Economic Brief

The PRC's OFDI to the CAREC region – prospects in green energy

By
Shiliang Lu

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The economic brief is authored by Shiliang Lu, Research Specialist at the CAREC Institute.

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Central Asia Regional Economic Cooperation (CAREC) Institute
No. 376 Nanchang Road, Urumqi, Xinjiang, the PRC, 830000
f: +86-991-8891151
LinkedIn: carec-institute
km@carecinstitute.org
www.carecinstitute.org

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Abbreviations

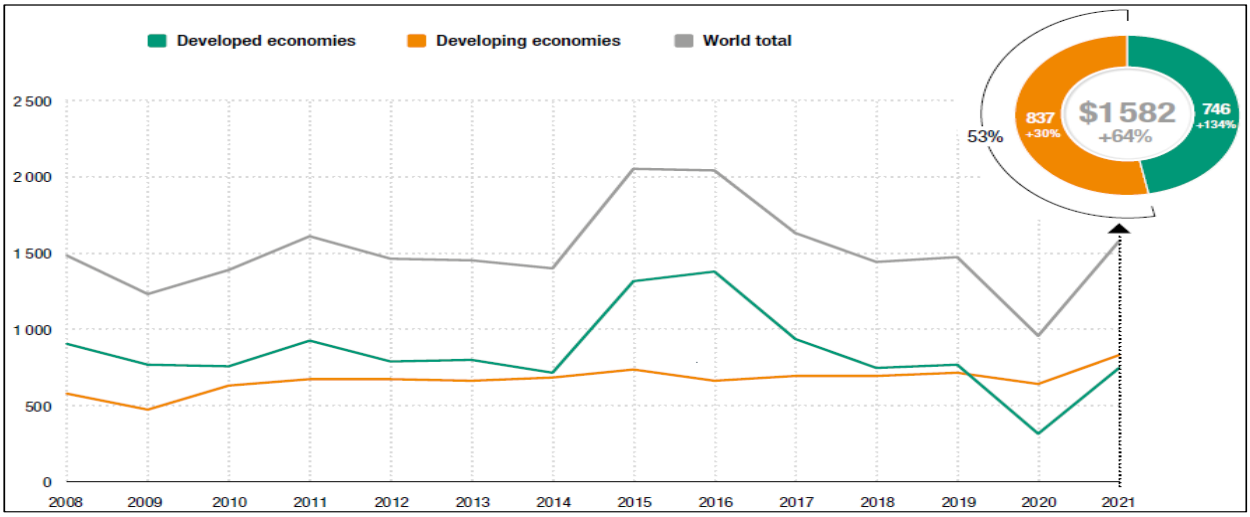
AEI	American Enterprise Institute
BREP	Belt and Road Energy Partnership
BRI	Belt and Road Initiative
BRIGC	BRI International Green Development Coalition
CAREC	Central Asia Regional Economic Cooperation
COP	Conference of the Parties
COVID-19	Coronavirus disease 2019
CPEC	China-Pakistan Economic Corridor
GDP	Gross Domestic Product
GGFI	Global Green Finance Index
GHG	Greenhouse Gas
GIP	Green Investment Principles
H1	The first half of the year
IEA	International Energy Agency
IIGF	International Institute of Green Finance
IRENA	International Renewable Energy Agency
MDB	Multilateral Development Bank
MW	Megawatt
NDC/INDC	Nationally Determined Contributions/Intended Nationally Determined Contributions
OFDI	Outward Foreign Direct Investment
PBC	People's Bank of China
PRC	People's Republic of China
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organization
WIR	World Investment Report
yoy	Year-on-year

"Greening" has been a buzzword for years and country leaders now show more determination than any time before to green the economy as the world is consistently struggling with the impacts brought about by climate change. Research on green topics has piled up throughout the world. The CAREC Institute, as one of the knowledge hubs of the CAREC region, has also conducted a number of researches related to climate change and green development in recent years. The latest typical ones include "Post-Pandemic Framework for a Green, Sustainable and Inclusive Recovery",[1] "Sustainable Pathways to Energy Transition in the CAREC Region: A Governance Perspective",[2] and "Excessive Use of Natural Resources and Sectoral Over-Reliance are behind Central Asia's Vulnerability to Compound Climate Challenges".[3] Building upon these studies and echoing the CAREC's resolution on its 21st Ministerial Conference to revitalize regional cooperation for a green, sustainable and inclusive recovery, this brief is reviewing the PRC's OFDI to the CAREC region related to green energy potentials of the member economies, and indicates that the PRC's green BRI strategy and the corresponding engagements could serve as a catalyst to build greener energy systems for the CAREC economies.

The PRC's OFDI flows to the BRI region still up, but rather moderate to the CAREC region

Global Foreign Direct Investment (FDI) flows ultimately recovered to pre-pandemic levels in 2021 thanks to the reopening of the world economy that facilitated the capital mobility across countries. Data in the WIR 2022[4] show that global FDI flows reached nearly USD 1.6 trillion in 2021, up by 64% as compared to the nadir created in 2020 when the world was hit hard by the COVID-19 pandemic and most affected economies closed their borders with others. By group, the developing economies received more FDI than the developed economies for almost three years, though the latter showed a stronger rebound of FDI inflows in 2021 surging by 134% yoy to USD 746 billion (Figure 1).

Figure 1. Global FDI inflows by economic grouping, 2008-2021 (USD billion, %)



Source: UNCTAD, World Investment Report 2022

[1] https://www.carecinstitute.org/publications/background-report-on-post-pandemic-framework-for-a-green-sustainable-and-inclusive-recovery/

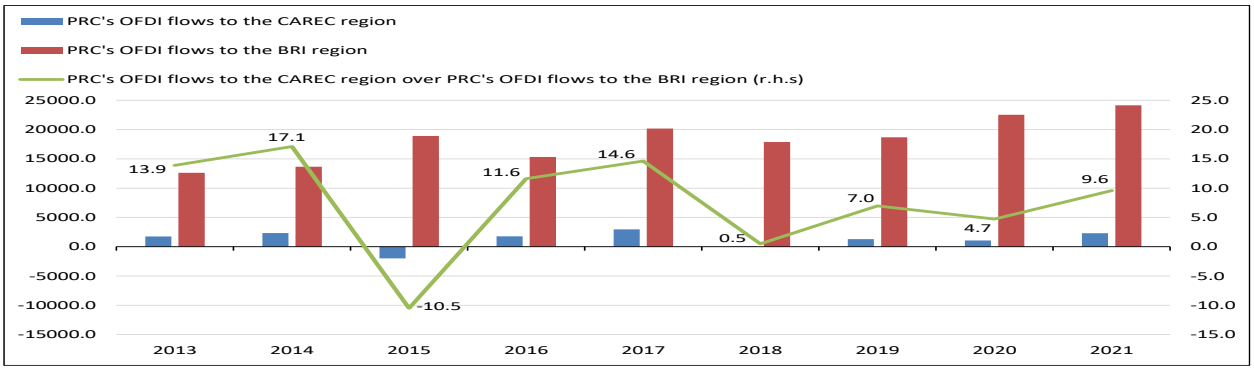
[2] https://www.carecinstitute.org/publications/sustainable-pathways-to-energy-transition-in-the-carec-region-a-governance-perspective/

[3] https://www.carecinstitute.org/publications/excessive-use-of-natural-resources-and-sectoral-over-reliance-are-behind-central-asias-vulnerability-to-compound-climate-challenges/

[4] https://unctad.org/system/files/official-document/wir2022_en.pdf

The Belt and Road Initiative (BRI) played a significant role in maintaining steady and progressive FDI inflows in the developing economies. As one of the world's largest investors, the PRC's OFDI flows from 2013 to 2021 to the economies along the BRI totaled USD 161.3 billion, up by an average of 5.4% per annum.[5] It should be specially noted that in 2020 when the global FDI flows plunged by 35% to 2005 levels on account of the COVID-19 pandemic, the PRC bucked the trend, with its direct investment to the economies along the BRI increasing by 20.6% yoy to USD 22.5 billion. This trend continued as the global economy was recovering from the pandemic in 2021, making the PRC's OFDI to the BRI region increase by 7.1% yoy to a record high of USD 24.1 billion, twofold higher than that of 2012 (Figure 2).

Figure 2. PRC's OFDI flows to the BRI and the CAREC region, 2013 - 2021[6] (USD million, %)



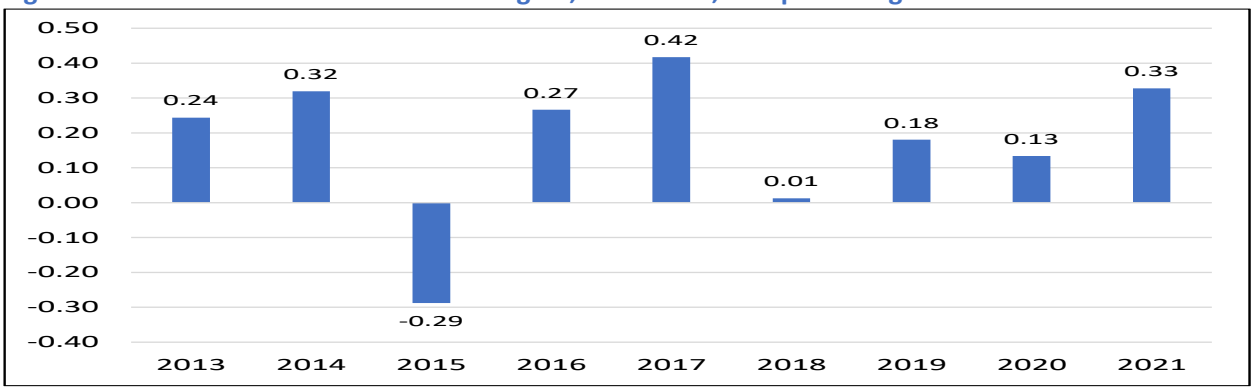
Source: Ministry of Commerce of the PRC, Statistical Bulletin of China's Outward Foreign Direct Investment (2013-2021); author's calculations.

The CAREC region received limited OFDI from the PRC, and no members of this region ranked among the top 20 of the PRC's OFDI flows in 2021. The reasons could be not only a sometimes volatile investment environment, the undiversified investable industry of some host countries, but perhaps also insufficient regional incentives such as cross-country investment facilitation mechanisms. Indeed, since the launch of the BRI in 2013, the proportion of the PRC's OFDI flows to the economies of the CAREC region to the ones of the BRI region has always been less than 20% and subsequently fell to single digit figures of 0.5%, 7.0% and 4.7% during 2018-2020, respectively. Although the share rebounded in 2021 to 9.6%, it was still lower compared to the first five years of the BRI except for 2015. The year 2015 witnessed sharp reflows[7] from the CAREC region, letting the proportion slump to minus 10.5% (Figure 2). However, this was mainly due to outflows from Kazakhstan, of which the reverse investment to the PRC reached as much as USD 2.5 billion then.

Analogously, the PRC's OFDI flows to the CAREC region only accounted for a small proportion of the region's nominal GDP, ranging from a trough of minus 0.29% in 2015 to a peak of 0.42% in 2017 (Figure 3). Some economies in the region relied significantly on the PRC's investment, though. The PRC's OFDI flows in general accounted for a higher portion of the Kyrgyz Republic's, Mongolia's and Tajikistan's nominal GDP than for the others, though the latter two economies saw strong OFDI reflows to the PRC in 2018 and in 2020. By contrast, the PRC's investment in Afghanistan, Azerbaijan, Turkmenistan and Uzbekistan was less significant, accounting for no more than 0.1% on average of their nominal GDP (Figure 4).

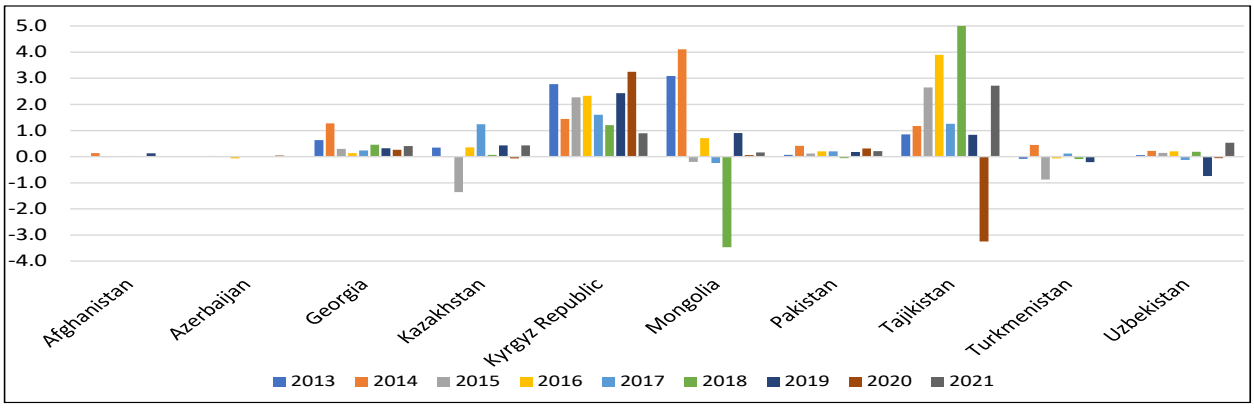
[5] https://en.gmw.cn/2022-10/27/content_36117680.htm
[6] http://fec.mofcom.gov.cn/article/tjsj/tjgb/
[7] The OFDI flow is equal to the total amount of foreign direct investment in the current period minus the reverse investment of foreign enterprises in the current period to domestic investors. The amount of reverse investment refers to the investment in which the overseas enterprises hold less than 10% of the shares of domestic investors.

Figure 3. PRC's OFDI flows to the CAREC region, 2013-2021, as a percentage of CAREC's nominal GDP[8]



Note: Data of Afghanistan in 2021, of Turkmenistan in 2020 and 2021 were unavailable, and thus not counted into the total.
Source: World Bank, World Development Indicators; author's calculations.

Figure 4. PRC's OFDI flows to the CAREC region by economy, 2013-2021, as a percentage of the respective economy's nominal GDP

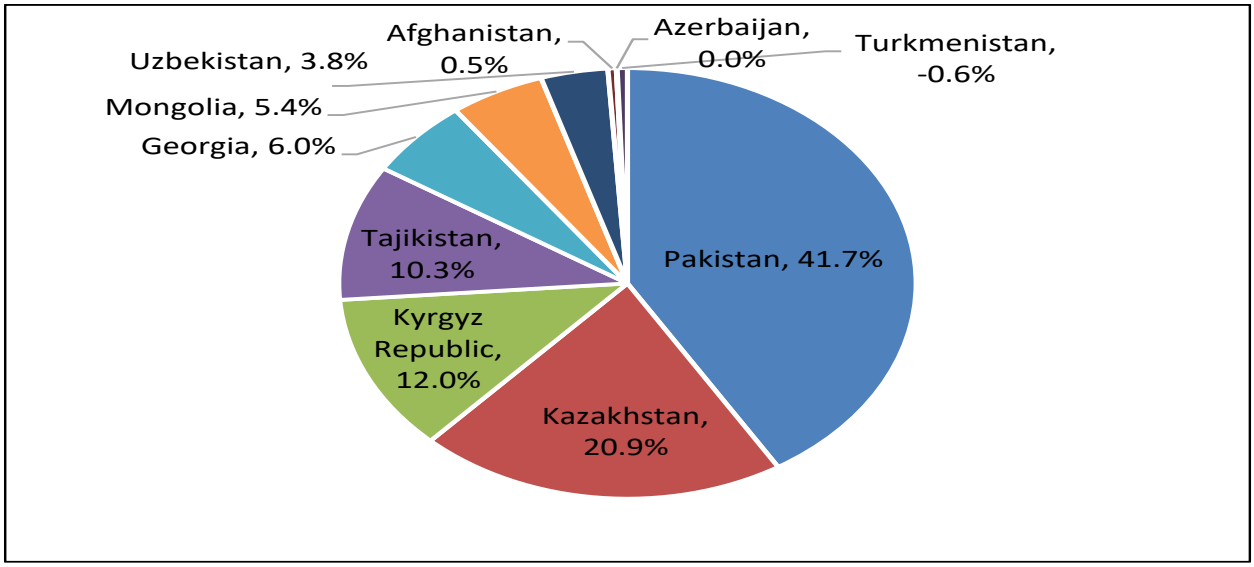


Note: Data of Afghanistan in 2021, of Turkmenistan in 2020 and 2021 were unavailable.
Source: World Bank, World Development Indicators; author's calculations.

The amount of the PRC's OFDI flows to the CAREC economies varied significantly. Thanks to projects of the China-Pakistan Economic Corridor (CPEC), Pakistan was the largest recipient among the CAREC economies and received cumulatively more than USD 4.8 billion OFDI from the PRC between 2013-2021, accounting for 41.7% of the PRC's total OFDI flows to the region in the same period. This was followed by Kazakhstan and the Kyrgyz Republic in the amount of USD 2.4 billion and USD 1.4 billion, accounting for 20.9% and 12.0%, respectively. By contrast, the shares of Afghanistan and Azerbaijan were less than 1% and of Turkmenistan was even minus 0.6% in the same period (Figure 5).

[8] https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?name_desc=true

Figure 5. Share of the PRC's total OFDI flows to the CAREC region by economy, 2013-2021,[9] %



Source: Ministry of Commerce of the PRC, Statistical Bulletin of China's Outward Foreign Direct Investment (2013-2021); author's calculations.

The energy sector took up the majority of the PRC's engagement in the CAREC region, given that a good many CAREC economies are endowed with abundant natural resources such as coal, oil, gas and water while downstream production is not sufficiently developed. Latest available data from the American Enterprise Institute (AEI)[10] showed that from 2013 to the first half of 2022 the energy sector accounted for 63.2% of the PRC's total engagement (i.e. investment plus construction projects) with the CAREC economies, followed by transport (19.3%), metals (6.7%), chemicals (4.3%) and real estate (3.1%). The share of other sectors was less than 1% (Figure 6).

Contractual cooperation[11] prevailing over investment remained the most popular entry mode for the Chinese enterprises to do businesses in the region. For instance, of the PRC's total engagement in the energy sector between 2013- H1 2022 only about USD 16.6 billion was through investments, and up to USD 42.1 billion was through contracts (partly financed by Chinese loans) (Figure 6). Increased riskiness of outbound investment due to a weak investment environment in the host countries could be one of the main reasons for the Chinese enterprises to do so. The Ease of Doing Business Index[12] by the World Bank measuring business regulations for local firms indicated that in the CAREC region except for Azerbaijan, Georgia and Kazakhstan, all other economies with data availability received relatively low rankings. Pakistan and Tajikistan dropped out of the top 100, and Afghanistan even ranked the 173rd among the observed 190 economies (Table 1).

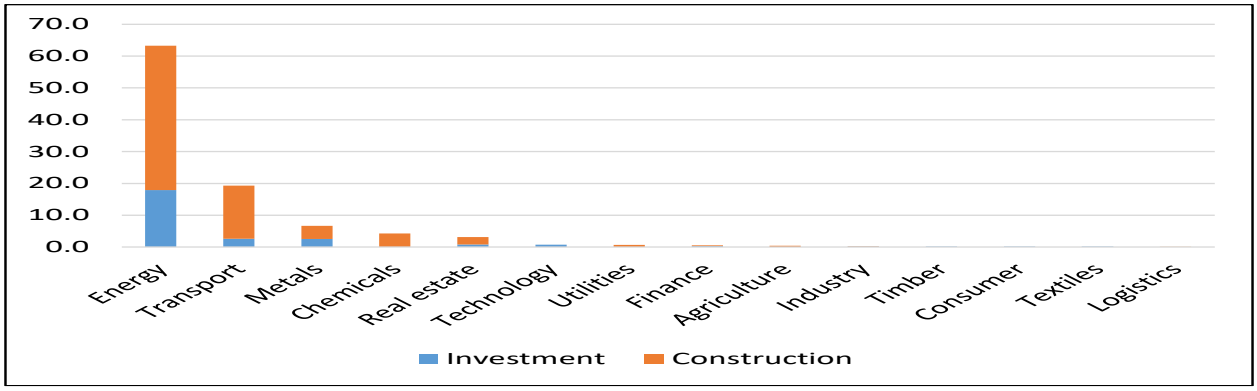
[9] The same source with footnote 6

[10] https://www.aei.org/wp-content/uploads/2022/07/China-Global-Investment-Tracker-2022-SPRING-final-1.xlsx?x91208

[11] International project contracting, different from FDI, is another approach for the Chinese enterprises to "go global" and participate in high-quality joint construction of the BRI and international economic cooperation. This contractual mode is a category of International Flexible Investment and includes many different patterns such as Engineering-Procurement-Construction (EPC), Engineering-Procurement-Construction+Finance (EPC+F), Project-Management-Consultant (PMC), Build-Operate-Transfer (BOT) and Public-Private-Partnership (PPP).

[12] https://databank.worldbank.org/source/doing-business

Figure 6. PRC's engagement in the CAREC region by sector, 2013 - H1 2022, %



Source: AEI, China Global Investment Tracker; author's calculations.

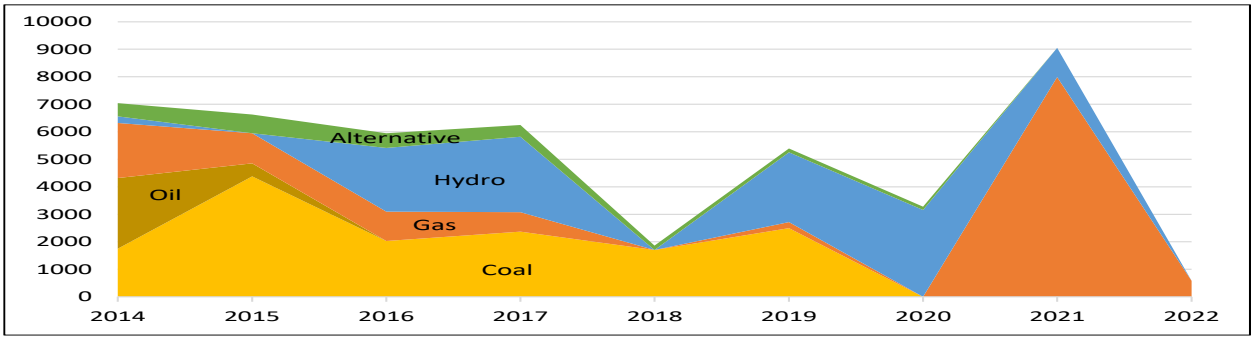
Table 1. Ease of doing business ranking for the CAREC economies, 2020

	AFG	AZE	GEO	KAZ	KGZ	MON	PAK	TJK	UZB
Rank	173	34	7	25	80	81	108	106	69
Score	44.1	76.7	83.7	79.6	67.8	67.8	61.0	61.3	69.9

Note: The score ranges from 0 to 100, where 0 stands for the worst regulatory performance and 100 the best regulatory performance. Economies with higher scores secure higher rankings.
Source: The World Bank, Doing Business 2020; author's compilation.

Traditional energy dominated the engagement. The amount of the PRC's engagement with the CAREC economies in traditional energy was more than twice as large as that in renewable energy, at about USD 31.4 billion. Coal investment and relevant construction took the largest proportion, cumulatively at 32%, followed by gas and hydro at 29.7% and 26.2%, respectively. By contrast, the engagement in alternative energy such as solar and wind was rather limited, lower than 6% during 2014 - H1 2022 (Figure 7). However, thanks to the green energy transition economies have committed that there is a big potential. And the PRC's announcement in 2021 not to build new coal-fired power plants abroad would further promote these economies' energy transition process.

Figure 7. PRC's total engagement in the CAREC region by energy source, 2014 - H1 2022 (USD million)

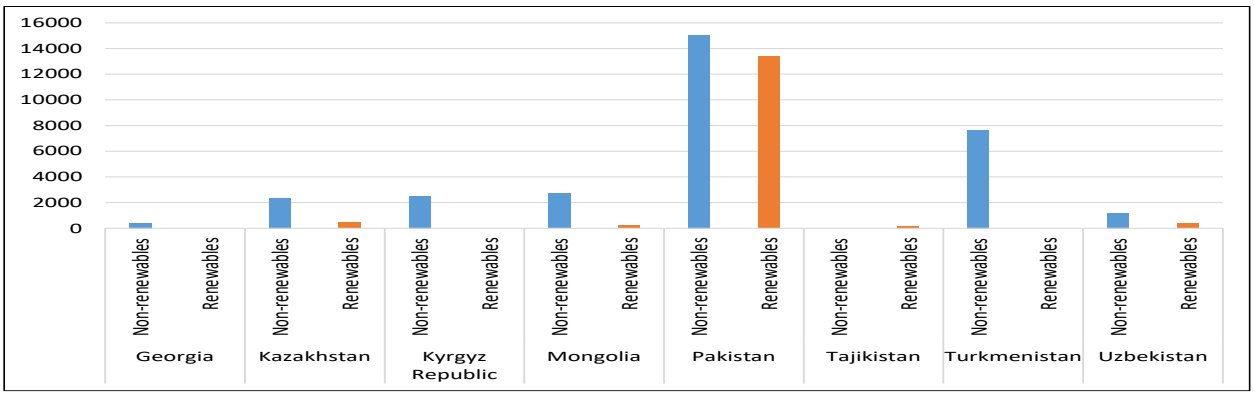


Source: AEI, China Global Investment Tracker; author's calculations.

The energy engagement received from the PRC was disproportionately dispersed among the CAREC economies. Pakistan was the largest recipient by far in both non-renewables and renewables investment and/or construction in the region. Although the aggregate amount of the PRC's engagement in non-renewables was larger than that in renewables in the economy, things altered from 2017 onwards (except for 2018 and H1 2022) when the engagement of the latter prevailed over the former, particularly significantly in 2020-2021. This could have been motivated by the economy's strategy on

energy transition, but on the other hand also pushed by the lack of hydrocarbon resources, larger demand for electricity due to the ever-increasing population base, among others. In addition, the intense operations of the CPEC must have played a vital role in advancing Pakistan's green energy development. Comparatively, except for Turkmenistan the PRC's energy engagement in other CAREC economies was limited, with the engagement in renewable energy taking up a lesser proportion (Figure 8).

Figure 8. PRC's total energy engagement in the CAREC region by economy, 2014 - H1 2022 (USD million)



Source: AEI, China Global Investment Tracker; author's calculations.

The CAREC economies' energy transition: an urgent and daunting task

Climate change is one of the biggest challenges for global sustainability in the 21st century. According to the United Nations Climate Action, the current global temperature is approximately 1.1 degrees Celsius higher than that of the late 19th century, with the past decade from 2011 to 2020 being the warmest on record.[13] The warmer temperature, together with other climate induced consequences such as epidemics and food shortage, would lead to around 250,000 excess deaths each year between 2030 and 2050, as estimated by the World Health Organization (WHO).[14]

The CAREC region, like any other area in the world, will continue to be impacted by the consequences of climate change, providing such issues are not addressed timely and effectively. Indeed, many economies in the region have for years reeled from severe natural disasters. For example, the third lingering drought year from 2020 in Afghanistan exacerbated the pre-existing food crisis and six-time more households in 2022 felt impacted by the drought, in contrast to 2020.[15] Other recent examples include the unprecedented heatwaves since March 2022 in Pakistan described as "testing the limits of human survivability"[16] and the devastating floods since mid-June 2022 killing more than 1,500 people,[17] and the heaviest downpours in 60 years in parts of southern China in the summer of 2022 forcing the evacuation of hundreds of thousands of people.[18] The INFORM Risk Index[19] published by the European Commission suggested that most CAREC economies would still be at very high risk of earthquakes, and

[13] https://www.un.org/en/climatechange/what-is-climate-change
[14] https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health
[15] https://reliefweb.int/report/afghanistan/wfp-afghanistan-situation-report-22-december-2022
[16] https://www.ctvnews.ca/climate-and-environment/india-and-pakistan-heat-wave-is-testing-the-limits-of-human-survivability-expert-says-1.5884377
[17] https://news.un.org/en/story/2022/09/1127051
[18] https://epaper.chinadaily.com.cn/a/202206/22/WS62b258f7a3109375516ed0b7.html
[19] https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk

at high risk of floods and droughts. According to the Index, the risk of earthquakes and droughts has become the second most influential factors to the makeup of overall rank of Afghanistan, only next to conflict-related components. Apart from higher risks of flood, the PRC and Pakistan are exposed exclusively to the risk of tsunami and tropical cyclone due to their geographical proximity to the oceans, though in different magnitudes. The high scores of the economies on these risks collectively made the average of the whole region significantly higher than the world average level (Table 2).

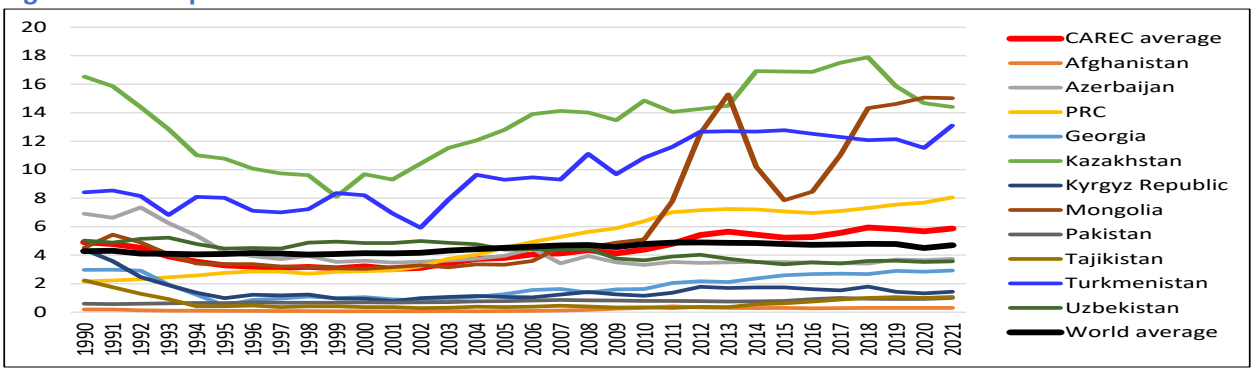
Table 2. Selected indicators from the INFORM Risk Index 2022 for the CAREC economies

	Earthquake	Flood	Tsunami	Tropical Cyclone	Drought	Inform Risk Level	Rank
Afghanistan	9.7	7.2	0.0	0.0	8.9	8.2	3
Azerbaijan	8.8	4.9	0.0	0.0	5.0	5.9	24
PRC	7.2	8.4	9.2	8.1	4.6	4.1	79
Georgia	7.9	5.1	0.0	0.0	5.1	3.9	85
Kazakhstan	6.5	6.0	0.0	0.0	6.1	1.8	164
Kyrgyz Republic	8.6	5.6	0.0	0.0	6.0	3.7	96
Mongolia	2.4	4.3	0.0	0.0	6.7	2.6	130
Pakistan	9.3	8.8	6.7	3.8	4.8	6.0	22
Tajikistan	9.3	5.4	0.0	0.0	7.6	4.5	65
Turkmenistan	3.3	6.4	0.0	0.0	4.3	2.4	138
Uzbekistan	8.1	6.3	0.0	0.0	6.6	3.1	114
CAREC average	*7.4*	*6.2*	*8.0*	*6.0*	*6.0*	*4.2*	-
World average	*4.0*	*4.5*	*3.7*	*1.7*	*3.4*	*3.8*	-

Note: Bigger figures stand for higher risks; reversely the economy with the highest risk is ranked the 1st.
"Inform Risk Level" and "Rank" here refer to the overall rating of three dimensions, namely, hazards and exposure, vulnerability and lack of coping capacity. The natural disasters listed in the table are only part of hazards and exposure.
According to the practice of the Index, the value (in red) ">=6.5" is defined as "very high" risk, while the value (in orange) ">=5.0" as "high" risk.
Source: European Commission, DRMKC, INFORM; author's compilation.

Strong and sustained reductions in CO2 and other greenhouse gas (GHG) emissions could delay the rise in temperature and thereby halt, or at least partially reduce future extreme climate catastrophes. Compared with many emission-intensive countries, the CAREC economies are not large GHG emitters. The total CO2 emissions of the CAREC region excluding the PRC accounted for only 2.3% of the total global emissions in 2021. However, although the region was on average mostly below the world level by per capita CO2 emissions until 2010, the development of mining, industrialization, and exports mostly by Kazakhstan, Mongolia, Turkmenistan and the PRC pushed up the CO2 emissions per capita in 2012-2021, to levels significantly above the global average. While per capita CO2 emissions of Kazakhstan and Turkmenistan have been always above the CAREC average since 1990, the PRC and Mongolia outstripped the average since early 2000s, with per capita CO2 emissions of the latter jumping to a record high of 15.3 tonnes in 2013 and a deep "V" shape thereafter. Comparatively, Afghanistan, Pakistan and Tajikistan (since 1993) produced the least per capita CO2 emissions in the region, mostly less than 1 tonne per annum in the last three decades (Figure 9).

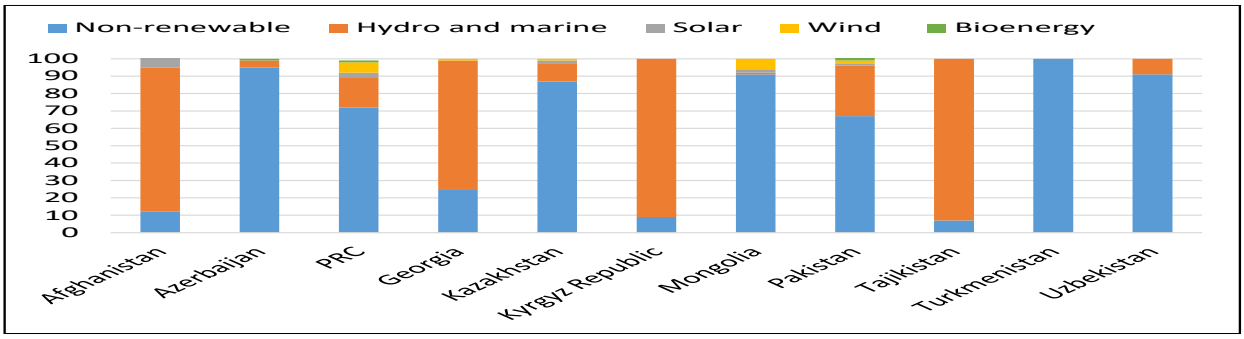
Figure 9. Per capita CO2 emissions of the CAREC economies[20]



Note: CO2 emissions from fossil fuels and industry. Land-use change is excluded.
Source: Our World in Data; author's compilation.

High dependency on traditional energy and fast-growing population in most CAREC economies make the reduction of GHG emissions difficult. Figure 10 depicts the electricity generation mix of the CAREC economies in 2020, where most still relied heavily on non-renewables such as oil, coal and gas to generate electricity. While the share of using non-renewables for electricity generation in Azerbaijan, Kazakhstan, Mongolia and Uzbekistan reached more than 85%, the share in Turkmenistan accounted for 100%. By contrast, Afghanistan, Georgia, the Kyrgyz Republic and Tajikistan were the only economies in the region that had a low utility rate of non-renewables. Owing to abundant water assets, these economies bore considerable capacity to generate hydropower, and the share of hydro accounted for 83%, 74%, 91% and 93% of their total electricity generation mix, respectively. Rapid demographic growth is deemed to be another key element to climate disruptions, bringing more energy consumption through the burning of fossil fuels, deforestation and other manufacturing processes. O'Neill et al (2010) found that slowing population growth by 2050 could help reduce 16-29% emissions thought necessary to avoid severe climate-induced impacts.[21] However, according to the World Bank's projection, the population of the CAREC region excluding the PRC by 2050 is expected to rise to 565 million, an increase of 193 million from 2022.[22] Except for Georgia, all other economies will continue with positive population growth, with Afghanistan, Pakistan and Tajikistan increasing the most by then by 80.1%, 56.0% and 52.7%, respectively. The population the PRC is projected to decrease to 1.29 billion in 2050, from 1.41 billion in 2022.

Figure 10. Electricity generation mix of the CAREC economies, 2020,[23] %



Source: IRENA; author's compilation.

[20] https://ourworldindata.org/co2-emissions
[21] https://www.pnas.org/doi/10.1073/pnas.1004581107
[22] https://databank.worldbank.org/source/population-estimates-and-projections#
[23] https://www.irena.org/Data/Energy-Profiles

All CAREC economies, in line with the global appeals at the COPs, showed strong resolve to reduce GHG emissions in an effort to lessen the potential impacts of climate change. Across the globe, over 70 economies to date have set a net-zero target, including the PRC and Kazakhstan from the CAREC region.[24] All 193 Parties to the Paris Agreement have issued at least a first Nationally Determined Contribution (NDC), and 151 of them communicated a new or updated NDC as of November 2021.[25] The Annex depicts the NDC or INDC target of the CAREC economies, where specific proportion of reduction on GHG emissions were announced. While most economies made unconditional pledges, economies including Afghanistan, Georgia, Kazakhstan, the Kyrgyz Republic, Pakistan, Tajikistan and Turkmenistan also set conditional targets, promising to reduce more with external financial support.

Such pledges could be materialized, at least partially, through replacing non-renewable energy by renewable sources such as wind, solar and hydro. According to the data retrieved from the UNDP's Renewable Energy Snapshots by a report of the CAREC Institute, all CAREC economies with data availability have tremendous renewable energy potential, particularly from solar power, for power generation. Azerbaijan and Turkmenistan have relatively higher potential from wind, and Georgia and Tajikistan from small hydropower plants. Kazakhstan has the greatest technical potential in solar, wind and small hydro power (next to Tajikistan though) compared to others due to its territory and geographical advantages (Table 3). However, incompleteness of policies, higher marginal costs for renewable energy deployment, and lack of technical support and incentives in renewable energy development could be headwinds for many CAREC economies to proceed with their energy transition. Meanwhile, the resource-intensive economies with lower costs of hydrocarbons are more likely to fall into a phenomenon of path dependence,[26] where the societies resist to make a change from the past even if better alternatives are available now.

Table 3. Technical potential for installed renewable electricity capacity in the CAREC economies,[27] MW

	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Republic	Tajikistan	Turkmenistan	Uzbekistan
Small hydro	400	4,500	4,800	1,800	23,000	1,300	1,800
Wind	4,500	2,300	354,000	1,500	2,000	10,000	1,600
Solar PV	115,200	96,900	3,760,000	267,000	195,000	655,000	593,000
Biomass	1,500	1,700	300	200	300	Not sig.	800

Source: Adapted from the CAREC Institute's report: Sustainable Pathways to Energy Transition in the CAREC Region: A Governance Perspective, March 2022

Green BRI strategy: catalyst to build greener energy systems for the CAREC region

Greening the BRI conforms to the pursuit of green development among societies globally and will facilitate the UN 2030 Agenda for Sustainable Development and the Paris Agreement. As the initiator and one of the biggest investors along the BRI, the PRC has come up with the concept of building a silk road for green and sustainable development as its priorities for years.

[24] https://www.un.org/en/climatechange/net-zero-coalition
[25] https://www.un.org/en/climatechange/all-about-ndcs
[26] http://en.wikipedia.org/wiki/Path_dependence
[27] https://www.carecinstitute.org/wp-content/uploads/2022/04/Sustainable-Pathways-to-Energy-Transition_GOVERNANCE-ATLAS-FINAL-REPORT.pdf

The policy framework pertinent to green BRI development was continuously refined and enriched. Since the launch of the BRI in 2013, the PRC has released a multitude of rules and regulations to guide its home enterprises to improve their capability to prevent environmental risks in overseas projects. More significant progress started from 2015 when the concept of jointly building a "Green Silk Road" was proposed, highlighting the importance of ecological civilization in investment and trade, and the need to strengthen cooperation on ecological environment, biodiversity and climate change. The year 2021 witnessed another milestone where the PRC announced not to build new coal-fired power projects in other nations, and the Chinese businesses were requested to comply with international green rules and standards set in the UNFCCC, the Convention on Biological Diversity, the 2030 Agenda for Sustainable Development and the Green Investment Principle while making outbound investments, which in most cases were more stringent than "host country rules". Moving forward, the initiative envisages attaining remarkable achievements in green BRI development by 2025 and basically form a green development pattern along the BRI by 2030 (Table 4).

Table 4. Policy development of jointly building the green BRI[28]

Nascent stage		
2013 - The PRC proposed to jointly build the BRI.	Feb. 2013 - Guidelines for Environmental Protection in Foreign Investment and Cooperation	
Initial stage		
Mar. 2015 - Vision and Actions on Jointly Building the Silk Road Economic Belt and the 21st Century Maritime Silk Road	May 2017 -Guiding Opinions on Promoting the Development of a Green Belt and Road Initiative	May 2017 -The Belt and Road Ecological and Environmental Cooperation Plan
Stage of exploration		
Jul. 2021 - Green Development Guidelines for Foreign Investment and Cooperation	Sep. 2021 -The PRC pledged not to build new coal-fired power projects abroad.	Jan. 2022 - Guidelines for Ecological Environmental Protection of Foreign Investment Cooperation and Construction Projects
Stage of maturity		
Mar. 2022 -Opinions on the Joint Implementation of Green Development in the Belt and Road Initiative	By 2025, notable achievements on green BRI development shall be made.	By 2030, the green development of the BRI should basically take shape.

Source: IIGF; author's translation.

Several initiatives were jointly established to strengthen communication and cooperation in greening the investments along the BRI. Typical examples include the setup of the BRI International Green Development Coalition (BRIGC),[29] Green Investment Principles (GIP)[30] and BRI Environmental Big Data Platform.[31] It should be specially noted that the GIP launched its first Regional Chapter in Central Asia in

[28] http://iigf.cufe.edu.cn/info/1012/5034.htm

[29] In the CAREC region, the PRC, Kazakhstan, Mongolia and Pakistan are cooperative partners of the BRIGC. Among all partners, Mongolia is the first champion country for green development under the BRIGC framework. http://en.brigc.net/

[30] In the CAREC region, apart from Chinese banking institutions, Astana International Exchange (Kazakhstan), Khan Bank (Mongolia), Trade & Development Bank of Mongolia and Habib Bank (Pakistan) have signed up to the GIP and attained membership status. https://gipbr.net/

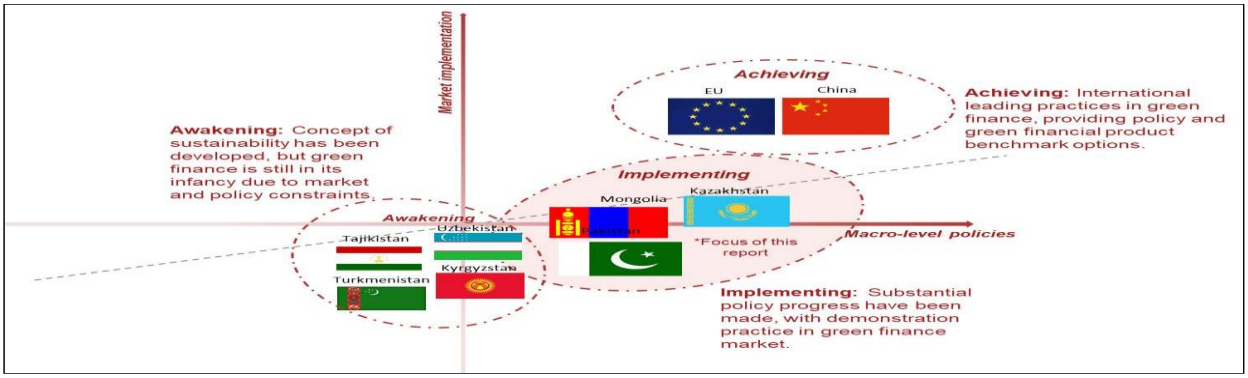
[31] http://eng.greenbr.org.cn/

May 2021 with the vision to disseminate best practices among local financial institutions in the region. "'The IEA predicts that to get to net-zero by 2050 we will need to triple investment in renewable energy to USD 1.6 trillion in 2030. The GIP regional chapters are a key part of this. Today's launch of the Central Asia chapter paves the way for a series of regional chapters which will help transform the investment landscape on the BRI', said James Pennington, Lead of Circular Economy & China Partnerships at the World Economic Forum".[32]

The Belt and Road Energy Partnership (BREP)[33] is another multilateral cooperation platform specifically for the energy sector. Among all energy areas, clean energy is one of the most important elements for cooperation. With the launch of "Qingdao Initiative for BRI Green Energy Cooperation" in October 2021,[34] member countries will further support green and low-carbon energy development in the developing countries by means of technological innovation, capacity building and technical assistance.

The PRC's strong position in green finance creates massive opportunities for foreign institutions, including the ones from the CAREC region. The PRC has accumulated a substantial portfolio of advanced practices in green finance policies and instruments. According to the People's Bank of China (PBC), the PRC has preliminarily developed a comprehensive green financial system, providing green loans, green bonds and other green products and services. It should be noted that by the end of 2021 the PRC's outstanding green loans in local and foreign currencies reached USD 2.5 trillion, being the largest in scale in the world.[35] Also, the PRC became the second largest green bond market globally in 2021, with the offshore green bond issuance growing 80% yoy to USD 12.7 billion.[36] By contrast, other CAREC economies are still in initial stages of green financing. The Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan need to develop more macro-level policies to fulfill their commitments on green transition. Kazakhstan, Mongolia and Pakistan have made substantial progress in enacting sustainability and green finance related policies, yet they still need to catch up a lot in terms of market implementation (Figure 11). The most recent "Global Green Finance Index (GGFI)" by Z/Yen, a London-based think tank, showed that among the 84 major financial centers worldwide, only 2 were from the CAREC region (both from Kazakhstan) if excluding the ones of the PRC (Table 5).

Figure 11. Green finance progress of several CAREC economies



Source: GIP, Paving the Way for Green Finance Development in Central Asia

[32] https://gipbr.net/Content.aspx?id=330&type=21&m=8

[33] Among the CAREC economies, Afghanistan, Azerbaijan, the PRC, the Kyrgyz Republic, Mongolia, Pakistan and Tajikistan are the members of BREP. http://www.nea.gov.cn/2019-04/25/c_138008739.htm

[34] http://www.nea.gov.cn/2021-10/19/c_1310254540.htm

[35] https://investinchina.chinadaily.com.cn/s/202203/10/WS6229a921498e6a12c12220fb/china-ranks-first-in-world-in-terms-of-outstanding-green-loans.html

[36] https://www.climatebonds.net/resources/reports/china-green-bond-market-report-2021

Table 5. "Global Green Finance Index 10" [37] ranks and ratings

Center	GGFI 10		GGFI 9		Change in rank	Change in rating
	Rank	Rating	Rank	Rating		
London	1	590	1	586	0	4
Amsterdam	2	580	2	573	0	7
New York	3	578	5	551	2	27
Luxembourg	4	554	7	546	3	8
San Francisco	5	553	3	553	-2	0
Los Angeles	6	552	10	541	4	11
Geneva	7	551	9	543	2	8
Stockholm	8	550	4	552	-4	-2
Copenhagen	9	549	12	539	3	10
Sydney	10	548	13	538	3	10
			…			
Shanghai	17	540	18	533	1	7
Shenzhen	20	537	21	530	1	7
Beijing	23	534	14	537	-9	-3
Guangzhou	27	530	23	527	-4	3
Qingdao	31	526	33	516	2	10
Hong Kong	41	516	39	508	-2	8
Astana	54	496	49	497	-5	-1
Almaty	75	458	74	466	-1	-8

Source: Z/Yen, The Global Green Finance Index 10 - Supplement "The Role of the Financial Services Sector in Supporting Agriculture"; author's compilation.

The PRC's supportive policies, cooperation initiatives and advancement in green finance collectively to promote the green agenda of the CAREC region is to benefit all. Indeed, the PRC has actively engaged in renewable energy development of many other countries in the past few years, including most CAREC economies. The latest completed projects backed by the PRC in the CAREC region include 60 MW Shelek Windpower Project[38] in Kazakhstan and 720 MW Karot Hydropower Plant[39] in Pakistan. In 2019, solar photovoltaic products manufactured by the PRC were exported to over 200 countries and regions, and the share of complete wind power assemblies in the global total output reached as high as 41%.[40] In 2020, the Chinese overseas investment in renewable energy for the first time exceeded the investment in non-renewables, with the share of the former ascending to 57% from 38% in 2019.[41]

Conclusion and policy implications

The CAREC economies, in particular those with high dependence on fossil fuels, should proactively diversify their existing energy structure. As the non-renewable energy is bound to be exhausted eventually, future energy export will be gradually shifting to renewables, affecting the technology, products and services. To flatten potential price fluctuations of traditional energy and synchronize steps with the global trend for decarbonization, economies of this type should take precautions and

[37] https://www.zyen.com/publications/public-reports/the-global-green-finance-index-10-supplement-the-role-of-the-financial-services-sector-in-supporting-agriculture/

[38] https://www.globaltimes.cn/page/202209/1275198.shtml

[39] https://english.news.cn/20220701/1e098c2808f842f68ae73eca5c98c4b2/c.html

[40] https://govt.chinadaily.com.cn/s/202012/22/WS5ff7c75a498eaba5051be753/energy-in-chinas-new-era.html

[41] Nedopil Wang, Christoph (January 2021): "China's Investments in the Belt and Road Initiative (BRI) in 2020", Green BRI Center, International Institute of Green Finance (IIGF), Beijing.

accelerate the energy transition process. Indeed, such orientation has even been adopted already in some of the world's top oil and gas producers such as Saudi Arabia, the United Arab Emirates, and Qatar.[42,43]

The CAREC region needs to speed up the deployment of renewable energy, not only because this can contribute to reduction of GHG emissions and to fulfill climate commitments but also because this will create more jobs. A recent report released by China Three Gorges International, for example, showed that CPEC energy projects have so far created more than 46,000 job opportunities for local employment in Pakistan.[44] Research by Garrett-Peltier (2017) found that some 7.49 jobs could be generated from USD 1 million spending in renewable energy whereas the same amount of spending in fossil fuels could create only 2.65 jobs.[45] In the short term, it brings more employment opportunities to those who lost their jobs due to COVID-19-related reasons, especially in the economies with higher remittance income. In the medium and long term, it will help ease the employment pressure for generations to come, in view of the rapid demographic growth of the region in the next 30 years.

The CAREC economies should fully utilize their abundant renewable energy potential, at a time of rising energy costs and higher inflation. The World Bank in its latest Commodity Markets Outlook report indicated that owing to the effects of the war in Ukraine as well as continued recovery from the COVID-19 crisis, energy prices surged by around 60% in 2022.[46] By contrast, the marginal cost of renewable energy becomes more competitive. "Indeed, renewables are increasingly becoming the default source of least cost, new power generation," as IRENA's "Renewable Power Generation Costs in 2021" noted.[47]

Nevertheless, the preceding proposals can be materialized only by tightened cooperation and coordination between the economies. Effective general approaches include:

- creating a preferential environment through formulating and/or consistently optimizing country-level rules and regulations related to inbound green investment and subsequent operations of the green energy facilities;
- directing more financial institutions including from MDBs to provide loans with lower interest rate and government to provide subsidies for inbound investors on green energy development;
- cooperation for modernizing and extending electrical grids and other required infra-structure, and further developing electricity trading;
- better leveraging subsistent and potential platforms for green energy cooperation, including the CAREC Green Energy Alliance endorsed earlier by the 21st CAREC Ministerial Conference on 24 November 2022;
- conducting capacity building trainings for government officials and technicians on this topic.

As for the CAREC economies with higher dependence on traditional energy, notably on fossil fuels, additional expectations apart from the above approaches include:

[42] https://gulfbusiness.com/saudi-arabia-aims-to-achieve-net-zero-emissions-by-2060/
[43] https://www.euromoney.com/cop27/article/2asmpja0eyducvb5q2tj4/investment/qatar-looks-to-renewables-to-power-sustainability-transition
[44] https://energycentral.com/news/cpec-energy-projects-generate-46000-job-opportunities
[45] Heidi Garrett-Peltier, "Green Versus Brown: Comparing the Employment Impacts of Energy Efficiency, Renewable Energy, and Fossil Fuels Using an Input-Output Model," Economic Modelling 61 (February 1, 2017): 439–47.
[46] https://openknowledge.worldbank.org/bitstream/handle/10986/38160/CMO-October-2022.pdf
[47] https://www.irena.org/publications/2022/Jul/Renewable-Power-Generation-Costs-in-2021

- strengthening the awareness, more importantly, the execution of their greening action plans and learning from some gulf states such as Qatar by mobilizing more funds on renewable energy deployment as the soaring energy prices in 2022 might have enabled these commodity exporters to reap extra profits;[48] this additional investment will not only accelerate the implementation of their respective NDCs, offset the risks of lower potential exports of hydrocarbons due to the proactive energy transition of other importing economies, create more job opportunities, but it will also empower the whole society to enjoy the "first-mover advantage" in the medium and long term;
- breaking up the path dependence by creating incentives, including shifting the tax burden from renewables to the traditional energy products;
- promoting the development of green energy demonstration zones as pioneers to spearhead the overall energy transition process;
- reforming energy tariffs towards a price system that covers fully generation and distribution costs while supporting low-income households that can't afford the increased energy prices.

[48] https://www.carecinstitute.org/wp-content/uploads/2022/08/QEM7-final-10-August-2022_-publishing.pdf

Annex: NDC/INDC targets of the CAREC economies

	NDC/INDC targets	Financial needs	Submission date
Afghanistan*	To reduce 13.6% GHG emissions by 2030, with external backup.	USD 10.785 billion for adaptation, and USD 6.62 billion between 2020 and 2030 for mitigation	23/11/2016
Azerbaijan*	35% reduction in the level of GHG emissions compared to 1990/base year by 2030.		09/01/2017
PRC	To peak CO2 emissions before 2030 and achieve carbon neutrality before 2060; to cut CO2 emissions per unit of GDP by more than 65% compared to 2005, to uplift the proportion of non-fossil fuel consumption to about 25%, to mount forest stock up by 6 billion steres compared to 2005, and to increase the total installed capacity of alternatives (i.e. wind and solar) to more than 1.2 billion KW by 2030.		28/10/2021
Georgia	To reduce the total GHG emissions unconditionally by 35% and below 1990 by 2030, by 50-57% compared to 1990 with foreign backing.		05/05/2021
Kazakhstan*	To cut 15% of its GHG emissions unconditionally and 25% with conditions by the end of 2030 compared to 1990.		06/12/2016
Kyrgyz Republic	To cut its GHG emissions unconditionally by 16.63% by 2025 and by 15.97% by 2030, conditionally by 36.61% and by 43.62% respectively, under the BAU scenario.	Around USD 10 billion	09/10/2021
Mongolia	To reduce its GHG emissions by 22.7% by 2030 compared to the BAU scenario, not including land use, land use change and forestry.	USD 5.2 billion for adaptation, and USD 6.3 billion for mitigation	13/10/2020
Pakistan	To reduce its projected emissions unconditionally by 15% and conditionally by 35% by 2030.	USD 101 billion for energy transition	21/10/2021
Tajikistan	Unconditionally not to exceed 60-70% GHG emissions, and conditionally not to exceed 50-60% as of 1990 by 2030.	More than USD 1 billion per year	12/10/2021
Turkmenistan*	No increase in GHG emissions and even with reductions by 2030, if external support is available.	USD 10.5 billion for adaptation	21/10/2016
Uzbekistan	To cut GHG emissions per unit of GDP by 35% by 2030 compared to 2010 level.		30/10/2021

Note: "*" indicates that the economy has submitted an INDC target.
Source: UNFCCC, NDCs; author's compilation. https://unfccc.int/NDCREG