# POST-PANDEMIC FRAMEWORK FOR A GREEN, SUSTAINABLE AND INCLUSIVE RECOVERY

## BACKGROUND REPORT

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CAREC INSTITUTE

# Post-Pandemic Framework for a Green, Sustainable and Inclusive Recovery

Background report

4 November 2022

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Central Asia Regional Economic Cooperation (CAREC) Institute
No. 376 Nanchang Road, Urumqi, Xinjiang, the PRC
f: +86-991-8891151

km@carecinstitute.org
www.carecinstitute.org

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## Abbreviations

| | |
|---|---|
| CAREC | Central Asia Regional Economic Cooperation |
| COVID-19 | Coronavirus disease |
| CPI | Consumer Price Index |
| GDP | Gross Domestic Product |
| H1 | First Half (financial or calendar year) |
| H2 | Second Half (financial or calendar year) |
| IMF | International Monetary Fund |
| PRC | People's Republic of China |
| Q1 | First quarter |
| Q2 | Second quarter |
| Q3 | Third quarter |
| Q4 | Fourth quarter |
| r.h.s. | right hand side |
| sa | seasonally adjusted |
| TVET | Technical and vocational education and training |
| WHO | World Health Organization |
| yoy | year-on-year |

# Introduction

The CAREC region, as well as the world around it, faces a plethora of arduous challenges—the ominous outcome of an unusual and unanticipated frequency of black swan events. While a trade war among the major economies was casting a shadow on global economic prospects in 2018, the COVID-19 pandemic wreaked havoc, leaving behind a trail of human tragedy, and widespread economic losses had a disproportionate impact on already marginalized population groups, overburdened health systems, yawning fiscal gaps owing to massive response packages, rising debt levels, the fragmentation of global and regional value chains, and skyrocketing shipping costs. Science delivered on its promise, developing and delivering vaccines in record time. The pandemic receded, and a quick economic recovery was afoot in 2021. But 2022 witnessed another rare and major geopolitical conflict in Europe which gave another rude shock to the world by compounding the structural damages to the global economy caused by the pandemic. Global energy prices skyrocketed, as did the prices of other commodities. Global food prices reached unprecedented levels, heightening food insecurity and aggravating current account deficits for net food importers. Developed countries scrambled to secure their energy supplies and food requirements while containing inflation through monetary policies that further complicated issues for developing countries, which faced widening current account deficits with shrinking windows for borrowing. A global product super cycle is also further aggravating poverty indicators more profoundly owing to food and fuel prices. This can be a recipe for macro-economic disruption, especially in a high debt environment, and can also lead to political and social upheaval. While these urgent matters grab most of the headline attention, the climate agenda remains an overarching challenge as most countries find it increasingly difficult to achieve sustainability goals.

The situation outlined above presents an extremely complex and challenging environment for policy makers in CAREC countries. Achieving a growth trajectory within a supportive macro-economic framework in an environmentally sustainable way, with due consideration for distribution supporting equitable human development, is a defining challenge for public policy makers today. Luckily, there are bright spots on an otherwise bleak horizon. Digitalization is a newfound tool with virtually limitless applications in governance, business, productivity, trade, finance, healthcare, and education, to name a few. It can serve as a great equalizer, transforming traditional structures to new versions that are more productive, efficient, transparent, and equitable. Regional cooperation can help achieve these objectives through programs like CAREC with its sector strategies helping countries identify gaps and prepare policies to fill the same. For climate as well, regional approaches can be a great help for delivering on intended nationally determined contributions, while effectively implementing adoption and mitigation strategies.

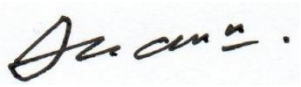
Against this backdrop, this report was conceived as a background document to help CAREC member countries grasp the latest data and trends, which can be useful in shaping national policy and redefining and reprioritizing regional approaches for economic recovery that is consistent with climate objectives, that is sustainable in the long term, and that mainstreams inclusiveness for a fair distribution of economic

gains. This work draws primarily upon various research projects by the CAREC Institute over the last few years and attempts to build a consistent narrative of background policy research while calling on the CAREC community to focus on issues of green, sustainable, and inclusive development to the benefit of all CAREC members. I hope policy makers in the CAREC countries will find these ideas useful and applicable.

I acknowledge the work done by the CI Researchers Dr Iskandar Abdullayev, Dr Qaisar Abbas, Khalid Umar, Dr Eisa Khan Ayoob Ayoobi, Dr Ghulam Samad, Shakhboz Akhmedov, Rovshan Mahmudov, and Rick Yu for their work which served as background material for this project; and especially Dr Hans Holzhacker, Chief Economist at the CAREC Institute who synthesized different research products into a systematic theme and narrative which is consistent in key messages. I acknowledge also the editing done by Xin Lei, Dr Ilhom Abdulloev, and Chen Long from CI Knowledge Management.

Finally, I would like to emphasize that this work is intended to be a call to attention for policy makers and development partners with interest in the development process in the region for turning these challenges into opportunities by directing public policy initiatives towards green, sustainable, and equitable growth.

The CAREC Institute, for its part, stands committed to prioritizing the ideas and objectives outlined in this framework and to develop supporting research and capacity building products based on the interest and demand of member countries.



**Syed Shakeel Shah**
**Director of the CAREC Institute**

# Executive summary

***While the CAREC region has by and large overcome the worst obstacles for economic growth posed by the COVID-19 pandemic, new challenges loom. A set of policies is needed that strengthen the resilience against new shocks, accelerates technological change, fosters the development of human capital, and further intensifies trade that allows the CAREC region to realize its comparative advantages.***

***The CAREC region is among the most vulnerable areas worldwide to climate change and natural disasters. Food security and protection against disasters have gained utmost importance for the region. More generally, policies, regulations, and initiatives that support the CAREC region's green transition and adaptation to climate change must be given highest priority. Sustainable agriculture and the energy transition will be key areas for structural change.***

***To allow smooth transition to new productions and services and not to leave any group of population during the imminent big socio-economic changes without adequate support, inclusiveness must be mainstreamed. Social discrimination, where it still exists needs to be overcome, education needs to be further improved, health systems and pandemic prevention need to be further propped up.***

***Regional cooperation will be essential for coping with the challenges of the coming years and must be further enhanced to achieve the required economies of scale and scope. Development Partners have to play a crucial role for facilitating the CAREC region's way to prosperity and further expediting progress towards reaching the sustainable Development Goals. As the CAREC vision has put it: "Good Neighbors, Good Partners, and Good Prospects."***

### The economic impact of COVID-19 is largely overcome, but new challenges loom

**The reacceleration of GDP growth after the sharp slowdown in 2020 caused by the COVID-19 pandemic allowed real GDP to exceed 2019 levels in 2021 in almost all CAREC economies.** Some services sectors that were strongly impacted by the pandemic continued to suffer setbacks, and agriculture and mining showed a mixed picture. A large proportion of small and micro businesses were negatively affected by the COVID-19 pandemic. Nevertheless, growth in most services and in manufacturing was generally solid in the second half of 2021.

**However, 2022 brought serious new challenges.** New virus variants evolved and pose new risks if not contained. Geopolitical tensions risk fragmenting the global geo-economic space and creating setbacks for international trade. Surging energy and food prices raise the specter of a dramatic escalation in global poverty and could result in global stagflation. CAREC economies are not immune to these developments; both exports and imports are affected, and price increases eat into real incomes and livelihoods.

**Amidst the challenging backdrop of rising inflation, weaker growth and higher public debt, there is now less room for maneuvering in the economic policy space**. In response to the pandemic, elevated government spending in support of households and businesses prevented deeper and longer recessions and helped ease hardship for the most vulnerable parts of the population. However, public debt ratios have risen as a result in most CAREC economies. Fiscal policies need to be very well targeted now to

remain efficient and sustainable while helping to provide high quality public goods and social protection. Monetary policies were loosened during the pandemic and prudential banking regulations were partially eased or postponed. These are retightened now to counter inflation and exchange rate pressures and must walk the tight rope between sufficient flexibility to allow for appropriate financing of the economy while preserving financial stability.

### A fresh set of policies for a productivity push is required

**During past decades strong growth allowed the CAREC region to substantially narrow the national income gap to developed economies, but progress has slowed, and new sources of productivity need to be found**. To integrate CAREC economies deeper into global and regional value chains and make them at the same time more self-reliant and more resilient against external shocks, products and services need to be better diversified. The transition to new types of production and services, digitalization in its various aspects, the energy transition, new approaches to agriculture, all open new opportunities for the region but also require new business approaches and forward-looking policies for industrial development. Governments need to provide the necessary infrastructure and regulations and support the acquisition of required qualifications via education and training.

**A major source for productivity growth, sustainability, and green transition is digitalization and more generally innovation and advanced technologies**. They are also crucial prerequisites for ensuring successful participation in global and regional value chains, diversifying, and meeting decarbonization challenges. Digitalization and innovation not only increase productivity but can make societies more resilient as COVID-19 has shown and can provide services that were not possible without them. Digitalization can improve healthcare by offering e-medicine for remote regions. The availability of digitalized real-time and historical climate data supports climate research and forecasting extreme weather events and climate action for achieving ecological sustainability. However, digitalization, innovation, and frontier technologies are effective forces for development but also pose risks. To make them maximally beneficial for all they must be accompanied by reforms in complementary areas such as regulation, education and training, social protection, and active labor market policies.

**Foreign trade and foreign direct investment are crucial for increasing productivity and securing needed products and services**. The CAREC region has made significant progress in upgrading cross-border connectivity and facilitating cross-border trade in recent decades, including within the ambit of the CAREC program and other international initiatives. However, bottlenecks remain; the soft infrastructure in particular needs further upgrading. Trade costs need to be further reduced and services trade and e-commerce further developed. Geopolitical tensions and the resulting threat of geo-economic fragmentations require the strengthening of supply chain resilience and the diversification of trading partners and transportation routes. Intra-CAREC trade and investment needs to be further developed along with making better use of international initiatives such as the Belt and Road initiative or the EU's Global Gateway initiative.

### Adaptation to climate change, safeguarding food security, energy transition are all highly urgent

**Among all the imminent challenges, climate change is an especially severe and urgent one.** The world is highly off-track to limit global warming to the Paris Agreement target of 1.5°C. The CAREC region is among the areas most strongly affected by climate change. Some of the CAREC economies are large greenhouse gas (GHG) emitters. For some, exports will be strongly impacted by global decarbonization efforts, at least in the longer run. All CAREC members have submitted their intended nationally determined contributions (NDCs) for the reduction of GHG emissions. Adjusting economic paradigms to balance the vision of growth and development with climate imperatives has assumed centrality on the global agenda, and CAREC economies too must further develop their strategies in support of climate actions.

**The CAREC region's agriculture sector will have to undergo fundamental structural changes to address the challenges of climate change and global warming.** Climate change is severely impacting the CAREC region's agriculture, which still accounts for a substantial share of the region's production and for an even a higher share of employment. And agriculture is key for food security. To address these challenges, breakthroughs in water and land productivities and the diversification of agricultural production are required. These changes in agriculture may have serious social consequences for rural populations and must be accompanied by well-informed and drafted government programs that take the multitude of challenges and stakeholders into account to make the transition as beneficial and as smooth as possible.

**As with agriculture, the region's energy sector needs to undergo deep transformation to cope with the realities of climate change and global warming.** While measures to increase energy efficiency will remain key, the CAREC economies will also have to meet additional energy demand. In particular, demand for electricity will increase because of more e-mobility, digitalization, and substitution for fossil fuels. Green hydrogen will probably also rise in importance. At the same time, the CAREC region is strongly dependent on fossil fuel, including coal, for the generation of electricity and heat and is in dire need of transitioning to alternative sources to reduce GHG emissions and pollution. Upgrading the power sector requires a broad range of measures from reorganizing the company structure of the sector to attracting more investment in transmission lines, the transition to a new power mix for an enhanced share of renewables, to new financing tools, tariff setting, and regulation.

### Inclusiveness: not only just, but also a core requirement for smooth socio-economic change

**Inclusive growth, reduced inequality, adequate social safety nets and improvements in human capital will be key for a successful economic transition.** Inclusiveness, more equality, and social protection are not only socially just and desirable, but also a crucial precondition for developing the internal market, increasing productivity, diversifying the economy, and for allowing the imminent deep technological and socioeconomic transition process to unfold relatively smoothly and without heightened social tensions. Policies to mitigate potentially adverse impacts on vulnerable parts of the population, education, healthcare, gender equality, and social protection must be core themes of government transition programs.

**The CAREC economies have made great progress in poverty reduction and welfare improvement in the past decades, but COVID-19 and elevated inflation endanger these achievements**. The proportion of the

population living below the international 'middle' poverty line of US$3.2 per day was below 5 percent in 2018 to 2019 for all CAREC economies except Pakistan and Afghanistan. The percentage of the population living below the international 'extreme' poverty line of US$1.9 per day was only about half of this. However, with COVID-19 sweeping the globe since 2020, poverty reduction has slowed or reverted. Inflation, especially higher food prices, makes affording purchases for daily needs a hard task for a growing part of the population. Renewing poverty reduction is an urgent but not an easy task that requires a complex set of social protection measures along with decent employment opportunities, social integration, robust social protection programs, and a favorable environment.

**Most CAREC countries do comparably well in several categories of social protection but have substantial need for improvement in others**. Measured by the share of the population protected, on average the CAREC economies perform slightly better than the world in most categories. Six out of ten CAREC economies with data availability cover a larger share of their populations with at least one social protection benefit than the world does on average. However, CAREC economies do worse protecting mothers with newborns and with regard to unemployment benefits and universal health coverage. More active labor market policies and public support for the reskilling and job searches of workers could help the unemployed. Moreover, some CAREC countries fall below the international average in the coverage of their population through such programs and may have to prop up their development. Empowering labor in compensation negotiations and corporate decision making is another essential ingredient for a more equitable society.

**Migrant and day workers need better consideration of their specific needs.** Migrant workers should be subject to the same minimum wages as their native counterparts and receive equal social protection such as health care and social security. Through cooperation of sending and receiving countries, sending countries can manage the worker-recruitment process in a transparent manner, including job orders and fees involved. Receiving countries, can benefit from better job matching of migrant workers and see a decline in irregular migration owing to lower recruitment cost

**As in other parts of the world, there was already a significant gender equality gap in the CAREC region before 2020, and the COVID-19 pandemic has aggravated the issue in many respects, beginning with female workforce participation, to schooling, and to domestic violence**. The scarring from the pandemic is deeper and longer lasting for women than for men. A substantial gender pay gap has persisted for many years. A whole range of policies and measures are needed to enhance gender equality—among them, regulations and implementation controls that ensure goods are produced under safe working conditions, free from harassment, and with equal pay for equal work; zero tolerance policies to reduce the risk of gender discrimination, sexual exploitation, and the harassment of women and girls; helping women to gain skills by scholarships and other incentives that prepare them for jobs in science, technology, engineering, and mathematics. Supporting women's entrepreneurship is another important field for reducing gender inequality and securing employment and independent income for women. Gender inequality needs to be addressed on many levels, most importantly also by the empowerment of women in the public sector through political representation.

**Progress has also been made in education, but issues remain, especially for technical and vocational education and training (TVET), and technical higher education**. Some CAREC countries do not differ very

much from developed economies in terms of average years of schooling; however, Pakistan and Afghanistan are far off. Female access to at least some secondary education is generally not much below male access except for Afghanistan and Pakistan. However, the Programme for International Student Assessment (PISA) rankings—except the ones for the PRC—indicate that most of the CAREC countries still must catch up quite substantially in terms of education quality. To ensure better and more equal access to education for rural and other disadvantaged areas and students and to make education more resilient against events such as the COVID-19 pandemic, the digital infrastructure and access and online teaching methods and materials must be improved. Some CAREC countries have rather low higher education attainment rates, and much more so for students from poor households. Women's attainment lags significantly behind men's for studies above a bachelor's degree. TVET and technical higher education are crucial for raising productivity and delivering proper services for digitalization, decarbonization, and greening, and they need upgrading and more funding. The CAREC countries should further intensify mutual support in the field of education. Academic cooperation and student exchanges are on the rise globally and in the CAREC region and should be even more widespread.

**Healthcare systems and societies at large need to be better prepared for pandemic outbreaks as serious health threats remain.** New Sars-Cov-2 variants continue to emerge, and a range of other communicable diseases continue to endanger the region. More investment in health facilities and infrastructure, including by engaging the private sector, is desirable to upgrade health systems and make them more resilient against surges in demand. Innovative digital technologies and solutions in support of health information systems, data management, and knowledge sharing will all be essential for better healthcare. Health services for migrants, border communities, and vulnerable groups should be enhanced, and the specific needs of women better met. However, improving healthcare systems alone is insufficient to efficiently counter pandemic outbreaks; strong political resolve, skilled governance, and decent preparation are also required. Properly organized containment measures are key, and even more so successfully conducted vaccination campaigns based on well-conveyed information and on time secured vaccines and vaccination facilities. Regional cooperation should be advanced to establish harmonized standards and regulatory mechanisms for efficient procurement and mutual help in case of insufficient health system capacities.

### Regional cooperation needs a further push, over and above by CAREC program activities

**Regional cooperation, economic integration, the exchange of views and ideas, and learning from each other are all crucial ingredients for moving ahead successfully to fully utilize the CAREC region's opportunities**. The CAREC region's societies and governments are confronted with a complex network of new challenges and opportunities and must react on multiple fronts. New technologies and the reorganization of global value chains, accelerating digitalization, and better connectivity all open new chances for the CAREC economies. However, business activities and investment often require economies of scale to be successful and efficient; strengthening cooperation and integration among the CAREC economies and coordinating development programs can provide such economies of scale.

*Regional cooperation is the core mandate of the CAREC initiative –the cooperation among CAREC members should become even closer in coming years. In recent years new collaboration initiatives among CAREC members have been launched, and high-level consultations and meetings in various formats have taken*

*place. Such initiatives could become even more frequent and far-reaching, and cooperation through channels that have been successfully established, specific institutions, procedures, and platforms for cross-country cooperation could and should be further advanced. In support, mainstreaming strategies developed under the CAREC program, further activization, strengthening and country ownership of CAREC expert groups can augment the cooperation and integration process in the region.*

## Post-Pandemic Framework for a Green, Sustainable and Inclusive Recovery

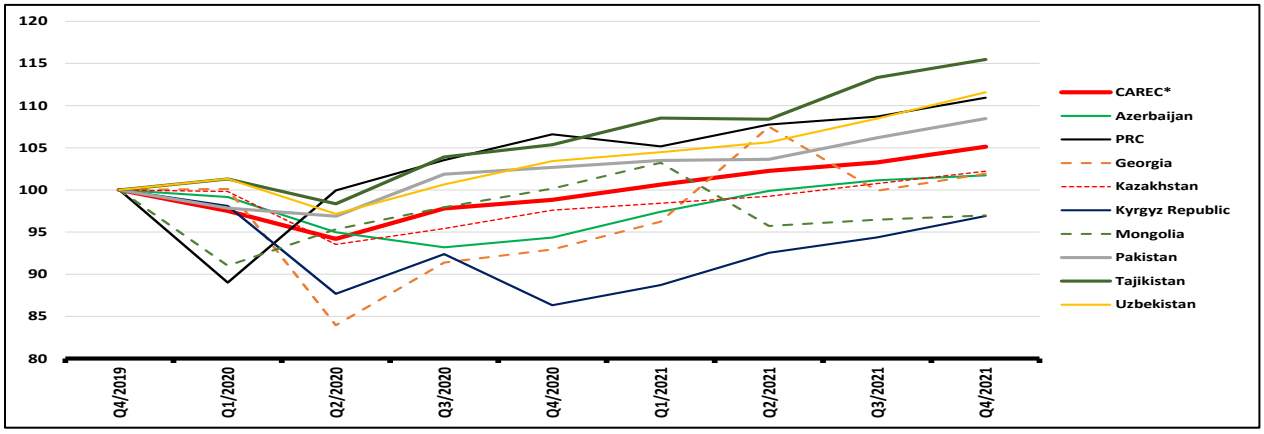
This report serves as background material for a resolution to be adopted at the CAREC Ministerial Conference on 24 November 2022. The purpose of the resolution and the report is to provide a thematic framework for CAREC research, capacity building, and program initiatives in the coming few years based on the CAREC Strategy 2030 and recent developments. The report elaborates on four main topics that will be central to the imminent socioeconomic change in the CAREC region in the coming years: economic recovery, growth and productivity, greening and sustainability, inclusion and human capital, and regional cooperation. The report was written by the CAREC Institute based on the institute's own work and on consultation with stakeholders from the CAREC region. The report was reviewed by members of the CAREC Institute's Advisory Council, representatives of CAREC member countries, and other external reviewers, mostly from CAREC Development Partners.

# 1. COVID-19 recession largely overcome but new threats loom

*The CAREC region by and large outgrew the COVID-19 induced slump in GDP by the end of 2021, but questions remain about the solidity and shape of the recovery.*

**Most CAREC economies outgrew the COVID-19 recession in 2021.** Decent growth in the second half of 2021 allowed most CAREC economies to exceed 2019 real GDP levels by late 2021 (Figure 1). In particular, growth in manufacturing and services was solid; in agriculture and mining it was more mixed (Figure 2). Within services there were also differences: hospitality, especially, remained below 2019 levels (Figure 3). Preliminary data for 2021 shows that fixed capital formation has recovered less well than other components of GDP. However, all in all the CAREC region had almost overcome the COVID-19 contraction by late 2021 notwithstanding some volatility, remaining scars, and varying progress for different groups of the population.

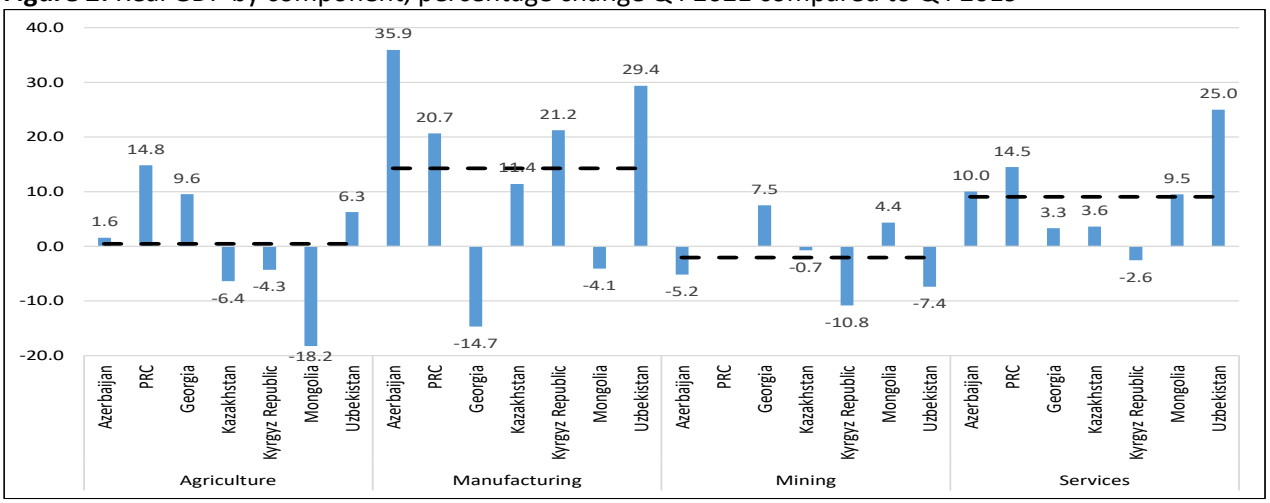
**Figure 1**: Real GDP, seasonally adjusted (Q4 2019 = 100)




*Refers to the simple average of CAREC economies where data is available

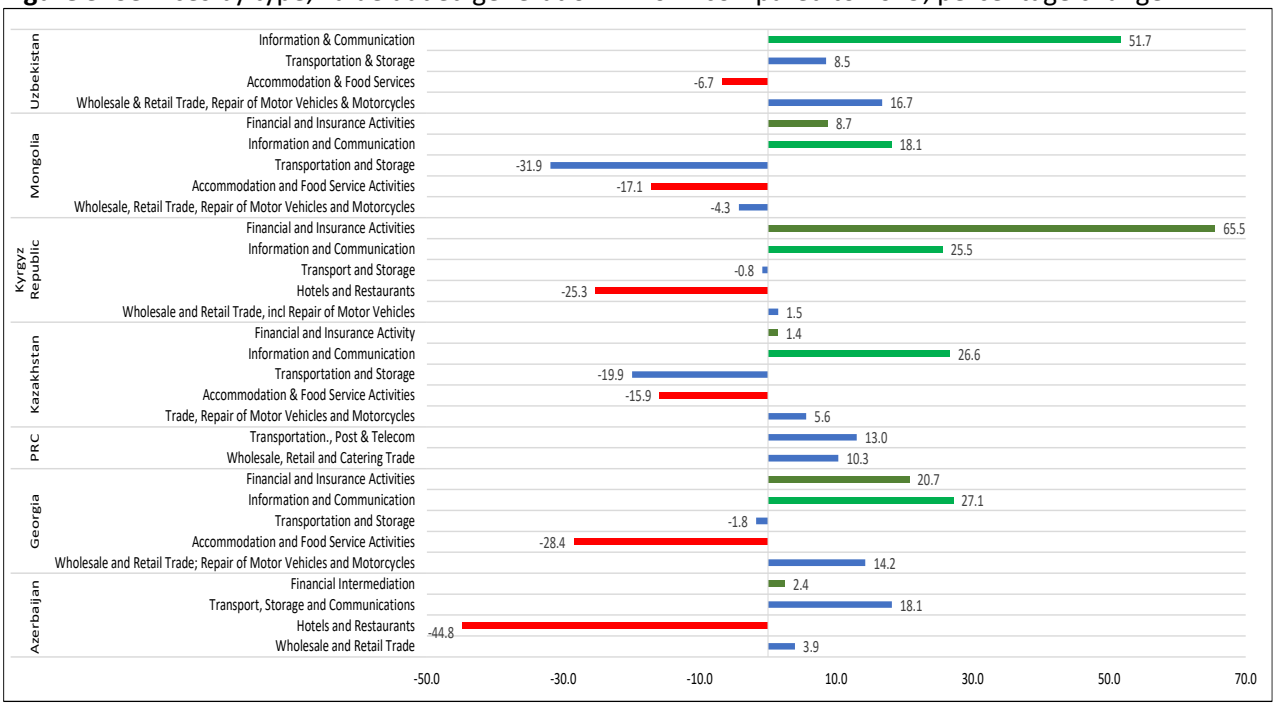
Source: CEIC, national statistical agencies, authors' calculations

**Figure 2:** Real GDP by component, percentage change Q4 2021 compared to Q4 2019




Source: CEIC, national statistical agencies, authors' calculations

**Figure 3**: Services by type, value added generation in 2021 compared to 2019, percentage change




Source: CEIC, national statistical agencies, authors' calculations

**Unfortunately, new adverse developments have been endangering the recovery since early 2022**. Societies and authorities of the CAREC members are confronted with new pandemic outbreaks, heightened geopolitical tensions with far-reaching economic impacts, accelerating inflation, and the resulting socioeconomic consequences such as the increase in poverty.

**New variants of the SARS-Cov-2 virus have emerged that could pose new risks not only to the populations' health but also to the economy if not contained.** Other communicable diseases such as monkey pox, tuberculosis, and viral hepatitis also remain serious threats. These are aggravated by growing antibiotics resistance and intensified global travelling. Although economic growth has become generally

relatively less correlated with Sars-Covid-2 infection rates, serious new outbreaks and new infectious diseases still cost more lives and cause prolonged health issues, can result in new lockdowns and have an adverse impact on the economic outlook.

**Small and micro enterprises have been especially hard hit by the COVID-19 pandemic and might still need some support**. A large number of micro, small, and medium-size enterprises (MSMEs) were exposed to supply chain disruption, reduction in sales, and cash flow problems, according to a CAREC Institute study.[1] Many MSMEs are engaged in trade and services, which, unlike manufacturing or agriculture, necessitate extensive interaction with the general population, thus it is unsurprising that many firms suffered. Around nine in ten firms across the four countries surveyed in the study reported that their businesses had suffered to various degrees, leading to temporary business closures for 60 percent of Georgian MSMEs, almost one-half of Pakistani and Kazakhstani MSMEs, and one-third of Uzbekistan's firms. Governments across the region came up with various support measures, including fiscal relief for firms. Among those firms that applied for government support, measures such as tax relief, concessionary loans, and other measures to support cash flow were most popular. But in general, the largest group of MSMEs did not receive or apply for any form of external support during the pandemic, government or otherwise.

**However, the pandemic also showed the importance of MSMEs for economic flexibility and resilience.** MSME employment held up significantly better than revenues. Despite declining revenues and the need to control costs, most surveyed firms did not choose to reduce staff. In Kazakhstan only 35 percent of MSMEs had not reduced their headcount by November 2020 compared to February 2020, but in the other countries of the study around three-quarters of MSMEs did not lay off permanent employees. But the flexibility and resilience came at a price: a much more significant impact was felt on employment conditions, such as wages and working hours. Many MSMEs did not survive, others don’t have sufficient working capital now. They might need help, also for diversifying supply chains, exploring new markets and online platforms, and developing more and better backward and forward integration into global and regional value chains. Technologically advanced SMEs need supporting environments conducive to their sustained development, such as technology parks and business incubators.

**The war in Ukraine, besides being a human tragedy, casts new shadows over the recovery both globally and in the CAREC region.** Elevated inflation rates brought about by supply chain disruptions, high energy prices, and wheat shortages undermine real incomes and household consumption. Recession in the Russian Federation and devastation in the Ukraine darken future export prospects for the CAREC economies and will in future negatively affect remittances. In the short term the conflict triggered large migration flows and further fueled inflation by elevating housing prices. Prices of goods imported from Russia were also on the rise. Increased uncertainty scares off already hesitant investment. It triggers capital outflows and amplifies balance of payment issues.

[1] The CAREC Institute together with ADB conducted a survey of 1,145 firms across Pakistan, Kazakhstan, Uzbekistan, and Georgia from December 2020 to January 2021. MSMEs are a highly important part of the CAREC economies and account for a substantial share of GDP, and even more so of employment. Across the four countries studied, MSMEs form 84 percent to 99 percent of all registered businesses and account for up to 60 percent of GDP, and three-quarters of employment. MSMEs probably play an even more significant economic role than official government figures suggest, given the large informal sectors in the countries studied.

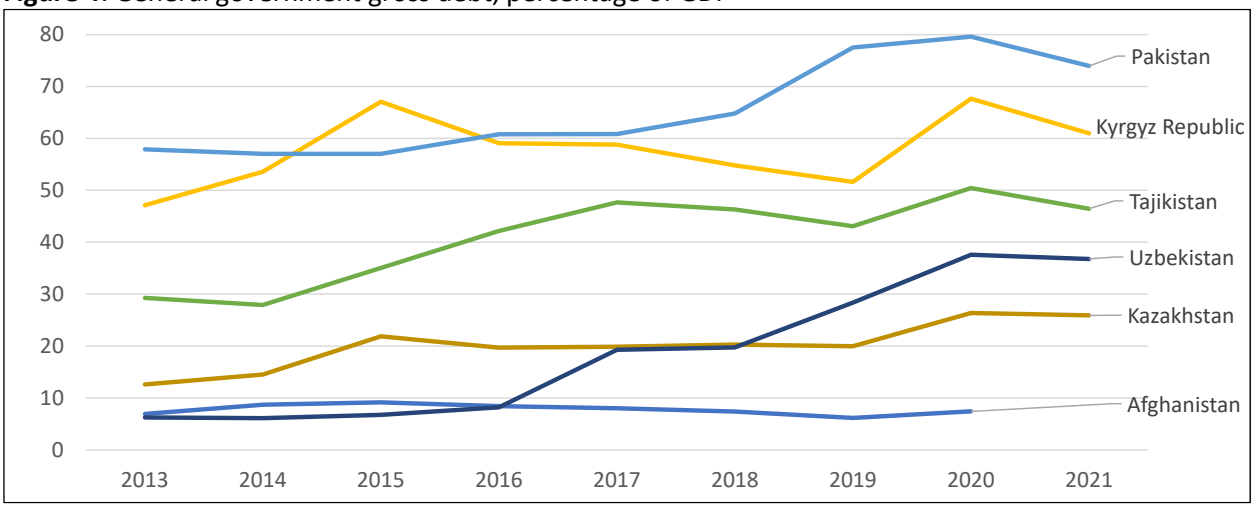
**The war, along with supply chain disruptions and draughts caused by climate change, is affecting different societal strata and different countries unevenly**. While some commodity exporting companies might achieve extra profits thanks to high commodity prices, most of the population is suffering from high inflation. Commodity importing countries are getting hurt by high import bills. Fiscal positions could further worsen owing to the need to subsidize food and energy prices. Higher nominal tax revenues owing to higher inflation might partially offset the negative effect on government revenues because of weaker growth, but probably not fully.

## 2. Economic policies mitigated the recession during the pandemic, but there is less room for maneuver now

*Economic policies helped overcome the COVID-19 crisis, but strained available cushions, and must be very well targeted now to remain efficient and preserve stability.*

**Fiscal spending to mitigate the adverse impact of the COVID-19 pandemic has pushed up public debt**. Owing to the recovery in GDP, public debt in percent of GDP was lower by the end of 2021 than it was in 2020 when GDP contracted, but it was nevertheless higher in all CAREC economies with data availability than it was in 2019 (Figure 4). Fiscal policy suggestions on the table now reach from reducing spending inefficiencies and broadening of the tax base by addressing tax avoidance and cutting unnecessary tax incentives to improved taxation of the digital economy and to activities for formalizing the informal economy.

**Figure 4**: General government gross debt, percentage of GDP

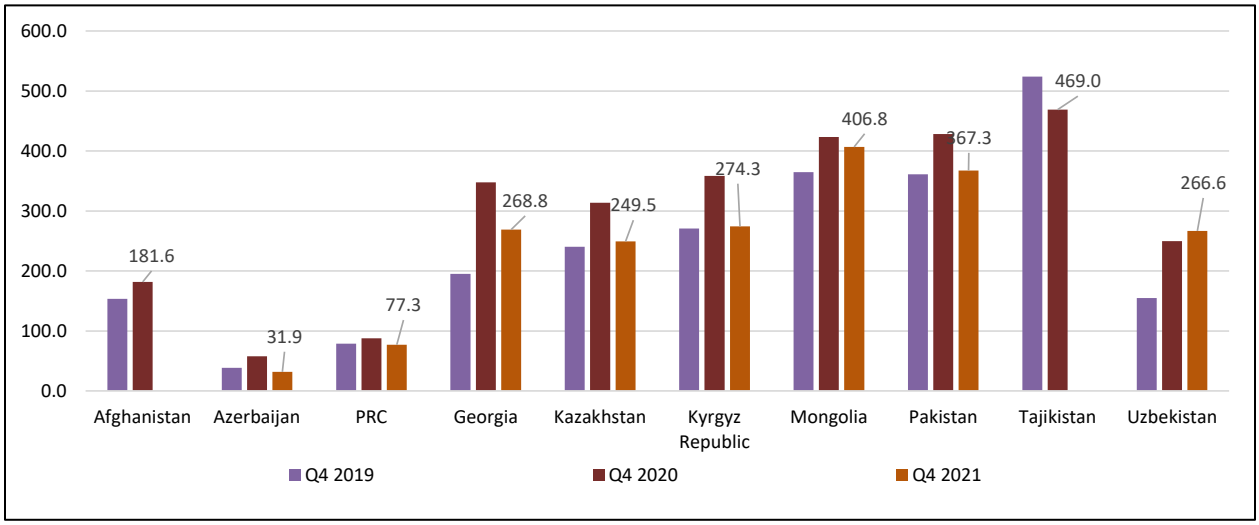



Source: IMF Fiscal Monitor, authors' calculations

**External debt in percent of exports of goods and services fell in 2021 compared to 2020 thanks to higher exports, but debt levels have been high historically in several CAREC countries.** Most CAREC economies would need to spend annual export proceeds of more than two years to pay off their debts (Figure 5). In the case of Mongolia it is four years and in the case of Pakistan almost four years. New borrowing might be difficult for these economies or at least expensive. While the actual burden that the foreign debt

constitutes for the economy depends on repayment schedules, interest rates, and the structure of the debt, it is clear that the space for further increases in external debt ratios is relatively limited in the currently evolving global high yield environment.

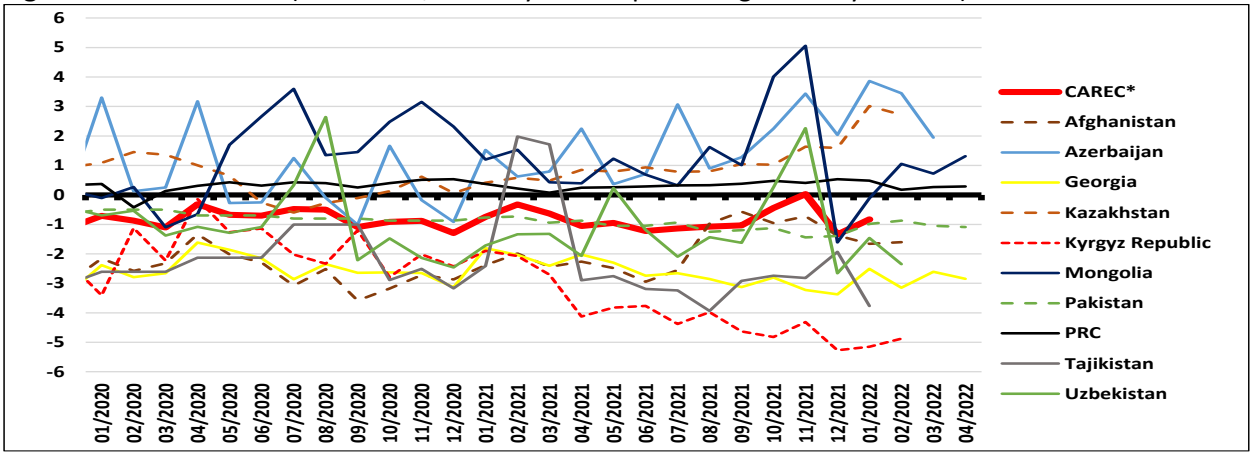
**Figure 5**: External debt in percentage of annual exports of goods and services




Source: CEIC, authors' calculations

**Interest rate hikes in developed economies to counter inflation increase the cost of capital and can cause capital outflows from emerging markets, including in the CAREC region.** They thus aggravate balance of payment problems, which might lead to exchange rate volatility and complicate external debt refinancing. In particular, CAREC economies that incurred high external debts and run substantial foreign trade deficits are exposed to these developments. While the traditional foreign trade surplus countries Azerbaijan and Kazakhstan had their surpluses increase in 2021, the traditional deficit countries Kyrgyz Republic, Georgia, and to some extent Pakistan, saw their deficits substantially widen since early 2021 (Figure 6).

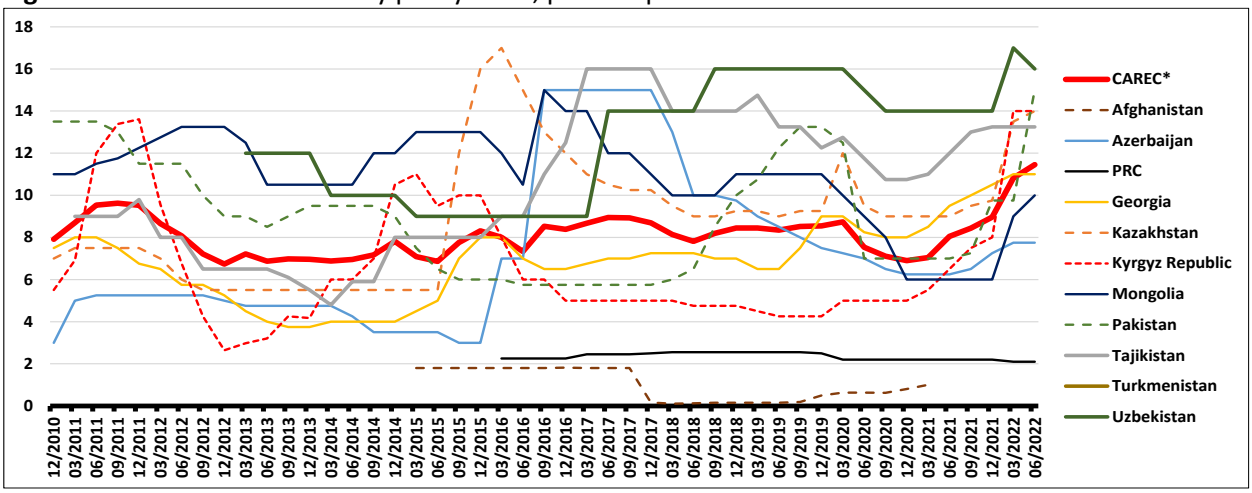
**Figure 6:** Trade balance (US$ based, monthly data in percentage of full year GDP)




*Refers to the simple average of CAREC economies where data is available
Source: CEIC, authors' calculations

**Monetary policy was re-tightened in most CAREC economies in the first half of 2022 to counter inflation and protect exchange rates**. Most central banks raised their policy rates (Figure 7). On average in the CAREC region, policy rates are higher now than any time for more than a decade. Azerbaijan's central bank, for example, announced the fifth consecutive hike of its refinancing rate in March 2021, increasing it by 150 basis points since September 2020 to 7.75% citing 'uncertainties in the global economic and political situation'.[2] The State Bank of Pakistan's monetary policy committee ordered a policy rate hike of 250 basis points to 12.25% in April because of high commodity prices, persistently high inflation, and rupee depreciation, and ordered another hike of 125 basis points to 15% in July as inflation surpassed 20%.[3] Other central banks also raised policy rates and re-tightened prudential banking rules. A notable exception was the People's Bank of China, which wished to support the economy amid renewed COVID containment measures and cut its five-year loan prime rate by 15 basis points to 4.45% in May, referring to a 'complex and severe environment'.[4] Where CAREC monetary authorities will go from here will depend on the evolving situation, but they will have to be careful to balance tightening and leaving sufficient room for financing the nascent recovery.

**Figure 7**: Central bank monetary policy rates, percent per anno




Source: CEIC, authors' calculations

**The CAREC authorities will need to keep an eye on macroprudential regulations and activities**. The IMF wrote in its April 2022 *World Economic Outlook* citing tighter financial conditions and spillovers from geopolitical volatility: 'Regulators should take early action and tighten selected macroprudential tools to target pockets of elevated vulnerabilities… Insolvency frameworks may also need to be strengthened in some cases… Emerging market borrowers should reduce near-term rollover risks by extending debt maturities where possible and contain the buildup of currency mismatches…'[5] Some CAREC economies

[2] https://www.centralbanking.com/central-banks/monetary-policy/monetary-policy-decisions/7941601/azerbaijan-continues-gradual-tightening

[3] https://www.centralbanking.com/benchmarking/monetary-policy/7946041/pakistan-orders-250bp-hike-at-emergency-meeting; https://www.centralbanking.com/central-banks/monetary-policy/monetary-policy-decisions/7950586/pakistan-raises-rates-again-as-inflation-rises-rapidly

[4] https://www.centralbanking.com/central-banks/monetary-policy/monetary-policy-decisions/7948101/china-cuts-key-lending-rate

[5] https://www.imf.org/en/Publications/WEO/Issues/2022/04/19/world-economic-outlook-april-2022

encountered substantial banking sector problems during the great financial crisis of 2008 to 2009, and renewed problems should be avoided.[6]

## 3. Catching up with developed economies has slowed

*After achieving the substantial narrowing of the national income per capita gap to developed economies, the catching up progress of the CAREC economies has slowed down for about a decade. The CAREC region needs a new productivity push to resume the narrowing trend.*

**Recent economic challenges come on top of more long-term ones, among them slowing GDP growth in the CAREC region.** Except for the Kyrgyz Republic and Pakistan, real GDP growth has been less in the five years of 2015 to 2019 than in the five years prior to this period (Table 1). The average of the ADB-IMF-WB forecasts for 2023—the first year after the highly volatile 2020 to 2022 period, owing to COVID-19—points to a reacceleration of GDP growth compared to 2015 to 2019 for about one-third of the CAREC economies, but a further slowdown for the other two-thirds. However, even for the accelerating third, much will depend in the long run on the rate at which productivity increases.

**Table 1**: Real GDP growth, percentage year on year

| | Average growth | | 2020 | 2021 | 2022F | 2023F | 2022F | | | 2023F | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2010-2014 | 2015-2019 | | | Average ADB, IMF, and WB | | ADB | IMF | WB | ADB | IMF | WB |
| **Afghanistan** | 6.2 | 1.9 | 3.9 | -2.4 | | | | | | | | |
| **Azerbaijan** | 1.8 | 0.8 | -4.2 | 5.6 | 3.5 | 2.5 | 4.2 | 3.7 | 2.7 | 2.8 | 2.5 | 2.2 |
| **PRC** | 8.6 | 6.7 | 2.2 | 8.1 | 3.6 | 4.7 | 3.3 | 3.2 | 4.3 | 4.5 | 4.4 | 5.2 |
| **Georgia** | 5.4 | 4.0 | -6.8 | 10.4 | 7.2 | 5.2 | 7.0 | 9.0 | 5.5 | 6.0 | 4.0 | 5.5 |
| **Kazakhstan** | 5.8 | 2.5 | -2.5 | 4.0 | 2.5 | 4.0 | 3.0 | 2.5 | 2.0 | 3.7 | 4.4 | 4.0 |
| **Kyrgyz Republic** | 4.0 | 4.2 | -8.4 | 3.6 | 1.6 | 3.4 | 3.0 | 3.8 | -2.0 | 3.5 | 3.2 | 3.4 |
| **Mongolia** | 10.4 | 3.9 | -4.6 | 1.4 | 2.2 | 5.2 | 1.7 | 2.5 | 2.5 | 4.9 | 5.0 | 5.8 |
| **Pakistan*** | 3.2 | 3.8 | 5.7 | 6.0 | 5.4 | 3.7 | 6.0 | 6.0 | 4.3 | 3.5 | 3.5 | 4.0 |
| **Tajikistan** | 7.1 | 6.9 | 4.5 | 9.2 | 3.0 | 4.1 | 4.0 | 5.5 | -0.4 | 5.0 | 4.0 | 3.3 |
| **Turkmenistan** | 11.0 | 6.3 | 5.9 | 6.2 | 3.5 | 4.1 | 5.8 | 1.2 | | 5.8 | 2.3 | |
| **Uzbekistan** | 7.4 | 5.8 | 1.9 | 7.4 | 4.5 | 5.0 | 4.0 | 5.2 | 4.3 | 5.0 | 4.7 | 5.3 |

* Fiscal years (1 June – 30 July); 2020/21 = 5.74, 2021/22 = 5.97

Note: red figures indicate a deceleration from the previous period, green figures an acceleration

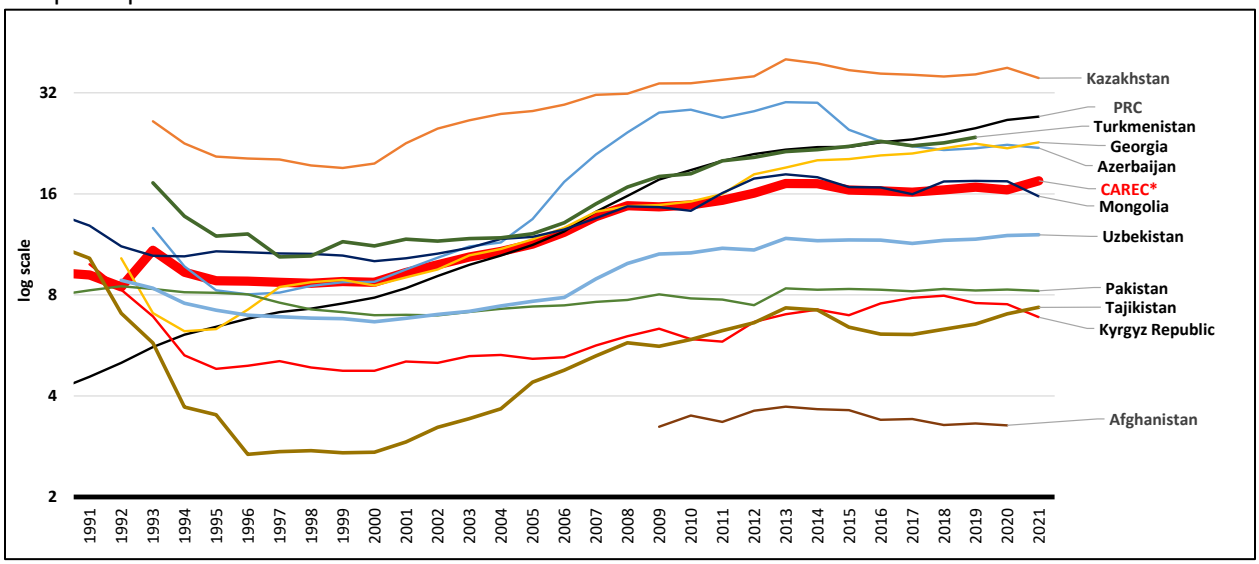
Source: CEIC, national statistical agencies, ADB, IMF, WB, author's calculations

**As result of more moderate growth, the catching up of the CAREC economies with developed countries has slowed down for about a decade**. The CAREC economies were able to increase their average gross

[6] Macroprudential tools include: cap on loan-to-value ratio and loan loss provisions, cap on leverage—to limit asset growth by tying banks' assets to their equity, levy on non-core liabilities—to mitigate pricing distortions that cause excessive asset growth, time-varying reserve requirement, liquidity coverage ratio, liquidity risk charges that penalize short-term funding, capital requirement surcharges proportional to the size of maturity mismatch, and so on.

national income (GNI) per capita from about 10 percent of the US GNI on average in the CAREC region in 1999 to 2000 to about 16 percent to 17 percent in 2013 to 2014 (Figure 8). Levels and speed differed among countries, and achievements at country level do not always translate to a profit for all population groups but by and large there was substantial progress during this period. However, the gap has not narrowed much more since 2013 to 2014 as gains from basic economic reforms, favorable terms of trade, capital inflows, and technology transfer diminished. The slowdown in the catching up according to the GNI per capita indicator comes despite the post-COVID real GDP growth recovery depicted in Figure 1, and even though real GDP growth continued also in the 2015-2019 period as shown in Table 1. However, this growth was not strong enough to secure a faster growth in national income per capita measured at purchasing power parities than in developed countries represented in Figure 8 by the US.

**Figure 8**: Gross national income (GNI) per capita, PPP (current international US$), in percentage of US GNI per capita




* Simple CAREC average

Source: World Bank, World Development Indicators, authors' calculations

## 4. A new productivity push is needed

*To re-accelerate welfare gains and the catching up with developed countries a new productivity push is needed. A major source for productivity growth, sustainability, and green transition is digitalization and more generally innovation and advanced technology. These are also crucial for ensuring successful participation in global and regional value chains, diversifying, and meeting decarbonization challenges. For increasing productivity and securing needed products and services also foreign trade and foreign direct investment are essential. Intra-CAREC trade and investment needs to be further developed along with making also better use of broader international initiatives such as the Belt and Road initiative, RCEP, the EU's Global Gateway initiative, and similar.*

## 4.1. Digitalization, Innovation, Technology

### 4.1.1. Digitalization: strong transformation potential, but can also widen the social divide, if insufficient infra-structure and qualification is provided.

**Digitalization is transforming industries, people's daily lives, and how governments operate**. The CAREC Digital Strategy 2030, published in February 2022, points out: 'There is broad agreement across CAREC that digitalization will not only help COVID-19 recovery but also allow member countries to develop robust solutions in important areas such as healthcare, education, agriculture, finance, trade, and tourism.'[7] Digitalization not only increases productivity but can make societies more resilient in many respects as COVID-19 has shown and can provide services that were not possible without digitalization. Digitalization can improve healthcare by offering e-medicine for remote regions, for example. The availability of digitalized real-time and historical climate data supports climate research and forecasting extreme weather events and climate action for achieving ecological sustainability. CAREC economies cannot afford to miss out on digitalization and, more broadly, rapid technological change.[8]

[7] https://www.adb.org/sites/default/files/institutional-document/777876/carec-digital-strategy-2030.pdf

[8] Much of what was said about OECD countries applies also to the CAREC region: "The aggregate productivity gains from digitalisation have not been sufficiently large to offset these headwinds, at least not to date. This contrasts with the late 1990s, when a previous wave of digitalisation associated notably with the diffusion of personal computers lifted productivity growth, at least in the United States. The disappointing productivity gains from the current wave of digitalisation have become a major economic puzzle, sometimes called the "modern productivity paradox" in reference to the earlier productivity paradox formulated by Robert Solow in 1987… economy-wide productivity gains have been disappointing due to shortfalls in key complementary factors and policies. Indeed, digital technologies are characterised by strong complementarities (i) between the technologies themselves; (ii) with firms' capabilities and assets, such as technical and managerial skills, organisational capital, innovation and financing capacity; and (iii) with policies that promote competition and an efficient reallocation of resources in the economy. Shortfalls in these complementary factors have slowed the diffusion of digital technologies and reduced the associated productivity benefits." https://www.oecd-ilibrary.org/sites/5713bd7d-en/index.html?itemId=/content/component/5713bd7d-en

**Table 2:** Digital Adoption Index (DAI)

| Country | Digital Adoption Index (Rank)* | Digital Adoption Index | DAI Business Subindex | DAI People Subindex | DAI Government Subindex |
|---|---|---|---|---|---|
| Kazakhstan | 45 | 0.671 | 0.600 | 0.573 | 0.839 |
| Georgia | 68 | 0.599 | 0.642 | 0.484 | 0.670 |
| Azerbaijan | 71 | 0.594 | *0.509* | 0.523 | 0.751 |
| PRC | 74 | 0.586 | *0.548* | 0.525 | 0.686 |
| Mongolia | 84 | 0.538 | 0.653 | *0.348* | 0.612 |
| Kyrgyz Republic | *96* | *0.499* | 0.609 | *0.349* | 0.539 |
| Uzbekistan | *121* | *0.401* | *0.359* | *0.313* | 0.531 |
| Pakistan | *122* | *0.400* | *0.471* | *0.162* | 0.566 |
| Afghanistan | *134* | *0.343* | *0.342* | *0.123* | 0.564 |
| Tajikistan | *141* | *0.323* | *0.417* | *0.236* | *0.317* |
| Turkmenistan | *154* | *0.272* | *0.440* | *0.293* | *0.085* |
| **Average of 180 countries** | **90.5** | **0.516** | **0.574** | **0.442** | **0.530** |

The DAI ranges from 0 to 1 (worst to best); green: highest, yellow: medium, red: lowest)
* Among 180 countries; blue italics indicate scores below average (assigned by the authors)
Source: Digital Adoption Index 2016

**However, digitalization has not progressed evenly on a global basis, and the CAREC region must catch up too**. Six of the eleven CAREC economies scored below the average for 180 countries on the World Bank's Digital Adoption Index (Table 2).[9] Turkmenistan, Tajikistan, Afghanistan, Pakistan, and Uzbekistan are below global average in both of the 'business' and 'people' subindices; Azerbaijan and the PRC additionally in 'business,' and Mongolia and the Kyrgyz Republic in 'people.' At the same time, the CAREC region does relatively well in the 'government' subindex; only two CAREC countries remained below the global average. Since the compilation of the World Bank's index in 2016, substantial further progress has been made by the CAREC members and all have digital development programs in various forms while the definition of "digitalization" has constantly broadened. A digital divide globally, among CAREC members, and within CAREC countries has nevertheless remained and needs to be narrowed to allow CAREC countries to fully exploit their economic potential.

**The various reasons for and various forms of digital divide need careful attention to promote inclusive digitalization in the CAREC region**. A recent study by the CAREC Institute on the digital divide constructed a Composite Digital Divide Index (CDDI)[10]. Especially with regard to digital output (ICT/High tech exports in percent of total exports), regulations, and digital FDI, the digital divide seems to be substantial for several countries, whereas affordability and access look more equal (Table 3).

[9] At least in 2016, the most recent year when the index has been computed https://www.worldbank.org/en/publication/wdr2016/Digital-Adoption-Index
[10] https://www.carecinstitute.org/wp-content/uploads/2022/03/CAREC-Institute-Digital-CAREC-report-March-2022-1.pdf

**Table 3**: Composite Digital Divide Index (CDDI)* across CAREC countries, 2020

| | Cost and affordability | Access and infrastructure | Internet quality | Regulations | Digital security | ICT output | Digital FDI | **CDDI** |
|---|---|---|---|---|---|---|---|---|
| Azerbaijan | 0.86 | 0.92 | 0.28 | 0.33 | 0.95 | 0.17 | 0.00 | **0.62** |
| Georgia | 0.88 | 0.88 | 1.00 | 1.00 | 0.85 | 0.04 | 0.09 | **0.86** |
| Kazakhstan | 1.00 | 1.00 | 0.81 | 0.57 | 1.00 | 1.00 | 0.95 | **1.00** |
| Kyrgyz Republic | 0.34 | 0.49 | 0.82 | 0.40 | 0.44 | 0.14 | 0.23 | **0.41** |
| Mongolia | 0.87 | 0.64 | 0.26 | 0.68 | 0.14 | 0.91 | 0.46 | **0.62** |
| Pakistan | 0.51 | 0.12 | 0.72 | 0.20 | 0.64 | 0.06 | 0.71 | **0.33** |
| Tajikistan | 0.00 | 0.21 | 0.64 | 0.12 | 0.03 | 0.01 | 0.26 | **0.08** |
| Uzbekistan | 0.76 | 0.70 | 0.20 | 0.24 | 0.73 | 0.01 | 0.37 | **0.40** |

Note: The seven dimensions of the CDDI were derived by a Principle Components Analysis based on 25 indicators reaching from the cost of broad band access in % of GNI per capita over e-commerce safety to FDI in the ICT sector of the CAREC economies; colors represent quartiles of the index scores, with dark green the highest quartile and dark red the lowest.
Source: Digital CAREC: Analysis of the Regional Digital Gap Report, March 2022

**Achieving green and sustainable development is impossible without narrowing the digital divide within/across the CAREC economies.** Inequality or lack of digital access is one of the key factors that impedes sustainable development and leads to severe socioeconomic and environmental damage. Digital gaps are critical hindrances faced by developing countries that yield income inequality, cause social conflicts and loss of competitiveness, and polarizes people within/across countries. Likewise, a recent study by the CAREC Institute has shown that the CAREC region has not fully benefited from the digital economy transformation.[11]

**The digital divide strongly affects a broad range of highly important areas**. They include competitiveness and cross border trade, logistics and transactional payments, but also the environmental quality because of higher energy consumption, inefficient supply chain management, lack of industry 4.0 application, and more. Moreover, the relevance and scope of ICTs have changed enormously owing to the COVID-19 crisis. The CAREC Institute study indicates that the higher the digital inequality across/within countries in terms of digital FDI, digital security, regulations, internet cost, and internet quality, the more critical are the barriers to sustainable growth in the digitalization era, where industrial processes embody advanced digital technologies such as autonomous operations, blockchain, and machine learning.

**CAREC regional cooperation could help to make digitalization as efficient and welfare-enhancing as possible**. The CAREC Digital Strategy 2030 calls for 'creating a data-driven digital regional economy with fast and reliable online access to relevant information and trusted, real-time, user-friendly digital services for all citizens, businesses, and administrations across the CAREC region,' through: encouraging

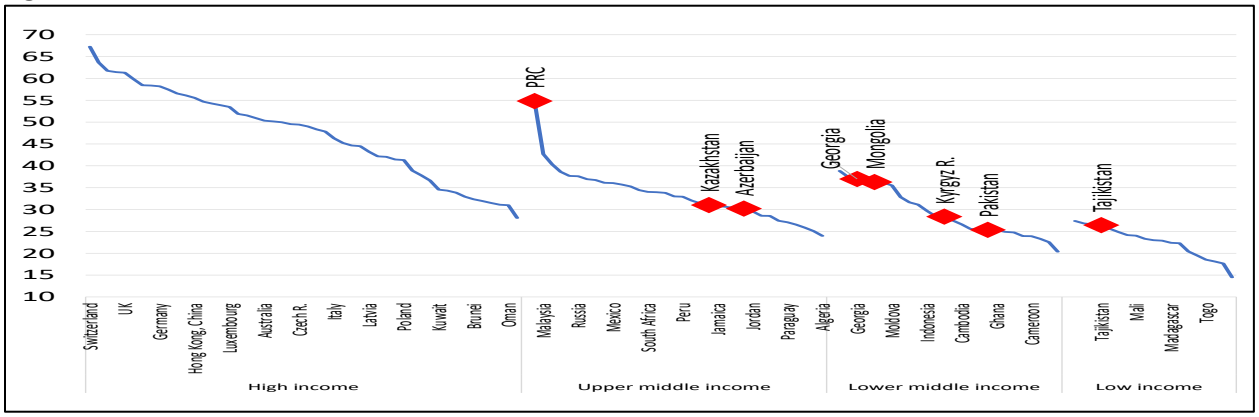
[11] https://www.carecinstitute.org/publications/digital-carec-analysis-of-the-regional-digital-gap/

investment in the digital infrastructure across the region to close connectivity gaps; harmonizing digital and data legislature to promote an enabling environment; developing new digital skills—including for women, disadvantaged, and minority populations—to create jobs; attracting talent into the region to strengthen CAREC's innovation ecosystem; reducing regional trade barriers to increase cross-border trade and expand business opportunities for companies across the region, particularly in e-commerce; creating interoperable digital platforms to enable the development of CAREC's operational clusters, among other measures. The strategy lists six sectors where regional cooperation is especially important to advance digitalization: healthcare, learning and education, agriculture, finance, trade, and tourism.[12]

### 4.1.2. Innovation and technologies: crucial for modernization and diversification

**CAREC economies will need more innovation to better exploit production niches related to their natural and historically accumulated comparative advantages**. Mining, textiles, and agriculture will likely remain important, but more sophisticated, higher value-added downstream production and related services, distribution, marketing, R&D and so on, will increasingly play a bigger role. Innovation will also be crucial for the localization of a higher share of foreign invested production. The PRC scores high on the Global Innovation Index,[13] especially related to GDP per capita. Georgia and Mongolia also look quite good (Figure 9). Others still have to upscale their efforts. There is a need to make national innovation systems (NISs) more efficient, increase R&D and innovation investment via public funds or catalyzing more private investment, including through encouraging venture capital, and by increasing support for incubators and technoparks. Exchange of knowledge and intraregional support for the development and application of innovation is another important possibility to promote innovation and technology transfer. Innovation and advanced technologies are not only supportive to economic growth, they also play a big role in generating more inclusive and environmentally sustainable patterns of development.

**Figure 9**: Global Innovation Index 2019




Source: Cornell University, INSEAD, WIPO, Global Innovation Index 2019, authors' calculations

**The CAREC economies should accelerate their catching up in frontier technologies.** UNCTAD developed a Readiness for Frontier Technologies Index.[14] The index considers technological capacities related to

[12] https://www.adb.org/news/features/digitalization-six-sectors-can-boost-regional-cooperation-central-asia
[13] https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019.pdf
[14] https://unctad.org/system/files/official-document/tir2020_en.pdf

physical investment, human capital, and technological effort, and covers national capacities to use, adopt, and adapt these technologies. The five economies that score the highest above what their per capita GNI would suggest are India, the Philippines, Ukraine, Vietnam, and the PRC. The PRC and India perform especially well for R&D. The PRC's 'industry' ranking is also high. The high scores for the Philippines and Vietnam are related to high foreign direct investment inflows, particularly in electronics, facilitated by related industrial policies. Generally, top performing developed countries tend to have a rather balanced performance across all the subindices, whereas top overperforming developing countries have lower rankings for ICT connectivity and skills, not least because of urban/rural and gender divides. Among the CAREC economies, the PRC, Kazakhstan, and Georgia rank above the global average; the other countries still need to improve their appropriation of recent technological achievements.

**Table 4***:* Readiness for Frontier Technologies[15] Index, ranking out of 158 countries*

| | Total ranking* | ICT ranking | Skills ranking | R&D ranking | Industry ranking | Finance ranking |
|---|---|---|---|---|---|---|
| **PRC** | 25 | *99* | *96* | 1 | 7 | 6 |
| **Kazakhstan** | 62 | 62 | 42 | 56 | 75 | *114* |
| **Georgia** | 79 | 71 | 56 | *87* | *81* | 56 |
| **Azerbaijan** | *100* | 70 | *95* | *90* | *154* | *128* |
| **Mongolia** | *110* | *132* | 51 | *140* | *150* | 65 |
| **Kyrgyz Republic** | *115* | *112* | *97* | *127* | *98* | *120* |
| **Pakistan** | *123* | *145* | *146* | 60 | *96* | *132* |
| **Tajikistan** | *143* | *148* | *117* | *133* | *119* | *147* |

* No data for Turkmenistan and Uzbekistan ** Blue italics indicate ranks above the average of 79
Indicators covering the dimensions: ICT: internet users as a percentage of the population, mean download speed; Skills: expected years of schooling, percentage of high-skill employment; R&D: number of publications on frontier technologies, patents filed on frontier technologies; Industry: high-technology manufactures exports (percentage), digitally deliverable services exports (percentage); Finance: domestic credit to private sector (percentage of GDP).
Source: UNCTAD Technology and Innovation Report 2021

**CAREC economies need to adopt advanced technologies also into traditional sectors**. This requires aligning science, technology, and innovation with industrial policies, strengthening innovation systems, developing digital skills, and closing gaps in ICT. It also means attracting frontier technology development and deployment into established sectors. This would enable traditional production sectors to benefit from multiple channels of technological diffusion and the exchange of knowledge and know-how.

### 4.1.3. Technological change: great advantages but also substantial risks

**Digitalization, innovation, frontier technologies are effective forces for development but also pose risks**. The World Bank's World Development Report 'On digital dividends' stresses that if digitalization delivers scale economies for firms but the business environment inhibits competition, the outcome could be an excessive concentration of market power and the rise of monopolies. If digitalization automates many tasks but workers do not possess the skills that technology augments, the outcome will be greater

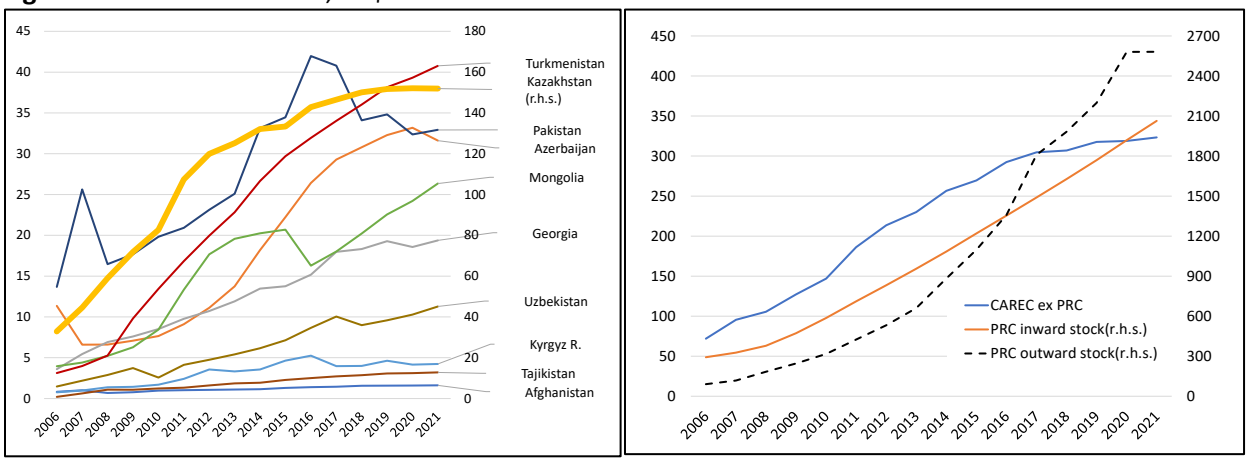
[15] Defined by the report as artificial intelligence (AI), internet of things (IoT), big data, blockchain, 5G, 3D printing, robotics, drones, gene editing, nanotechnology, solar photovoltaic (Solar PV).

inequality, rather than greater efficiency. If the internet helps overcome information barriers that impede service delivery but providers are unaccountable, the outcome will be greater control, rather than greater customer empowerment and inclusion.[16] Therefore, to make digitalization maximally beneficial for all it must be accompanied by reforms in complementary areas such as education and regulation.

## 4.2. FDI: crucial for the transfer of modern technology and management

**More foreign direct investment (FDI) is crucial for the transfer of modern technology and management practices to the CAREC region, economies of scale and better inclusion in global and regional value chains**. FDI in the CAREC region maintained robust growth for two decades. Most FDI went to mining (except for FDI in the PRC). Kazakhstan received about one-half of all FDI of the CAREC region excluding the PRC (left hand side of Figure 10). However, there are signs now of a flattening off as oil sector projects entered more mature states. FDI inflows to Kazakhstan fell by 14 percent year-on-year in 2021 to US$3.2 billion because of declines in the extractive industries and transportation. After large FDI inflows to Azerbaijan during 2011-2020 flows turned negative to minus US$1.7 billion in 2021 because of the repatriation of funds by oil companies. By contrast, FDI inflows to Uzbekistan rose by 18 percent to US$2 billion and to Turkmenistan by 24 percent to US$1.5 billion. Inflows to Pakistan remained little changed at US$2.1 billion. FDI in the PRC has continued to grow fast even during the pandemic (right hand side of Figure 10). CAREC countries will have to increase efforts to attract viable projects in sectors other than mining, further improve the investment climate, and provide conducive infrastructure and skilled labor. At the same time, FDI projects should be in line with the countries' development plans and debt owed to foreign direct investor remain sustainable. This is also in the interest of the investors and serves the long-term mutual benefit.

**Figure 10**: FDI inward stock, US$ billion




Source: UNCTADSTAT, authors' calculations

**The PRC's outward direct investment (ODI) is an important source of FDI, including for the CAREC region**. The PRC's global ODI stock reached US$2.6 trillion by 2021. In the CAREC region Chinese companies invested about US$48 billion between 2007 and June 2022.[17] Roughly 74 percent of these investments

[16] https://documents1.worldbank.org/curated/en/896971468194972881/pdf/102725-PUB-Replacement-PUBLIC.pdf
[17] https://www.aei.org/china-global-investment-tracker/

went into the energy sector, 12 percent to metals, 5 percent to transportation, and 4 percent to tech. Largest recipients were Kazakhstan with 41 percent, Pakistan with 35 percent, and Mongolia with 10 percent. Cumulative Belt and Road Initiative (BRI) engagement since the announcement of the BRI in 2013 is US$932 billion, about US$371 in non-financial investments and US$561 in construction contracts. In Jan-May 2022, non-financial direct investment reached CNY52.7 billion (US$ 8.2 billion), a year-on-year increase of 9.4%. Main investment destinations were countries such as Singapore, Indonesia, Malaysia, United Arab Emirates, Vietnam, Thailand, Cambodia, Laos and Serbia, but also Pakistan. Chinese enterprises also signed 1,840 project contracts with a contract value of CNY244.6 billion yuan (US$38 billion).[18]

**Regional cooperation on projects from third parties that are beneficial for the region as a whole or at least for more than one country could be helpful**. Cross-country investments would allow investors to utilize economies of scale. This applies to investments from outside the CAREC region, but cross-country investments inside the region are also growing and desirably will do so even more in the future. Beside traditional FDI, opportunities related to asset-light forms of investment, mostly based on digitalized services such as in taxi, trade, and tourism services, must be explored and an enabling legal environment for such emerging forms needs to be further developed.

## 4.3. External trade

*A major source of productivity is the utilization of the CAREC economies' natural or historically acquired comparative advantages via foreign trade. At the same time foreign trade secures products and services vital for domestic production or consumption, but not easily or cheaply produced domestically.*

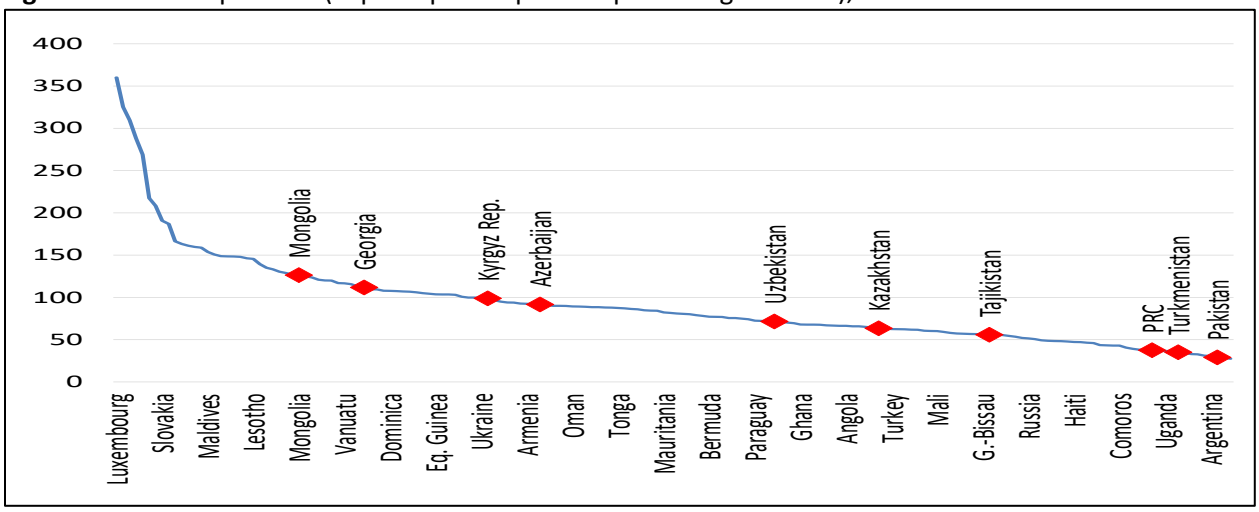
### 4.3.1. Trade openness: differs among CAREC economies, and trends differ as well

**The degree of trade openness differs in the CAREC region because of different economic fundamentals.** The CAREC economies are pretty spread out across the global spectrum of trade openness, with Mongolia most open and Pakistan least (Figure 11).[19] Mongolia, Azerbaijan, and Kazakhstan have the highest exports compared to GDP, Pakistan, Afghanistan, and Turkmenistan the lowest (Figure 12). On the import side, the Kyrgyz Republic, Tajikistan, and (until 2020) Afghanistan are most open; Turkmenistan, the PRC, and Pakistan are least open.

[18] http://www.mofcom.gov.cn/article/tongjiziliao/dgzz/202206/20220603322656.shtml

[19] Trade openness is usually measured as share of foreign trade in GDP. For small economies, foreign trade generally accounts for a larger share of GDP than for large ones because they have a smaller internal market and economies of scale and scope require external cooperation. However, other factors than size play a role as well, among them the commodity structure of the traded goods and services and trade costs. Exchange rates also impact the trade to GDP ratio because they determine the foreign (US$) value of GDP whereas exports are usually priced in foreign currency, mostly in US$.

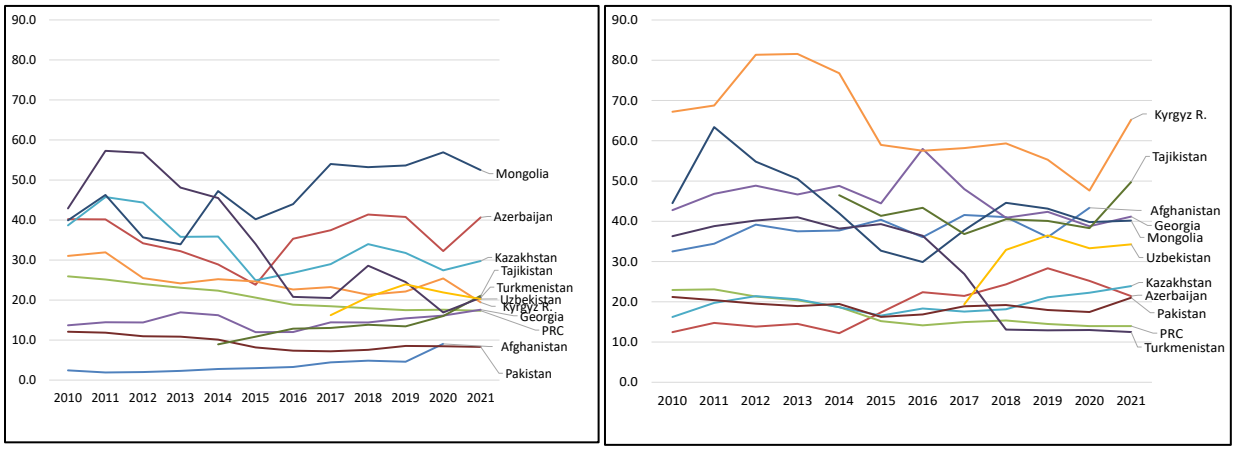
**Figure 11**: Trade openness (exports plus imports in percentage of GDP), 2018




Source: https://www.theglobaleconomy.com/rankings/trade_openness/, authors' calculations

**Trends diverge as well**. For Mongolia, export openness has clearly increased since a decade ago; for Turkmenistan, import openness decreased (Figure 12). For the PRC, the shares both of exports and imports in GDP have been declining, reflecting faster growth of the domestic than the external market. Other trends are less obvious. COVID-19 caused trade disruptions in 2020, but given that it also impacted GDP, the effect on trade openness was not the same for all CAREC economies; for some, trade in percentage of GDP was up, for others, it was down. While trade in some cases might increase more slowly than GDP, especially the small, landlocked CAREC economies must boost foreign trade, particularly exports, in order to reap the benefits from their comparative advantages and from economies of scale. However, trade openness and reducing trade costs also exposes domestic producers to sharper competition. Therefore, opening up must go along with policies that enable these to be competitive.

**Figure 12**: Exports in percentage of GDP Imports in percentage of GDP

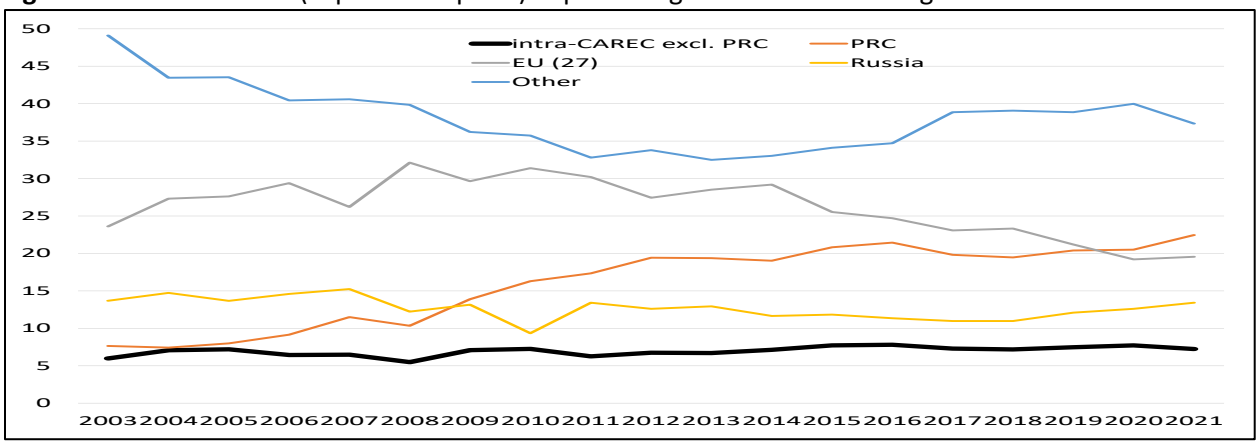



Source: TradeMap, World Development Indicators, authors' calculations

### 4.3.2. Trade destinations: on the way to more diversification

**The CAREC region has begun to diversify export destinations and import sourcing but even more would be desirable to allow for faster trade growth and higher resilience in case of shocks**. There has been a trend reversal during 2012 to 2016: whereas until this period the share of 'other'—that is, the rest of the world—in CAREC (excluding the PRC) trade was shrinking in favor of the PRC and the European Union, the 'other' trade share has since increased at the expense of the European Union (Figure 13). The trade share of Russia has remained broadly unchanged over the years; the PRC's increased until 2016, but not much further then. The country composition of the increase in the share of 'other' is rather diverse, with Korea, the Gulf States, South Africa, Brazil, and Vietnam playing significant roles, and on the import side Turkey and India.

**Figure 13**: Trade volume (exports + imports) in percentage of CAREC excluding PRC trade




Source: TradeMap, World Development Indicators, authors' calculations

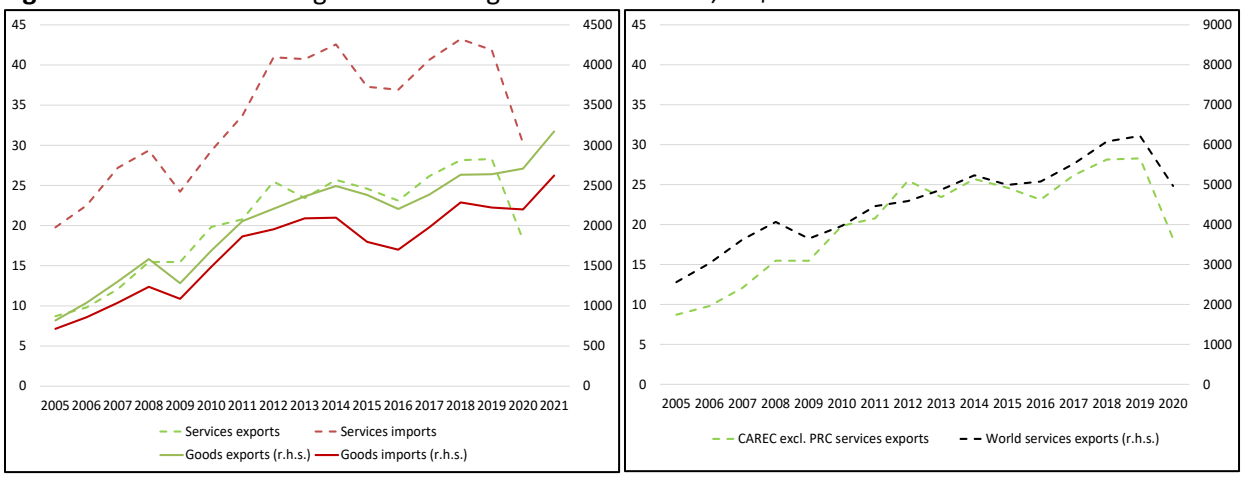
### 4.3.3. Intra-CAREC trade: more backward linkages desirable

**Intra-CAREC trade (excluding the PRC) accounts for only a small part of the region's external trade but could increase in importance should regional sourcing improve**. Over the period 2003 to 2020, intra-CAREC trade oscillated narrowly around 6.8 percent. The commodity structure of the CAREC region's intraregional trade is comparable to the commodity structure of the region's global trade. It is dominated by mineral fuels, metals, and agricultural goods, albeit not to the same extent as CAREC's global exports. Turkmenistan, Kazakhstan, and Azerbaijan are large net exporters of hydrocarbons. Pakistan's net exports to CAREC include a broad range of products, but most importantly sugars and sugar confectionery, cereals and products of the milling industry, but also pharmaceutical products and mineral fuels. There could be further substitution of gasoline and grain imports from Russia by CAREC production in the future. CAREC firms currently generate little input for the region's leading exporters—that is, there are relatively little backward ties of the CAREC region's main exporters with businesses from other CAREC countries. This could and should change as the complexity of CAREC export products increases and regional sourcing plays a bigger role.

### 4.3.4. Trade in services: potential for more

**CAREC trade in services has flattened.** The CAREC region's (excluding the PRC) trade in services is growing broadly in line with its trade in goods, although from relatively low levels and with a high trade deficit as opposed to a trade surplus in goods (left hand side of Figure 14). CAREC service exports grew faster than world service exports until 2012, but somewhat slower than global exports since (right hand side of Figure 14). The COVID-19 pandemic affected trade in CAREC services more than trade in CAREC goods in 2020, and more than global trade in services.

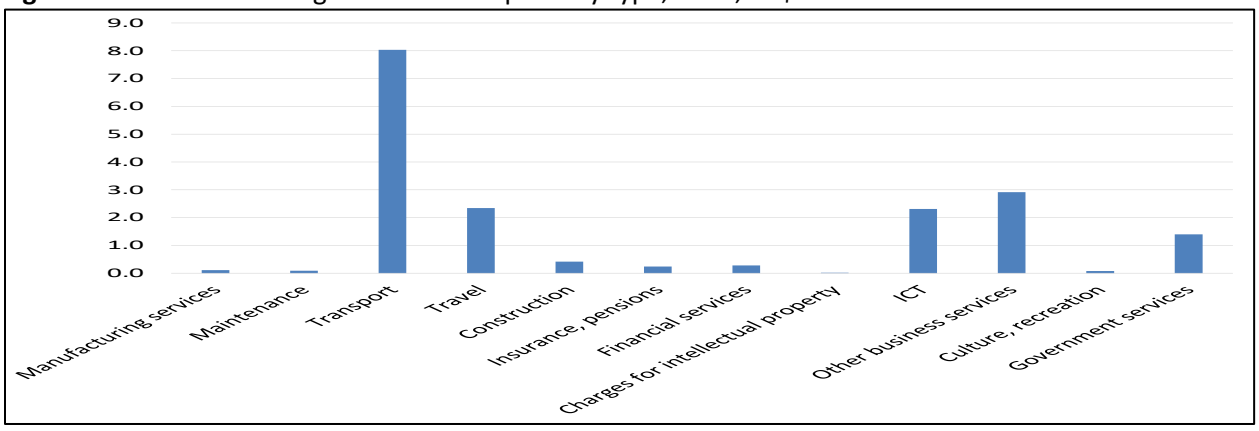
**Figure 14**: CAREC excluding PRC trade in goods and services, US$ billion




Source: TradeMap, authors' calculations

**The main service exports are transport, travel, ICT, and business services**. CAREC's (excluding the PRC) most important service export by far is transportation, not least thanks to transit services by Kazakhstan and Azerbaijan (Figure 15). Georgia leads the travel service exports, but other CAREC economies also contribute significantly. Pakistan is the largest provider of business and government services and ICT among the CAREC economies (excluding the PRC).

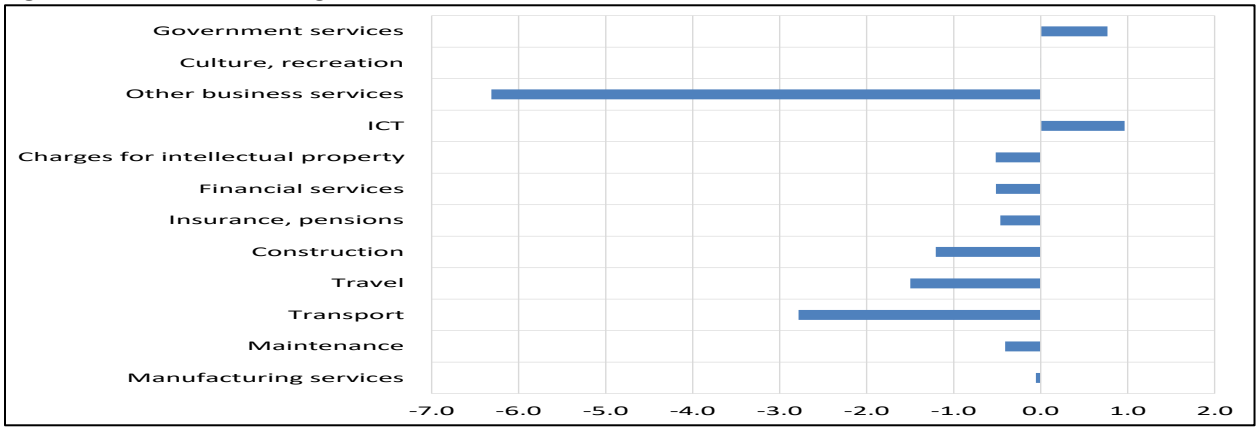
**Figure 15**: CAREC excluding PRC service exports by type, 2020, US$ billion




Source: TradeMap, authors' calculations

**The CAREC region is a net importer of services; only government services and ICT achieve a small surplus**. The largest deficit the CAREC region runs is in the category 'other business services,' which includes engineering services related to mining, especially oil and gas (Figure 16). The largest deficits are therefore incurred by oil exporters Kazakhstan and Azerbaijan, but Pakistan has also been constantly in deficit; on a smaller scale, most other CAREC countries in the 'other business services' category have also been in deficit. Transport, travel, and construction also contribute significantly to the deficit, notwithstanding that the transit countries Kazakhstan and Azerbaijan have surpluses in transport, the tourism countries Georgia and the Kyrgyz Republic in travel (even in 2020), and Pakistan in construction. There is also a small surplus in ICT, mainly thanks to Pakistan, but Uzbekistan, Georgia, and Afghanistan also contributed. Given the CAREC region's geostrategic location, there is still potential to increase transit earnings; ICT and business services could also be further intensified if the required qualification and infrastructure are provided; and the landscapes and cultural heritage of the region are perfect preconditions for developing tourism.

**Figure 16**: CAREC excluding PRC trade in services balance, 2020, US$ billion




Source: TradeMap, authors' calculations

### 4.3.5. Digital trade: more to come

**CAREC economies vary strongly in their readiness for digital trade; for some, there is significant room to catch up.** Digital trade is increasingly important and comprises both digitally ordered trade in goods and services (cross-border electronic commerce [e-commerce]) and digitally delivered trade (services delivered internationally through the internet or other networks). The COVID-19 pandemic has further advanced the development of digital trade. With more than one-half of trade digital, the PRC and Pakistan have the highest share of total digital trade (Table 5), and for the PRC and Pakistan digital trade amounts to billions of dollars. Afghanistan, Mongolia, and Azerbaijan are in the middle; Kazakhstan, Uzbekistan, the Kyrgyz Republic, Georgia, and Tajikistan have shares below 10 percent, or only slightly above in the case of Kazakhstan. However, growth rates are high in Kazakhstan, Azerbaijan, and Georgia, and digital trade will certainly develop further in the region. This will also continue to transform domestic trade and will require more regulations in the field of consumer protection and taxation, among others.

**Table 5:** International trade in digitally deliverable services

| Countries | Digital trade in percentage of total trade in services 2020 | Growth rate 2019-2020 percentage year on year | Volume in 2020 US$ million |
|---|---|---|---|
| Afghanistan | 53.43 | 74.44 | 373.81 |
| Azerbaijan | 22.03 | -23.93 | 577.34 |
| PRC | 55.01 | 7.54 | 154,375.15 |
| Georgia | 15.16 | 17.04 | 240.44 |
| Kazakhstan | 16.37 | -0.25 | 823.71 |
| Kyrgyz Republic | 18.81 | 14.20 | 82.84 |
| Mongolia | 30.22 | -29.92 | 197.89 |
| Pakistan | 59.67 | 7.40 | 3,194.00 |
| Tajikistan | 5.18 | -24.79 | 7.18 |
| Uzbekistan | 16.30 | 3.23 | 277.00 |
| **CAREC Average** | **29.22** | **4.50** | **16014.94** |

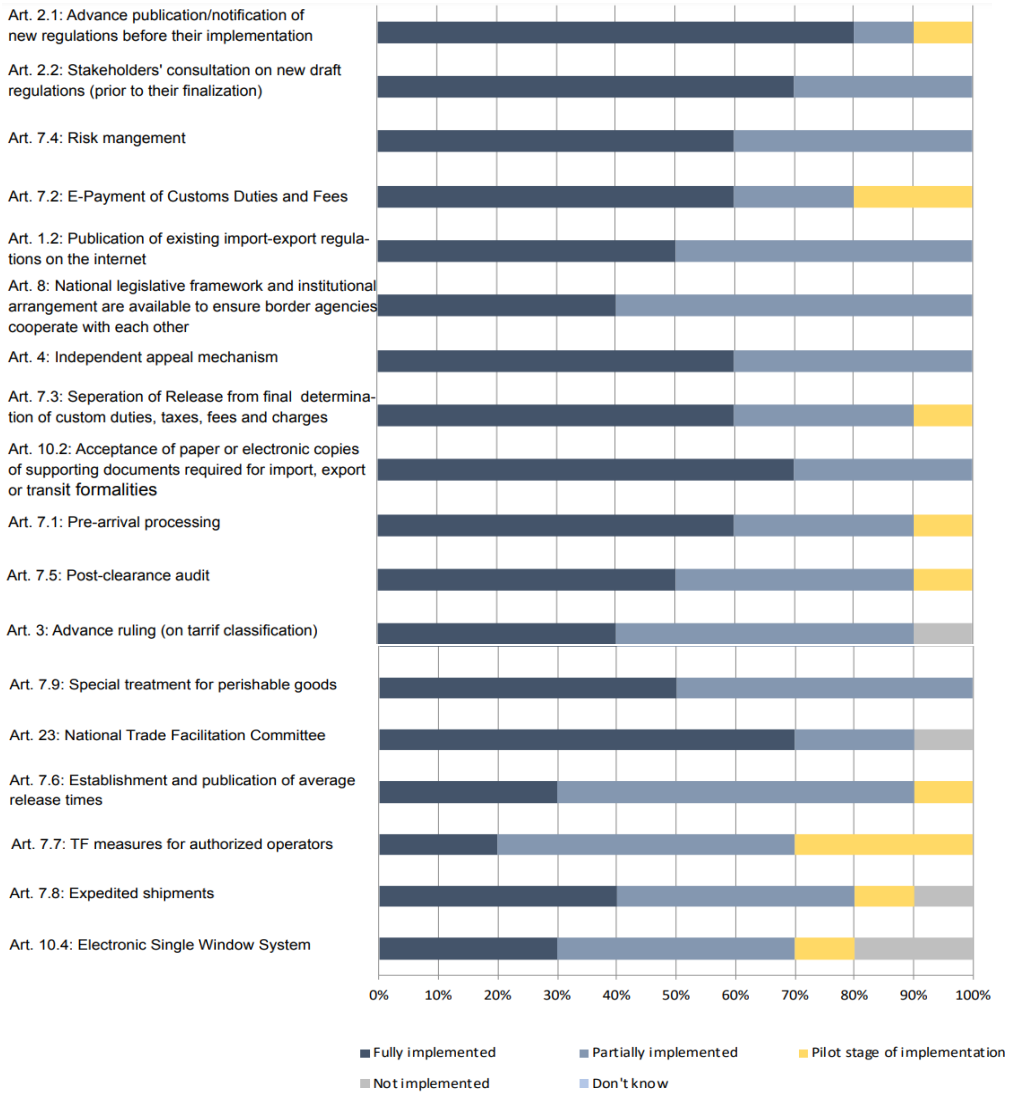
Scale (green: highest, yellow: medium, red: lowest)
Source: UNCTAD[20]

### 4.3.6. Trade facilitation: significant progress while potential new fields have opened

**CAREC countries have made great progress in implementing trade facilitation measures, notwithstanding that in most categories open issues remain and in some further experimentation is needed.** The CAREC Integrated Trade Agenda (CITA) 2030 calls for promoting trade through increased market access, providing efficient border crossing procedures, the development of logistical services, and other trade facilitation related activities, including better access to trade finance.[21] Along with improving transport connectivity, trade facilitation through accelerating cross-border operations, and reducing transaction costs by simplifying and digitalizing trade is a core instrument for lowering trade costs.

[20] https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=158358
[21] https://www.adb.org/sites/default/files/institutional-document/490576/carec-trade-agenda-2030-action-plan-2018-2020.pdf

**Figure 17**: Progress in the implementation of WTO-TFA related measures by CAREC countries




Source: UN Global Survey on Digital and Sustainable Trade Facilitation, untfsurvey.org, 2021

**According to information provided by countries to the WTO by official notification, seven measures included in the WTO Trade Facilitation Agreement (TFA) have been fully or partially implemented by all CAREC countries**. However, electronic single window systems—hugely important for enhancing trade facilitation and institutional connectivity—have been fully implemented by only 30 percent of CAREC members (Figure 17). Another 40 percent and 10 percent, respectively, stated that they have implemented electronic single window systems partially or that they are still experimenting with them. Meanwhile Pakistan has complied with its WTO obligation of setting up a single window system and launching a trade information portal by June 2022, a major achievement.[22] For Azerbaijan, Turkmenistan, and Uzbekistan, WTO accession is pending; were this to materialize, it might amount to the regulatory precondition for more trade facilitation in the CAREC region.

[22] https://www.psw.gov.pk/

**Beside the trade facilitation measures envisaged under the WTO Trade Facilitation Agreement, additional trade facilitation efforts might be desirable for the CAREC region.** The recent new WTO agreements might support such efforts. Intra-CAREC trade should be further advanced by enhanced cooperation, simplified rules and regulations, mutual recognition and electronic exchange of phytosanitary certificates, and mutual support for strengthening the capabilities of sanitary and phytosanitary laboratories. Further advancing cross-border paperless trade will contribute to make procedures faster and more cost-effective. Establishing cross-border free trade areas can be an instrument to promote intra-CAREC trade. Setting up open and inclusive platforms for regional collaboration through new generation free trade agreements (FTAs) aligned with WTO-Plus and WTO-X, which include trade in services, investment, trade facilitation, competition policy, digital trade, e-commerce, and labor and environmental protection, might also be considered. The changed geopolitical and geo-economic realities might modify existing trade and investment flows. Upgrading some of the regional or bilateral trade agreements or considering new ones are therefore also potential topics for trade policies.

## 4.4. Transport connectivity

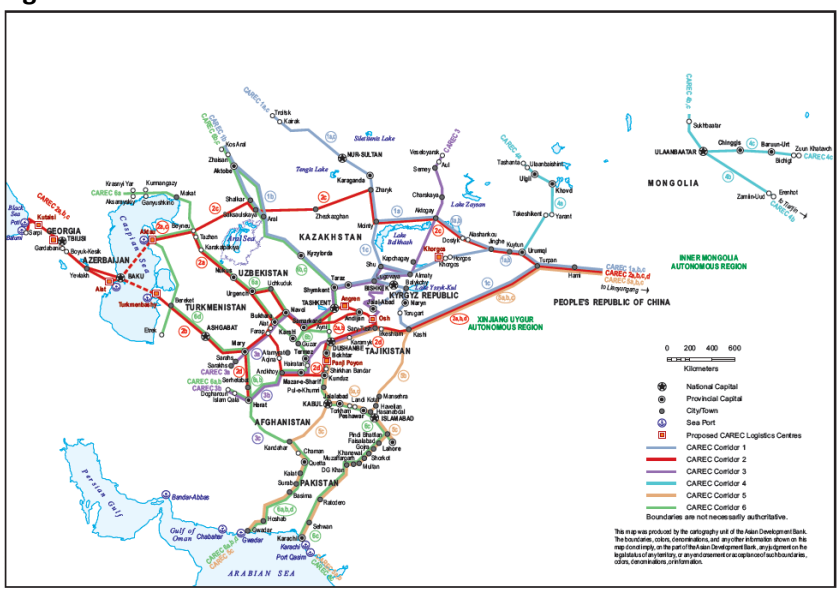
*Improving connectivity has been at the core of the CAREC program's projects, and transport accounted for a large share of investments under the program. While there are still substantial investment needs in hard infrastructure, the focus should shift now to soft infrastructure, digitalization, and customs procedures to achieve tangible and sustained connectivity improvements.*

### 4.4.1. Transport connectivity: close to the CAREC program's heart, and still rightly so

**The CAREC program has devoted much attention and most of its funding to transportation connectivity, and the aspirations laid down in the CAREC transport strategies 2020 and 2030 remain highly timely**. The six CAREC transport corridors provide overland connectivity among the CAREC members and serve as links to transcontinental corridors and to the deepwater ports of the Arabian Sea and Black Sea (Figure 18). The CAREC Transport and Trade Facilitation Strategy 2020 pointed to changes in the global environment that increased 'the need to extend corridors to effectively link with ports and onward transport beyond the CAREC region, the importance of developing north–south corridors, the attractiveness of rail transport relative to other modes, the importance of transport logistics development, and the need for greater progress in achieving streamlined and efficient border control.'[23] The CAREC Transport Strategy 2030 added emphasis on increasing sustainability and network quality, multimodal connectivity, road asset management, road safety, and performance-based maintenance goals.[24] All these points remain valid.

[23] https://www.adb.org/sites/default/files/institutional-document/34107/files/carec-ttfs-2020.pdf
[24] https://www.adb.org/sites/default/files/institutional-document/559456/carec-transport-strategy-2030.pdf

**Figure 18**: CAREC multimodal corridors




Source: CAREC Secretariat

**The Strategy 2030 mentions that connectivity improvements could be achieved at the multimodal corridor via the Caspian Sea**. This 'middle corridor' connecting the PRC and Europe via Kazakhstan, the Caspian, on to Turkey and the Black Sea ports is in the spotlight currently because it provides an alternative to the transit through Russia, although capacities are still limited. Kazakhstan, Azerbaijan, and Georgia established the 'Eurasian Rail Alliance' joint venture[25] to service the middle corridor. Southern corridors, including from Pakistan via Afghanistan and Uzbekistan, and via Iran are also under discussion. Construction works of the PRC–Kyrgyzstan–Uzbekistan railway have begun. Continuous improvement of hard and soft infrastructure along these corridors, coupled with regional agreements to provide regulatory cover to facilitate trade along these corridors, will go a long way to fully leverage the potential of these corridors.

### 4.4.2. Soft infrastructure increasingly key

**After substantial investment in hard infrastructure, border crossing and other procedures are crucial now for the further improvement of connectivity.** Except for the PRC, most CAREC economies score low on the World Bank's Logistics Performance Index,[26] which covers dimensions such as transport logistics, shipment pricing, and delivery time. In particular, scores are rather low for the two pillars 'trace and tracking' and 'efficiency of the clearance process' (Table 6).

[25] https://www.silkroadbriefing.com/news/2022/03/10/kazakhstan-azerbaijan-and-georgia-to-establish-eurasian-rail-alliance-joint-venture/

[26] https://www.worldbank.org/en/news/infographic/2018/07/24/logistics-performance-index-2018

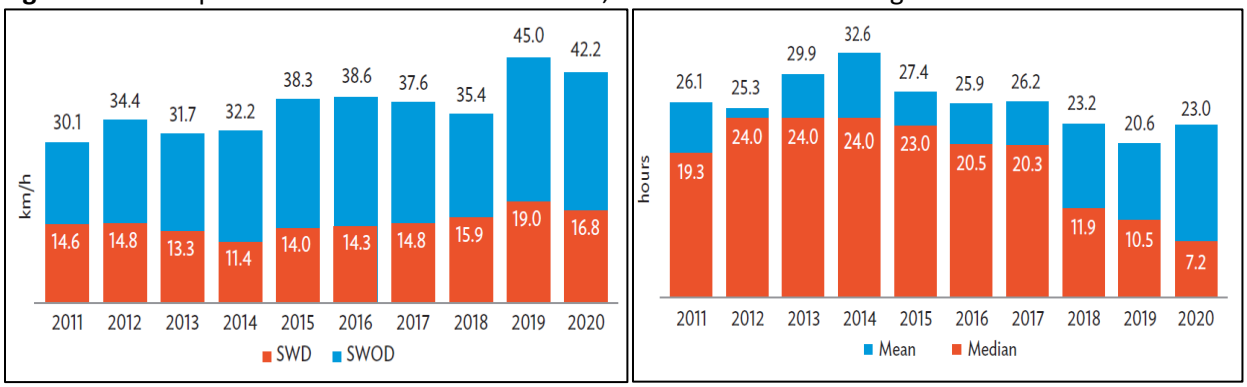
**Table 6:** Logistics Performance Index, 2018

| Country name | Trace and tracking shipments | | The efficiency of the clearance process | | Average Logistics Performance Index | |
|---|---|---|---|---|---|---|
| | Rank | Index score | Rank | Index score | Rank | Index score |
| Afghanistan | 159 | 1.697 | 158 | 1.735 | 160 | 1.949 |
| China | 27 | 3.648 | 31 | 3.286 | 26 | 3.605 |
| Georgia | 139 | 2.257 | 95 | 2.424 | 119 | 2.443 |
| Kazakhstan | 83 | 2.777 | 65 | 2.664 | 71 | 2.810 |
| Kyrgyz Republic | 99 | 2.644 | 55 | 2.750 | 108 | 2.546 |
| Mongolia | 152 | 2.100 | 127 | 2.224 | 130 | 2.373 |
| Pakistan | 136 | 2.265 | 139 | 2.122 | 122 | 2.419 |
| Tajikistan | 131 | 2.333 | 150 | 1.923 | 134 | 2.340 |
| Turkmenistan | 107 | 2.558 | 111 | 2.350 | 126 | 2.410 |
| Uzbekistan | 90 | 2.709 | 140 | 2.103 | 99 | 2.577 |

Source: World Bank, Logistics Performance Index

**That there is room for improvement is confirmed by ADB-CI's 'Corridor Performance Measurement and Monitoring' reports.** There have been improvements in rail transportation, especially since 2015 (Figure 19). The average speed for rail transport to travel on CAREC corridors rose between 2010 and 2019 from 27.2 kilometers per hour (kmh) to 45.0 kmh, net of delays, with some slowing again in 2020 to 42.2 kmh. However, including delays of various kinds, speed was only 19.0 kmh in 2019 and fell back to 16.8 kmh in 2020. The average time for border crossing for rail transport was 23.0 hours in 2020, a lot less than at the peak in 2014, but above a time of 22.1 hours in 2010 (not on the chart) although not the 26.1 hours in 2011. The median time decreased a lot more though, indicating that the continued high waiting time was mostly owing to a few outliers. There was much less progress on road transportation (Figure 20). The speed for road transport was at 42.9 kmh in 2020 below the 2011 figure of 43.0 kmh, and net of delays at 22.7 kmh in 2020 also less than the 24.2 kmh in 2011. The average time needed for border crossing was 15.1 hours in 2020, up from 6.2 hours in 2011. The median time also increased significantly. Border crossing times in the region vary substantially between countries, however, as well as between inbound and outbound waiting times (Table 7).

**Figure 19:** Rail: speed to travel on CAREC corridors, time for border crossing clearance

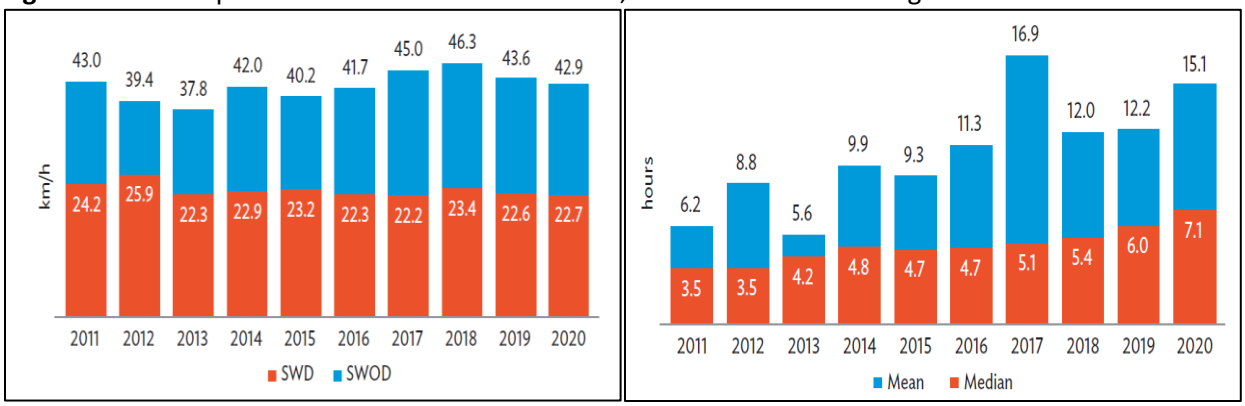



SWD: speed with delay; SWOD: speed without delay

Source: ADB, CAREC Corridor Performance Measurement and Monitoring (CPMM), Annual Report 2020, Dec 2021[27]

[27] https://www.adb.org/sites/default/files/publication/779026/carec-cpmm-annual-report-2020.pdf

**Figure 20:** Road: speed to travel on CAREC corridors, time for border crossing clearance




SWD: speed with delay; SWOD: speed without delay

Source: ADB, CAREC Corridor Performance Measurement and Monitoring (CPMM), Annual Report 2020, Dec 2021

**Table 7***:* Average border clearance time, hours

| | | Road | | Rail | | | | Road | | Rail | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2015 | 2020 | 2015 | 2020 | | | 2015 | 2020 | 2015 | 2020 |
| AFG | Outbound | 1.5 | 12.9 | - | 3.8 | MON | Outbound | 1.6 | 1.5 | 4.3 | 2.1 |
| | Inbound | 26.1 | 23.7 | - | - | | Inbound | 3.2 | 5.0 | 21.3 | 10.6 |
| AZE | Outbound | 50.7 | 2.8 | - | - | PAK | Outbound | 31.2 | 53.3 | - | - |
| | Inbound | - | 10.2 | - | - | | Inbound | 13.6 | 85.8 | - | - |
| PRC | Outbound | 7.8 | 9.5 | 26.9 | 18.7 | TAJ | Outbound | 4.4 | 4.1 | - | - |
| | Inbound | 1.3 | 1.5 | 39.1 | 17.5 | | Inbound | 4.7 | 4.6 | - | - |
| GEO | Outbound | - | 14.2 | - | - | TKM | Outbound | 5.9 | 8.9 | 4.5 | 3.6 |
| | Inbound | - | 4.8 | - | - | | Inbound | 6.6 | 6.9 | 4.7 | 5.9 |
| KAZ | Outbound | 2.6 | 8.0 | 15.6 | 8.4 | UZB | Outbound | 5.9 | 7.6 | 15.4 | 14.0 |
| | Inbound | 4.7 | 9.2 | 44.1 | 56.2 | | Inbound | 5.8 | 14.0 | 5.7 | 5.2 |
| KGZ | Outbound | 3.2 | 1.8 | - | - | | | | | | |
| | Inbound | 2.6 | 2.4 | - | 1.7 | | | | | | |

Green figures: decrease from 2015 to 2020, red figures: increase from 2015 to 2020

Source: CPMM (2021)

# 5. Greening and sustainability

*The CAREC region's economic development will be impacted in the decade to come by a multitude of deep structural changes, of which global warming and decarbonization are among the most fundamental. To move towards a more circular economy will be key to secure sustainability.*

## 5.1. Climate change

### 5.1.1. A matter of urgent concern

**Global temperature is rising above target as reported by the Intergovernmental Panel on Climate Change (IPCC) in April 2022, posing catastrophic climate change challenges in the coming decades, including for the CAREC region, which is severely exposed to draughts, floods, and the melting of glaciers**. Achieving the Paris Agreement target of limiting global warming to 1.5°C would require global

GHG emissions to peak before 2025 at the latest and to be reduced by 43 percent by 2030.[28] The global warming should be highly alarming to the CAREC countries. The region has been facing increasing climate change challenges in recent decades and is one of the most vulnerable regions globally.[29] The recent floods in Pakistan provide tragic evidence of this fact.

### 5.1.2. Water stress

**Climate change is dramatically altering the hydroclimatic conditions in the CAREC region.** The average annual temperature in Central Asia increased by 0.5°C over the last three decades, and it is set to increase further by 2.0°C to 5.7°C until 2085 (SIPRI 2018).[30] The increase in temperature coupled with changing seasonal and spatial patterns in precipitation is causing more frequent and severe droughts on the Central Asian plains (CAREC Institute 2020). By 2040, seven countries in the CAREC region will be experiencing 'extremely high' levels of water stress, according to WRI 2019 projections.[31] Most of the CAREC economies show 4+ scores on the Water Stress Index that measures total annual water withdrawals as a percentage of total annual available blue water, suggesting extremely high risk (Table 8). The CAREC economies are exposed to the highest water stress in agriculture, followed by industrial and domestic use.

**Table 8:** Water Stress Index in the CAREC region

| Rank | Name | Overall index | Industrial | Domestic | Agricultural |
|---|---|---|---|---|---|
| 11 | Kyrgyz Republic | 4.9 | 4.88 | 4.86 | 4.91 |
| 17 | Kazakhstan | 4.66 | 4.46 | 4.47 | 4.79 |
| 18 | Pakistan | 4.33 | 4.1 | 4.01 | 4.35 |
| 23 | Turkmenistan | 4.12 | 4.09 | 3.98 | 4.13 |
| 24 | Azerbaijan | 4.08 | 4.03 | 4.01 | 4.1 |
| 25 | Uzbekistan | 4.03 | 4.37 | 4.35 | 3.97 |
| 26 | Afghanistan | 4.03 | 3.35 | 3.51 | 4.06 |
| 34 | Mongolia | 3.65 | 3.93 | 3.93 | 3.24 |
| 44 | Tajikistan | 3.31 | 3.52 | 3.24 | 3.3 |
| 46 | China | 3.19 | 3.08 | 2.95 | 3.33 |
| 68 | Georgia | 2.2 | 2.05 | 1.99 | 2.41 |

Scores: [0-1): low (<10 percent) water stress, [1-2): low to medium (10 percent to 20 percent), [2-3): medium to high (20 percent to 40 percent); [3-4): high (40 percent to 80 percent); [4-5]: extremely high (>80 percent)
Source: World Resources Institute, Water Stress Index 2021

[28] https://public.wmo.int/en/media/press-release/ipcc-now-or-never-15%C2%B0c-warming-limit#:~:text=In%20the%20scenarios%20assessed%2C%20limiting,reduced%20by%20about%20a%20third
[29] CAREC Institute (2020). *Climate Vulnerability, Infrastructure, Finance and Governance in CAREC Region.* Retrieved from https://www.carecinstitute.org/wp-content/uploads/2020/05/CI-climate-research-report-29-May-2020.pdf
[30] SIPRI (Stockholm International Peace Research Institute) 2018. Central Asia—Climate Related Security Risk Assessment. Expert Working Group Report. Stockholm, 2018
[31] WRI (2019). Creating a Sustainable Food Future: A Menu of Solutions to Feed Nearly 10 Billion People by 2050. World Resources Report. World Resources Institute, Washington, DC

**Irrigation already accounts for approximately 80 percent of total water withdrawals in the region; new sources of water are increasingly expensive to develop.** Seasonal and geographic variations in water availability are severe bottlenecks for agricultural development in many CAREC countries. In addition, the degradation of water quality is impacting human health, limiting food production, reducing ecosystem functionality, and thus hindering economic growth (WB 2019a).[32] Total irrigated lands are estimated to be around 104 million hectares in the CAREC economies, with the PRC and Pakistan accounting for 69 million hectares and 19 million hectares, respectively. Around 15 million hectares of land equipped for irrigation are reportedly not actually being irrigated owing to various technical and financial reasons including disrepair of hydraulic infrastructure, increasing demand by competing sectors, depletion of groundwater resources, and degradation of soil quality.[33]

### 5.1.3. Environmental problems and disasters

**The climate issue is part of even bigger environmental problems**. Table 9 presents the Environmental Performance Index (EPI), which integrates 32 indicators of environmental quality from air pollution to waste and sanitation, drinking water to health and biodiversity.[34] The EPI suggests that several CAREC countries are seriously vulnerable, with Pakistan, the PRC, and Mongolia the most vulnerable.

**Table 9:** Composite Environmental Performance Index (EPI) 2022

| EPI Rank | Country | EPI 2022 |
|---|---|---|
| 81 | Afghanistan | 43.6 |
| 93 | Kazakhstan | 40.9 |
| 103 | Georgia | 39.1 |
| 104 | Azerbaijan | 38.6 |
| 107 | Uzbekistan | 38.2 |
| 117 | Tajikistan | 37.1 |
| 118 | Turkmenistan | 37.0 |
| 126 | Kyrgyz Republic | 35.7 |
| 155 | Mongolia | 29.6 |
| 160 | PRC | 28.4 |
| 176 | Pakistan | 24.6 |
| **CAREC AVERAGE** | | **35.7** |

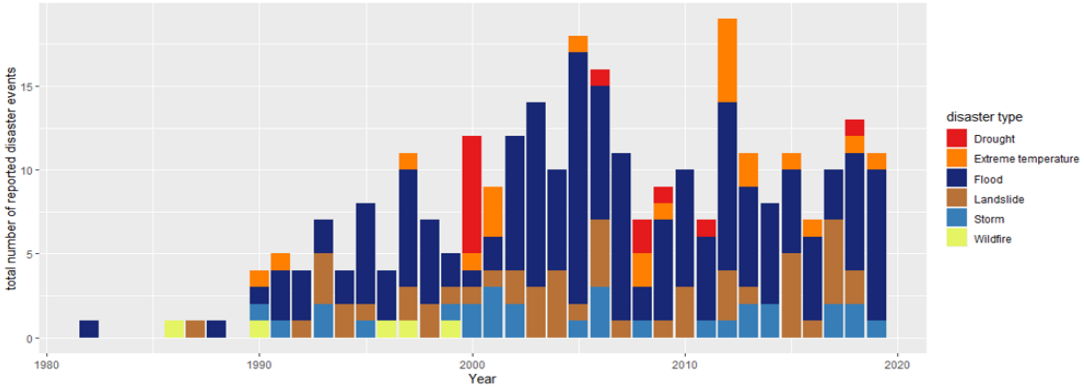
Source: Yale Center for Environmental Law and Policy, Environmental Performance Index 2022

**The CAREC region is facing various types of environmental disaster, including drought, extreme temperature, flood, and storm**. There has been an increasing number of climate induced disasters in the CAREC region in the past four decades (Figure 21). The projected negative climate trajectory will bring more challenges if the right measures are not taken at national and regional levels. The drying up of the Aral Sea, which used to be one of the world's largest lakes, is a living example. The floods in Pakistan in

[32] Quality Unknown: The invisible Water Crisis. International Bank for Reconstruction and Develoment/The World Bank. Washington, DC. https://openknowledge.worldbank.org/handle/10986/32245
[33] https://www.carecinstitute.org/publications/climate-vulnerability-infrastructure-finance-and-governance-in-carec/
[34] https://epi.yale.edu/downloads/epi2022report06062022.pdf

2002 are another drastic example. It has severely hampered the region's ongoing socioeconomic and overall development with lasting impacts on the development prospects of future generations. Aral Sea restoration has become a regional (if not a global) environmental effort.

**Figure 21:** Climate induced disasters in the CAREC region from 1980 to 2019




Source: CAREC Institute, Climate Vulnerability, Infrastructure, Finance and Governance in the CAREC Region. Research report, 2020[35]

**The 2022 floods in Pakistan[36]**

The 2022 floods have shown Pakistan's high vulnerability to climate change. The scale of the disaster substantially exceeds the one of the 2010 floods. The country experienced its wettest August since 1961. One-third of the country was covered by water. About 33 million people were affected and nearly 8 million people displaced. The floods caused damage of an estimated US$14.9 billion, equivalent to 4.8 percent of fiscal year 2022 GDP. The sectors that suffered the most are housing (US$5.6 billion); agriculture, food, livestock, and fisheries (US$3.7 billion), with floods causing the most losses to cotton, date, sugarcane, and rice crops, around 1 million livestock have perished; and transport and communications (US$3.3 billion) as transportation suffers from the loss of critical infrastructure such as roads and bridges, resulting also in the disruption of supply chains.

The damages in the agricultural sector have spillover effects on the industry and services sectors. Local cotton constitutes about half of the textile industry's required cotton input. Textiles account for around one-quarter of total industry output and more than one-half of goods exports. The food processing industries will be negatively impacted by reduced harvests and supply of livestock. In turn, the lower agricultural and industrial activity adversely impacts trade and transportation, which account for about one-half half of the service sector value added. Consequently, value added in the service sector is projected to decline by 0.6 percent of GDP. Overall GDP decline as a direct impact of the floods is estimated to be around 2.2 percent of GDP. The floods have disproportionately hit the poorest households in poorest areas. The national poverty rate will likely increase by 3.7 to 4.0 percentage points, pushing

[35] https://www.carecinstitute.org/publications/climate-vulnerability-infrastructure-finance-and-governance-in-carec/
[36] Compiled from: Ministry of Planning, Development & Special Initiatives, "Pakistan Floods 2022: Post-Disaster Needs Assessment", https://reliefweb.int/report/pakistan/pakistan-floods-2022-post-disaster-needs-assessment

between 8.4 and 9.1 million people into poverty; the rate stood at 21.9% in 2018, according to World Bank data.

The transport and communications sector has the highest reconstruction and recovery needs (US$5.0 billion); followed by agriculture, food, livestock, and fisheries (US$4.0 billion), and housing at PKR 592 billion (US$2.8 billion). The provinces of Sindh and Balochistan account for approximately 50 percent and 15 percent of recovery and reconstruction needs, respectively.

The recovery and reconstruction needs are exceeding Pakistan's available resources. Assistance from multilateral and bilateral partners is required. On August 19, the Government of Pakistan launched a PKR 37.2 billion (US$170 million) flood relief cash program for 1.5 million affected families. On August 30, the Government of Pakistan and the United Nations jointly launched the 2022 Pakistan Floods Response Plan (FRP), which highlighted the main humanitarian needs and outlined an action plan to respond to the immediate needs of the people. A Revised FRP was released on October 4, appealing for US$816 million to cover the most urgent needs of 9.5 million people. However, as of October 21, only 13.7 percent of the requested amount has been funded.

## 5.2. Agriculture: strongly affected while highly important

### 5.2.1. Rethink agricultural production models

**Climate change strongly harms the CAREC region's agriculture, which still accounts for a substantial share of the region's GDP and an even higher share of employment**. The sector generated on average 15 percent of the GDP of CAREC members in 2019, excluding the PRC, compared to the world average of 4 percent (Table 10). Agriculture generates at least one-fifth of GDP in Afghanistan, Pakistan, and Uzbekistan. In 2019, agriculture employed 33.5 percent of the workforce in CAREC members, significantly more than the global average of 27 percent. Agricultural products accounted for about 10 percent of CAREC exports on average, and as much as 85 percent in Afghanistan, 28 percent in Georgia, and 22 percent in Pakistan. Agriculture will undergo deep structural changes with serious consequences for the economy, employment, and the fabric of society.

**Table 10:** Contributions of agriculture to CAREC economies, 2019

| Economy | Share of Agriculture, Forestry, and Fishing Value Added in GDP (%) | Share of Agriculture in Employment (%) | Share of Agriculture in Export Value (%) |
|---|---|---|---|
| Afghanistan | 25.8 | 42.8 | 84.9 |
| Azerbaijan | 5.7 | 35.9 | 4.6 |
| Georgia | 6.5 | 41.8 | 28.2 |
| Kazakhstan | 4.5 | 15.8 | 5.9 |
| Kyrgyz Republic | 12.1 | 21.2 | 14.7 |
| Mongolia | 10.8 | 27.4 | 6.5 |
| Pakistan | 22.0 | 36.7 | 22.4 |
| Tajikistan | 19.2[a] | 44.9 | 15.6 |
| Turkmenistan | 9.3[b] | 19.9 | 1.1 |
| Uzbekistan | 25.5 | 23.9 | 13.5 |
| **CAREC-10 (average)** | **15.0** | **33.5** | **10.0** |
| PRC | 7.1 | 25.4 | 3.1 |

[a] 2018; [b] 2015; Averages are weighted by GDP, employment, and exports; agricultural commodities are defined as sections 0, 1, 2 (except 27 and 28), and 4 of the Standard International Trade Classification[37]
Sources: World Bank, World Development Indicators; TradeMap; China Statistics Press.

**While global warming and water stress pose serious threats to agriculture in the CAREC region, arable land per capita has substantially decreased over the past 25 years**; Afghanistan, Georgia, Mongolia, Pakistan, Tajikistan, and Uzbekistan are especially exposed. The projected future strong population growth will result in an even more alarming degradation of soil availability. To address these challenges, a breakthrough in water and land productivity and the diversification of agricultural production are required.[38]

**There is a need to reassess the safety and sustainability of the water-related infrastructure for the optimization of services.** Operational efficiency has often declined as facilities have approached the end of their design life. And it is necessary to consider groundwater, drainage, and reclaimed water resources in future planning. Five countries in the CAREC region are highly water dependent on transboundary rivers. More water conservation facilities, drainage water collection, use after desalinization, and water-saving irrigation are needed. International and regional water management cooperation is another important area in which to improve water security and efficiency.

**To adapt to climate change and make agriculture more productive, it is necessary to rethink agricultural production models, water allocation, and crop diversification with heat and drought resistant varieties.** For example, Turkmenistan and Uzbekistan should strategically reconsider diversification of cropping, from cotton to horticulture and fodder. Wheat is the main agricultural product in the CAREC region, particularly for Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan. Its importance in household consumption makes it the most important crop for regional food security. However, resilience and sustainability require more diversification also in the wheat countries. Other adaptation and mitigation measures include: soil protection; zero-tillage, and crop

[37] https://www.wto.org/english/res_e/ statis_e/wts2018_e/wts2018_e.pdf
[38] CAREC Institute, Climate research, Climate Vulnerability, Infrastructure, Finance and Governance in the CAREC Region. Research report. 2020, https://www.carecinstitute.org/wp-content/uploads/2020/05/CI-climate-research-report-29-May-2020.pdf

rotation; windbreaks and plant shelter belts; sustainable pasture management; preventing grassland degradation, restoring grassland from grazing land; effective forest management; voluntary tree planting; construction of forestry infrastructure; afforestation and reforestation; increased forest area; expand protected area; carbon monitoring in forest areas; and combating desertification.

**Agriculture must become less energy and GHG-emissions intensive**. Policies and measures that provide incentives to reduce fuel consumption and to use cleaner fuel technologies, to recover biomass for energy generation and use methane gas from manure, along with optimal timing of fertilizer application, restraint on fertilizer and pesticide use, and methane and nitrous oxide emissions control are of high importance.

### 5.2.2. Food security: under threat

**Food security is a serious issue for the CAREC region**. None of the CAREC economies is among the top 30 on the Global Food Security Index that ranks 113 global economies by integrating four key dimensions—affordability, availability, quality and safety, natural resources and resilience (Table 11). Pakistan, Tajikistan, and Uzbekistan are the most vulnerable CAREC economies, while Azerbaijan and Kazakhstan are moderately susceptible to food insecurity. The PRC scores highest on the food security index. The war in Ukraine and the resulting increase in food prices make the situation even more challenging. Afghanistan is not covered by the index, but it is one of the most exposed countries globally, with a serious hunger crisis under way.

**Table 11:** Food Security Index 2021

| Rank / 113 | Country | Score |
|---|---|---|
| 34 | PRC | 71.3 |
| 41 | Kazakhstan | 69.2 |
| 56 | Azerbaijan | 62.6 |
| 75 | Pakistan | 54.7 |
| 78 | Uzbekistan | 53.8 |
| 83 | Tajikistan | 51.6 |

Scores are normalized to 0-100, where 100=most favorable food security environment
Source: Impact Economist, Food Security Index 2021[39]

### 5.2.3. Management of water, agriculture, and food production: digitalization can help

**Digital technologies can decisively aid in the management of agricultural land and resources, and the organization of production and services related to agriculture.** Land evaluation, soil-crop appropriateness, meteorological information, crop growth, bioenergy and productivity, precision farming, and water treatment systems and the many phases of the agricultural supply chain (processing, packaging, delivery, consumption, agro-waste management) have benefited from digitalization.

[39] https://impact.economist.com/sustainability/project/food-security-index/Index

**To modernize agriculture, make it more circular, and ensure food security, various advanced digital technologies can be applied**. They include satellite imagery, GIS, smartphones, robotics, artificial intelligence, genomics, bioinformatics, and big data. Digital technologies also aid in the selection of procedures for best possible high-yield achievement, of meticulous resource feeds, determining the best nutritional value of the agricultural produce, crop data processing, and post-harvest services for agro-based industries. Digitalization can help organize online meeting platforms, virtual education, algorithm-based traffic management system, autonomous transport system, and GIS mapping to highlight climate vulnerability, and machine learning-based environmental predictions. Drones and remote sensing help identify and cultivate barren lands conveniently and quickly.

## 5.3. Energy and electricity

*The energy sector is also among the ones to undergo deepest changes globally and in the CAREC region. Within the energy sector, changes in the electricity sector are highly crucial. The CAREC region is strongly depended on fossil fuel for the generation of electricity and heat, and it is in dire need of transitioning to alternative sources of energy.*

### 5.3.1. Emissions, energy transition, and nationally determined contributions

**Most of the CAREC economies must substantially accelerate their energy transition**. Table 12 reports how CAREC economies score among 115 countries on the Energy Transition Index (ETI).[40] Azerbaijan, Georgia, and China are the top three performing countries in terms of transitioning to a secure, sustainable, affordable, and reliable energy future, while Mongolia, Pakistan, Kyrgyz Republic, and Kazakhstan are the least performing countries, according to the ETI.

**Table 12:** Energy Transition Index

| Rank | Name | ETI | System Performance | Transition Readiness |
|---|---|---|---|---|
| 33 | Georgia | 65.15 | 67.4 | 52.9 |
| 44 | Azerbaijan | 62.90 | 69.5 | 56.3 |
| 68 | China | 56.70 | 55.4 | 58.0 |
| 75 | Tajikistan | 55.00 | 55.7 | 54.3 |
| 83 | Kazakhstan | 53.75 | 64.1 | 43.4 |
| 94 | Kyrgyz Republic | 51.30 | 52.3 | 50.3 |
| 104 | Pakistan | 48.90 | 56.2 | 41.6 |
| 113 | Mongolia | 44.25 | 51.5 | 37.0 |

Source: World Economic Forum, Global Energy Transition Index 2021

**All CAREC members have submitted their intended nationally determined contributions (NDCs) for the reduction of GHG emissions under the COP 21 Paris Agreement**. Some of the commitments are unconditional and are to be realized relying on the countries' own sources; other commitments are

[40] https://www.weforum.org/reports/fostering-effective-energy-transition-2021/

contingent on finding external financing (Table 13). The commitments are underpinned in the NDCs by ambitious plans for concrete measures and strategies. Time horizons are short, mostly 2030 is the critical year for delivery. Therefore, implementation must be accelerated, and better coordinated international and regional action could help.

**Table 13:** Nationally determined contributions

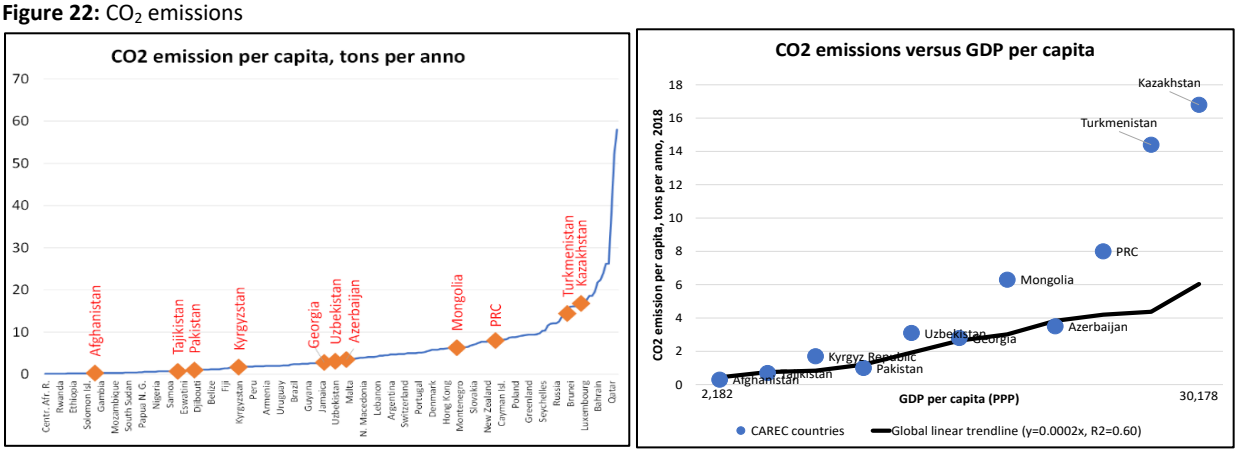
| Country | Base year | Time frame | Target |
|---|---|---|---|
| Afghanistan | 2005 | 2020-2030 | There will be a 13.6 percent reduction in GHG emissions by 2030 compared to a business as usual (BAU) 2030 scenario, conditional on external support. |
| Azerbaijan | 1990 | 2030 | 35 percent reduction at total emissions level compared to the base year. Total emissions reduction for 2030 compared to the base year: 25.666 Gg $CO_2$ equivalent (excluding LULUCF) 24.374 Gg $CO_2$ equivalent (including LULUCF ). |
| PRC | 2005 | 2030, 2060 | Lower $CO_2$ emissions per unit of gross domestic product (GDP) by over 65 percent from the 2005 level; peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060. |
| Georgia | 1990 | 2030 | Unconditional target: 35 percent below 1990 level of its domestic total GHG emissions by 2030; conditional target: 50 percent to 57 percent of its total GHG emissions by 2030 compared to 1990, in case of international support. |
| Kazakhstan | 1990 | 2021-2030 | Unconditional target: A 15 percent reduction in GHG emissions by 31 December 2030 compared to the base year; conditional target: A 25 percent reduction in GHG emissions by 31 December 2030 compared to the base year, subject to additional international investments, access to low carbon technologies transfer mechanism, green climate funds and flexible mechanism for country with economy in transition. |
| Kyrgyz Republic | 2017 | 2017-2030 | By 2025 reduce GHG emissions by 16.63 percent under the BAU scenario, and with international support by 36.61 percent. By 2030, The Kyrgyz Republic can reduce GHG emissions by 15.97 percent of the GHG emission levels under the BAU scenario, and by 43.62 percent with international support. |
| Mongolia | 2010 | 2030 | A 22.7 percent reduction in total national GHG emissions by 2030, compared to the projected emissions under a BAU scenario for 2010; in addition, if conditional mitigation measures such as the carbon capture and storage and waste-to-energy technology are implemented, then Mongolia could achieve a 27.2 percent reduction in total national GHG emissions. Along with that, actions and measures to remove GHG emissions by forest are determined, which set the total mitigation target of Mongolia as 44.9 percent of GHG emission reduction by 2030. |
| Pakistan | 2015 | 2030 | Overall 50 percent reduction of its projected emissions by 2030, with a 15 percent drop below BAU from the country's own resources, and an additional 35 percent drop below BAU subject to international financial support. |
| Tajikistan | 1990 | 2030 | Unconditional target: emissions cap of 60 percent to 70 percent of existing GHG emissions in 1990 level by 2030, conditional target: emissions cap of 50 percent to 60 percent compared to the 1990 level by 2030, if provided access to affordable financial resources, technology transfer and technical cooperation. |
| Turkmenistan | 2000 | 2020-2030 | As specified in the 'National Strategy of Turkmenistan on Climate Change.' |
| Uzbekistan | 2010 | 2030 | Reduce specific GHG emissions per unit of GDP by 35 percent by 2030 from the level of 2010. |

Source: Nationally Determined Contributions Registry[41]

**Several CAREC economies are substantial GHG emitters, and in particular the GDP of Kazakhstan, Turkmenistan, Mongolia, and the PRC is highly $CO_2$-intensive.** While the $CO_2$ emissions of most CAREC countries are broadly in line with their GDP per capita, Kazakhstan, Turkmenistan, the PRC, and Mongolia produce a lot more than their GDP per capita would suggest (Figure 22). This is in part related to their industry structure and is about to decline as the services sector expands. However, there is also a lot of room for changes in electricity generation, distant heating, the traffic, and construction. Countries need to reduce emissions ($CO_2$ and others) for the sake of the environment, the health of their populations, and the livelihood of future generations.

[41] https://unfccc.int/NDCREG

**Figure 22:** $CO_2$ emissions

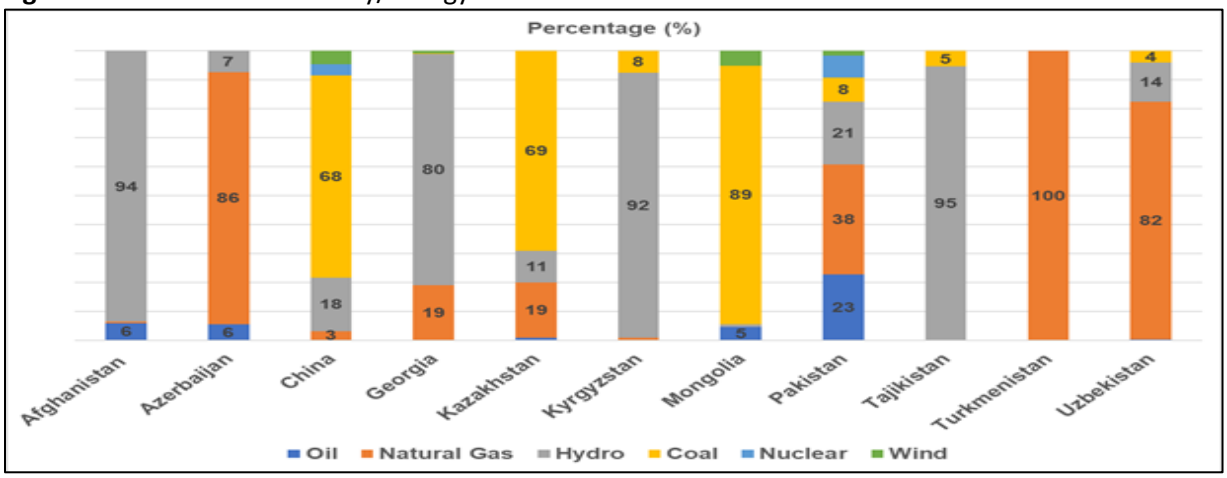



Source: Emissions Database for Global Atmospheric Research (EDGAR), national statistics agencies, authors' calculations

## 5.3.2. Transforming the power sector is a main part of the energy transition

**Fossil fuels still account for a large part of sources for electricity generation in the CAREC region.** Energy transition is understood to comprise the shift from conventional sources of power to new sources of supply. For instance, from coal and hydrocarbons to cleaner sources that use water, wind, sunlight, and biologically derived fuels. Also, from the direct use of fuels to the use of electricity. However, coal, oil, and natural gas still constitute the principal source of electricity generation in many CAREC economies (Figure 23).

**Figure 23:** Sources of electricity/energy in CAREC countries




Note: According to recent data, natural gas accounts for 94.5%, hydro (including small hydro) for 4.0%, and other renewable energy for 1.5% of electricity generation in Azerbaijan.

Source: CAREC Institute, 'Climate Vulnerability, Infrastructure, Finance and Governance in CAREC Region.' Research report, 2020

**Regional cooperation is an important element of upgrading governance in the electricity sector.** Stronger regional coordination can promote the rollout of stable governance frameworks and contribute to economies of scale and scope. Closer cooperation at all levels would also enhance efficiencies while

minimizing market and regulatory risks faced by prospective investors. Such an approach would also facilitate the functioning of a regional energy market and diversifying generation based on competitive advantages. In this way, alternative long-term and sustainable evolutions could be envisaged while preserving adequate flexibility to accommodate significant variability in supply and demand in the short term. A Central Asia Transmission Cooperation Association (CATCA) could perhaps be set up to allow network operators to discuss and produce longer-term regional network development plans.[42] The aim of this initiative would be to elevate grid expansion planning from a purely national level to a regional level, enhancing information sharing and energy security in the region.

**A longstanding project for better electricity cooperation in the region is CASA-1000**. The Kyrgyz Republic and Tajikistan are endowed with large hydropower resources. Thanks to summer rainfall and water flow, both countries have a surplus of electricity during the summer. At the same time, Afghanistan and Pakistan suffer from insufficient electricity generation while trying to keep pace with the growing demand. The Central Asia South Asia (CASA) project for a new electricity transmission system to connect the four countries would enable the Central Asian countries to transfer and sell their electricity surplus during the summer months to the deficient countries in South Asia. The project also complements the countries' efforts to integrate and expand markets to increase electricity trade and find regional solutions to water resource management.[43]

**Energy transition will have to encompass various dimensions, including availability, applicability, acceptability, and affordability**. Challenges range from grid integration, the need for storage systems, and enhancing industry and household energy efficiency, to addressing the imminent increase in electricity demand resulting from the spread of digitalization and e-mobility. Effective management of demand and supply patterns is needed to enhance asset use efficiency while minimizing potential market and regulatory risks. The transition requires reforms in regulations and pricing regimes. The CAREC countries need to further improve the institutional and regulatory framework to encourage investments in the energy transition and in renewables. Appropriate incentives to suit specific sections of society need to be tailored properly if the energy transition is to be feasible, efficient, and sustainable. Renewable energy must also be affordable for the consumer.

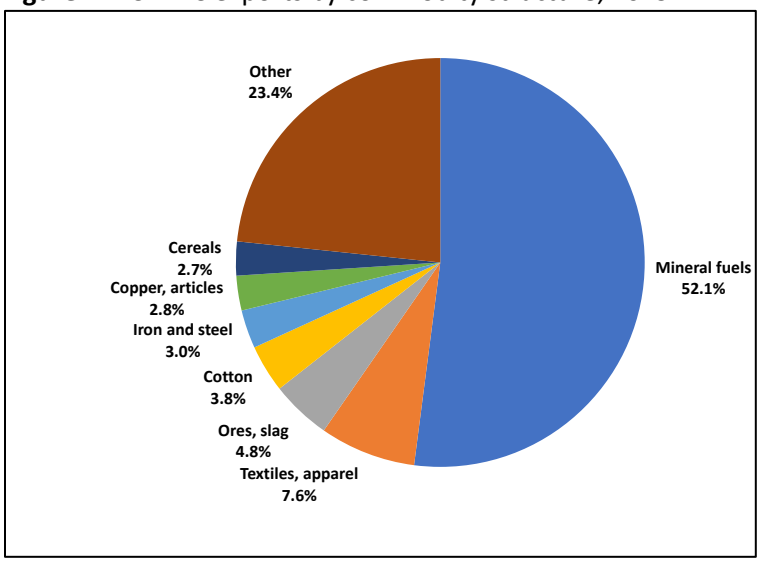
### 5.3.3. Decarbonization in Europe and elsewhere will affect CAREC exports

**More than one-half of CAREC exports (excluding the PRC) are mineral fuels** (Figure 24)**.** Other exports are also highly energy- and water-intensive; Kazakhstan and Azerbaijan in particular will be affected by global decarbonization efforts. Accelerated global decarbonization strategies will reduce the use of mineral fuels in production, transportation, and heating, and thus negatively affect such CAREC exports in the medium to long term. Mineral fuels accounted for 67 percent of Kazakhstan's exports in 2019. Of these, 59 percent (39 percent of Kazakhstan's total exports) went to the European Union. The figures for Azerbaijan are 90 percent of exports, of which about one-half go to the European Union. The EU countries agreed to target 30 percent of the €750 billion 'Next Generation Recovery Fund,' a COVID-19 relief fund, towards climate change-related spending. Kazakhstan and Azerbaijan must seriously consider how to

[42] https://carecenergy.org/wp-content/uploads/2022/04/CATCA-Concept_final_April-2022_EN.pdf
[43] https://www.casa-1000.org/

diversify both the product structure of their exports and their export destinations to maintain their export revenues in the long run.

**Figure 24:** CAREC exports by commodity structure, 2019




Source: TradeMap, authors' calculations

**While global demand for mineral fuels is set to shrink in the long run, demand for metals, especially copper, nickel, rare earths, is increasing owing to the electrification of many areas that were previously served by other forms of energy**. These materials are also in high demand for the production of electronic chips and other electronic parts. Analysis from the IEA report on critical minerals shows that electric vehicles require up to six times more minerals for their motors and batteries compared to conventional cars.[44] Lithium, cobalt, graphite, manganese, copper, and many others are the backbone of electric vehicles. While most of those are abundant in nature, the level of investment needed to satisfy the globally booming demand is not yet sufficient. While CAREC countries should also encourage downstream production in the mineral fuels sector, for which high demand will continue, such as fertilizers and new materials, they should utilize opportunities in the metals sector along with opportunities in agriculture and in services such as tourism, trade, healthcare, and others.

# 6. Inclusiveness and human capital

**Despite substantial achievements, the CAREC economies continue to face serious challenges on the way to full prosperity**. All CAREC economies secured step-by-step improvement from 2010 to 2019 according to the Human Development Index.[45] However, the average score for the CAREC region was still lower in 2019 than the world average. To advance further towards prosperity, additional measures for eradicating

[44] https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions
[45] https://hdr.undp.org/data-center/human-development-index?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=CjwKCAjw_b6WBhAQEiwAp4HyIKzoUw55QtoVY_g446CvkmbalCntzqq4LJ5VjxL8F-scO1p0NxeLkBoCUfQQAvD_BwE#/indicies/HDI

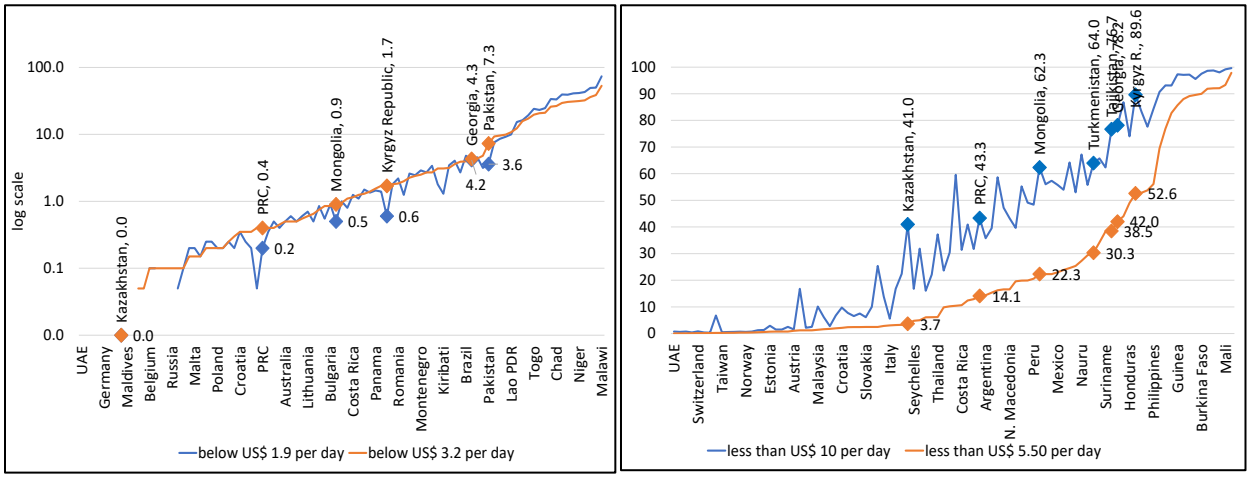
poverty, broadening social protection, reducing gender inequality, and propping up education and healthcare will be essential.

## 6.1. Poverty: an open wound

### 6.1.1. Poverty reduction until 2019

**CAREC economies, like many other nations in the world, have made great progress in poverty reduction and welfare improvement in the past few decades, but poverty has remained a serious curse**. World Bank data shows that the proportion of the population living below the international middle poverty line of US$3.2 per day was below 5 percent for most CAREC countries, although higher for Pakistan, and definitely for Afghanistan, although no data is available for this metric (left hand side of Figure 25). The proportion of the population living below the international extreme poverty line of US$1.9 per day ranged from 0 percent for Kazakhstan to 4.2 percent for Georgia, and proportion of the population living below the poverty line of US$3.2 per day from 0 percent for Kazakhstan to 7.3 percent for Pakistan. CAREC economies thus range over the whole global spectrum. However, the share of the population living on less than US$5.5 per day was still above 20 percent in several CAREC countries (right hand side of Figure 25). The share of the population living on less than US$10 per day is substantial in the CAREC region, reflecting low GDP per capita and inequality of income.

**Figure 25:** Share of population below US$xx daily income (average 2018-2019), percentage




Source: WB Worldpopulationreview, authors' calculations

### 6.1.2. Renewed poverty increase in 2020, and highly likely again in 2022

**With COVID-19 sweeping the globe, poverty reduction has slowed, and a substantial number of people are falling back into poverty or are much poorer than before, certainly also in the CAREC region**. According to a report by the World Bank, between 75 million and 95 million additional people could be living in extreme poverty globally in 2022 compared to pre-COVID-19 projections.[46] The rise in food prices and more generally the elevated inflation will likely aggravate the situation. Data released by the Asian

[46] https://www.worldbank.org/en/topic/poverty/overview

Development Bank suggests that almost half of the population in Afghanistan already lived below the national poverty line in 2020. Since then, the situation has become much more severe, and UNHCR and others warn about a rampant hunger crisis.

**Poverty has remained a big open wound in several CAREC countries, and COVID-19 has reaggravated the problem.** The 2030 Agenda for Sustainable Development promised 'to leave no one behind and to reach those furthest behind first.' Reducing poverty is a difficult task, however, that requires a complex set of 'policies for sustainable, inclusive, sustained, and equitable economic growth, supported by full employment and decent work for all, social integration, declining inequality, rising productivity, and a favorable environment.'[47]

## 6.2. Social protection: at a critical juncture

### 6.2.1. The pandemic exposed weaknesses of social protection

**The COVID-19 pandemic clearly demonstrated the vulnerability of those who were insufficiently protected**. Casualties were highest particularly among this group. In sectors such as hospitality, culture, retail trade, and tourism, businesses employees suffered major employment losses with severely adverse effects on the livelihoods of the least protected. At the same time, while often working in professions most exposed to the spread of infection, the ones without unemployment protection could rarely afford to pause work. Beside the personal hardship that this involved, this also hindered containment measures to the disadvantage of society as a whole.

### 6.2.2. Room for improvement

**CAREC countries protect their population comparably well in some social protection categories but have substantial room for improvement in others**. Measured by the share of the population protected, CAREC economies perform slightly better than the world on average in most categories (Table 15). Six out of ten CAREC economies with data availability cover a larger share of their populations with at least one social protection benefit than the world does on average. However, CAREC economies do worse protecting mothers with newborns: only three reach higher percentages than the world average. They do also worse with regard to unemployment benefits and universal health coverage. In all categories, Afghanistan and Pakistan protect a smaller portion of the population not only than the world average, but also than the low-income country average.

[47] https://www.un.org/en/global-issues/ending-poverty

**Table 14:** Social protection coverage, 2020 or latest available, (percentage of relevant population group)

| | Population covered by at least one social protection benefit (excluding health)[1] | People protected by social protection systems including floors | | | | | | | Universal health coverage [2] |
|---|---|---|---|---|---|---|---|---|---|
| | | Children | Mothers with new-borns | Persons with severe disabilities | Unem-ployed | Older persons | Workers in case of work injury | Vulnerable persons covered by social assistance | |
| Afghanistan | *8* | *0* | *2* | *14* | *2* | *25* | *4* | *6* | *37* |
| Azerbaijan | *39* | *17* | *16* | 100 | 19 | *73* | *32* | *13* | *65* |
| PRC | 71 | *3* | 69 | *33* | 24 | 100 | *32* | 33 | 79/95[3] |
| Georgia | 97 | 48 | *26* | 100 | *0* | 91 | 49 | 93 | 66 |
| Kazakhstan | 100 | 57 | *44* | 100 | *9* | 100 | 75 | 74 | 76 |
| Kyrgyz Republic | *42* | *17* | *24* | 65 | *3* | 100 | 65 | *14* | *7* |
| Mongolia | 100 | 85 | 100 | 100 | 29 | 100 | 76 | 89 | *62* |
| Pakistan | *9* | *5* | … | *2* | *0* | *6* | *3* | *5* | *45* |
| Tajikistan | *27* | *14* | 67 | 49 | 21 | 94 | … | *8* | 68 |
| Turkmenistan | 67[4] | … | … | … | … | … | … | … | *7/88.6*[4] |
| Uzbekistan | *43* | 29 | *16* | 40 | *1* | 100 | 44 | *16* | 73 |
| ***CAREC average*** | **54** | **28** | ***40*** | **60** | ***11*** | **79** | **42** | **35** | ***53*** |
| | | | | | | | | | |
| ***World*** | ***47*** | ***26*** | ***45*** | ***34*** | ***19*** | ***78*** | ***35*** | ***29*** | ***66*** |
| *Low income* | *13* | *9* | *11* | *9* | *1* | *23* | *10* | *8* | *45* |
| *Lower-middle* | *25* | *21* | *33* | *11* | *6* | *39* | *14* | *15* | *55* |
| *Upper-middle* | *64* | *23* | *53* | *41* | *18* | *91* | *36* | *34* | *77* |
| *High income* | *85* | *87* | *86* | *86* | *52* | *98* | *81* | *63* | *82* |

[1] SDG 1.3.1 [2]SDG 3.8.1 [3] progress achieved since the World Social Protection Report 2020-22 according to PRC data 4 according to data provided by the Government of Turkmenistan
Blue italics indicate a percentage below global average
Source: ILO, World Social Protection Report 2020-22, Statistical annex[48]

**As other countries, CAREC members have multidimensional needs for upgrading social protection**. The International Labor Organization's World Social Protection Report 2020-22 not only calls for the coverage of larger proportions of the population, adequate benefit levels, and sustainably financed systems, but also for provisions that are rights based.[49] For all CAREC economies the availability of detailed data about vulnerabilities and social protection is a big issue and one of the areas where decisive improvements are needed. More active labor market policies and public support for reskilling, job-searching, and facilitating reallocation of workers would be desirable. Empowering labor in compensation negotiations and corporate decision making is another essential ingredient for a more equitable society.

**Migrants need specific protection**. From CAREC countries originate a large number of migrant workers and they also have a significant stock of mutual migrants (Table 15). Migrant workers should be subject to the same minimum wages as their native counterparts. To address the obstacles faced by migrant workers in accessing healthcare and other social protection benefits—highly relevant to many in the CAREC region—it is essential to ensure access to social protection equal to that of native employees and to facilitate cross border portability of entitlements. Cooperation of sending and receiving countries is advantageous to migrant workers. Through cooperation, sending countries can manage the worker-

[48] https://www.social-protection.org/gimi/ShowWiki.action?id=629#stat
[49] https://www.social-protection.org/gimi/RessourcePDF.action?id=1

recruitment process in a transparent manner, including job orders and fees involved. Both sending and receiving countries should ensure that the workers arrive in the destination country with a prior job arrangement. Receiving countries, can thus benefit from better job matching of migrant workers and see a decline in irregular migration owing to lower recruitment cost.[50]

**Table 15:** Mutual migrant stock (mid-2020): destination and origin

| Destination | Origin | Persons | Destination | Origin | Persons |
|---|---|---|---|---|---|
| Afghanistan | Pakistan | 102,500 | Mongolia | PRC | 11,419 |
| | Tajikistan | 4,422 | | Kazakhstan | 225 |
| | Uzbekistan | 219 | | Pakistan | 21 |
| Azerbaijan | Afghanistan | 176 | Pakistan | Afghanistan | 1,598,223 |
| | Georgia | 48,815 | | PRC | 311 |
| | Kazakhstan | 3,456 | Tajikistan | Afghanistan | 12,433 |
| | Kyrgyzstan | 2,438 | | Azerbaijan | 168 |
| | Tajikistan | 236 | | PRC | 46 |
| | Turkmenistan | 1,644 | | Georgia | 664 |
| | Uzbekistan | 16,254 | | Kazakhstan | 840 |
| PRC | Pakistan | 3,414 | | Kyrgyzstan | 11,351 |
| Georgia | Afghanistan | 40 | | Pakistan | 103 |
| | Azerbaijan | 6,023 | | Turkmenistan | 446 |
| | PRC | 74 | | Uzbekistan | 7,563 |
| | Kazakhstan | 1,718 | Turkmenistan | Afghanistan | 198 |
| | Kyrgyzstan | 249 | | Azerbaijan | 7,596 |
| | Mongolia | 27 | | Kazakhstan | 19,994 |
| | Pakistan | 86 | | Tajikistan | 1,465 |
| | Tajikistan | 148 | | Uzbekistan | 67,003 |
| | Turkmenistan | 203 | Uzbekistan | Azerbaijan | 20,201 |
| | Uzbekistan | 765 | | Kazakhstan | 13,092 |
| Kazakhstan | Azerbaijan | 50,912 | | Kyrgyzstan | 4,856 |
| | PRC | 2,274 | | Tajikistan | 11,408 |
| | Georgia | 3,445 | | Turkmenistan | 756 |
| | Kyrgyzstan | 7,085 | Russian Federation | Afghanistan | 5,090 |
| | Tajikistan | 16,644 | | Azerbaijan | 766,918 |
| | Turkmenistan | 1,104 | | PRC | 56,138 |
| | Uzbekistan | 296,511 | | Georgia | 449,973 |
| Kyrgyzstan | Azerbaijan | 4,554 | | Kazakhstan | 2,558,907 |
| | PRC | 262 | | Kyrgyzstan | 591,025 |
| | Georgia | 3,183 | | Mongolia | 21,132 |
| | Kazakhstan | 12,599 | | Pakistan | 726 |
| | Tajikistan | 2,146 | | Tajikistan | 466,252 |
| | Turkmenistan | 973 | | Turkmenistan | 185,561 |
| | Uzbekistan | 8,940 | | Uzbekistan | 1,146,175 |

Source: https://www.un.org/development/desa/pd/content/international-migrant-stock

## 6.3. Gender equality: substantial room for improvement, including political representation

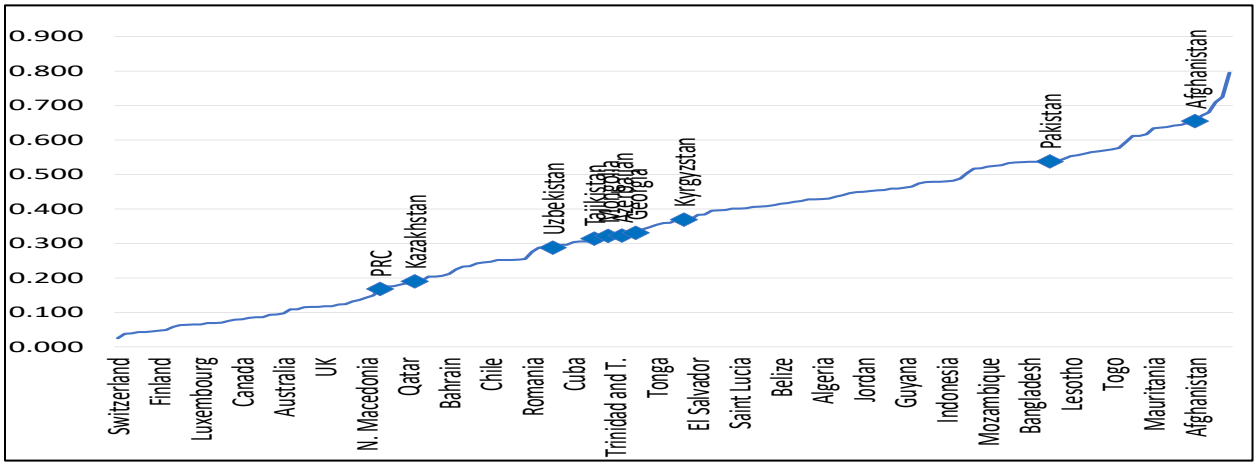
### 6.3.1. COVID-19 has further widened the gender gap

**There was already a significant gender equality gap in the CAREC region in 2019, and the COVID-19 pandemic has only aggravated the issue**. UNDP's Gender Inequality Index, part of the Human Development Report, is a composite metric using three dimensions—reproductive health, empowerment, and the labor market—and five subindices—maternal mortality ratio, adolescent birth rate, share of women's seats in parliament, share of women with at least some secondary education, and labor force participation of women.[51] High scores indicate high inequality between women and men. According to the

[50] https://www.adb.org/sites/default/files/publication/419611/migration-remittances-development-asia.pdf
[51] https://hdr.undp.org/data-center/thematic-composite-indices/gender-inequality-index?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=CjwKCAjwk_WVBhBZEiwAUHQCmUVFO9oldtc7BC-7mVOBwKkEInSrsC6AmO9jkbw6E5WHJYS9dxAcUxoCPCUQAvD_BwE#/indicies/GII

index, inequality is relatively moderate in the PRC and Kazakhstan by global comparison and high in Afghanistan and Pakistan (Figure 26). The other CAREC countries fall more in the middle; whereas the data for Turkmenistan is missing.

**Figure 26:** Gender Inequality Index, data for 2019




Source: UNDP Gender Inequality Index, authors' calculations

**COVID-19 has worsened gender inequality in many respects, beginning from female workforce participation, to schooling, to domestic violence**. 'The evidence shows that, while both men and women were severely affected by the pandemic, women experienced a larger impact through multiple channels. First, as women are frequently employed in sectors directly disrupted by lockdown and social distancing measures, they consequently experienced both higher unemployment rates and a more subdued re-entry into employment. Second, women's labour force participation dropped further than that of men at the start of the pandemic. Third, women's re-employment has been slower, with lower hiring rates and delayed hiring into leadership roles. There is also evidence that among those women who have continued to work throughout the pandemic, some have reduced their working hours more than men and some have pulled back from promotions and leadership roles,' the World Economic Forum's Global Gender Gap Report 2021 reads.[52] The scarring from the pandemic has been deeper and more persistent for women than for men.

### 6.3.2. Most of unpaid work, but worse off on pay scales, political representation, and many more areas

**There is a systemic gender gap in pay scales, quality of employment, and promotion opportunities, not least owing to failures to implement national policies on flexible working arrangements, parental leave, and equal pay**, the CAREC Gender Strategy 2030 adds.[53] Female entrepreneurship is undermined by factors that include lack of finances for startups and expansion because of women's limited ownership of assets to leverage credit. Women are also often among the most affected by shocks such as droughts or flooding, and food price fluctuations. Pandemics, such as COVID-19, affect women more because of their disproportionate exposure to risk and increased pressure to undertake primary care responsibilities.

[52] https://www3.weforum.org/docs/WEF_GGGR_2021.pdf
[53] https://www.adb.org/sites/default/files/institutional-document/698316/carec-gender-strategy-2030.pdf

**The CAREC region lags global average in women's political representation**. CAREC's performance is generally better than globally for maternal mortality, although figures for Pakistan and the Kyrgyz Republic are high, and Afghanistan's scores are way above global average (Table 16). Except for Afghanistan and Pakistan, female enrollment in secondary education looks relatively satisfying, and for Mongolia and the Kyrgyz Republic it is higher than enrollment figures for males. Female labor force participation is seriously below the global average in Afghanistan, Pakistan, and to a lesser extent in Tajikistan. The CAREC region performs substantially below the global average for women's seats in parliament, although interestingly Afghanistan performed best among the CAREC countries and above the global average, in 2019 however. It is quite clear that political empowerment also affects economic empowerment. This might be one of the reasons for the persisting gender pay gap in the CAREC region, evident even for the few countries with data availability (Figure 27). Progress in closing the pay gap looks limited and not very systematic.

**Table 16:** Gender Inequality Index and subindices

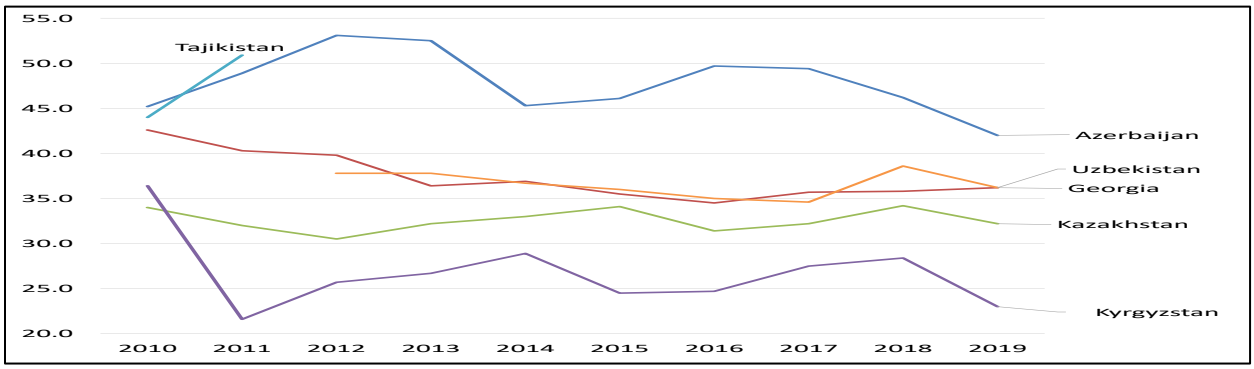
| Country | Gender Inequality Index | Maternal mortality ratio | Adolescent birth rate | Share of seats in parliament | Population with at least some secondary education | | Labor force participation rate | |
|---|---|---|---|---|---|---|---|---|
| | Value | (Deaths per 100,000 live births) | (Births per 1,000 women ages 15-19) | (percentage held by women) | (percentage aged 25 and older) | | (percentage aged 15 and older) | |
| | | | | | Female | Male | Female | Male |
| | **2019** | 2017 | 2015-2020 | 2019 | 2015–2019 | 2015–2019 | 2019 | 2019 |
| PRC | **0.168** | 29 | 7.6 | 24.9 | 76.0 | 83.3 | 60.5 | 75.3 |
| Kazakhstan | **0.190** | 10 | 29.8 | *22.1* | 99.3 | 99.6 | 62.7 | 75.5 |
| Uzbekistan | **0.288** | 29 | 23.8 | *16.4* | 99.9 | 100.0 | 52.4 | 78.1 |
| Tajikistan | **0.314** | 17 | *57.1* | *20.0* | 93.3 | 95.7 | *31.3* | 52.8 |
| Mongolia | **0.322** | 45 | 31.0 | *17.3* | 91.5 | 86.1 | 53.3 | 66.4 |
| Azerbaijan | **0.323/0.264*** | 26/21* | *55.8/45.0** | *16.8/18.2** | 93.9 | 97.5 | 63.4 | 69.7 |
| Georgia | **0.331** | 25 | *46.4* | *14.8* | 97.2 | 98.6 | 57.4 | 80.8 |
| Kyrgyz Republic | **0.369** | 60 | 32.8 | *19.2* | 99.1 | 98.3 | 44.8 | 75.7 |
| Pakistan | ***0.538*** | 140 | 38.8 | *20.0* | *27.6* | 45.7 | *21.9* | 81.7 |
| Afghanistan | ***0.655*** | *638* | *69.0* | 27.2 | *13.2* | 36.9 | *21.6* | 74.7 |
| Turkmenistan | **..** | .. | 24.4 | 25.0 | .. | .. | 51.4 | 78.3 |
| *World* | ***0.436*** | *204* | *43.3* | *24.6* | *61.0* | *68.3* | *47.2* | *74.2* |

* Updated according to recent data from Azerbaijan

Note: Blue italic figures indicate values below global average

Source: UNDP Gender Inequality Index

**Figure 27:** Gender pay gap, difference between men's and women's monthly earnings in percentage of men's earnings




Source: UNECE Statistical Database[54], authors' calculations

### 6.3.3. A wide range of protection and empowerment measures are needed for women

**There is a whole range of policies and measures needed to enhance gender equality**. Among them are regulations and implementation controls that ensure that goods and services are produced under safe working conditions, free from harassment and with equal pay for equal work; zero-tolerance policies to reduce the risk of gender discrimination, sexual exploitation, and harassment of women and girls; assisting women in starting or expanding existing MSMEs through the provision of favorable banking products and training in business skills; helping women to gain skills that prepare them for jobs in science, technology, engineering, and mathematics (STEM), including by scholarships and other incentives; and many more. Provision of childcare and elderly care support could facilitate labor market participation especially for women.

## 6.4. Education: especially TVET and technical higher education needs upgrading and funding

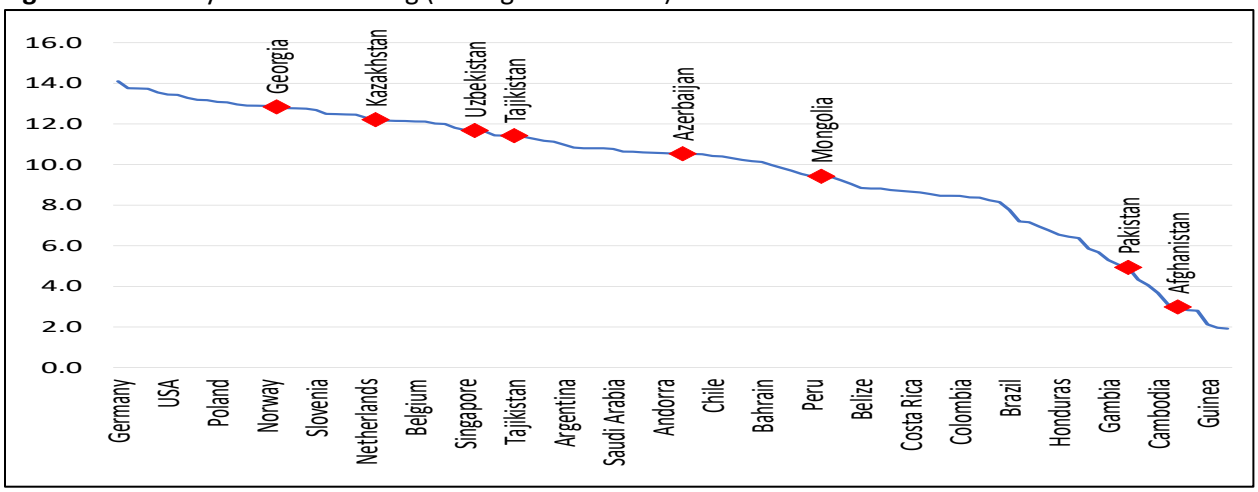
### 6.4.1. Equality of access: issues remain

**Some CAREC countries do not differ very much from developed economies in terms of average years of schooling, but other issues remain, especially for TVET and higher education**. Mean years of schooling range from 12.8 in Georgia to 9.4 in Mongolia (Figure 28). However, Pakistan and Afghanistan are far off with 4.9 and 3.0 years, respectively. Azerbaijan, Georgia, Kazakhstan, and some Chinese cities are ranked in the Programme for International Student Assessment (PISA): among 79 countries the PRC was ranked first in all three disciplines of mathematics, science, and reading in 2018; Kazakhstan, Azerbaijan, and Georgia were ranked between 55 and 71 in the three disciplines. [55] This indicates that most of the CAREC countries still must catch up quite substantially in terms of education quality. Things become even more complicated when it comes to post-school TVET and higher education. For higher education, some CAREC countries have rather low mean attainment rates, and much more so for students from poor households

[54] https://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__03-WorkAndeconomy/017_en_GE_GPG2_r.px/
[55] https://www.oecd.org/pisa/publications/pisa-2018-results.htm

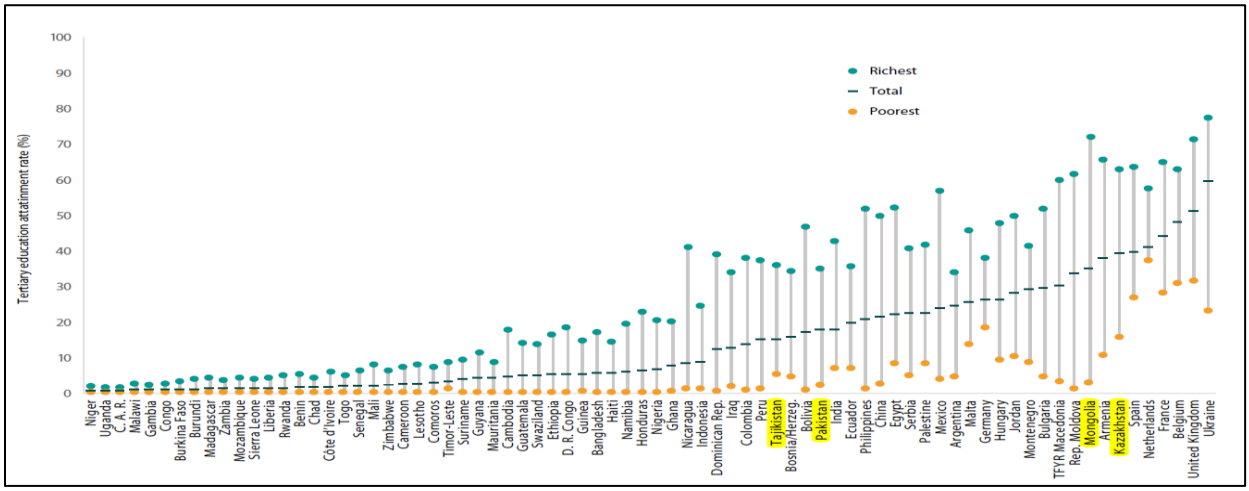
(Figure 29). Female access to at least some secondary education is generally not much below male access in the region; however, in Afghanistan and Pakistan female access to secondary education is far below male access. Above bachelor's degree studies, women's attainment also lags men's in other CAREC countries.

**Figure 28:** Mean years of schooling (average 2015-2021)




Source: UNESCO, http://data.uis.unesco.org/#, authors' calculations

**Figure 29**: Percentage of 25–29-year-olds who have completed at least four years of tertiary education, by wealth, selected countries, 2008-2014




Source: UNESCO 2017, Six ways to ensure higher education leaves no one behind,[56] highlights by the authors

**COVID-19 hit education severely and affected disadvantaged students disproportionally**. According to UNESCO's Global Education Monitoring Report 2021/2022,[57] schools in high income countries were fully closed for 21 percent of total instruction days, compared with 31 percent in low- and middle-income countries. Online platforms, which ensure learning continuity better than radio and television, were used in more high-income countries (96 percent) than in middle (92 percent) and low-income ones (58

[56] https://unesdoc.unesco.org/ark:/48223/pf0000247862
[57] https://www.unesco.at/en/education/education-2030/global-education-monitoring-gem-report/gem21-22

percent). According to UNICEF's Remote Learning Readiness Index, compiled for 67 low- and middle-income countries from the categories preprimary, primary, lower secondary, and upper secondary education, Kazakhstan is best prepared for future emergencies among the CAREC countries that entered the study, Pakistan the least (Table 17).[58] To ensure better and more equal access to education in future, CAREC countries need to strengthen early age education for all to compensate for the degree of education of parents that strongly impact the education and professional careers of their children, to support education in rural areas, and to invest in unlocking digital learning opportunities, including in online teaching methods and materials. Regional cooperation could help here as well.

**Table 17:** Remote Learning Readiness Index

| Score* | Countries | No. of countries |
|---|---|---|
| 5 stars | Argentina, Barbados, Jamaica, Philippines | 4 |
| 4 stars | Albania, Armenia, Cambodia, Cuba, Gambia, Guyana, Honduras, Indonesia, Jordan, Kazakhstan, Kenya, Maldives, Nigeria, South Africa, Vietnam | 15 |
| 3 stars | Bangladesh, Bhutan, Bosnia and Herzegovina, Burkina Faso, Colombia, Costa Rica, Guatemala, Guinea, India, Kyrgyzstan, Mexico, Myanmar, Saint Lucia, Senegal, Serbia, Sierra Leone, Zimbabwe | 17 |
| 2 stars | Afghanistan, Belize, Chad, Comoros, Democratic Republic of the Congo, Ghana, Lao People's Democratic Republic, Mali, Mauritania, Nepal, Papua New Guinea, Sao Tome and Principe, Sudan, Timor-Leste, Tonga, Trinidad and Tobago, Tunisia, United Republic of Tanzania, Yemen | 19 |
| 1 star | Angola, Benin, Burundi, Cote d'Ivoire, Congo, Ethiopia, Kiribati, Madagascar, Malawi, Niger, Pakistan, Togo | 12 |

* 1 star: poor performance in the two weakest domains; 2 stars: low or mid-low performance in the two weakest domains; 3 stars: average performance in its two weakest domains. 4 stars: mid-high performance in the two weakest domains; 5 stars: high performance across all domains.

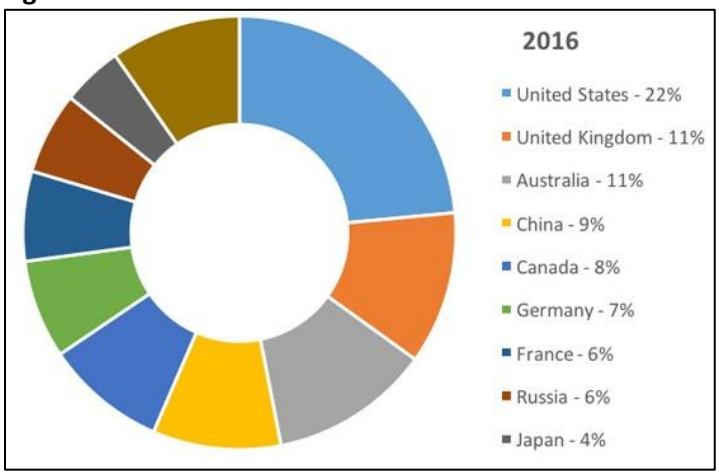
Source: UNICEF 2021, Ensuring Equal Access to Education in Future Crises: Findings of the New Remote Learning Readiness Index

### 6.4.2. Academic exchange: growing field of cooperation

**International students and more generally academic exchange is on the rise globally, including in the CAREC region**. Figure 30 shows the main global destinations for studying abroad. The CAREC countries have various student exchange programs. Intra-CAREC exchange is also increasingly developing; the PRC, in particular, has become an important host country for CAREC students. More coherent standards for the acknowledgement of credits earned, certificates, and so on in the CAREC region along with further strengthening exchange programs and the mutual exchange of teachers, programs, and courses on various levels could additionally promote CAREC cooperation in the field of education.

[58] Ensuring Equal Access to Education in Future Crises: Findings of the New Remote Learning Readiness Index https://data.unicef.org/resources/remote-learning-readiness-index/

**Figure 30:** Global market shares of destinations for internationally mobile students



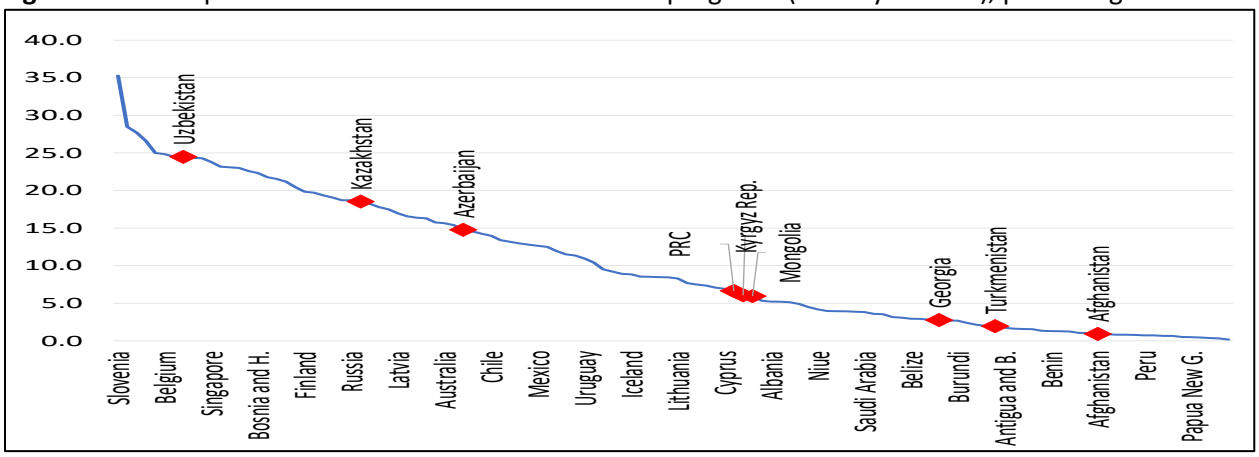

Source: ICEF Monitor 2017, Measuring up: Global market share and national targets in international education[59]

### 6.4.3. TVET: crucial for productivity and proper services, quality and attractivity to be raised

**To secure proper services for households and businesses as well as raising the productivity and scope for industrial production improving vocational education and training is essential.** Uzbekistan, Kazakhstan, and Azerbaijan perform better than the global average in technical and vocational programs for 15–24-year-olds; other CAREC economies are more mid-range or on the lower end of global distribution and could do more (Figure 31). While in many CAREC countries there are shortages of technicians and artisans both from TVET and higher technical education, insufficient development of TVET opportunities and blockages of subsequent progress from TVET to higher education may discourage young people to choose TVET education, thus distorting choice and failing to respond to labor market needs. There is a need to open more flexible pathways and options for the accumulation, recognition, and transfer of learning through transparent, well-articulated outcome-based qualification systems that increase the attractiveness of TVET by meeting student aspiration and removing any perception of TVET tracks as a dead end.[60]

[59] https://monitor.icef.com/2017/04/measuring-global-market-share-national-targets-international-education/
[60] Simon Field and Ava Guez, Pathways of progression—Linking technical and vocational education and training with post-secondary education, https://unesdoc.unesco.org/ark:/48223/pf0000265943

**Figure 31**: Participation rate in technical and vocational programs (15-24 year olds), percentage



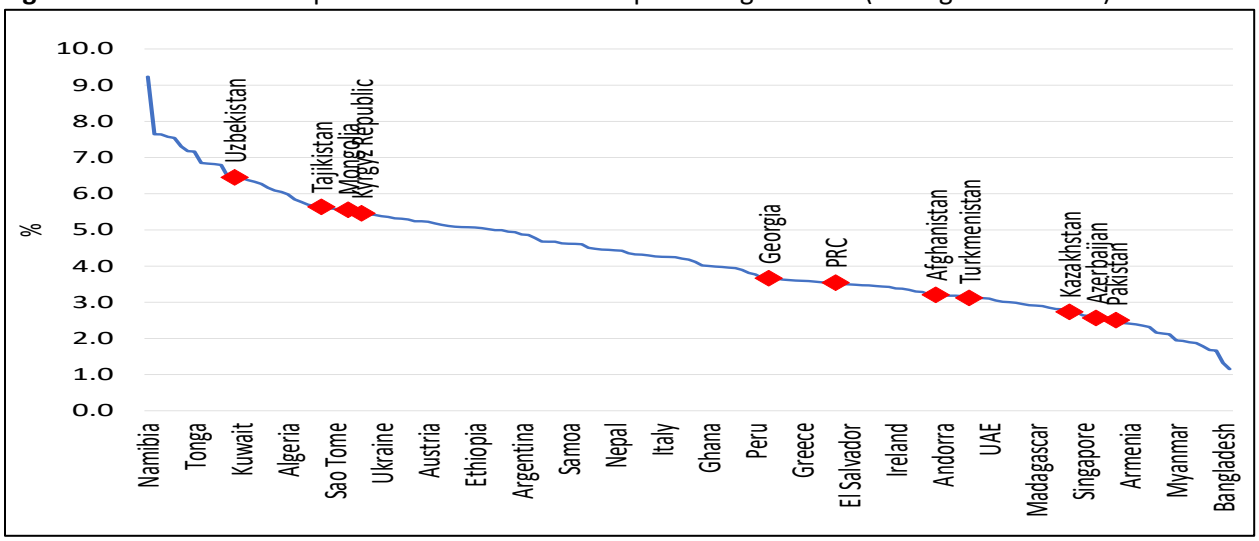

Source: UNESCO, http://data.uis.unesco.org/index.aspx?queryid=3730, authors' calculations

### 6.4.4. Funding: public–private cooperation potentially helpful, if properly regulated

**New sources of funding need to be found, especially for post-secondary education, while efficient public regulation and quality assurance should be assured**. Government expenditure for education in percentage of GDP is relatively high in some CAREC countries (Figure 32). However, public institutions, fully funded by government so that tuition fees are kept low or at zero, are often constrained by limited budgets, and so their growth has not kept pace with burgeoning demand. Private for-profit institutions and foreign universities have partially met some of the growth in demand. Also, open universities have become increasingly popular thanks to the development of online distance learning technologies and with the expansion of massive online open courses (MOOCs). Especially at post-secondary level, tuition fees and maintenance costs can be a barrier to study for students; therefore, mixed privately run but partially publicly funded systems have also evolved. 'Publicly funded education does not have to be publicly provided, but disparity in education processes, student outcomes, and teacher working conditions should be addressed head-on.'[61]

[61] https://unesdoc.unesco.org/ark:/48223/pf0000379875

**Figure 32**: Government expenditure for education in percentage of GDP (average 2018-2019)




Source: World Bank, World Development Indicators, authors' calculations

## 6.5. Healthcare: both systems and societies at large need better preparedness

### 6.5.1. Serious health threats remain

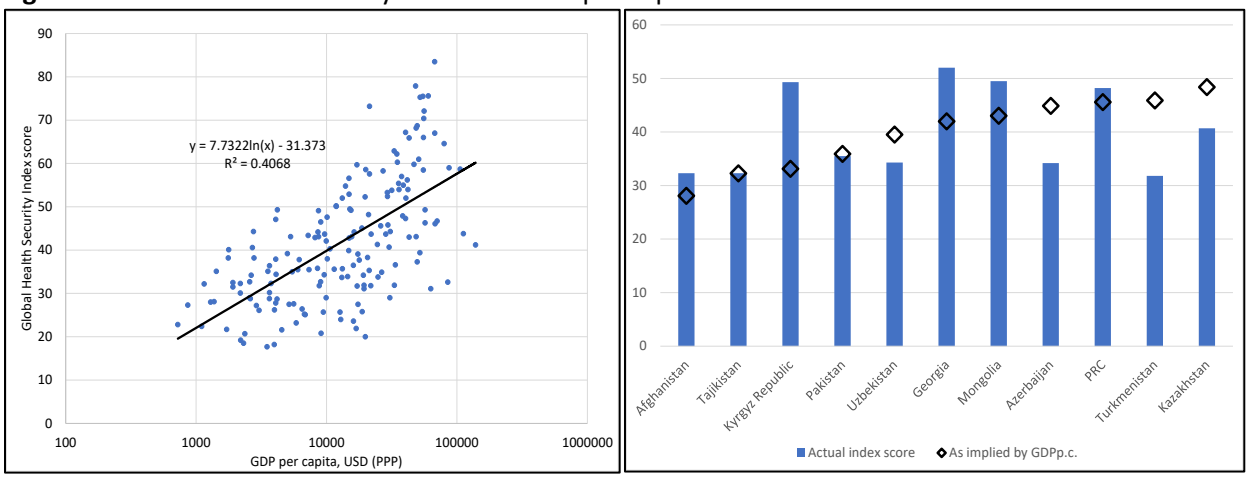
**As new Sars-Cov-2 variants emerge, the CAREC region remains under threat from COVID-19, while other communicable diseases are also endangering the region**. Some CAREC countries are exposed to outbreaks of malaria, dengue, monkeypox, and Japanese encephalitis. Chronic infectious diseases, such as HIV/AIDS, tuberculosis (TB), and viral hepatitis B and C, continue to be a heavy burden in the region. Resistance to inexpensive and effective antimicrobial drugs has emerged at an alarmingly high rate, making many common diseases and pathogens (such as TB) difficult and expensive to treat.[62]

### 6.5.2. Healthcare quality: roughly in line with GDP but should be further improved

**The quality of health systems is roughly in line with GDP per capita in the CAREC region but should be further improved.** The left-hand side of Figure 33 shows the global correlation between GDP per capita and the Global Health Security Index,[63] the right-hand side shows the actual score on the index and the implied GDP per capita for the CAREC region. While the discrepancies are not very large, more investment in infrastructure and health facilities, potentially also by engaging the private sector, would be desirable to increase quality of life and make health systems more resilient against surges in demand. Besides, insurance coverage needs to be improved to reduce out-of-pocket payments and make healthcare more equitable.

[62] https://www.adb.org/sites/default/files/institutional-document/798371/carec-health-strategy-2030.pdf
[63] The GHS Index is a project of the Nuclear Threat Initiative and the Johns Hopkins Center for Health Security; it was developed with The Economist Intelligence Unit. https://www.ghsindex.org/

**Figure 33**: Global Health Security Index and GDP per capita




Source: Global Health Security Index, WB World Development Indicators, authors' calculations

### 6.5.3. Health system resilience alone is insufficient, societies as a whole need to react

**However, improving health systems alone is insufficient to efficiently counter pandemic outbreaks; strong political resolve, and skilled governance and preparation are also required**. There was little correlation globally between COVID-19 infections and casualties and the Global Health Security Index, at least in the early stages of the pandemic in 2020.[64] Properly organized containment measures are key, and especially successfully conducted vaccination campaigns based on well-conveyed information to the population and timely secured vaccines and vaccination facilities. Regional cooperation substantially helps to reach these goals.

### 6.5.4. Cooperation would help

**The CAREC Health Strategy 2030, published in May 2022, aims to strengthen regional leadership, coordination, and workforce capacity.**[65] Sufficient workforce skills and capacity are required, especially in public health emergency leadership, public health, epidemiology, and research. The strategy calls for improving health surveillance and the laboratory infrastructure along with early warning systems and regionally aligned awareness-raising materials on communicable diseases. Effective and harmonized regulatory mechanisms and standards, efficient procurement mechanisms for medications and supplies, and strengthening the reliability of supply chain management facilitate access to medication and supplies. Of particular importance for the region is the enhancing of health services for migrants, border communities, and vulnerable groups. The specific needs of women in health planning and design of services and infrastructure need to be met better. Improved capacity to develop, implement, and utilize innovative digital technologies and solutions in support of health information systems and data management will also be essential for regional knowledge sharing.

[64] CAREC Institute Economic Brief, Covid-19—Reaction Functions, Paradoxes, and Latest Economic Data, https://www.carecinstitute.org/publications/economic-brief-covid-19-reaction-functions-paradoxes-and-latest-economic-data/

[65] https://www.adb.org/sites/default/files/institutional-document/798371/carec-health-strategy-2030.pdf

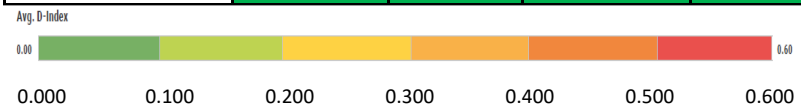
## 6.6. Short summary

**All in all, CAREC countries with data availability do not perform badly on a broad range of indicators important for human development in the region, but a set of serious issues remain**. According to 15 indicators compiled by UN ESCAP in the Asia and the Pacific SDG Progress Report 2022,[66] the CAREC economies covered have particular need to catch up in modern services such as financial services and the use of the internet, and in tertiary education (Table 18).

**Table 18**: Index of opportunities and barriers, Asia-Pacific, latest year

| | | Modern Services | | Energy | | WASH | | Children | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Country** | **Year** | Financial services | Internet use | Clean fuels | Elec-tricity | Basic sanitation | Basic drinking water | Over-weight | Stunting | Wasting |
| Afghanistan | 2015 | | | 0.420 | 0.090 | 0.280 | 0.150 | | | |
| Georgia | 2018 | | | 0.050 | 0.000 | 0.040 | 0.020 | 0.020 | 0.020 | 0.000 |
| Kazakhstan | 2015 | | 0.030 | 0.010 | | 0.000 | 0.020 | 0.020 | 0.020 | 0.010 |
| Kyrgyzstan | 2018 | | 0.080 | 0.120 | | 0.010 | 0.040 | 0.010 | 0.020 | 0.000 |
| Mongolia | 2018 | | 0.200 | 0.360 | 0.010 | 0.140 | 0.100 | 0.020 | 0.020 | 0.000 |
| Pakistan | 2017 | 0.470 | 0.510 | 0.320 | 0.050 | 0.170 | 0.030 | 0.010 | 0.110 | 0.020 |
| Tajikistan | 2017 | 0.430 | 0.400 | 0.060 | 0.000 | 0.000 | 0.080 | 0.010 | 0.030 | 0.010 |
| Turkmenistan | 2019 | | 0.140 | | 0.010 | 0.000 | 0.000 | 0.010 | 0.010 | 0.010 |
| **CAREC average** | | 0.450 | 0.227 | 0.191 | 0.027 | 0.080 | 0.055 | 0.014 | 0.033 | 0.007 |

| | | Women | | | Education | | | Average |
|---|---|---|---|---|---|---|---|---|
| **Country** | **Year** | Demand for contraception | Physical or sexual violence | Skilled birth attendance | Early childhood edu-cation | Secondary education | Tertiary education | **Simple average** |
| Afghanistan | 2015 | 0.140 | 0.100 | 0.160 | | 0.290 | 0.360 | **0.220** |
| Georgia | 2018 | 0.120 | | 0.000 | 0.080 | 0.110 | 0.190 | **0.060** |
| Kazakhstan | 2015 | 0.030 | | 0.000 | 0.120 | 0.020 | 0.180 | **0.040** |
| Kyrgyzstan | 2018 | | 0.090 | 0.000 | 0.080 | 0.020 | 0.200 | **0.060** |
| Mongolia | 2018 | 0.080 | | 0.010 | 0.110 | 0.130 | 0.210 | **0.110** |
| Pakistan | 2017 | 0.120 | 0.080 | 0.120 | | 0.240 | 0.280 | **0.180** |
| Tajikistan | 2017 | 0.100 | 0.060 | 0.020 | | 0.090 | 0.220 | **0.110** |
| Turkmenistan | 2019 | 0.070 | | | | 0.050 | 0.330 | **0.060** |
| **CAREC average** | | 0.094 | 0.083 | 0.044 | 0.098 | 0.119 | 0.246 | **0.105** |



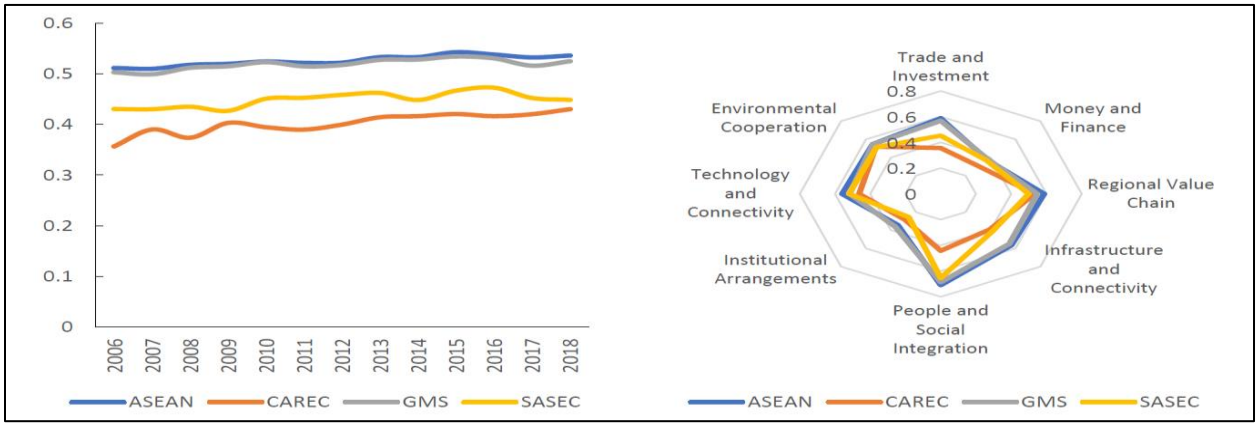

Source: UN ESCAP, Asia and the Pacific SDG Progress Report 2022

[66] https://www.unescap.org/kp/2022/asia-and-pacific-sdg-progress-report-2022

# 7. Regional cooperation and integration: a new level in the new period?

**CAREC regional integration has advanced but remains rather low compared to other Asian subregions and more progress might be needed**. CAREC scores increased on the Asia-Pacific Regional Cooperation and Integration Index (ARCII) between 2006 and 2018, but only moderately. The CAREC region has remained the least integrated among the Asian subregional initiatives (Figure 34).[67] The CAREC region scores the lowest in 'institutional arrangements' and 'money and finance.' The CAREC region scores the highest in the dimension 'regional value chains'; however, this is thanks to resources exports while there are few backward linkages. To deepen integration and cooperation in all dimensions, CAREC economies should use their strategic geographical position actively to attract a broad range of industries, rather than just providing raw material inputs or transportation channels.

**Figure 34**: Asia-Pacific Regional Cooperation and Integration Index for Subregional Initiatives; dimensional indices, 2018



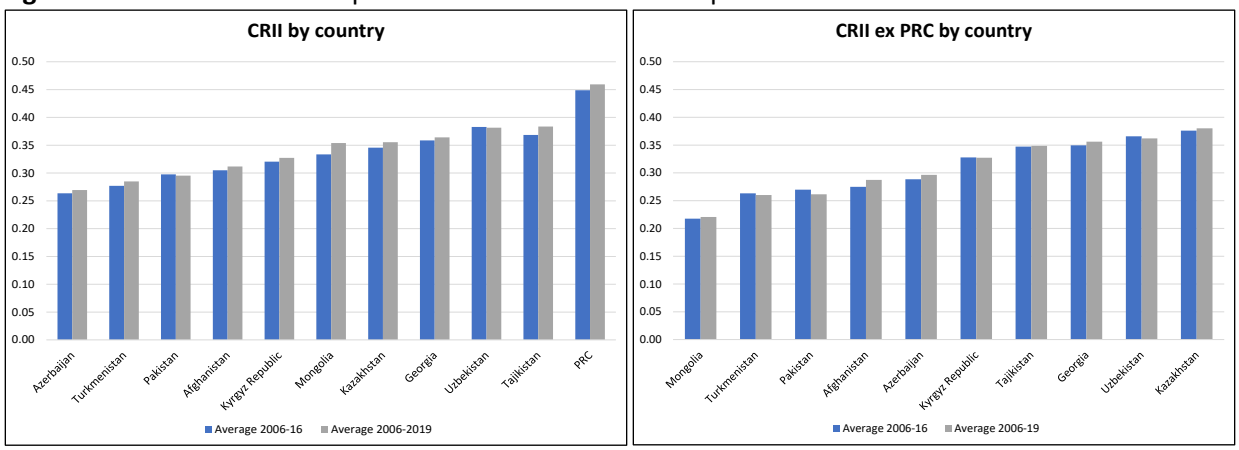

ASEAN = Association of Southeast Asian Nations, GMS = Greater Mekong Subregion, SASEC = South Asia Subregional Economic Cooperation

Source: ADB, The Enhanced Asia-Pacific Regional Cooperation and Integration Index, August 2021

**The CAREC Institute's 'CAREC Regional Integration Index (CRII)' shows the integration progress by country and confirms the findings of the ARCII of a some but moderate integration progress.** For most CAREC economies, CRII scores moderately increased between the periods 2006- 2016 and 2006-2019, although there were marginal declines for Pakistan and Uzbekistan (left-hand side of Figure 35), and, excluding the PRC, also for Turkmenistan (right-hand side of Figure 35).[68] The reason is that for Pakistan there was a fall in 'infrastructure and connectivity' scores, but from relatively high levels. Uzbekistan and Turkmenistan saw some decline in 'regional value chains.'

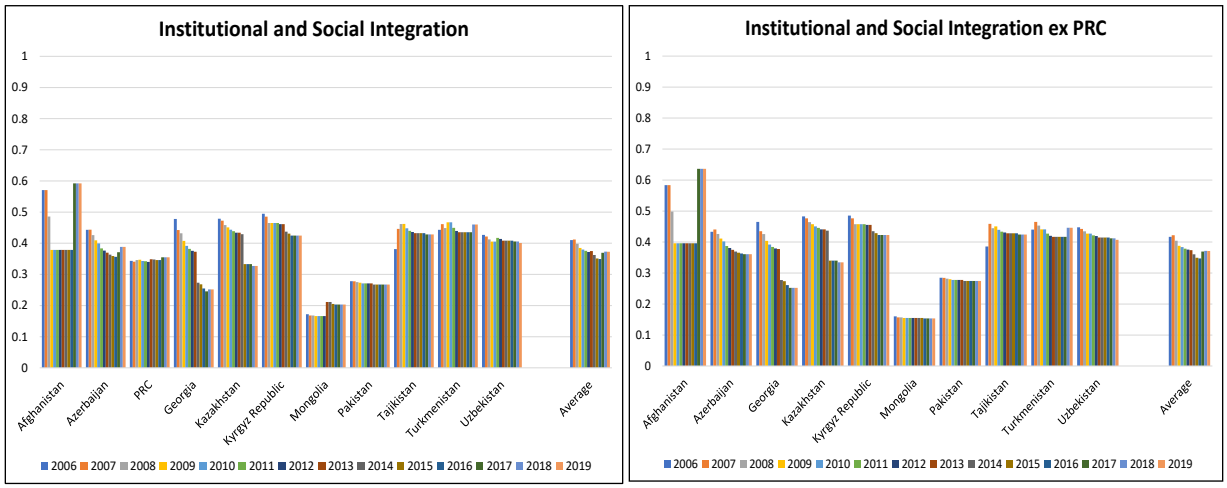
[67] https://www.adb.org/sites/default/files/publication/732076/asia-pacific-rci-index-enhanced-framework.pdf
[68] https://www.carecinstitute.org/publications/carec-regional-integration-index-crii/

**Figure 35:** CRII scores for the period 2006-2016 and for the period 2006-2019




Source: CAREC Institute, CAREC Regional Integration Index (CRII), February 2021

**Figure 36:** Institutional and social integration scores




Source: CAREC Institute, CAREC Regional Integration Index (CRII), February 2021

**In the dimension 'institutional and social integration,' the tendency for most countries is stable or slightly falling.** Mongolia and Pakistan have relatively fewer institutional ties with most other CAREC countries compared to other countries with more diversified relations within CAREC, which can be explained by geography and history; Afghanistan has relatively higher scores thanks to its specific relationship to Pakistan (Figure 36). The indicators of the dimension 'institutional and social integration' do not give the full picture of social interaction.[69] While there are indeed substantial institutional, social, and cultural differences among CAREC countries, there is also significant exchange, including of students and migrant workers. However, the relatively low and partially falling readings in the dimension

[69]. The dimension '**institutional and social integration**' is measured by the variables:
6.1 Proportion of other CAREC countries that have signed FTAs with the country
6.2 Proportion of other CAREC countries that have an embassy
6.3 Proportion of other CAREC countries that have signed business investment treaties
6.4 Proportion of other CAREC countries that have signed double taxation treaties
6.5 Cultural proximity with other CAREC countries relative to that with all other countries (for example, measured by the purchase of books from each other)

'institutional and social integration' are concerning considering the importance of regional cooperation for managing the new challenges in the new historical period.

**There is plenty of room for further improvement of institutional, social and cultural, scientific and technological exchange and cooperation.** There are a multitude of multilateral organizations and initiatives that serve as integration mediators. CAREC is one of them. The rather low integration of the CAREC region has reasons in history and in the little complementary commodity structure of the region's production but should be intensified now. The imminent major technological and socioeconomic changes, the green transition, and new demand for inclusions and human capital development open new opportunities for closer intraregional cooperation and integration and increase the potential benefits for CAREC economies. These changes require in crucial areas sufficiently large economies of scale and scope, more common approaches and regulations, as well as and especially the intensified exchange of views, ideas, and knowledge, and the mutual contact and cooperation of all populations within the CAREC countries.

# 8. Role of Development Partners and Multilateral Development Banks for Regional Cooperation and Integration

Development Partners' commitment to regional cooperation and integration (RCI) has been an important facilitating factor of the CAREC region's impressive development from the very beginning of the CAREC program's establishment, made possible by improved regional connectivity and trade, but not only. The exchange of views contributed to better mutual understanding and was a starting point of many successful initiatives. Cooperation in CAREC expert and working groups yielded many important concrete results improving people's lives in the CAREC region. To fully exploit the development potential of the CAREC region and to cope with the challenges and opportunities of our time not only intra-CAREC cooperation is highly important, but also the participation in other major cooperation and trade initiatives in the broader Asia-Pacific region and beyond.

Development Partners play a crucial role for the development of the CAREC region in multiple ways. Coordination among the Development Partners, and between Development Partners and CAREC region governments have a great effect on the outcomes of development efforts and should be intensified even more, especially along the core CAREC cooperation themes, to maximally benefit all CAREC members and the CAREC common cause.

Areas of essential interventions by Development Partners and Multilateral Development Banks:

I. Guidance on the directions to go within the CAREC program's range of sectoral and thematic areas
II. Linking CAREC's regional plans and programs more effectively with national plans and priorities
III. Linking CAREC with other cooperation initiatives, regional and beyond (including BRI, SPECA, ECO, etc.)
IV. Knowledge sharing through CAREC expert and thematic working groups
V. Support for national and regional capacity and skills development, not least to underpin regional cooperation among countries
VI. Critical review of the projects undertaken, help in assessing performance results

VII. Last, but not least financial support and conducting of joint CAREC development projects and mobilizing concessional and non-concessional resources for this purpose.

Of special importance is the cooperation with Development Partners also for embedding CAREC activities in the Sustainable Development Goals framework and for monitoring CAREC activities through the prism of the Sustainable Development Goals. The CAREC program should intensify contacts with the organizations responsible for monitoring the progress on SDGs on the international level as well as with the national agencies of the CAREC members responsible for the Voluntary National Reviews for a deeper exchange of views.

The Sustainable Development Goals Report 2022 "using the latest available data and estimates, reveals that the 2030 Agenda for Sustainable Development is in grave jeopardy due to multiple, cascading and intersecting crises. COVID-19, climate change and conflict predominate. Each of them, and their complex interactions, impact all of the Goals, creating spin-off crises in food and nutrition, health, education, the environment, and peace and security. To put the world on track to sustainability will require concerted action on a global scale." [70] Although most CAREC economies have done relatively well in global comparison in goals such as eradicating extreme poverty, health care, education, equity and social protection, the need of concerted action on a regional and a global scale applies also to them.

# 9. Conclusion: revitalize regional cooperation for a green, sustainable, and inclusive recovery!

**The 'CAREC Strategy 2030' skillfully describes the CAREC activities planned and needed in the period until 2030, and they are still very relevant**. Activities mentioned include '… assess the shifting landscape of global and regional trade, and the potential of moving toward FTAs in the region, with a focus on trade in services … assist … with respect to trade facilitation and policy … single windows, improved border crossing points, and customs harmonization ... investments in railways and logistics will be stepped up ... support technology leapfrogging in the use of clean and renewable energy, and promote energy efficiency, besides promoting energy trade … support for sanitary and phytosanitary measures ... promote dialog on water management issues … irrigation, improved management of rivers ... addressing water contamination ... develop a regional labor market information system focusing on skills needs, regional job search and placement, and cross border higher education and technical training offerings … help address pandemic risks and control of communicable diseases, and prevention and treatments for noncommunicable diseases.'[71] Written in 2017, this is both very timely and in line with the analysis of this report.

The CAREC region's societies and governments are confronted with a complex network of new challenges and opportunities and must react on multiple fronts. Full recovery from the COVID-19 pandemic, greening and sustainability, inclusion, equality, and social protection have assumed highest priority along with healthcare, science, and education. Regional cooperation is more essential than ever to facilitate the

[70] https://unstats.un.org/sdgs/report/2022/
[71] https://www.adb.org/sites/default/files/institutional-document/383241/carec-2030.pdf

imminent deep technological and socioeconomic change. Helping to intensify regional cooperation is the core mandate of the CAREC initiative. ***Revitalizing regional cooperation for prosperity and a green, sustainable, and inclusive post-pandemic recovery*** should be the core theme for CAREC activities during the coming years.

**Core themes for CAREC cooperation**

Since its inception in 2001, the CAREC Program has been an effective facilitator of practical, results-based regional projects and policy initiatives critical to sustainable economic growth and shared prosperity in the region. It has mobilized $44.7 billion in investments as of June 2022, that have helped establish multimodal transport networks, increased energy trade and security, facilitated free movement of people and freight, and laid the groundwork for economic corridor development. The CAREC 2030 Strategy, endorsed during the 16th Ministerial Conference in 2017, provides a new long-term strategic framework for the program leading to 2030. Many initiatives have already been successfully implemented in the five priority clusters of the strategy under the overarching vision of "Good Neighbors, Good Partners, Good Prospects".

The COVID-19 pandemic has validated the importance and need for continued regional cooperation, the exchange of knowledge and lessons, the identification of urgent investment needs and the mobilization of resources. Business activities and investments often require economies of scale to be successful and efficient, which can be done through strengthening cooperation and integration among the CAREC economies and coordinating development programs and policies of each country. The CAREC program should be used even more as an open and inclusive platform for strengthening linkages and synergy within countries and with other international and regional cooperation mechanisms. Partnerships among countries should be further strengthened to deepen cooperation in the focus areas for a green, sustainable, and inclusive recovery. Regional cooperation has become even more essential in the post-COVID-19 era and must be deepened to cope with new challenges in the region.

The imminent major technological and socioeconomic changes, the green transition, and new demand for inclusions and human capital development open new opportunities for closer intraregional cooperation and integration and increase the potential benefits for CAREC economies. These changes require in crucial areas sufficiently large economies of scale and scope, more common approaches and regulations, as well as and especially the intensified exchange of views, ideas, and knowledge, and the mutual contact and cooperation of all populations within the CAREC countries.

**Core areas of old and new cooperation:**

**Trade and connectivity**: new transport corridors, new trade facilitation agreements, enhanced cooperation for product certification, better standardization of customs procedures, upgrading digital connectivity

**Cooperation in regional services**: transportation, tourism, financial services, including green finance

**Energy**: intensifying electricity trade in optimized trading systems, new electricity transmission lines, new oil and gas transportation routes, hydrogen transportation facilities

**Agriculture and food security**: better alignment of regional water management, improved logistics for trade in agricultural products and the development of regional agricultural value chains

**Migration**: better equalization of minimum wages and social entitlements for migrant workers with that of residents, ensuring better cross-country portability of entitlements for migrants

**Science, technology, and education**: further intensification of cooperation in science, technology development and transfer and academia, including student exchange; broadening of mutual recognition of academic and professional degrees; broadening of cooperation especially in areas that have highest relevance for a sustainable and inclusive recovery such as climate change, energy efficiency, biodiversity, water management and green finance. A major focus should also be on health care and social sciences that deal with poverty reduction, inclusiveness and the empowerment of disadvantaged groups of the society.

**Health care**: early information in case of regional health threats, harmonization of standards for efficient procurement of vaccines, equipment and other medical goods, mutual help in case of insufficient health system capacities

# CAREC INSTITUTE

No.376 Nanchang Road, Sha Yi Ba Ke District, Urumqi
Xinjiang Uygur Autonomous Region, The People's Republic of China
+86.991.8891151 | www.carecinstitute.org
km@carecinstitute.org | Linkedin: carec-institute