Plan June 2020–September 2021*. Manila: ADB. Reference document for the Virtual CAREC Senior Officials' Meeting, 30 June 2021. Updated for the 4th Meeting of the CAREC Regional Trade Group, 30 September 2021. The CAREC Integrated Trade Agenda 2030 results framework includes the following output: CAREC member countries' capacity to produce and trade in diversified products, sectors, and markets is enhanced, with a rolling target to reduce the share of the top-five exports in total CAREC exports, as a measure of trade diversification.

[61] GCI data for Afghanistan, Turkmenistan, and Uzbekistan are not available.

69. Improvements are noted across CAREC member countries under the old and the new index, except for Mongolia and Georgia, which showed a marginal decline from 2018 to 2019. However, infrastructure was only one of the multiple factors that contributed equally to the moderate increase in the average value of GCI in the CAREC subregion during 2011–2019. The other factors included technology readiness and information and communication technology (ICT) adoption, innovation and business dynamism, higher education and training, and institutions (Figure 4). Since ADB CAREC activities have focused on infrastructure, are still in the early stages, and have not yet achieved tangible results in non-infrastructure areas, GCI data make evident that ADB's contribution to improving competitiveness in the CAREC subregion was likely modest.

Figure 4: Changes in the Average Value of Global Competitiveness Index by Pillar—CAREC Member Countries, excluding the People's Republic of China



CAREC = Central Asia Regional Economic Cooperation, ICT = information and communication technology.
Source: The World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004; The World Economic Forum. The Global Competitiveness Index Historical Dataset 2005–2014; and The World Economic Forum. The Global Competitiveness Report 2017–2018.

70. **The evaluation's contribution-tracing assessment found that ADB CAREC support for transport, the largest in the CAREC Program, contributed modestly to regional competitiveness.**[62] The contribution-tracing assessment gathered and analyzed all the evidence on results of ADB transport support and tested the validity of its findings using Bayesian updating.

IV. Limited Progress in Supporting Regional Public Goods

71. RPGs are part of several priorities under the CAREC strategies. Under CAREC 2020, RPGs included communicable disease control, disaster risk management, and climate change. The human development cluster of CAREC 2030 more explicitly focuses on providing RPGs in relation to mitigating pandemic risks and controlling communicable diseases. But some activities in other clusters are also RPGs, including management of natural resources under the agriculture and water cluster, and regional actions that complement national efforts to mitigate climate change under the infrastructure and economic connectivity cluster. RPGs have significant positive externalities for neighboring countries. However, as the benefits of investment cannot be captured by a single country, they were insufficiently supplied at the CAREC subregional level. Appendix 3 describes in detail the concept of RPGs and how they were prioritized in CAREC strategies. The chapter assesses how ADB has performed in helping improve the supply of RPGs.

[62] The detailed analysis is in Appendix 6.

A. Mixed Results in Addressing Climate Change

72. ADB support through the CAREC Program has achieved encouraging progress in mitigating climate change in the energy sector but made little headway in other sectors. ADB support for regional climate change adaptation has been limited.

73. **Progress has been promising in climate change mitigation in energy but limited in transport**. ADB support for climate change mitigation focused on promoting the adoption of renewable energy and clean technologies, in which CAREC member countries have all shown a significant interest since the Paris Climate Agreement of 2015. CAREC member countries have prepared nationally determined contributions (NDCs) and submitted them to the United Nations Framework Convention on Climate Change. The NDCs are climate action plans developed by country governments to cut carbon emissions and to adapt to climate impacts. All NDCs from CAREC member countries emphasize renewable energy and energy efficiency, including various clean and low-carbon technologies for a variety of applications. In line with their specific requirements, the NDCs emphasize the need for international support in terms of finance and investments, introduction of green technologies, technology transfer, requisite regulatory frameworks, institutional mechanisms, training, and capacity development. The NDCs have opened opportunities for ADB support across all CAREC member countries. Enhancing sustainability by greening the regional energy system is a key pillar of CAREC Energy Strategy 2030.[63] The strategy focuses on introducing a regional approach to achieve economies of scale in investing in clean technologies and helping mainstream new options into national energy systems.

74. ADB has supported regional TA projects to propagate specific renewable energy and clean technologies. The support has resulted in a positive outlook for continued interest and investment in renewable energy and clean technologies, and in their environmental and financial sustainability. ADB has helped create champions for renewable energy and clean technologies in at least some CAREC member countries and changed mindsets about such technologies.[64] As a result, Mongolia and Pakistan pursued large-scale battery projects, Georgia and Kyrgyz Republic focused on electric vehicles, and Turkmenistan and Uzbekistan on off-grid solar; three of the projects were financed by ADB loans, and the others were either financed by non-ADB resources or are in an advanced stage of preparation. TA resulted in the revision of CAREC Energy Strategy 2030 and, for the first time in CAREC history, the signing of a declaration after the CAREC Energy Ministers' dialogue in Tashkent in September 2019. The need for energy transition to cleaner energy sources and a more efficient and environmentally sustainable development path is explicitly recognized in the declaration.

75. The learning from various forums and discussions organized through the various TA projects has enabled CAREC member countries to update their NDCs with ambitious goals for greening their economies and mitigating climate change and to improve their clean energy policies. Mongolia updated its NDC in October 2020, Georgia in May 2021, and the People's Republic of China and three CAPS countries (Kazakhstan, Tajikistan, and Uzbekistan) in October 2021. Since around 2017, Azerbaijan, Georgia, and Kyrgyz Republic have passed renewable energy laws, while Azerbaijan and Georgia have enacted energy efficiency laws.[65] Energy efficiency has become a top priority for state policy in Kazakhstan as reflected in the updated NDC implementation road map of February 2021.

76. Evaluation interviews revealed that some governments have been developing policies to promote clean technologies. For example, Uzbekistan intends to install solar panels in about 35,000 buildings by 2024, has set up a fund to support energy efficiency projects, and wants to develop a mechanism to

[63] In CAREC Strategy 2020, the greening of the region's energy system was not a key pillar, although the corresponding energy strategy and action plan did emphasize the Clean Development Mechanism and other carbon finance mechanisms, as well as energy efficiency and renewable energy.

[64] ADB. 2022. *Technical Assistance for Leapfrogging of Clean Technology in Central Asia Regional Economic Cooperation Countries through Market Transformation Sovereign Project*. Manila (TA 9299).

[65] The law in Kyrgyz Republic was specifically for small hydropower plants of up to 25-megawatt capacity.

expedite energy efficiency investments. Georgia is developing an integrated energy and climate change mitigation strategy and would like to develop hydro, solar, and wind projects. Several other CAREC member countries indicated that ADB CAREC support was highly useful, helped them learn from best practices, and informed their policy formulation.

77. ADB supported the establishment of the Green Energy Alliance, which is expected to bring together project developers and financiers and other interested parties under a joint platform to facilitate collaboration among them. A detailed concept of the alliance was prepared in May 2022 and endorsed by the CAREC Ministerial Conference in November 2022. The alliance complements some platform initiatives such as the Energy Investment Forums that have been held to promote private investment in energy since 2016. The alliance's objective of helping improve climate change management in CAREC member countries is likely to be achieved, but how soon the alliance can become a smoothly functioning platform to expedite (and cofinance or raise financing for) green energy projects was uncertain at the time of the evaluation.

78. Taken as a whole, it is evident that ADB support has helped propagate renewable energy and clean technologies in national energy systems and informed the formulation of energy policies to reduce greenhouse gas emissions in CAREC member countries. To test the claim's validity, the evaluation conducted a contribution tracing assessment which helped gather and analyze the items of evidence discussed above and substantiated that the claim was valid. [66]

79. CAREC Transport Strategy 2030, however, does not highlight the need to address the climate change issue as an important policy for the transport sector. ADB's transport operations incorporate climate change mitigation measures in line with ADB's operational guidelines, processes, and procedures, and have largely been confined to adjusting transport infrastructure rather than adjusting transport services. No operations in the transport portfolio support policy-driven actions to shift transport demand to more efficient and effective modes such as public transport and use of railways, measures to reduce demand for transport services, and increased use of renewable energy resources.

80. **ADB support through the CAREC Program to regional climate change adaptation is limited**. Measures introduced into recent transport projects are limited to designing drainage structures to accept higher water discharge volumes, designing pavements to withstand a greater range of operating temperatures, and planting trees and vegetation to reduce risks of landslides. CAREC Energy Strategy 2030 notes the vulnerability of the CAREC subregion's energy infrastructure to climate change but does not lay out any measures to reduce it. Only a couple of ADB CAREC energy projects incorporate some climate change adaptation measures.[67]

81. ADB is trying to establish a CAREC disaster risk transfer facility, which could potentially contribute to building climate and disaster resilience. An innovative ADB TA project is supporting countries by developing high-level disaster risk profiles for earthquakes, floods, and infectious diseases; by designing and assessing the feasibility of a regional disaster risk transfers solution, leveraging the international reinsurance and capital markets for at least three CAREC member countries; and by building capacity to show key stakeholders the benefits of a layered approach to disaster risk financing.[68] Such a facility, and similar modeling, has the potential to be applied in the case of climate change–induced disasters such as droughts and floods, which are expected to occur with greater frequency.[69]

[66] Appendix 6 presents the detailed analysis and results.
[67] An example is the Toktogul hydro plants in Kyrgyz Republic (Grant 0294, Loan2869) approved in 2012. It included a dam safety assessment of the impact of climate change on the hydrology and variation in seasonal water flows.
[68] ADB. Regional: Developing a Disaster Risk Transfer Facility in the Central Asia Regional Economic Cooperation Region.
[69] I. Didovets et al. 2021. Central Asian Rivers under Climate Change: Impacts Assessment in Eight Representative Catchments. *Journal of Hydrology: Regional Studies*. Volume 34.

82. While the proposed disaster risk transfer facility received widespread endorsement during high-level CAREC meetings, the vision and objectives of the facility and the potential benefits to individual CAREC member countries have not been clearly communicated to all stakeholders, especially more technical government staff who participated in the TA activities. Interviews with disaster focal points in CAREC member countries revealed that some government staff have misconceptions and lack understanding of the overarching vision of the proposed facility. Better communication is important, given the frequent turnover in government focal points and the little to no handover between personnel. Lessons from similar initiatives, such as previous ADB undertakings in the Pacific, in collaboration with the World Bank, highlight the need to ensure that all country stakeholders are fully informed of the purpose and intricacies of such a facility.[70] In the Pacific, the lack of understanding among government counterparts of the difference between parametric- and indemnity-based insurance led to frustration and disillusionment when certain parameters were not met, and countries could not, therefore, access financing despite having undergone disasters.

B. Providing a Framework for Investments in Regional Health Security and Cooperation

83. CAREC 2030 recognizes that addressing pandemic risks and controlling communicable diseases are critical RPGs with significant positive externalities. The strategy supports a common framework for tackling pandemics given the likely regional nature of future outbreaks. Potential areas for action include boosting regional capacities to assess and respond to pandemic risks and building preparedness to alleviate regional health risks, including by developing early warning systems and regional surveillance centers. For noncommunicable diseases, CAREC 2030 promotes common approaches and cross-learning in prevention and treatment protocols, modernization of service delivery and regulations, development of sustainable financing models, and private sector–driven trade in health services and e-medicine ADB's primary contribution to the health sector has been CAREC Health Strategy 2030, which provides a framework for future investments and for strengthening of national health strategies.

84. The CAREC Program commissioned a scoping study in 2019, which identified three strategic areas for promoting regional cooperation in the health sector: boosting regional health security; strengthening health systems through regional cooperation and information sharing; and improving access to health services for migrant workers, mobile populations, and border communities.[71] With the support of a TA project, and building on the findings of the scoping study, a working group on health was established in March 2021, mobilizing Ministries of Health and development partners, and the CAREC health strategy 2030 was published in May 2022 (footnote 79). According to CAREC health focal points and development partners interviewed by the evaluation, without ADB support, it would have been difficult to achieve a regional-level strategic overview of health sector priorities.[72]

C. CAREC Is Beginning to Address Transboundary Water Resource Management

85. Water availability problems have led to violence and the risk of further conflict. For example, in the decades since gaining independence, Kyrgyz Republic, Tajikistan and Uzbekistan, jointly dependent on access to water from the Amu Darya and the Syr Darya, have clashed violently over access to water. Increasing lack of water availability, dense and fast-growing populations, ethnic fragmentation, disputed borders, and numerous exclaves within the three countries contribute to insecurity and highlight the need for greater transboundary water management.

86. ADB's contribution has so far been the preparation of discussion papers on climate and water resource analysis, and a regional consultation on the draft framework for the water pillar of CAREC

[70] ADB support for the Pacific Catastrophe Risk Assessment and Financing Initiative was provided under ADB. 2008. *Technical Assistance for Regional Partnerships for Climate Change Adaptation and Disaster Preparedness*. Manila (TA 6496-REG).
[71] ADB. 2021. *Enhancing Regional Health Cooperation under CAREC 2030: A Scoping Study.* Manila.
[72] Based on virtual interviews with health key informants in the health sector by the CAREC evaluation team from May to June 2022.

2030 in 2021. Climate projections and growing demands indicate that regional water scarcity will further increase unless appropriate countermeasures are taken. The framework for agricultural development and food security is planned for 2023. Although the CAREC 2030 results framework targets improved water resource management as an outcome, with road maps of national water resource development interventions as indicators, supportive activities have yet to be developed and implemented. Specific recommendations for operation and maintenance of water infrastructure and cost recovery have yet to be affected. Activities have focused on laying the groundwork for future regional cooperation in agriculture and water.

D. Slow Progress on Gender Mainstreaming

87. Progress on gender mainstreaming under the CAREC Program has been relatively slow, with missed opportunities to integrate gender equality into CAREC projects, as indicated in the Development Effectiveness Review (DEFR) for 2017–2020.[73] Gender mainstreaming is a cross-cutting theme of CAREC strategies. While gender disparities have been reduced in some projects and some subsectors under the CAREC Program, only 25% of the 72 ADB CAREC investment projects approved during the evaluation period were classified as *gender equity* or *gender mainstreaming*, compared with the 2030 target of 55% as specified in ADB Strategy 2030. *Gender equity* and *gender mainstreaming* are identified as the main conduit for promoting gender and development in ADB Strategy 2030.[74]

88. Systemic gender disparities exist in employment across CAREC member countries.[75] To resolve them, the CAREC Program developed and adopted its first gender strategy, CAREC Gender Strategy 2030 (CGS 2030) in 2020. CGS 2030 aims to provide strategic guidelines for mainstreaming gender into CAREC operations in four areas: (i) promoting women's access to economic opportunities, (ii) contributing to women's social empowerment, (iii) supporting women's regional networks and gender-responsive policy reforms, and (iv) increasing women's access to information and communication technology. In 2022, CAREC formed the Regional Gender Expert Group, comprising representatives from member countries and development partners as proposed in CGS 2030. The group met in Istanbul in August 2022 for the first time. TA to support implementation of the CGS 2030 was approved in October 2021. CAREC 2020 and CAREC 2030 have limited emphasis on gender equity or gender mainstreaming, although going forward CAREC 2030 is in a better position to make progress as it is backed by CGS 2030.

* * * * * * *

89. In sum, ADB support for climate change mitigation has helped propagate clean technologies in national energy systems and inform formulation of energy policies to reduce greenhouse gas emissions in the CAREC subregion. Otherwise, ADB support for RPGs, including climate change mitigation, is limited to developing strategies and scoping studies, although it has generated investment proposals for some sectors. Achieving outcomes will remain a long-term objective given that ADB's support to RPGs is still in the early stages and given the continuing need for institution building, dialogue and coordination in those areas. Results will depend on significant future investments and financing as well as sufficient staff and TA resources. Investments in those areas have been partly affected by the economic shocks brought about by the COVID-19 pandemic and the Russian invasion of Ukraine, which have concentrated country priorities on domestic economic recovery. ADB's contribution was limited by the lack of emphasis on RPGs in CAREC programming before CAREC 2030.

---

[73] ADB. 2022. *CAREC 2030 Development Effectiveness Review (2017–2020)*. Manila.

[74] "Strategy 2030 sets out ambitious at entry targets by 2030, including (i) at least 75% of the number of ADB's committed sovereign and nonsovereign operations will be classified as those with gender elements (gender equity theme+effective gender mainstreaming+some gender elements); and (ii) at least 55% of the number of ADB's committed sovereign and nonsovereign operations will be classified as those with gender equity and mainstreaming (gender equity theme+effective gender mainstreaming)." ADB. 2019. *Strategy 2030 Operational Plan for Priority 2: Accelerating Progress in Gender Equality, 2019–2024*. Manila. p. 23, para. 51.

[75] ADB. 2021. *CAREC Gender Strategy 2030: Inclusion, Empowerment, and Resilience for All*. Manila.

V. A Generally Satisfactory Platform for Dialogue and Coordination

90. The chapter examines how well the CAREC Program has functioned as a platform and ADB's role in supporting it, including as an honest broker and a technical adviser. The chapter focuses on assessing the value of the platform and the effectiveness of the CAREC Program's institutional framework for achieving the CAREC strategic objectives. The box describes the key dimensions of the institutional framework of the CAREC Program, while Appendix 4 describes in detail the institutional structure.

Box: Key Dimensions of the CAREC Program's Institutional Framework

The Ministerial Conference of the 11 member countries is the Central Asia Regional Economic Cooperation (CAREC) Program's highest decision-making authority and is held annually to discuss and endorse high-level regional strategies and policy initiatives, while exercising overall accountability for program results. The Ministerial Conference is supported by the semiannual Senior Officials' Meeting, which monitors the program's progress, considers, and endorses major deliverables and key policies, and prepares for the Ministerial Conference. Sector coordinating committees and working groups discuss and develop sector strategies and action plans, share knowledge, and ensure effective and timely implementation of priority projects. Acting as the CAREC Secretariat, the Asian Development Bank prepares and organizes all key meetings and forums for the CAREC Program. Each CAREC member country has a senior government official as the CAREC national focal point to ensure effective coordination among all relevant agencies and other interested parties on matters related to CAREC operations within the country and among the authorities, the CAREC Secretariat, and the various CAREC meetings and forums.

Source: CAREC Program documents.

A. The CAREC Program Has the Generally Appropriate Institutional Setup, Strategies, and Instruments

91. Stakeholders indicated during the mission interviews and in the questionnaire survey that the CAREC Program has the necessary and appropriate institutional setup, strategies, and instruments. CAREC meetings and events have been generally appreciated by CAREC member countries and development partners. The Ministerial Conference is well attended by high-level government officials, ADB's President, and high officials from other development partners. The heads of government of the CAREC hosting countries are often present at the opening sessions. Most country delegations are headed by ministers or vice ministers. Attendance was high even during the COVID-19 pandemic, when meetings were virtual or hybrid, although government counterparts and development partners said that meetings were short and too scripted, and space was insufficient during the pandemic for dialogue and open discussion.

92. Interviewed government counterparts widely appreciated the value of the events. Government agencies generally considered them helpful in improving cross-country cooperation on strategies, plans, and projects and in promoting knowledge sharing. National and sector focal points in some countries, however, said that sector coordination committee meetings could benefit from attendance by more technical people. The evaluation survey and mission interviews show that government counterparts were, on average, satisfied with the decision-making structure of the CAREC Program, the meetings and dialogues at various levels, and CAREC strategic frameworks and sector strategies and plans developed through the platform. Development partners were, in general, moderately satisfied with the CAREC platform.

93. Government counterparts, country stakeholders, and development partners were, on average, satisfied with the role of ADB as the CAREC Secretariat, which was rated *high* by surveyed government counterparts. ADB as a technical adviser has produced a broad range of knowledge products and events for the CAREC Program, funded under its knowledge service TA. Based on the CAREC Secretariat's database of publications and knowledge events, a total of 115 knowledge products were published and

345 knowledge-sharing related events held during 2021–2022.[76] The surveyed government counterparts and development partners assessed ADB's contribution to dialogue improvement, knowledge sharing, coordination, and learning as *high*. Government counterparts rated the CAREC Program's knowledge and research products as *satisfactory*. The findings corroborate with those from the mission interviews.

94. The CAREC Program's results monitoring system, however, has some substantial gaps. The triennial DEFR does not adequately provide timely information on results that are needed to inform program decision-making. CAREC Results Framework 2030 and most sector results frameworks generally lack adequate indicators, baselines, and targets for outcomes and have no intermediate outcome targets at all. The lack hampers DEFR and sector progress reports in monitoring how CAREC operations have contributed or would contribute to achieving results and whether progress is on track. The reports largely focused on reporting actions taken, activities completed, and deliverables achieved. Discussions on the reports were limited at the Ministerial Conferences or Senior Officials' Meetings.

95. While it provides a framework for identifying CAREC projects, the recently introduced CAREC project classification system has some limitations. In March 2021, CAREC introduced a project classification methodology, to be aligned with ADB's guidance note on classification of RCI projects issued earlier that year. The methodology defines a CAREC project as one that is expected to (i) support national and regional strategies related to CAREC's five operational clusters and sector strategies, (ii) contribute to regional economic benefits, and (iii) provide additional support to CAREC activities. While the system highlights that a CAREC project should promote cross-country collaboration, the requirement is not explicitly included in the three classification criteria. The classification methodology gives equal weight to each of the three criteria and does not clearly require the contribution to regional economic benefits to be substantive. Before the introduction of the classification methodology, a CAREC project was required to have been discussed in a CAREC forum, with a clear consensus to classify it as a CAREC project.

96. Although ADB has generally fulfilled its role as the CAREC Secretariat well, its staff and TA resources for the CAREC Program could be constrained as the Program expands into the new sectors and clusters introduced in CAREC 2030. Since CAREC 2020, the total number of sectors covered by the Program has more than doubled, but CAREC Secretariat staffing has not increased. In addition, the amount of dedicated RCI funding is declining, especially because the Regional Cooperation and Integration Fund (RCIF) is expected to be used up by mid-2023, after which it will not be replenished. The RCIF was established in 2007 in response to increasing demand for RCI among developing member countries, and has been an important funding source for TA activities under the Program. The Program now needs to compete against other ADB priorities for TA funding, especially for ADB's general Technical Assistance Special Fund resources.

97. The institutional arrangement for trade facilitation and trade policy under the CAREC Program has experienced some challenges, which have complicated the sector's programming, funding, and project implementation. Trade-related activities under the CAREC Program have been managed mainly by the East Asia Department, which has more expertise in trade-related work than the Central and West Asia Department (CWRD), while other sectors have been managed by CWRD.[77] This division of labor has caused some structural difficulties at the working level, including those related to coordination, incentives, and communication, although the two departments have made great efforts to coordinate.

B. ADB, through the CAREC Platform, Functioned Well as an Honest Broker

98. CAREC member countries value ADB support for providing a neutral platform to mobilize experts, convene countries and development partners, impart best practices, and share learning and experience.

[76] Capacity-building activities, including workshops, training, seminars, study tours, and webinars, are counted as knowledge events.
[77] CAREC trade policy activities were managed by the International Monetary Fund until the issuance of the CAREC Integrated Trade Agenda in 2019, when management of these activities was transferred to ADB's East Asia Department.

Interviewed government representatives and development partners said ADB is well placed because of its convening power and its role as an honest broker. Stakeholders appreciated that CAREC is a non-treaty grouping, with nonbinding resolutions, focused on investments and economic development. Government counterparts saw value in CAREC's approach of promoting a project-based economic cooperation program, one that does not require formal consensus. They rated the importance of ADB's role as an honest broker as *high*.

99. Through the CAREC platform, ADB actively guided countries to opportunities for increasing cooperation. Uzbekistan's shifts in foreign policy direction to greater regional cooperation have changed regional dynamics, according to interviewees. The rekindling of regional ties and tangible improvements in interstate relations, such as between Uzbekistan and Tajikistan, have opened possibilities for greater cooperation and integration. While the events were not the result of any contribution of ADB or CAREC, stakeholders noted that ADB support for CAREC did provide a platform to discuss increasing cooperation between Uzbekistan and neighboring countries as reforms were implemented following regime change in 2017. ADB has discussed with government authorities the need to upgrade newly reopened BCPs as relationships between countries have improved.

100. In Kyrgyz Republic and Tajikistan, interviewed government authorities noted that the CAREC platform has enabled both countries to continue dialogue on technical matters in a neutral, non-politicized forum, despite the closure of the border between them since 2021. In Mongolia, ADB has helped the country align its SPS standards with international standards. Interviewed national stakeholders stated that the project could not have taken place without ADB's support. The subsequent joint customs control involving Mongolia and the People's Republic of China was based on a bilateral agreement, but ADB brokered the cooperation through a series of meetings and coverage of the logistical cost.

101. Interviews with government counterparts revealed several disadvantages to CAREC member countries if ADB did not serve as the CAREC Secretariat. They might, for instance, disagree on where the secretariat should be located, who would drive the CAREC Program agenda, and who would provide most of the funding. Given the difficult preconditions for regional cooperation, CAREC member countries would find it difficult to take on the role of secretariat if ADB were to withdraw.

C. The CAREC Institute Played a Significant Role as a Knowledge and Training Center

102. Interviewed government counterparts generally appreciated the role of the CAREC Institute, which is part of the CAREC Program. The institute conducts analytical and knowledge work and capacity-building activities to support regional cooperation among CAREC member countries, as well as outreach activities to promote recognition of the CAREC Program. The institute is jointly owned and governed by the 11 CAREC member countries and obtained its legal status in 2017.[78] ADB played a significant role in supporting the institute's establishment and providing capacity building.

103. Since 2018, the institute has published 79 research reports, working papers, and policy and economic briefs. The studies investigated topics of relevance to the CAREC Program, such as cross-border intra- and extra-bloc trade, factors influencing trade in the region and the growth impact of free trade agreements, and prospects for human capital development under the CAREC Program, among others. The institute has worked in partnership with other research institutions and organizations, including ADB Institute, the United Nations Economic and Social Commission for Asia and the Pacific, the International Food Policy Research Institute, and national research institutes. The CAREC Institute has provided the platform to discuss emerging regional and global issues in the form of webinars, dialogues, and symposiums, often in partnership with other institutions.

[78] The CAREC Institute had a slow start because of the time taken to reach an intergovernmental agreement but began operations virtually in 2009 and was physically established in the People's Republic of China in 2015. The agreement to institutionalize the institute was signed on 26 October 2016 and entered into force on 24 August 2017.

104. The institute's capacity-building workshops are conducted in collaboration with the CAREC Program under the auspices of the sector knowledge service TA projects, as funded through the TA Special Fund and the ADB Poverty Reduction and Regional Cooperation Fund. For example, workshops were conducted on road safety engineering, road asset management, and performance-based contract implementation and supported by transport knowledge service TA projects. Trade workshops were organized on SPS modernization, value chain development, trade negotiations, WTO Trade Facilitation Agreement implementation, and e-commerce. The events were uploaded as digital modules accessible on the institute's e-learning platform and developed as part of the institute's strategic goal of upscaling knowledge services to member countries. An evaluation survey showed that, on average, government counterparts were satisfied with the CAREC Institute as a knowledge and training center, and executing and implementing agencies were satisfied with the training and knowledge products it provided.

105. Although the institute has been important in conducting development research and providing capacity-building services for the CAREC Program, it still needs substantial support. The institute's operating costs are covered mainly by the People's Republic of China (about $3 million a year). ADB provides some TA support, which is matched by the People's Republic of China–funded ADB Poverty Reduction and Regional Cooperation Fund. Of the other CAREC member countries, only Pakistan has contributed to the institute's running costs. The institute needs more core funding for its research activities, rather than relying on ad hoc funding from TA and one-time projects, so that it can focus on a phased program that can be carried over the medium to long term without interruption or uncertainty.

D. The Corridor Performance Measurement and Monitoring System Is Useful but Has Some Limitations

106. ADB supported the establishment and operation of the Corridor Performance Measurement and Monitoring (CPMM) system to assess the performance of the CAREC corridors, considering that they were primarily designed to facilitate increased traffic flows and trade. Information and data for the CPMM system are compiled by the private sector, which involves freight forwarders through the CAREC Federation of Carriers and Forwarders Associations (CFCFA). They collect and assemble data as individual trucks pass through BCPs, which serve as an independent information source collected by road users and haulers. The CPMM process has been in operation since 2010, and CPMM annual reports have provided a valuable source of information on the cost and time delays at each key border crossing. The reports are publicly available and published on the CAREC and ADB websites. The information provided by CPMM is an invaluable planning tool for ADB, development partners, and governments. They indicate that BCPs continue to be a major constraint on the movement of goods and services throughout the CAREC subregion despite the large investment in transport infrastructure. Complementary efforts to improve cross-border facilities, processes, procedures, and policies are limited.

107. The CAREC Program, however, does not record actual cross-border information. The CPMM system collects data only on sample trucks transporting cargo along the six CAREC corridors to assess border-crossing time and costs; the system does not collect any data on other vehicle types or on actual total traffic throughputs at border crossings. The system records sample cross-border movements at 37 pairs of BCPs, covering the main BCPs in the six CAREC corridors, but collects samples at only 12 railway-crossing points in CAREC railway corridors 1 and 4. Improved data on the number of vehicles, people and freight crossing borders would facilitate estimation of regional and trade facilitation benefits of the CAREC program.

108. ADB's engagement with the CFCFA has proven useful in gathering CPMM data, identifying major bottlenecks, improving targeting of CAREC support, and monitoring progress. Regulatory and commitment obstacles, however, hinder the CFCFA from becoming a financially sustainable nongovernment agency, and the entity continues to require ADB support. [79]

[79] Following management decision in consultation with CFCFA, the TA concluded its financial assistance to CFCFA organizational and administration activities on 31 October 2021. However, ADB remains committed to continuing effective collaboration

E. Coordination with Development Partners and the Private Sector Needs to Be Strengthened

109. While it can be inherently challenging to coordinate among development partners, the evaluation found that there is room for ADB to strengthen coordination with other development partners under the CAREC Program. CAREC operational plans could have been more coordinated with those of other development partners. Increased collaboration is especially important to draw on the comparative advantages of other development partners' approaches to supporting regional projects. However, the lists of CAREC project opportunities were de-emphasized after the CAREC midterm review in 2016. The opportunities and pipelines are developed by some sector committees without sufficient involvement of development partners, although they are put in an annex to sector strategies to be approved by the ministerial conference. Other development partners do not find the CAREC project pipeline or opportunities documentation useful. The Greater Mekong Subregion Program, in contrast, has a master project pipeline listed in its Regional Investment Framework, which is a prominent instrument to draw funding from development partners.[80]

110. Interviewed stakeholders noted that as the CAREC Program expands to include new sectors, ADB's comparative advantage is less clearly defined. Several interviewees suggested that ADB needs to transparently appraise its comparative advantage, staff expertise, and technical capacity as it moves into new areas of support, to adequately backstop the many proposed projects outlined in new sector strategies and investment frameworks. Development partners highlighted the need for ADB to focus on areas where it can add value, maximizing the possibilities for synergies and reducing the likelihood of overlaps and duplication in spaces where other development partners are more active.

111. ADB's engagement with the CFCFA has enabled a valuable link with the private sector. ADB has engaged with the private sector on energy, mainly by holding investment forums to promote private investment in green energy. Overall, however, ADB and CAREC private sector engagement has been limited. Proactive engagement with the private sector could help better identify issues, problems, and areas for CAREC strategy improvements and operational plans, and facilitate private sector participation and public–private partnerships.

VI. Where Next for CAREC?

112. The CAREC subregion is one of the least integrated in the world. After the cold war, development partners pinned much hope on regionalism, but achieving RCI preconditions is more difficult than in other developing regions. While RCI has enormous potential to contribute to socioeconomic development, obstacles to RCI are huge: intra-regional economic interdependence is low; security threats and conflict risks are significant; and countries remain highly centralized, economically and politically. Those factors reduce public demand for RCI. ADB has supported regional cooperation using a bottom-up approach, mainly by financing development infrastructure projects with transnational potential and spillover effects, and by bringing together the diverse CAREC member countries on a common platform to coordinate strategies and share knowledge and experience.

A. Key Evaluation Findings

113. **ADB support for transport and energy infrastructure has made significant progress in helping improve regional connectivity**. The CAREC Program's transport output targets covering investments in roads and railways were exceeded and ADB contributed substantially to that achievement. ADB support increased the quality of the corridor network as well as travel speeds and traffic volume in the network.

through partnering with CFCFA national freight forwarders associations, including through CPMM data collection and conduct of related studies.

[80] IED. 2021. *Evaluation of ADB Support for the Greater Mekong Subregion Program, 2012–2020*. Manila: ADB

ADB-supported BCPs saw an increase in cross-border traffic flows. Cross-border flows of goods and services likely increased as well, as suggested by the growth of the subregion's nonfuel trade volumes.

114. ADB energy portfolio will likely make a substantive contribution to improving energy flows across CAREC member countries. Two regional initiatives supporting energy exports from Central Asia to Afghanistan and Pakistan are currently suspended because ADB placed its regular assistance to Afghanistan on hold effective 15 August 2021.due to the Afghanistan situation. Many other energy projects are still under implementation. However, energy physical connectivity increased during the evaluation period to which ADB support has contributed, and it will continue to increase in the foreseeable future as ongoing projects are completed and commissioned. This will increase the possibility for improving energy exports and imports in the subregion.

115. **ADB support for the CAREC Program contributed only modestly to regional economic competitiveness**. Competitiveness of the CAREC subregion moderately improved in 2011–2019. ADB support for infrastructure helped improve the business climate and investment environment in regions and districts that benefited from ADB projects. Improvements to the transport corridors reduced vehicle operating costs and passenger travel time. Road investments increased economic activity in areas adjacent to project roads. Besides increasing power supply and exports, ADB energy support is likely to reduce costs and make electricity service more efficient and reliable.

116. Infrastructure, however, was just one of the contributors to competitiveness improvement. Others included technology readiness, information and communication technology adoption, innovation and business dynamism, higher education and training, and institutions. They have made contributions similar to those of infrastructure. Since ADB support in those other areas is still in the early stages and has not yet achieved tangible results, ADB's contribution to regional competitiveness was likely modest.

117. The still exceptionally low share of intra-regional trade in the CAREC subregion and limited diversification of trade flows show that investment in physical infrastructure alone is not sufficient to improve competitiveness. The key constraints on further RCI are in the non-infrastructure sectors. While ADB has facilitated dialogue on the harmonization of customs procedures through the CAREC Customs Cooperation Committee, tough border regimes and stringent trade regulations still constitute a major bottleneck, hindering cross-border movements of goods and services and market integration. Although promising signs of upcoming ADB investment support for regional value chain development in tourism, digital services, agriculture, and economic corridors are evident, whether investments will match the investment frameworks developed under the CAREC strategies remains to be seen. Investment climate constraints must be reduced through policy and regulatory reforms to accelerate economic diversification, especially as dependence on fossil fuel exports may soon turn out to be harmful.

118. **ADB support for CAREC to provide RPGs is still nascent.** ADB support for energy has helped propagate renewable energy and clean technologies in national energy systems and inform the formulation of energy policies to mitigate climate change. Overall, however, ADB support for RPGs is still limited to strategy development and scoping studies, although it has generated investment proposals in some sectors. Results on improving RPG provision will depend on significant future investments and financing as well as sufficient staff and TA resources. Investments have so far been partly affected by the shocks of the COVID-19 pandemic and the Russian invasion of Ukraine, which have concentrated country efforts on domestic economic recovery.

119. **In general, the institutional setup, strategies, and instruments of the CAREC Program are appropriate for achieving its strategic objectives, and ADB has generally fulfilled its role as the CAREC Secretariat well.** Government counterparts appreciated CAREC's approach to promoting project development and economic cooperation: one that does not require formal consensus. They rated ADB's role as an honest broker and as the CAREC Secretariat as *highly important*. However, the evaluation finds that ADB staff and TA resources could face increased pressure as the Program expands into new non-

infrastructure sectors and as the delivery of global and regional public goods such as climate change is now fundamental. In addition, the CAREC platform's results monitoring system as well as its coordination and engagement with stakeholders such as development partners and the private sector could be further strengthened.

B. Recommendations

120. The evaluation makes the following recommendations for effective implementation of the CAREC 2030 Strategic Framework:

(i) Strengthen support for investment climate and trade policy reforms to promote economic diversification across the CAREC subregion. Strengthening support for market-oriented reforms to promote private sector development and improve the investment climate and trade in the non-commodity industries, including through the strategic use of policy-based lending and non-sovereign operations, can help address limited economic diversification in CAREC member countries. The reforms need to be coordinated to address regulatory heterogeneity across countries and promoted through a regional approach that is supported by ADB country programs to implement projects at the national level, leveraging the use of different financing instruments, products, and modalities.

(ii) Increase support for modernization of BCPs and customs processes. The Regional Improvement of Border Services projects provide a suitable model of an integrated and holistic approach combining infrastructural, technical, and capacity-building elements. The model can be scaled up to more countries in the CAREC subregion, covering more BCPs. Future modernization support could revisit existing BCPs to better incorporate digital innovations and green and safe trade. Opportunities could be explored to upgrade BCPs that have not been covered by previous assistance yet are essential to alternative trade routes, such as the BCPs along the middle corridor, as protracted and intensified geopolitical crises risk fragmentating trade and investment. Investments and technical assistance for the "software" aspects of BCPs and trade facilitation are just as important as those related to physical infrastructure. To deliver higher impact, there is also a need to strengthen the coordination and collaboration between the trade and transport sectors. For example, transport operations need to be developed by fully considering the need for BCP improvement.

(iii) Give a higher priority to developing a multimodal corridor network in the CAREC subregion by increasing support for the railway network and aviation. Investment priorities in transport have largely focused on roads, and relatively few investments have been made in the railway network. However, the vast distances to markets outside and within the subregion, and the landlocked nature of many countries, are likely to provide cost advantages for rail freight if efficiencies in railway operations can be achieved and border delays reduced. While the road subsector still plays a key role in transport and trade facilitation in the CAREC region, ADB should explore opportunities to increase its CAREC support for railway improvement. Upgrading the middle corridor could be given a priority to mitigate the risks associated with the northern corridor. Increased support for the aviation sector has the potential to significantly enhance tourism and business services development and contribute to trade diversification. There is a growing demand for developing the sector in the subregion.

(iv) Use the CAREC platform to support climate change mitigation and adaptation in all sectors through regional cooperation. The cost and effectiveness of clean technologies will keep on changing as new technologies and applications emerge. By increasing its focus on propagating renewable energy and clean technologies in national energy systems and informing energy policy changes to mitigate climate change in CAREC member countries, ADB can build on the promising progress already made so far. The effort under the CAREC Program can be

expanded to cover adaptation issues in energy. ADB should also strengthen its CAREC support for climate change mitigation and adaptation in all other sectors, given the rising urgency to combat climate change. In transport, for example, adaptation topics such as climate proofing road construction and improvements should continue to be scaled up as well as mitigation measures such as policy changes to reduce vehicle emissions, effect transport modal shift and promote renewable energy vehicles.

(v) Strengthen the CAREC Program's results monitoring system and tools. CAREC 2030 Program Results Framework and sector results frameworks could be strengthened with indicators, baselines, and targets for outcomes and intermediate outcomes to monitor the contribution of CAREC operations to achieving results. Measures could be taken to ensure that the monitoring reports are adequately discussed in the Ministerial Conference and the Senior Officials' Meeting, and that only those projects that promote substantive cross-country cooperation are classified as CAREC projects. ADB can also help countries gather and share customs and trade-related data to assess the progress in achieving results of transport and trade facilitation investments, and to better identify border-crossing bottlenecks. While the Corridor Performance Measurement and Monitoring system data provide a useful snapshot of bottlenecks along CAREC transport corridors, there is a paucity of official data from individual BCPs that would allow for better performance monitoring and estimation of regional benefits.

APPENDIX 1: CAREC PORTFOLIO 2001–2021[1]

Table A1.1: ADB-Financed CAREC Projects by Sector, 2011–2021

	Investment Projects		Share of Total (%)	
	No.	Value ($ million)	No.	Value
Agriculture, Transport, Water [a]	1	119.9	1.4	0.8
Energy	15	3,621.5	20.8	23.1
Trade Facilitation and Trade Policy	6	562.9	8.3	3.6
Transport	50	11,406.4	69.4	72.6
Total	**72**	**15,710.7**	**100.0**	**100.0**

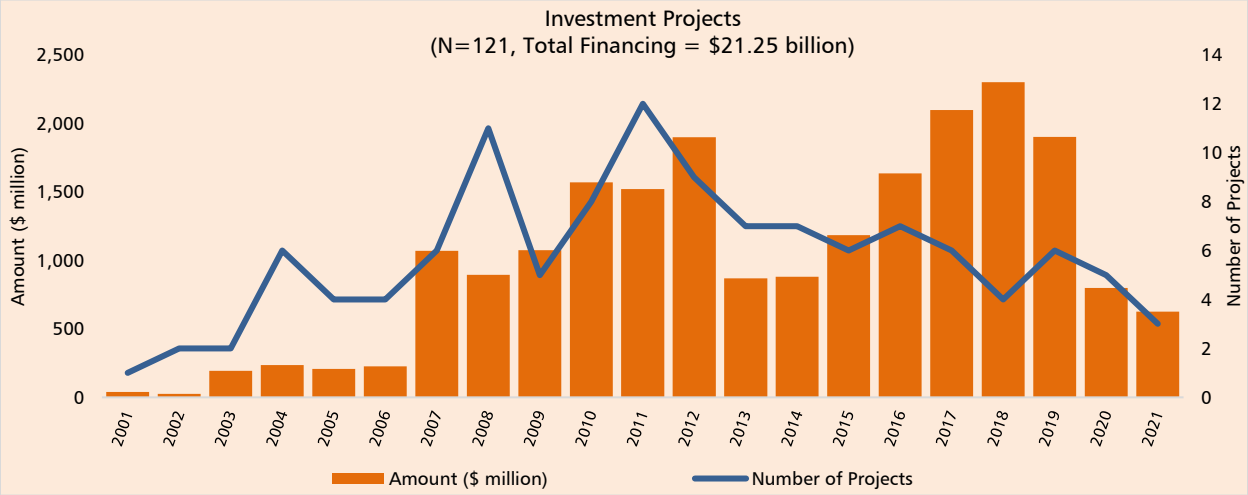
ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
[a] A multisector project.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

Table A1.2: Investment Projects Implemented by CAREC, 2001–2021

	ADB		Non-ADB		Total	
	2001–2010	2011–2021	2001–2010	2011–2021	2001–2010	2011–2021
Number of Projects	49	72	53	26	102	98
Primary Multilateral Institution Financing ($ million)[a]	4,657.94	11,526.71	6,473.56	4,328.84	11,131.50	15,855.55
Cofinancing ($ million)[b]	879.58	4,183.95	178.15	572.75	1,057.73	4,756.70
Total Financing ($ million)	**5,537.52**	**15,710.66**	**6,651.71**	**4,901.59**	**12,189.23**	**20,612.25**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
[a] Only ADB financing for ADB-assisted projects. For non-ADB projects, financing is from primary multilateral institutions supporting the project (i.e., European Bank for Reconstruction and Development, Islamic Development Bank, and World Bank).
[b] Includes financing from other CAREC multilateral institutions and cofinanciers.
Source: IED estimates based on the CAREC portfolio database.

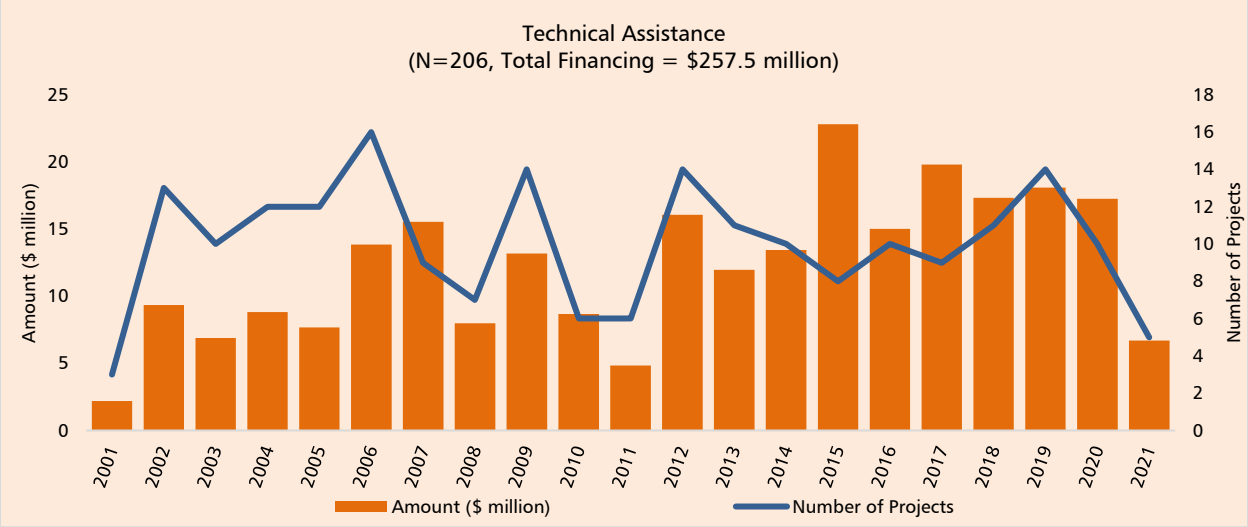
Figure A1.1: ADB-Financed CAREC Investment Projects by Year, 2001–2021



ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

[1] The evaluation covers only Asian Development Bank (ADB) approvals for the Central Asia Regional Economic Cooperation (CAREC) Program from 2011 to 2021 but uses data on project implementation progress published in the ADB eOps database and information from project completion reports and Independent Evaluation Department (IED) validation reports available as of 30 June 2022. IED validation ratings are as of 29 November 2022. The portfolio data in the appendix cover the evaluation period and the preceding 10-year period to provide the historical trend.

Figure A1.2: ADB-Financed CAREC Technical Assistance Projects by Year, 2001–2021



ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

Table A1.3: ADB-Financed CAREC Projects by Sector, 2001–2010

	Investment Projects		Share of Total (%)	
	No.	Value ($ million)	No.	Value
Energy	10	1,453.8	20.4	26.3
Trade Facilitation and Trade Policy	5	50.3	10.2	0.9
Transport	34	4,033.4	69.4	72.8
Total	**49**	**5,537.5**	**100**	**100**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio.

Table A1.4: Technical Assistance Projects Implemented by CAREC, 2001–2021

	ADB		Non-ADB		Total	
	2001–2010	2011–2021	2001–2010	2001–2010	2011–2021	2001–2010
No. of Projects	102.0	108.0	58.0	30.0	160.0	138.0
Primary Multilateral Institution Financing ($ million)[a]	85.1	107.3	27.5	13.9	112.6	121.3
Cofinancing ($ million)[b]	9.0	56.0	48.8	115.9	57.9	171.9
Total Financing ($ million)	**94.2**	**163.3**	**76.3**	**129.8**	**170.5**	**293.1**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Note: Numbers may not sum precisely because of rounding.
[a] Only ADB financing for ADB-assisted projects. For non-ADB projects, financing is from primary multilateral institutions supporting the project (i.e., European Bank for Reconstruction and Development, Islamic Development Bank, and World Bank).
[b] Includes financing from other CAREC multilateral institutions and cofinanciers.
Source: IED estimates based on the CAREC portfolio database.

Table A1.5: ADB-Financed CAREC Technical Assistance Projects by Sector, 2001–2010

	Technical Assistance Projects		Share of Total (%)	
	No.	Value ($ million)	No.	Value
Energy	21	18.5	21	20
Trade Facilitation	14	15.1	14	16
Trade Policy	2	0.8	2	1
Transport	46	33.5	45	36
Multisector Second Tier	19	26.4	19	28
Total	**102**	**94.2**	**100**	**100**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

Table A1.6: ADB-Financed CAREC Technical Assistance Projects by Sector, 2011–2021

	Technical Assistance Projects		Share of Total (%)	
	No.	Value ($ million)	No.	Value
Energy	24	36.6	22	22
Trade Facilitation	16	20.6	15	13
Trade Policy	5	2.9	5	2
Transport	41	53.0	38	32
Multisector Second Tier	22	50.3	20	31
Total	**108**	**163.3**	**100**	**100**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Note: Numbers may not sum precisely because of rounding.
Source: IED's estimates based on CAREC portfolio database. The number of TA projects for the period includes 104 TA projects plus four supplemental financing TA projects whose original projects were approved in the previous period (2001–2010).

Table A1.7: ADB-Financed CAREC Technical Assistance Projects by Type, 2001–2010

Type of Technical Assistance	No.	Amount ($ million)
Capacity Development	15	17.0
Policy Advice	46	46.9
Project Preparation	38	27.1
Research and Development	3	3.1
Total	**102**	**94.2**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Note: Numbers may not sum precisely because of rounding.
Source: IED estimates based on the CAREC portfolio database.

Table A1.8: ADB-Financed CAREC Technical Assistance Projects by Type, 2011–2021

Type of Technical Assistance	No.	Amount ($ million)
Capacity Development	29	71.4
Policy Advice	30	43.9
Project Preparation	42	39.0
Research and Development	7	9.1
Total	**108**	**163.3**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Note: Numbers may not sum precisely because of rounding. The number of technical assistance projects for the period includes 104 plus 4 supplemental financing, whose original projects were approved in 2001–2010.
Source: IED estimates based on the CAREC portfolio database.

Table A1.9: ADB Support by Country, 2001–2010
(%, total volume)

	Investment Projects		Technical Assistance		Total		Share of Total (%)	
	No.	Value ($ million)	No.	Value ($ million)	No.	Value ($ million)	No.	Value
Afghanistan	15	1,579.0	13	15.2	28	1,594.2	18.3	28.3
Azerbaijan	4	487.9	6	3.8	10	491.7	6.5	8.7
Georgia	0	-	0	-	0	-	-	-
Kazakhstan	4	1,106.0	4	1.2	8	1,107.2	5.2	19.7
Kyrgyz Republic	8	262.7	5	2.8	13	265.5	8.5	4.7
Mongolia	5	183.7	7	3.8	12	187.5	7.8	3.3
Pakistan	1	180.0	0	-	1	180.0	0.7	3.2
People's Republic of China	3	543.0	5	3.5	8	546.5	5.2	9.7
Regional	0	-	44	52.8	44	52.8	28.8	0.9
Tajikistan	8	355.0	11	6.2	19	361.2	12.4	6.4
Turkmenistan	0	-	1	0.4	1	0.4	0.7	0.0
Uzbekistan	3	840.3	6	4.5	9	844.8	5.9	15.0
Total	**51**	**5,537.5**	**102**	**94.2**	**153**	**5,631.7**	**100**	**100**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Note: Only technical assistance projects are designated as "regional." Investment projects are country based. The total number of investment projects does not sum up to 49 since 2 were implemented in two countries.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

Table A1.10: ADB Support by Country, 2011–2021
(%, total volume)

	Investment Projects		TA		Total		Share of Total (%)	
	No.	Value ($ million)	No.	Value ($ million)	No.	Value ($ million)	No.	Value
Afghanistan	14	2,596.4	6	4.6	20	2,601.0	11.0	16.4
Azerbaijan	5	1,320.0	4	3.4	9	1,323.4	5.0	8.3
Georgia	5	2,450.2	3	1.6	8	2,451.8	4.4	15.4
Kazakhstan	6	1,580.1	5	1.8	11	1,582.0	6.1	10.0
Kyrgyz Republic	8	1,051.6	6	5.3	14	1,056.9	7.7	6.7
Mongolia	6	389.0	3	2.7	9	391.7	5.0	2.5
Pakistan	6	1,496.0	6	21.5	12	1,517.5	6.6	9.6
People's Republic of China	1	196.3	1	0.2	2	196.5	1.1	1.2
Regional	0	0.0	56	106.2	56	106.2	30.9	0.7
Tajikistan	9	1,060.9	5	4.0	14	1,064.9	7.7	6.7
Turkmenistan	2	625.0	2	1.0	4	626.0	2.2	3.9
Uzbekistan	11	2,945.2	11	11.1	22	2,956.3	12.2	18.6
Total	**73**	**15,710.7**	**108**	**163.3**	**181**	**15,874.0**	**100**	**100**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Note: Only technical assistance projects are designated as "regional." Investment projects are country based. The total number of investment projects does not sum up to 72 since 1 project was implemented in two countries. Numbers may not sum precisely because of rounding.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

Table A1.11: Status of ADB-Supported CAREC Projects, 2001–2021

Item	Investment Projects		Technical Assistance	
	Number	%	Number	%
Active	**48**	**40**	**40**	**19**
Mature (passed at least 50% implementation time)	33	69	31	78
Completed	**73**	**60**	**166**	**81**
Self-Assessed	58	-	98	-
Validated	44	-	5	-
Not Evaluated	15	-	68	-
Total	**121**	**100**	**206**	**100**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Notes:
1. Information on maturity of active projects is as of January 2022. Information status on completed projects is as of September 2022.
2. There are cases of multiple reporting of a completion report since (i) some projects were jointly assessed and (ii) the additional and/or supplementary financing is not counted separately from its original project.
3. The classification of maturity in active projects is a rough estimate of whether a project has passed the midpoint of its implementation time based on the approval year and closing date.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

Table A1.12: Status of ADB-Supported CAREC Projects, 2011–2021

Item	Investment Projects		Technical Assistance	
	Number	%	Number	%
Active	**46**	**64**	**36**	**33**
Mature (passed at least 50 % implementation time)	31	67	28	78
Completed	**26**	**36**	**72**	**67**
Self-Assessed	24		38	
Successful	22	92	29	76
Validated	17		7	
Successful	12	71	4	57
Not Evaluated	2		34	47
Total	**72**	**100**	**108**	**100**

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation.
Notes:
1. Information on maturity of active projects is as of January 2022. Information status on completed projects is as of 24 November 2022.
2. There are cases of multiple reporting of a completion report since (i) some projects were jointly assessed and (ii) the additional and/or supplementary financing is not counted separately from its original project.
3. The classification of maturity in active projects is a rough estimate of whether a project has passed the midpoint of its implementation time based on the approval year and closing date.
Source: ADB (Independent Evaluation Department) estimates based on the CAREC portfolio database.

APPENDIX 2: ADB SUPPORT FOR VALUE CHAIN DEVELOPMENT THROUGH THE CENTRAL ASIA REGIONAL ECONOMIC COOPERATION PROGRAM

1. The Asian Development Bank (ADB) Central Asia Regional Economic Cooperation (CAREC) Program has pursued opportunities to promote value chain development by supporting tourism, economic corridor development, digital innovation, agriculture, and regional cooperation on training and education in the CAREC subregion. However, most ADB activities in those areas are still nascent and have yet to achieve tangible results.

2. **ADB support for tourism under the CAREC Program fostered a common vision for the development of sustainable tourism**.[1] During 2011–2021, ADB support included technical assistance (TA) for sustainable tourism development and a tourism master plan for the Almaty–Bishkek Economic Corridor (ABEC). In 2020, the TA project supported the development of the CAREC Tourism Strategy 2030 and its accompanying regional tourism investment framework (2021–2025). Stakeholder interviews indicate that the strategy helped some countries revise and improve their national tourism strategies. The regional investment framework laid the groundwork for potential investments.

3. While ADB is supporting the design of several project proposals, most of them are still at the early preparation stage. It remains to be seen if investments will be forthcoming under the investment framework. Early indications suggest that more time is needed to foster ownership of and cooperation on tourism development, while the coronavirus disease (COVID-19) pandemic generally set back tourism development. The ABEC tourism master plan provides a framework for developing the ABEC into an international-quality destination.[2] It identifies key investment priorities such as developing ski resorts along the mountain range between Almaty and Issyk-Kul and linking them with summer tourism opportunities. However, it is still too early to assess whether the master plan will contribute to the success of the ABEC corridor and promote sustainable tourism as most of the planned investments are still at the proposal or preparation stages.

4. The development of a CAREC tourism portal or website has faced setbacks. The portal is meant to be a tool for sharing and consolidating information on tourism regions and attractions. According to interviews and progress reports, the project had trouble getting the website up and running because the quality of information and photos received from the member countries was so varied and the handover of the longer-term operation of the website was delayed. A tourism hub should be established in a CAREC member country, where the website would be managed in the longer term. In the interim, the website remains under ADB management, and the regional TA project will possibly be extended to continue the support, with the addition of other activities.

5. **ADB support for economic corridor development has faced some setbacks**. Progress on economic corridor development has been slow, given the complexities involved in adopting a multisector, multicountry, value chain, and spatial development approach. The multidimensional economic corridor development approach was introduced in CAREC 2020 and consolidated in CAREC 2030. The multidisciplinary approach sought to move beyond transport and transit corridor development to a multidisciplinary value-chain development approach and was expected to strengthen regional competitiveness and reduce the cost of doing business. ADB has supported pilot economic corridor development initiatives, primarily through TA, notably on the ABEC and the Shymkent–Tashkent–Khujand Economic Corridor.

6. Most initiatives are still at the planning or approval stages, mostly because of the complex processes required for a multidisciplinary approach coordinating across countries and sectors. For example, ADB TA has resulted in an investment project proposal to develop a modern agriculture wholesale market along the ABEC.[3] However, project planning has suffered setbacks, and the original concept for joint activities in Kazakhstan and Kyrgyz Republic has been scaled back to focus solely on Kyrgyz Republic, which illustrates the complexities of

[1] Based on interviews with tourism focal points by the CAREC evaluation team in June and July 2022.

[2] ADB. 2019. *Almaty–Bishkek Economic Tourism Master Plan*. Manila. Developed under ADB. Regional: Sustainable Tourism Development in the Central Asia Regional Economic Cooperation Region (TA 9487), approved on 15 December 2017; ADB. 2017. *Almaty-Bishkek Economic Corridor Support*. Manila. ADB contributed $1.8 million while the government of Japan cofinanced $750,000.

[3] Proposed project: ADB. Kyrgyz Republic: Almaty-Bishkek Economic Corridor: Modern Agriculture Wholesale Market Development Project.

applying a multicountry spatial development approach. Other ABEC initiatives, such as the ABEC Tourism Master Plan, show promise with several investment project proposals currently in development at the time of the evaluation.

7. **Greater outreach and investment are needed to promote digital innovation**. ADB contributed to the adoption of information and communication technology and digitalization chiefly by developing the CAREC Digital Strategy 2030 and launching the start-up ecosystem hub to encourage cross-country cooperation in the CAREC subregion. The digital strategy aims to promote regional cooperation on policy design and capacity building to tackle social economic challenges through adoption of digital technologies. The ecosystem hub is important to build the capacity of key stakeholders: government officials, financial institutions, start-ups, incubators, accelerators, and universities. The hub is valuable as a broker in establishing effective partnerships through investor meetups and pitch sessions.

8. In the case of CAREC member countries that had already developed their own national digital strategies before the release of CAREC Digital Strategy 2030, the CAREC strategy did not inform their national strategies. However, the digital focal points commented on the draft of the CAREC strategy.[4] Upon revisiting their national strategies, the CAREC member countries found they were similar to the CAREC strategy. The CAREC strategy was published in February 2022.[5] The CAREC Startup Ecosystem hub has been launched. On 30 June 2022, the CAREC Secretariat launched the CAREC Startup Map and the CAREC Innovation Network to encourage cross-country cooperation and collaboration between entrepreneurs and active stakeholders.

9. Greater outreach and communication are needed to promote CAREC's digital initiatives. Some of the digital focal points interviewed for the evaluation were unaware that the CAREC strategy had been finalized and published. Some complained that they had not yet had any contact with other CAREC digital focal points, apart from brief introductions during online seminars. Some were not aware of the CAREC Innovation Network. One complained that they had been insufficiently consulted on the draft strategy and that it had been sent to them for comments only when it was nearly finalized. The added value of the CAREC strategy was not fully apparent to Uzbekistan government counterparts, given that a national strategy for Digital Uzbekistan 2030 had already been approved in 2020, considering other CAREC sector strategies available at the time.

10. The CAREC Digital Strategy Steering Committee was established in October 2022 to expedite more active country-level engagement in implementing the strategy. Most focal points interviewed understood that the activities were in the early stages, but recognized the importance of investing in digital connectivity, particularly given the importance of digital connectivity during the COVID-19 pandemic and the shift to new ways of working.

11. **Results in agricultural value chain development have been mixed.** CAREC support to agricultural value chain development has focused primarily on regulatory aspects related to the trade of agricultural and food products, but challenges in opening exchange of information between countries have led to mixed results. Few activities have been undertaken under the CAREC agriculture and water cluster. ADB commissioned a study that emphasizes the need to complement physical infrastructure with regulatory and institutional frameworks to strengthen integration into regional and global agricultural value chains.[6] To this end, some CAREC trade-related activities have provided relevant regulatory support for agricultural value chain development. For example, after Uzbekistan acceded to the International Plant Protection Convention (IPPC) in 2020, an ADB TA project was utilized to respond to a request for ADB's assistance in the IPPC work plan preparation, in line with improving phytosanitary measures.[7] Subsequently, Uzbekistan became the first CAREC member country to exchange electronic certificates under the IPPC's ePhyto system. In this case, CAREC TA complemented regular ADB country-level investments (i.e. non-CAREC investment and TA projects), supporting agricultural

[4] Based on virtual key informant interviews conducted by the CAREC evaluation team in mid-2022 with Pakistan, Tajikistan, and Uzbekistan.
[5] ADB. 2020. *CAREC Digital Strategy 2030: Accelerating Digital Transformation for Regional Competitiveness and Inclusive Growth.* Manila
[6] ADB. 2019. *Agriculture Development in the Central Asia Regional Economic Program Member Countries: Review of Trends, Challenges, and Opportunities.* Manila.
[7] ADB. 2022. CAREC 2030 Development Effectiveness Review (2017–2020). Manila.

diversification and value chain development in Uzbekistan.[8] Meanwhile, in Mongolia, stakeholders interviewed for the evaluation highlighted the pivotal role played by ADB in helping align national SPS measures with international standards to help the country realize its potential for agri-food exports, although it was difficult for the evaluation to find evidence of results achieved as the project is still ongoing and delayed.[9]

12. ADB TA developed capacity to strengthen food safety regulations and inspection regimes and support the adoption of internationally recognized food safety standards along agricultural value chains in CAREC member countries, which is expected to facilitate the export of primary and processed food products to external markets. However, the establishment of a CAREC food safety network was placed on hold because countries were reluctant to share information on national conditions and regulations, illustrating the challenge in gaining consensus on the harmonization of standards.[10] A country-level TA project supporting food safety capacity development in Turkmenistan faced challenges in establishing trust with government authorities. ADB mission approvals were delayed and ADB teams lacked access to laboratory facilities, provincial authorities, and private sector actors, leading to only partial delivery of project outputs.[11]

13. CAREC project pipelines indicate that investment will be increasing in agricultural value chains. An investment project proposal to develop a modern agriculture wholesale market is expected to boost value chain development along the ABEC.[12] Given the importance of agriculture and food products in intra-CAREC trade, such investments will upgrading regional value chain development.[13]

14. **ADB support for education and skills development has been limited**. As outlined in CAREC 2030, ADB support for education aims to explore opportunities for regional trade in education services by promoting cross-country cooperation. ADB provided limited support under the CAREC Program during 2011–2021, involving one TA project to strengthen regional cooperation on skills development.[14] Preparatory work on education and skills development began as early as 2019 with a scoping study, but the CAREC Program deferred subsequent activities as CAREC member countries agreed to prioritize health over education because of the COVID-19 pandemic.[15] After the approval of the skills development TA in 2021, a roundtable discussion was launched for collaboration on and preparation of education knowledge products. The TA will spearhead activities that support regional cooperation on human development, including (i) strengthened standardization and harmonization in higher education and technical and vocational education and training, (ii) improved governance and regulation of recruitment systems, and (iii) a labor market database and information systems. Given the limited activities conducted so far, it is too early to predict whether outcomes will be achieved.

[8] A recent evaluation of the IFAD-financed Horticultural Support project in Uzbekistan noted the insufficient attention paid by country-level investment projects to regulatory aspects affecting the trade and export of horticultural produce, which underlines the importance of ADB's regional SPS TA-support in these areas. IFAD. 2022. Republic of Uzbekistan Horticultural Support Project. Project Performance Evaluation.

[9] ADB. 2015. Mongolia: Regional Upgrades of Sanitary and Phytosanitary Measures for Trade Project. Report and recommendation of the President. Manila.

[10] ADB. 2022. *CAREC 2030 Development Effectiveness Review (2017-2020)*. Manila.

[11] ADB. 2018. *Turkmenistan: Modernization of Sanitary and Phytosanitary Measures for Food Safety.* Manila.

[12] Proposed project. ADB. Kyrgyz Republic: Almaty–Bishkek Economic Corridor: Modern Agriculture Wholesale Market Development Project.

[13] Agriculture and food products account for the largest share (36.7%) of intra-CAREC trade, excluding the People's Republic of China. United Nations Comtrade, total trade in US dollar terms, exports 2011–2020 (excluding Afghanistan and Turkmenistan because data are unavailable).

[14] ADB. Regional: Strengthening Regional Cooperation on Skills Development under the CAREC Program.

[15] ADB. *CAREC 2030 Development Effectiveness Review (2017–2020).*

APPENDIX 3: REGIONAL PUBLIC GOODS IN THE STRATEGIC FRAMEWORKS OF CAREC AND ADB

A. Concept of Regional Public Goods

1. Regional public goods (RPGs) are public goods supplied by geographically proximate states and that primarily benefit the states in the region. RPGs are distinguished by the non-rivalry and/or non-excludability of their consumption by the regional countries.[1] Non-rivalry means that the consumption of a public good by one regional country does not reduce the utility of the good for neighboring countries. An example is control of communicable diseases, the value of which is not reduced if other countries enjoy it, as well. Non-excludability means that single regional countries cannot be excluded from consuming a particular public good. An example is the protection of water resources, where no country that borders a body of water can be excluded from its consumption.

2. Public goods are often "impure" in that they are partially rival and/or partially excludable, with some even involving only some excludability but no rivalry or some rivalry but no excludability.[2] RPGs are distinguished by significant positive externalities for neighboring countries.[3] Because cooperation between the regional countries is often impeded by free-riding and coordination problems, the supply of such RPGs is usually suboptimal, especially if regional institutions that could bring the regional countries together to cooperate have shortcomings. Thus, regional countries need to cooperate and to supply RPGs collectively.

B. Regional Public Goods in CAREC Strategies

3. In CAREC strategic frameworks, RPGs are a formal component of the strategies, beginning with the 2006 CAREC Comprehensive Action Plan (CAP), in which RPGs are one of four action pillars. RPGs are transboundary (e.g., environment and management of natural resources). The CAP does not list all the possible RPG interventions but does add that the concept encompasses actions to counter regional public "bads" (avian flu threat, disaster risk management, corruption).

4. The CAP discusses RPGs in relation to two tiers of CAREC activities. The first tier is focused on transport, trade, and energy, while the second tier covers areas "such as human development, agriculture, environment, and tourism."[4] The division underscores the strong legacy of first-tier activities and/or sectors and the need to take advantage of emerging opportunities or threats. RPGs are linked to but appear to be a subset of second-tier activities; the distinction is not elaborated or clarified.

5. CAREC 2020 (2008) maintains an open-ended commitment to RPGs as it states that the CAREC Program "will help promote regional public goods such as communicable disease control, disaster risk management, and climate-change proofing, among others." The RPG list differs from that in the 2006 CAP, but neither list should be seen as definitive or clearly prioritized. Like the 2006 CAP, CAREC 2020 maintains the concept of second-tier activities, explaining them as necessary to tackle emerging issues that impact core area activities through regional collaboration. The mentioned examples (communicable disease control, agriculture, disaster risk management, and climate change adaptation and mitigation) overlap with the RPG examples offered.

6. CAREC 2030 is structured around clusters, which are groupings of sectors and areas that cover previously traditional core areas and what might have been described as second tier or RPGs in previous strategies. RPGs are mentioned only under health in the human development cluster. However, some other activities in a few clusters are RPGs as well, such as management of natural resources under agriculture and

---

[1] S. Barrett. 2020. Regional Public Goods: Conceptual Foundations. In B. Susantono and C.-Y. Park, eds. *Future of Regional Cooperation in Asia and the Pacific*. Manila: ADB. pp. 3–36; and T. Sandler. 2003. Demand and Institutions for Regional Public Goods. In A. Estevadeordal, B. Frantz, and T.R. Nguyen, eds. *Regional Public Goods: From Theory to Practice*. Washington, DC: Inter-American Development Bank. pp. 11–30.

[2] ADB. 2018. *Asian Economic Integration Report 2018*. Manila.

[3] A. Estevadeordal and L.W. Goodman. 2017. *21st-Century Cooperation: Regional Public Goods, and Sustainable Development*. London: Routledge; and T. Sandler. 2006. Regional Public Goods and International Organizations. *Review of International Organizations*. 1. pp. 5–25.

[4] CAREC. 2006. *CAREC Comprehensive Action Plan 2006–2010*. para. 15.

water, and regional actions that complement national efforts to mitigate climate change under infrastructure and economic connectivity.

C. Regional Public Goods in ADB Strategies

7. The four pillars of ADB's regional cooperation and integration (RCI) strategy since 2006 have been (i) regional and subregional economic cooperation programs on cross-border infrastructure and related software, (ii) trade and investment cooperation and integration, (iii) monetary and financial cooperation and integration, and (iv) cooperation on RPGs.[5] RPGs listed in the strategy include clean air, environmental protection, control of communicable diseases, management of natural disasters (now called disaster risk management), energy efficiency, improvement of governance, and prevention of human and drug trafficking. The list is not intended to be exhaustive, but rather to highlight potential initiatives worth including in the strategy.

8. The ADB operational plan for RCI (2016–2020) maintained a similar approach.[6] Its explicit list covers much of the same ground as the strategy, adding and shedding a few items but giving the impression that it is not exhaustive. The examples cited are valued for their own contribution and not simply to mitigate efforts in core areas (as in the case of CAREC strategies). Knowledge products are to be generated to directly support RPGs.

9. One of the three RCI priorities of ADB's Strategy 2030 is diversification of RPGs: regional climate change mitigation and adaptation, shared environmental management, and expansion and diversification of access to regional education and health services. Examples of RPGs mentioned in the strategy's main text include disaster risk management, transboundary natural resource management, emission trading, and green technologies.[7]

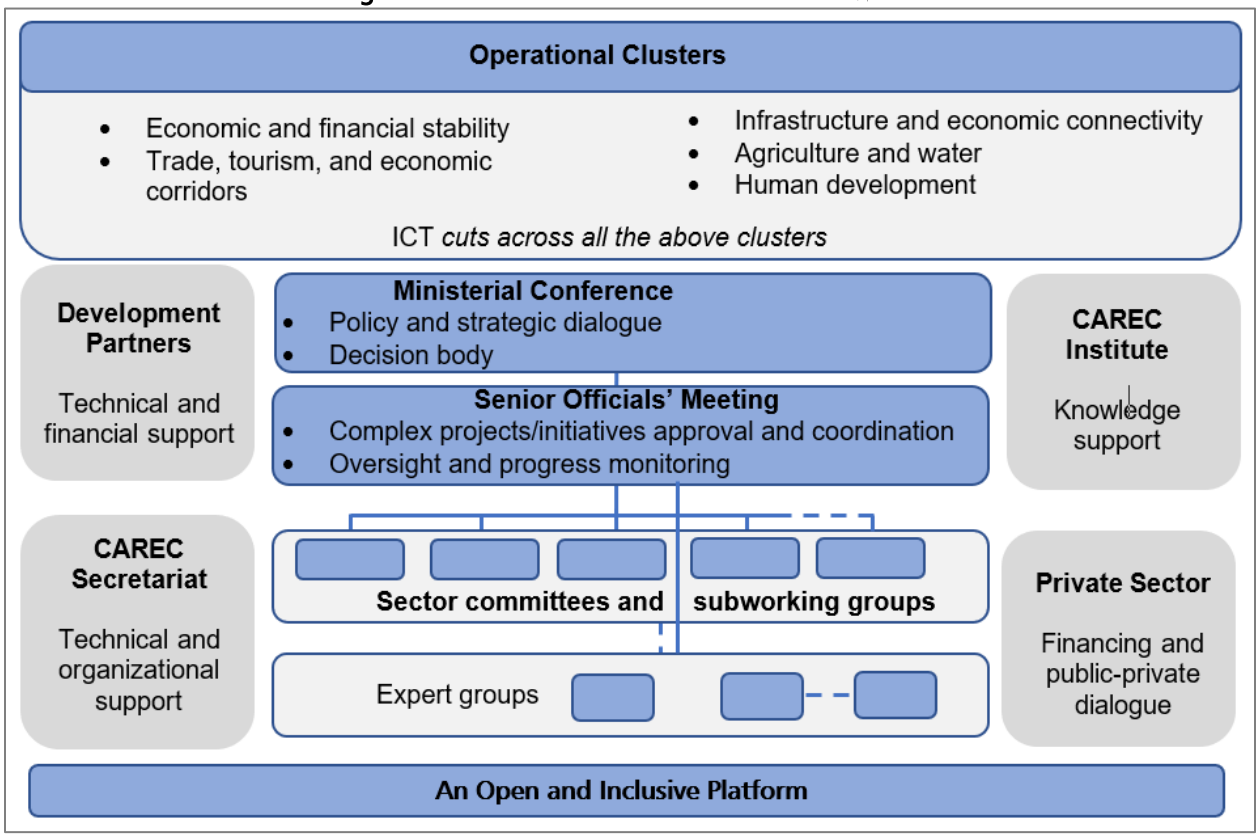
10. ADB has deepened its knowledge base on regional cooperation. The first chapter of its 2020 RCI knowledge product is devoted to RPGs. It provides examples, including air and marine pollution, climate change, infectious and communicable diseases, river basin management, hazardous waste transport, marine fisheries management, biodiversity and nature conservation, invasive species, harmonization of intellectual property rules, controls on dangerous scientific experiments, and technical standards. The view of RPGs is even more expansive than that in previous CAREC or ADB strategic documents and one that may find its way into the documents as the strategies are operationalized and refined.[8]

[5] ADB. 2006. *Regional Cooperation and Integration Strategy*. Manila.
[6] ADB. 2016. *Operational Plan for Regional Cooperation and Integration, 2016–2020: Promoting Connectivity, Competitiveness, Regional Public Goods, And Collective Action for Asia and the Pacific*. Manila.
[7] ADB. 2019. *Strategy 2030 Operational Plan for Priority 7—Fostering Regional Cooperation and Integration, 2019–2024*. Manila.
[8] B. Susantono and C.Y. Park, eds. 2020. *Future of Regional Cooperation in Asia and the Pacific*. Manila: ADB. p. 5.

APPENDIX 4: CAREC 2030 INSTITUTIONAL FRAMEWORK

1. The highest decision-making body of the Central Asia Regional Economic Cooperation (CAREC) Program is the Ministerial Conference. It meets annually, sets strategy and policy, and exercises accountability over the results of the CAREC Program. Some of the steering is done in the Senior Officials' Meeting, which meets semiannually; monitors progress of clusters and sectors; has the authority to consider and endorse major deliverables, themes, and key policy issues; and prepares for the Ministerial Conference.[1]

Figure A4: CAREC 2030 Institutional Framework



CAREC = Central Asia Regional Economic Cooperation, ICT = information and communication technology.
Source: CAREC Secretariat.

2. Four sector coordinating committees (transport, customs, trade policy, and energy) ensure effective and timely implementation of priority projects and have full authority to discuss and develop options and recommendations for their areas of competence. A flexible and demand-driven mechanism of expert groups provides rapid responses to countries' emerging priorities and changing needs.

3. Each CAREC member country appoints a senior government official as the CAREC national focal point to ensure effective coordination among agencies and other interested parties on regional economic cooperation. ADB serves as the CAREC Secretariat.

4. The CAREC Institute (based in Urumqi, Xinjiang, People's Republic of China) is jointly shared, owned, and governed by the 11 member countries. It connects the five operational clusters (economic and financial stability; trade, tourism, and economic corridors; infrastructure and economic connectivity;

[1] The Senior Officials' Meeting is also called the National Focal Points Meeting. The two names are used interchangeably.

agriculture and water; human development) to ensure coherence in design and implementation of policies, programs, and projects to promote regional economic cooperation and integration.

5. The institutional framework is driven by CAREC 2030, which has an indicative results framework; specific indicators were left open for the sector coordinating committees and technical groups to deliberate and further develop. The results framework is used for reporting in CAREC's Development Effectiveness Review (DEFR), published every 3 years. Since 2017, several sector strategies and results frameworks have been produced for CAREC 2030. They include CAREC Integrated Trade Agenda 2030, approved in 2018; and other CAREC sector and thematic strategies, including Transport Strategy 2030 and Energy Strategy 2030, approved in 2019; Tourism Strategy 2030 and Gender Strategy 2030, approved in 2020; and Health Strategy 2030 and Digital Strategy 2030, approved in 2021. Scoping studies have been completed for education and water.[2]

6. CAREC has employed action plans to more clearly define its directions, identify activities, and allocate indicative resources to them. Other sector strategies, results frameworks, and operational plans (including for the Food Safety Network under the agriculture pillar) for CAREC 2030 are being prepared.

7. Supporting CAREC structures and planning is the CAREC Secretariat, housed in ADB's headquarters in Manila. It receives financial and technical support from various ADB departments and draws from ADB operations departments' staff, mainly the Central and West Asia Department (CWRD) and, to a lesser extent, the East Asia Department. The secretariat reports to CWRD's Regional Cooperation and Operations Coordination Division, while receiving technical support and guidance from ADB central sector and thematic units. The division manages all economic work, country partnership strategies, programming, and technical assistance (TA) for CWRD.

8. The secretariat provides technical, administrative, and coordinating support to implement CAREC strategies. It links closely with country and sector focal points. Some ADB resident missions have individuals (usually consultants) assigned to coordinate CAREC projects as regional cooperation coordinators (e.g., in Kazakhstan, Kyrgyz Republic, and Mongolia). The position is vacant in some resident missions. CAREC 2030 foresaw strengthening the secretariat's capacity as the scope of CAREC operations and activities widened. Internal reports of the secretariat reveal that its staffing strength has "barely increased" despite the broadening of the CAREC 2030 agenda. Development partners were to be invited to second staff to the secretariat on short- and long-term assignments to support CAREC 2030. Reports on whether that has happened are not readily available.

9. The secretariat leads efforts to monitor the CAREC Program's progress in achieving results. It works closely with sector committees and working groups to develop sector and thematic results frameworks and prepares consolidated progress reports based on sector and thematic progress reports. Progress in achieving results is reported to the Ministerial Conference and Senior Officials' Meeting through the DEFR, along with sector and thematic progress reports. The DEFR was prepared annually from 2010 to 2016. It is now prepared every 3 years as per CAREC 2030. The results framework for CAREC 2030 was completed in late 2020, and the first DEFR after CAREC 2030 was prepared and presented as part of the documentation for endorsement by the Ministerial Conference of November 2021. The secretariat provides support to develop results monitoring instruments to measure RCI sector and regional performance. It supported, for example, the development of the Corridor Performance Measurement and Monitoring (CPMM) system and the CAREC Regional Integration Index. The CPMM monitors time and cost to pass a border-crossing point and travel a CAREC corridor to assess the efficiency of the six CAREC transport corridors. It was developed under ADB TA and is still funded by ADB. The CAREC Regional Integration Index was developed by the CAREC Institute with support from ADB and was inspired by ADB's Asian Regional Cooperation and Integration Index. It traces progress in six dimensions of regional economic cooperation and integration: trade and investment, money and finance, regional

[2] ADB. 2019. *Education and Skills Development under the CAREC Program: A Scoping Study*. Manila. ADB. 2021. ADB Regional Technical Assistance TA-9977 Central Asia Regional Economic Cooperation (CAREC): Developing the Water Pillar—Scoping Report.

value chains, infrastructure and connectivity, free movement of people, and institutional and social integration.

10. Financing of the CAREC Secretariat and some costs of meetings have been borne by ADB, partly from its regular budget (staff participation) and partly from TA funds. Development partners have funded their own costs of participating in meetings. Member countries funded their own staff costs of participating in meetings, with travel costs borne by ADB.[3]

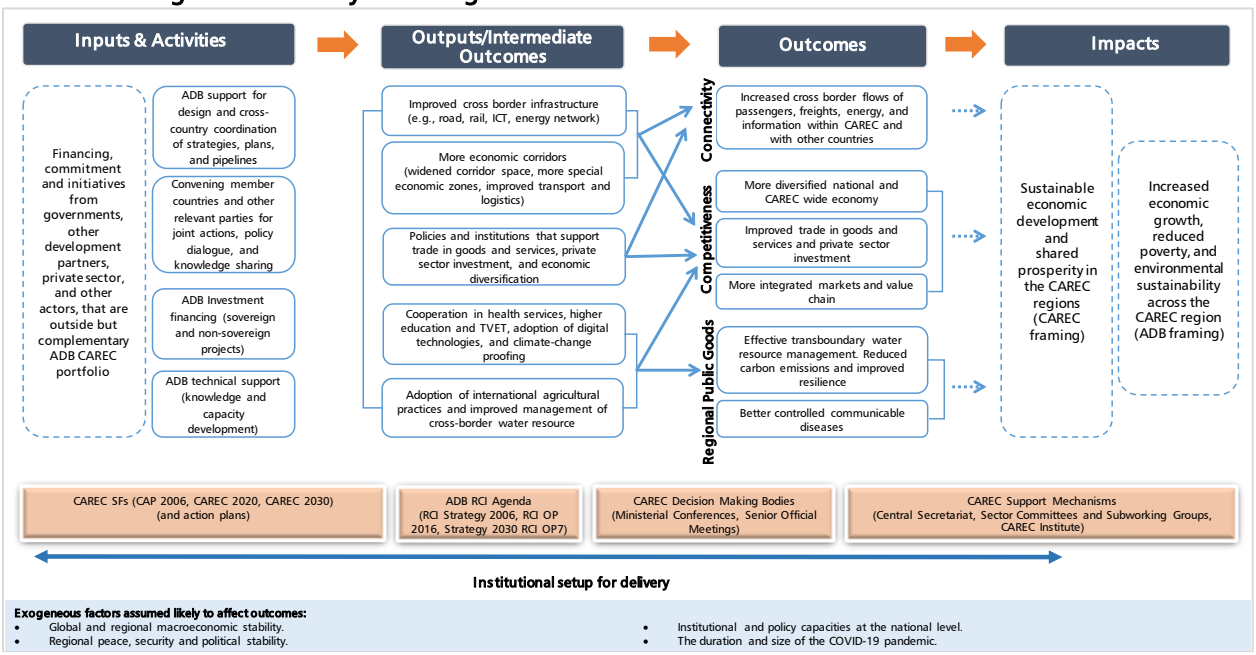
11. ADB supports the development of CAREC strategies and sector policies that provide direction for CAREC Program and sector programs. Regional TA projects support the development of CAREC strategic frameworks and sector strategic documents, which are discussed with government counterparts before being presented for approval by the various CAREC Program decision meetings. The strategies set the objectives and targets for the pursuit of CAREC strategic priorities and various sector initiatives and lent coherence to sector policies and projects for governments and development partners. The lists of project opportunities are developed based on the strategies and through discussions and coordination with CAREC sector coordinating committees, participated in by CAREC member countries and development partners and often chaired by ADB and the hosting country's sector focal points. Some ADB TA support has drawn on the expertise of partner institutions and international organizations to deliver outputs, and several development partners chaired certain sector coordinating committees. The completed and ongoing projects financed by all actors in various sectors have been grounded in CAREC strategic documents and identified country needs.

[3] F.J. Linn. 2020. Preparation of the First CAREC Development Partners' Forum. CAREC—Background Paper. August.

APPENDIX 5: THE EVALUATION'S THEORY OF CHANGE

1. The theory of change for the evaluation was developed based on consultations with ADB staff and assessments of CAREC and ADB strategies and their results frameworks over the last decade. The evaluation mainly focuses on the solid-lined boxes and arrows in the theory of change chart that describe ADB's inputs and activities and the main causal chains from ADB interventions to expected outputs and outcomes (Figure A1.1). The dashed boxes show inputs that the government, other development partners, and the private sector provide outside the ADB portfolio, and describe a high level of impact that results from the efforts of many other actors, not just ADB.[1] The lower set of boxes (orange) lay out ADB and CAREC strategies, CAREC instruments, and CAREC governance and administrative structures, which constitute the main institutional setup to deliver the program.

Figure A5: Theory of Change of the Evaluation of ADB's Contribution to CAREC



ADB = Asian Development Bank, CAP = The Comprehensive Action Plan, CAREC = Central Asia Regional Economic Cooperation, COVID-19 = coronavirus disease, GOV = government, ICT = information and communication technology, OP = operational plan, RCI = regional cooperation and integration, SF = strategic framework, TVET = technical and vocational education and training.
Note: Arrows emphasize the main causal relationships. Solid-lined boxes are the focus of the evaluation.
Source: ADB (Independent Evaluation Department).

2. **ADB inputs and activities comprise investment financing, technical assistance (TA), secretariat support for strategy and program development, and broker services to facilitate policy dialogue and knowledge sharing.** They help achieve the expected CAREC outputs and intermediate outcomes, including cross-border physical infrastructure and economic corridors; improved policies and institutions for trade and services, private sector investment, and economic diversification; strengthened cooperation in health, education, adoption of digital technologies, and climate change; and integrated management in agriculture, water, and tourism. ADB secretariat and broker services and TA help improve dialogue, knowledge sharing, cooperation, and learning on policies and best practices among CAREC member countries and development partners.

3. **The outputs/intermediate outcomes lead to a variety of final outcomes grouped under the broad CAREC strategic objectives of connectivity, competitiveness, and regional public goods**. The pathways

[1] ADB contributes to the impacts, but its distinct contribution is less visible than at the outcome level. Because of the scale of interventions, some modesty is required in claiming contributions as they are generally not decisive at the national or regional level. CAREC members' contributions at that level of results are noted more for context than for attribution.

transforming outputs/intermediate outcomes into final outcomes are many, and usually entail several outputs to bring about any of the strategic outcomes (Figure A1.1):

(i) Under **connectivity,** the envisaged outcomes include improved cross-border linkages and increased flows of goods, services, and people. They are mainly achieved by improving cross-border infrastructure, developing economic corridors, formulating policies that encourage trade, promoting investment, integrating financial markets, and improving tourism infrastructure.

(ii) Under **competitiveness,** the outcomes encompass improved trade, private sector investment, more integrated markets and value chains, and improved diversification. They are achieved through many of the measures that contribute to connectivity, as well as the pursuit of policies favorable to economic diversification and investment, and collaboration on higher education and technical and vocational education and training to expand the supply of skilled labor across member countries. Embedded in the measures are those for **gender equality** and **empowerment of women,** which would improve outcomes.

(iii) In **regional public goods**, greater cooperation across CAREC member countries to tackle shared social and environmental concerns, such as public health, climate change, and cross-border water resource management, would help achieve the expected outcome of better control of communicable diseases, effective transboundary water resources management, and reduced carbon emissions and improved climate resilience.

4. **ADB support is one of many factors that contribute to the three strategic—and comprehensive—outcomes**. Other contributing factors include government policies and investments, other development partner financial investments and technical support, and efforts of the private sector and other actors such as civil society.

APPENDIX 6: CONTRIBUTION TRACING AND ITS APPLICATION IN THE EVALUATION

A. Why Contribution Tracing?

1. The Central Asia Regional Economic Cooperation (CAREC) evaluation asks key questions about the program's causal contribution. Because the program focuses on regulation and infrastructure, however, the intervention cannot be randomized. Reconstructing counterfactuals is unfeasible because of extreme degrees of contextual complexity in relation to multicountry and multimodal interventions in energy, transport, and other areas CAREC covers. ADB is one of many actors that contribute to the CAREC Program's strategic outcomes, which will limit the extent to which results can be determined and attributed. Many of the questions are qualitative, calling for an approach capable of handling qualitative causal questions.

2. Several evaluation methodologies work with qualitative causal questions (in other words, those grounded in generative or mechanism-based causality). One well-known option is contribution analysis: an approach to create a contribution story to explain how an outcome has been achieved, taking account of a process or causal chain of intermediate outcomes, which materialize or not depending on a series of contextual conditions (assumptions that need to hold and risks that need to be avoided). Contribution analysis is similar to process tracing; both focus on explaining how the outcome has materialized by reconstructing a process, including factors that have contributed to the outcome. Unlike contribution analysis, however, process tracing offers clear guidelines to assess the strength of the evidence supporting the theory or explanation. While this advantage applies to all variants of process tracing, it is even more pronounced for the variant used in this evaluation. This variant can be associated with a rigorous, mathematical formalization based on Bayesian probability theory, which calculates the levels of confidence for the claims being made by the evaluation in the findings, based on the empirical evidence reviewed.

B. Brief Introduction to Contribution Tracing

3. Contribution tracing originates from combining ideas of contribution analysis and process tracing.[1] Process tracing has been referred to as a method but also as a tool and a technique for data collection and analysis,[2] reflecting its focus on theory development as much as on the search and assessment of evidence for a causal explanation (reflected in the distinction between the two deductive and inductive variants).[3] The purpose of process tracing is to draw causal inferences from "historical cases," broadly intended as explanations of past events. Process tracing is based on a mechanistic understanding of causality in social realities and starts from the reconstruction of a causal process between an independent variable and an outcome, which could, for example, be a theory of change or a causal mechanism.

4. Process tracing clearly distinguishes between the following:

(i) the process described in the theory of change, considered a possible "reality," or an ontological entity that might or might not exist or have materialized, which is usually unobservable;

---

[1] B. Befani and J. Mayne. 2014. Process Tracing and Contribution Analysis: A Combined Approach to Generative Causal Inference for Impact Evaluation. In B. Befani, C. Barnett, and E. Stern, eds. *IDS Bulletin*. 45 (6). pp. 17–36.

[2] D. Collier. 2011. Understanding Process Tracing. *Political Science and Politics*. 44 (4). pp. 823–30; D. Beach and R. Pedersen. 2013. *Process-Tracing Methods: Foundations and Guidelines*. Ann Arbor, Michigan: University of Michigan Press; A. Bennett. 2010. *Process Tracing and Causal Inference*. In H. Brady and D. Collier, eds. *Rethinking Social Inquiry*. Lanham, Maryland: Rowman and Littlefield; A. Bennett and J. Checkel. 2014. Introduction: Process Tracing: from Philosophical Roots to Best Practices. In A. Bennett and J. Checkel, eds. *Process Tracing: From Metaphor to Analytic Tool*. Cambridge, United Kingdom: Cambridge University Press.

[3] Beach and Pedersen, *Process-Tracing Methods*; Bennett and Checkel, Introduction: Process Tracing: From Philosophical Roots to Best Practices.

(ii) the evaluator's hypothesis on the existence of that reality (which is an idea in "our head" rather than a reality "out there");[4] and
(iii) the observable and, therefore, testable implications of the existence of such reality.

5. The tripartite conceptual framework stems from the awareness that mechanisms in the social sciences are usually not directly observable. We can never attain perfect certainty of their existence, but, nevertheless, we formulate hypotheses about their existence and look for evidence to increase or decrease our confidence in such hypotheses. Put differently, the aspiration of process tracing is to minimize the inferential error we risk making when producing statements about an ontological causal reality.

6. The backward perspective takes advantage of the fact that, at the time of the investigation, the mechanism has presumably had enough time to leave traces, which provide a strong indication of its existence. Process tracing recognizes that not all the traces are equally informative, and consequently focuses on assessing the quality, strength, power, or probative value of select pieces of evidence in support of (or against) the causal mechanism.

7. One of the advantages of Process Tracing is that it allows a clear distinction between "absence of evidence," which has no inferential power and does not add any value to what the researcher already knows, and "evidence of absence," which, on the contrary, can strongly challenge a hypothesis, if it contradicts observable implications stemming from such hypothesis.

8. Four well-known process-tracing tests are often used to describe the different ways evidence affects our confidence about a certain mechanism or theory of change: the hoop test, the smoking gun test, the straw-in-the-wind test and the doubly decisive test[5] (Box).

9. One possibility offered by process tracing, attempted in social science, law, and, most recently, in evaluation, is its combination with a rigorous mathematical formalization.[6] While the concepts of process tracing can be modelled with different mathematical concepts and tools, one branch of mathematics that is often useful in connection with the method is Bayesian updating.[7] The method is also called Bayesian confidence updating, contribution tracing, or, when applied more generally to theory-based evaluation, diagnostic evaluation. In the contribution-tracing formalization, the process-tracing tests in Box A6 are linked to the confusion matrix (Figure A6). The matrix links observed evidence with theory, which is used for diagnosis and calculation of the inferential power or probative value of empirical tests. The tests include statistical tests; the matrix shows, for example, type I and type II errors, sensitivity, and specificity).[8] Following the quantities in the confusion matrix, the inferential power of a piece of evidence E for a theory T can be measured in ways related to the difference between the true positives rate or sensitivity (the probability of observing a certain piece of evidence E if a theory T is true) and the false positive rate or type I error (the probability of observing the same piece of evidence E if the theory T is false).[9] The larger the difference between the true positives rate (sensitivity) and the false positives rate (type I error), the higher the probative value of evidence E for theory T (note that these

[4] Bennett and Checkel, Introduction: Process Tracing: From Philosophical Roots to Best Practices; S. van Evera. 1997. *Guide to Methods for Students of Political Science*. Ithaca, New York: Cornell University Press.
[5] Bennett, Process Tracing and Causal Inference.
[6] T. Fairfield and A. Charman. 2015. Applying Formal Bayesian Analysis to Qualitative Case Research: An Empirical Example, Implications, and Caveats. SSRN; R. Friedman. 1986. A Close Look at Probative Value. *Boston University Law Review*. 66. pp. 733–59; D. Kaye. 1986. Quantifying Probative Value. *Boston University Law Review*. 66. pp. 761–6; W. Edwards. 1986. Summing Up: The Society of Bayesian Trial Lawyers. *Boston University Law Review*. 66. pp. 937–41; B. Befani. 2020. Quality of Quality: A Diagnostic Approach to Qualitative Evaluation. *Evaluation*. 26 (3). pp. 333–49.
[7] A. Bennett. 2008. Process Tracing: a Bayesian Perspective. In J. Box-Steffensmeier, H. Brady, and D. Collier, eds. *The Oxford Handbook of Political Methodology*. Oxford: Oxford University Press; Beach and Pedersen, *Process-Tracing Methods: Foundations and Guidelines*; A. Bennett. 2014. *Disciplining Our Conjectures*. In A. Bennett and J. Checkel, eds. *Process Tracing: From Metaphor to Analytic Tool*; and Befani and Mayne, Process Tracing and Contribution Analysis: A Combined Approach to Generative Causal Inference for Impact Evaluation.
[8] Befani, Quality of Quality.
[9] D. Kaye, *Quantifying Probative Value*; Bennett, Disciplining our Conjectures; Friedman, A Close Look at Probative Value.

values also appear in the Bayes formula, used to update the level of confidence that the theory is true, from before to after observation of empirical evidence (from the "prior" to the "posterior" confidence).[10]

Box A6: The Four Process-Tracing Tests and Their Properties

Smoking gun (confirmatory). If the evidence is observed, the hypothesis is confirmed. If the evidence is not observed, the hypothesis is not confirmed, but that is not sufficient to reject the hypothesis. Average or low sensitivity, low type I error.

Hoop test (disconfirmatory). If the evidence is not observed, the hypothesis is rejected. If the evidence is observed, the hypothesis is not rejected (it "goes through the hoop," passes the test), but that is not sufficient to confirm the hypothesis. High sensitivity, average or low type I Error.

Doubly decisive (both confirmatory and disconfirmatory). If the evidence is observed, the hypothesis is confirmed. If the evidence is not observed, the hypothesis is rejected. High sensitivity, low type I error.

Straw in the wind (neither confirmatory nor disconfirmatory). If the evidence is observed, that is not sufficient to confirm the hypothesis. If the evidence is not observed, that is not sufficient to reject the hypothesis. Average sensitivity, average type I error.

Source: Adapted from B. Befani. 2020. Quality of Quality: A Diagnostic Approach to Qualitative Evaluation. *Evaluation*. 26 (3). pp. 333–49.

10. Intuitively, that means that if an observed piece of evidence has a higher chance of being observed if theory T holds true (sensitivity), than if theory T does not (type I error), that will strengthen the theory. If the opposite is true, and the evidence has a higher chance of being observed if the theory does not hold, compared with if the theory holds, observation of that evidence will weaken the theory. Finally, if the evidence has a similar chance of being observed whether the theory holds true or not (sensitivity is roughly the same as type I error), observing it will not significantly alter our confidence in the theory.

Figure A6: The Confusion Matrix

		Theory (ontological reality)		
		The theory is TRUE	**The theory is FALSE**	
Empirical observation O leading us to believe that the theory is true (observable reality)	**Evidence (O) is OBSERVED**	True Positive (TP)	False Positive (FP)	**Positive Predictive Value** = TP / (TP + FP)
	Evidence (O) is NOT OBSERVED	False Negative (FN)	True Negative (TN)	False omission rate = FN / (FN + TN)
		True positives rate (TPR) = **Sensitivity** = 1 – Type II error = TP / (TP + FN)	False positives rate (FPR) = 1 – Specificity = **Type I error** = FP / (FP + TN)	**Likelihood ratio** = TPR / FPR = Sensitivity / Type I error
		False negatives rate (FNR) = **Type II error** = 1 – Sensitivity = FN / (TP + FN)	True negatives rate (TNR) = **Specificity** = 1 – Type I error = TN / (FP + TN)	

Source: Adapted from B. Befani. 2021. *Credible Explanations of Development Outcomes: Improving Quality and Rigour with Bayesian Theory-Based Evaluation*. EBA Report 2021:03

11. In Bayesian confidence updating, different pieces of evidence have different values of sensitivity and specificity (which is the opposite of the type I error: the true negatives rate, or the probability of not

[10] B. Befani, S. D'Errico, F. Booker, and A. Giuliani. 2016. Clearing the Fog: New Tools for Improving the Credibility of Impact Claims. *IIED Briefing*. London: International Institute for Environment and Development.

observing a piece of evidence E if the theory T is false). That implies that they have different likelihood ratios, where the likelihood ratio is defined as the ratio between sensitivity and type I error and is a measure of the probative value of a piece of evidence for a certain theory. Different likelihood ratios thus mean different abilities to alter the evaluator's initial confidence in the contribution claim. The evaluator is thus forced to be transparent about their assumptions affecting confidence that the claim is true, and to "declare" its observable implications. If the claim holds true—or does not—what should I expect to observe? With what probability? Making those assumptions—mostly left out or at best left implicit with other methods—transparent means making them open to scrutiny. If they are not challenged, that will increase their legitimacy and credibility. Bayesian updating potentially presents additional challenges when dealing with multiple pieces of evidence; for example, when aggregating single observations into an evidence package. Rules and possibilities are different depending on whether the observations are stochastically independent or not, or to what degree. When it can be argued that multiple pieces of evidence are stochastically independent, a quick and straightforward method of aggregation is available (which we have sometimes used in the evaluation). It entails (i) multiplying the sensitivity values of each piece of evidence included in the package to obtain the sensitivity value of the entire package, and (ii) multiplying the type I error values of each piece of evidence included in the package to obtain the type I error value of the entire package. When we analyzed multiple pieces of evidence for the same claim or subclaim, and we could defend the assumption of their stochastic independence, we used the values obtained in that way to update our confidence in the claim on the basis, not just of one piece of evidence, but of an evidence package. Further suggestions on how to deal with multiple pieces of evidence (including when the assumption of independence does not hold) are included in the evaluation academic literature.[11]

C. Applying Contribution Tracing to the CAREC Evaluation

12. For the CAREC evaluation, the answers to the key evaluation questions were formulated in terms of contribution claims. Initially broad, the claims were articulated into sets of specific statements: for example, articulating the details of processes that CAREC had engaged in to make the claims "testable" with empirical evidence, which is usually the first step of contribution tracing. Initially, the first subclaims were grounded on preliminary knowledge gathered during desk reviews. In the second phase, data collection was designed, keeping in mind what kind of evidence could strengthen or weaken the specific claims, then conducted, usually the second step foreseen in applying the methodology. Data from interviews were then added to the evidence base and used to test the claims developed in the previous phase.

13. Eventually, the available data from all the sources (desk reviews, data sets, interviews) were assembled and rigorously associated with higher-level claims, after which they were assessed in terms of the extent to which the evidence supported the higher-level claims (fourth phase). Each claim was associated with specific pieces of evidence, and Bayesian updating was applied by estimating the sensitivity and type I error of each piece of evidence for a subclaim, with multiple pieces of evidence being aggregated when needed. The prior confidence in every claim was set at 0.5 in order not to bias the final estimate, and the posterior confidence for each claim was calculated using the Bayes formula.

14. In summary, the four application phases can be synthesized as below:

(i) developing specific, testable claims from broader contribution claims;
(ii) designing data collection and envisioning ideal evidence to strengthen or weaken the claims;
(iii) collecting data and organizing the evidence base in neat packages, rigorously associated with claims and subclaims; and

[11] B. Befani. 2020b. Diagnostic Evaluation and Bayesian Updating: Practical Solutions to Common Problems. *Evaluation*. 26 (4). pp. 499–515.

(iv) estimating Bayes formula values for the different pieces and/or evidence as associated with each claim, thus updating prior levels of confidence into posterior (post-observation) levels of confidence in the various claims and subclaims.

15. After the phases were completed and draft estimates of confidence levels available, the evaluation team reviewed them together with researchers with substantive expertise in the cases.

D. Main Findings from the Case Studies

16. The section reports on the main findings from the three case studies analyzed with the methodology, outlining the main supported claims and the confidence we have in their validity. The tables include the key pieces of evidence used in testing the higher-level claims and the associated values that were estimated for the Bayes formula.

1. First Case Study: Propagating Renewable Energy and Clean Technologies

17. **Overarching claim.** ADB's support for the CAREC energy program, including through the energy sector coordination committee, has helped propagate renewable energy and clean technologies in the CAREC member countries and informed the formulation of their national energy policies to reduce greenhouse gas emissions and mitigate climate change (overall confidence 99.8%, practical certainty that it is true).

Table A6.1: Propagating Renewable Energy and Clean Technologies: Contribution-Tracing Assessment of Evidence

Independent Pieces of Evidence		Values of Sensitivity, Type I Error, and Posterior Confidence in the Claim
Strategy	**Evidence 1.1.** ADB facilitated and supported the Energy Ministers' dialogue in September 2019, which endorsed CAREC Energy Strategy 2030 and strengthened CAREC member countries' commitment to embrace renewable energy and clean technologies to mitigate climate change.	S 0.60, T1E 0.50, Post 0.55[a]
	Evidence 1.2. ADB helped formulate CAREC Energy Strategy 2030, which calls for greening the energy systems of CAREC member countries and increasing the provision of a global and/or regional public good.	S 0.50, T1E 0.10, Post 0.83
Platform	**Evidence 2.1.** ADB supported the preparation of a detailed concept note on the Green Energy Alliance, an online platform intended to provide end-to-end solutions for renewable energy and clean technology projects across all CAREC member countries and to create robust green project pipelines. The alliance will forge interaction among governments (policy makers), regulators, state-owned enterprises, financial institutions, developers, investors, and other private businesses and interested parties from within and beyond CAREC all year round. The platform's design and functionality consider learnings from other platforms, many of which focus on facilitating investment in clean and green projects either in a specific region (e.g., Europe) or in more than one region (e.g., all developing countries). The alliance will be operationalized after it is endorsed by the Ministerial Conference (it has already been endorsed by the ESCC and the Senior Officials' Meeting).	S 0.70, T1E 0.10, Post 0.87
	Evidence 2.2: Since 2016, ADB has organized five Energy Investment Forums to encourage private participation in renewable energy, energy efficiency, and clean energy projects. Each forum event has been attended by most (if not all) CAREC	S 0.50, T1E 0.45, Post 0.53

Independent Pieces of Evidence		Values of Sensitivity, Type I Error, and Posterior Confidence in the Claim
	member country governments and other stakeholders, which have indicated their priorities for various types of clean and green projects. However, being 1- or 2-day events, the forums have facilitated only limited interaction among governments, financiers, and other parties. Follow-up interactions have been the exception rather than the rule	
Targeted support	**Evidence 3.1.** ADB funded a study that simulates the behavior of interconnected power systems in absorbing more renewable energy. The study shows that more renewable energy can be installed and operated in interconnected power systems. In that way, ADB is enabling CAREC's power grids to integrate increasing levels of renewable energy capacity (mostly solar and wind). Increasing renewable energy penetration—a prime option to mitigate climate change—is challenging because generation from solar and wind energy installations is intermittent and non-dispatchable while consumers are accustomed to reliable and stable electricity supply, which needs electricity output to match electricity demand every hour and minute of the day all year round. To help smartly manage intermittence, ADB support has focused on (i) increasing reserve capacity in the system that can be called into service at short notice; and (ii) increasing the "balancing area" of the grid, i.e., increasing interconnections between neighboring electricity grids so that one electricity grid can help overcome shortages in another	S 0.50, T1E 0.10, Post 0.83
	Evidence 3.2. An ADB-supported TA project helped change the mindset on renewable energy and clean technologies in some CAREC member countries and raise the priority accorded to mitigating climate change through a series of workshops. The TA focused on four technologies that the ESCC envisioned would change the energy landscape in CAREC member countries (solar power, electric vehicles, energy efficiency, and battery-based electricity storage), and which the ESCC envisioned would lead to disruptive changes in the foreseeable future and help mitigate climate change. The TA supported the preparation of a high-technology road map that provides opportunities and trends for the technologies, a case for investing in the technologies, as well as policy considerations and possible policy actions required to increase their penetration. Solar kits comprising solar panels, energy-efficient appliances, and electricity storage batteries were demonstrated in three CAREC member countries as part of another TA project. Another TA project focused on city energy efficiency initiatives in three countries.	S 0.50, T1E 0.40, Post 0.56
Policy	The learnings from various forums and discussions organized through the various TA projects have been followed by changes in the NDCs of many CAREC member countries, which have added ambitious goals for greening their national economies, mitigating climate change, and improving their clean energy policies. For example, Mongolia updated its NDC in October 2020, Georgia in May 2021, and the People's Republic of China and three Central Asia Power System countries (Kazakhstan, Tajikistan, and Uzbekistan) in October 2021. Interviews conducted by the evaluation team revealed that some governments have been developing policies to promote clean technologies. For example, Uzbekistan intends to install solar panels in about 35,000 buildings by 2024, has set up a fund to support energy efficiency projects,	S 0.80, T1E 0.45, Post 0.64

Independent Pieces of Evidence		Values of Sensitivity, Type I Error, and Posterior Confidence in the Claim
	and wants to develop a mechanism to facilitate energy efficiency investments. Georgia is developing an integrated energy and climate change mitigation strategy, and would like to develop hydro, solar, and wind projects. Several other CAREC member countries indicated that ADB CAREC support was highly useful, helped them learn from best practices, and informed their policy formulation	

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation, ESCC = energy sector coordination committee, NDC = nationally determined contribution, Post = posterior confidence, S = sensitivity, T1E = type I error, TA = technical assistance.
[a] From a prior of 0.5.
Source: IED.

2. Second Case Study: Transport Connectivity

18. **Overarching claim**. ADB support for the CAREC Program has made significant progress in helping improve regional transport connectivity (overall confidence 95%, high confidence that it is true).

Table A6.2: Improving Regional Transport Connectivity: Contribution-Tracing Assessment of Evidence

Independent Pieces of Evidence		Values of Sensitivity, Type I Error, and Posterior Confidence in the Claim[a]
Road priority segments along CAREC corridors	**Evidence 1.1.** ADB-supported CAREC transport projects comprised priority roadway segments along the six CAREC corridors, which the corridors were identified based on, among others, the capacity to increase connectivity between economic and population centers.	S 0.90, T1E 0.50, Post 64%
	Evidence 1.2. The physical output targets established for CAREC transport-related strategies covering investments in roads were met (or exceeded) through ADB-supported projects, which made up about half of all projects during the evaluation period.	S 0.90, T1E 0.30 Post 75%
Border-crossing points in CAREC corridors	**Evidence 2.1.** ADB's support to improve border-crossing points was limited in the number of projects and, in most cases, separate from road infrastructure and lacking support to improve processes, procedures, and policies at border crossings.	S 0.40 T1E 0.60 Post 40%
Capacity building and knowledge sharing	**Evidence 3.1.** With ADB's support, the CAREC transport strategies recognized the need to strengthen the sustainability of transport investments and to ensure the safety of transport users. ADB supported capacity building and knowledge sharing but the knowledge has not yet been fully translated into country policies.	S 0.80 T1E 0.40 Post 67%
Traffic flow along individual CAREC project roadways	**Evidence 4.1.** ADB's support for individual CAREC transport investment projects was followed by increased traffic flows along project roadways, but no regional monitoring system of traffic flow for the CAREC corridor network exists.	S 0.95 T1E 0.50 Post 66%
Cross-border flow of goods and services in the CAREC subregion	**Evidence 5.1.** While no data are available on cross-border traffic volumes for all border-crossing points, the growth of the CAREC subregion's nonfuel trade volumes indicated that cross-border flows of goods and services likely increased during the evaluation period.	S 0.75 T1E 0.55 Post 58%

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation, Post = posterior confidence, S = sensitivity, T1E = type I error.
[a] From a prior of 0.5.
Source: IED.

3. Third Case Study: Contribution of Transport Sector Support to Competitiveness

19. **Overarching claim.** ADB's transport sector support for the CAREC Program significantly contributed to increasing regional competitiveness of member countries (overall confidence 25%, cautious confidence that it is false; it is much more likely the contribution was modest).

Table A6.3: Transport Sector Support to Competitiveness: Contribution-Tracing Assessment of Evidence

Independent Pieces of Evidence		Values of Sensitivity, Type I Error, and Posterior Confidence in the Claim[a]
Vehicle operating cost reduction, passenger time savings	**Evidence 1.** Most ADB-supported individual CAREC transport projects assessed during the evaluation period met their targets of reducing vehicle operating cost and saving passenger time expected from the investments.	S 0.75 T1E 0.50 Post 60%
Changes in NTL	**Evidence 2.** Data on changes in NTL show that it grew more after than before project completion along the three ADB-supported roadway segments along the CAREC corridors in Uzbekistan, Kazakhstan, and Tajikistan, and more than in other comparable districts.	S 0.50 T1E 0.30 Post 62%
Trade facilitation	**Evidence 3.** ADB provided limited and fragmented support in trade facilitation during the evaluation period. (Data from the CAREC Program's Corridor Performance Measurement and Monitoring system indicate that, in that period, border-crossing time and costs significantly impeded the subregion's business and investment environment and saw limited improvement.)	S 0.35 T1E 0.50 Post 41%
Focus on national regulations	**Evidence 4.** ADB's support for the CAREC Program did not strongly focus on promoting adjustment to national regulations, which would have lessened nontariff barriers to domestic and international cargo markets.	S 0.35 T1E 0.50 Post 41%
Rank in major competitiveness indexes	**Evidence 5.** More than half the CAREC member countries are ranked in the lower half of the logistics performance index and GCI rankings, without much improvement during the evaluation period.	S 0.40 T1E 0.60 Post 40%
Infrastructure is only one of many factors affecting competitiveness.	**Evidence 6.** The CAREC subregion's competitiveness moderately improved in 2011–2019 based on the GCI's assessment. However, infrastructure was only one of the multiple factors that contributed to the moderate increase in the average value of GCI in 2011–2019. Technology readiness and information and communication technology adoption, innovation and business dynamism, higher education and training, and institutions, among others, contributed significantly to improved GCI value.	S 0.20 T1E 0.50 Post 29%

ADB = Asian Development Bank, CAREC = Central Asia Regional Economic Cooperation, GCI = Global Competitiveness Index, NTL = nighttime light, Post = posterior confidence, S = sensitivity, T1E = type I error.
[a] From a prior of 0.5.
Source: IED