



Economic Brief

Intra-CAREC Trade

Business as Usual or about to Change?

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29 June 2020

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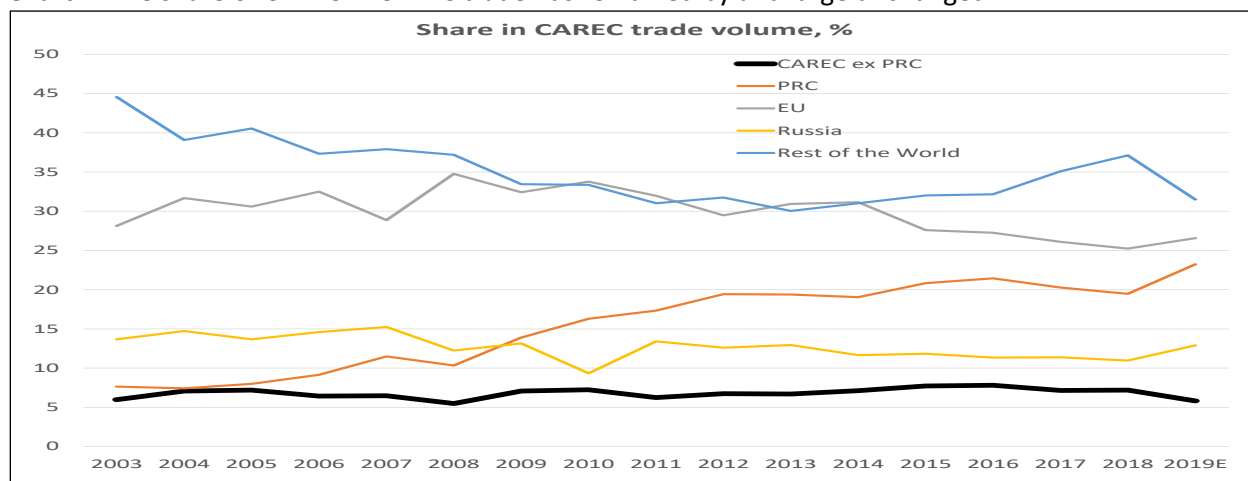
Intra-CAREC Trade: Business as Usual or about to Change?

This Economic Brief takes a pause from analyzing the Covid-19 economic impact and provides instead insights in CAREC countries' mutual trade against the background of the region's trade with its main trading partners Russia, the EU, and the PRC. It also gives a short overview over the products the CAREC countries are trading among themselves. The brief shows that the product composition of intra-CAREC trade is similar to the one of the region's global trade. It concludes, that in order to intensify intra-CAREC trade as well as the region's global exports, the product portfolio of CAREC countries' industry and agriculture has to be widened, and that business as usual is not sufficient. It emphasizes the need and opportunities of change brought about by global decarbonization efforts and green transition, widely discussed now in connection with efforts to revive the global economy after the slump caused by the Covid-19 pandemic. The pause from Covid-19 is thus not perfect. To broaden the range of products and services that can be exported is not easy and requires a whole set of measures in areas such as trade policy, coordination of sectoral policies, diversification, and business reforms. The CAREC program's Integrated Trade Agenda 2030¹ calls for such policies and offers support. Especially the countries that are in the center of the CAREC region's trade flows should step up their initiatives for industrial change and closer cooperation among the CAREC countries.

Outside partners' shares in CAREC's global trade have changed, but the share of intra-CAREC trade remained about the same during the last 15 years

The share of intra-CAREC² trade³ in the CAREC region's trade with the outside world is low (Chart 1). It averaged only 6.8% in 2003-2019. The PRC's share, by contrast, increased from 7.6% in 2003 to 23.2% in 2019, at the expense of the EU⁴, Russia, and the remaining trading partners (the "Rest of the World").

Chart 1: The share of CAREC in CAREC trade has remained by and large unchanged



Source: Trademap, World Development Indicators, author's calculations

¹ <https://www.carecprogram.org/?publication=carec-trade-agenda-2030-strategic-action-plan>

² For the purpose of this study the brief looks at the CAREC region without the PRC, given the PRC's special role as a major gravity center for the CAREC region's foreign trade. However, the PRC figures in many charts and paragraphs, hence an assessment of the involvement of the CAREC region with the PRC is also given.

³ In most parts of the paper trade is trade in goods since no break-down of services trade for intra-CAREC trade is available to us. In the paragraphs related to services trade, services are mentioned explicitly.

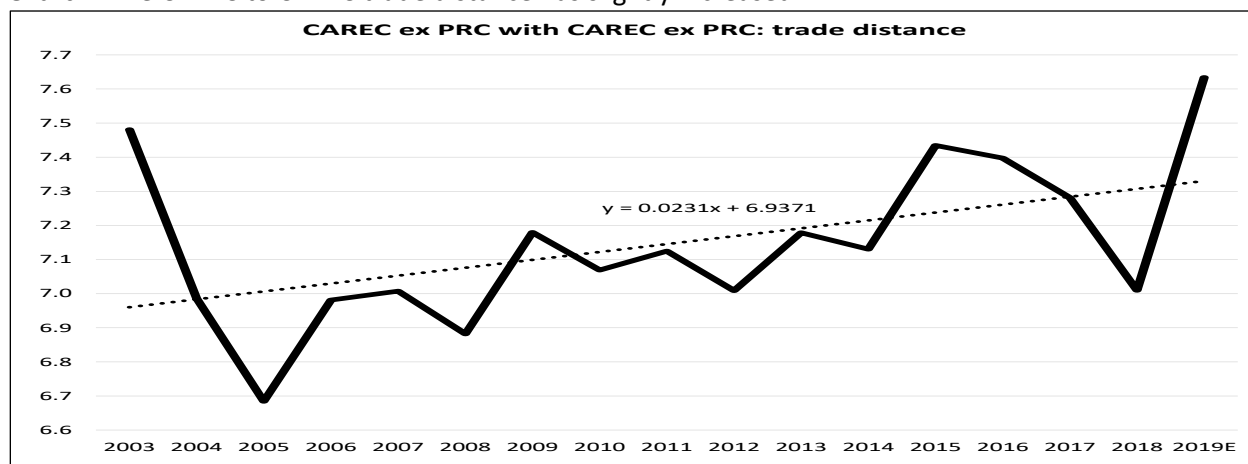
⁴ In this brief EU still means the EU(28), that is before Brexit.

Adjusting for GDP reveals that intra-CAREC's trade has even slightly decreased

A larger GDP is usually accompanied by a larger trade volume between trading partners. To measure mutual trade intensity, adjusted for GDP, the brief introduces a concept of mutual trade openness, that is the trade volume between country A and country B as share of the respective GDP⁵. For the sake of better presentability the logarithm of the reciprocal value is used and called “trade distance”⁶.

Between 2003 and 2019 the intra-CAREC⁷ trade distance had the tendency to slightly increase (Chart 2), although with some volatility. This means that the trade intensity inside the region became a bit less, adjusted for GDP growth⁸.

Chart 2: The CAREC to CAREC trade distance has slightly increased*



* A lower reading in this chart means higher trade intensity, a higher reading means less intense trade relations, adjusted for GDP. Both, trade volumes and GDP, are those of the respective year. The values on the horizontal axis are years, the values on the vertical axis are calculated according to the formula in footnote 6. The trend and the corresponding equation indicate that the distance is increasing by about 0.02 units on average per year or by 0.2 units in 10 year, from about 7.0 in 2004 to about 7.2 in 2014, for example.

Source: Trademap, World Development Indicators, author's calculations

⁵ The brief uses GDP at current exchange rates, which is problematic to some extent because fixed exchange rates, used in a number of CAREC for a number of periods, might strongly influence GDP in USD terms. GDP at PPP might have some advantages. However, current exchange rates, which move in line with commodity prices at least in the longer run, can offset to some extent the influence of commodity price volatility. We made some comparisons. In the end, the difference is not huge long term.

⁶ The formula is $D_{ij} = \ln((Y_i/T_{ij}) * (Y_j/T_{ji}))$ where D_{ij} is the “trade distance” between country I and J, \ln is the natural logarithm, Y_i is the GDP of region I, Y_j the GDP of region J, and $T_{ij}=T_{ji}$ the mutual trade volume (exports+imports). The formula slightly resembles the formula used in gravity models $\ln(T_{ij}) = a_1 * \ln(Y_i) + a_2 * \ln(Y_j) - a_3 * \ln(D_{ij}) + C$, where D_{ij} is the geographical distance between country I and J, C is a constant, and a_1, a_2, a_3 are the coefficients to be estimated. In more sophisticated gravity models, D_{ij} can represent more than just the geographical distance, that is overall obstacles to trade, and is also called trade costs. If the equation is reversed, the “distance” or trade costs are modelled as a function of GDP and the trade volume. The expression “distance” in this brief is inspired by the gravity equation. However, the coefficients are not estimated but given by definition. The actual meaning of the formula used here is mutual trade openness.

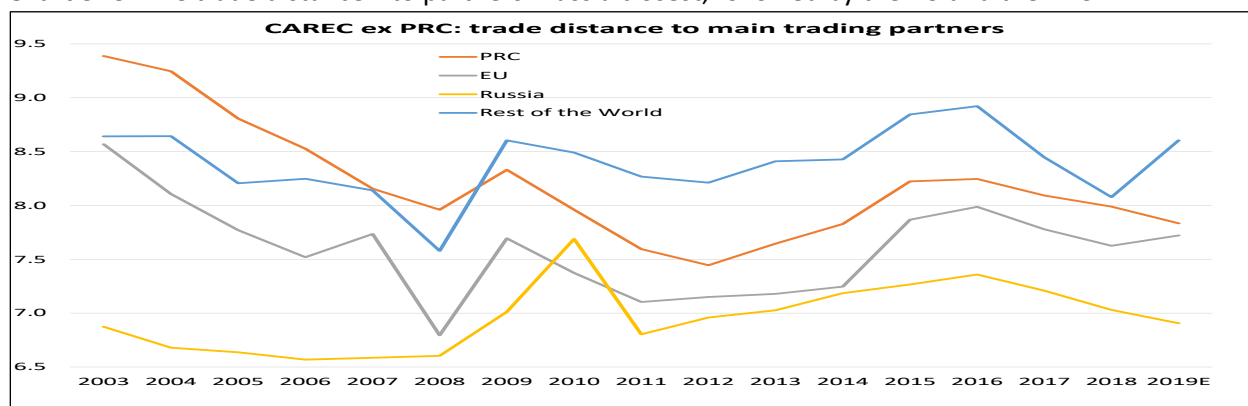
⁷ For the sake of shortness, just “CAREC” is used instead of “CAREC region” in most of the paper.

⁸ The CAREC region's GDP is calculated as the sum of the CAREC countries' GDP, exports as the sum of CAREC countries' exports and imports the sum of CAREC countries' imports.

CAREC's trade with the outside world intensified until 2011-12, but has stagnated since

The CAREC region's outside trade relations, adjusted for GDP, are closest with Russia (Chart 3). The EU ranks second. The PRC, coming in third, strongly developed its trade with the CAREC region until 2012, overtaking the "Rest of the World"⁹. Since then, the trend was sideward with some volatility, in the years 2015 and 2016 largely reflecting low oil prices.

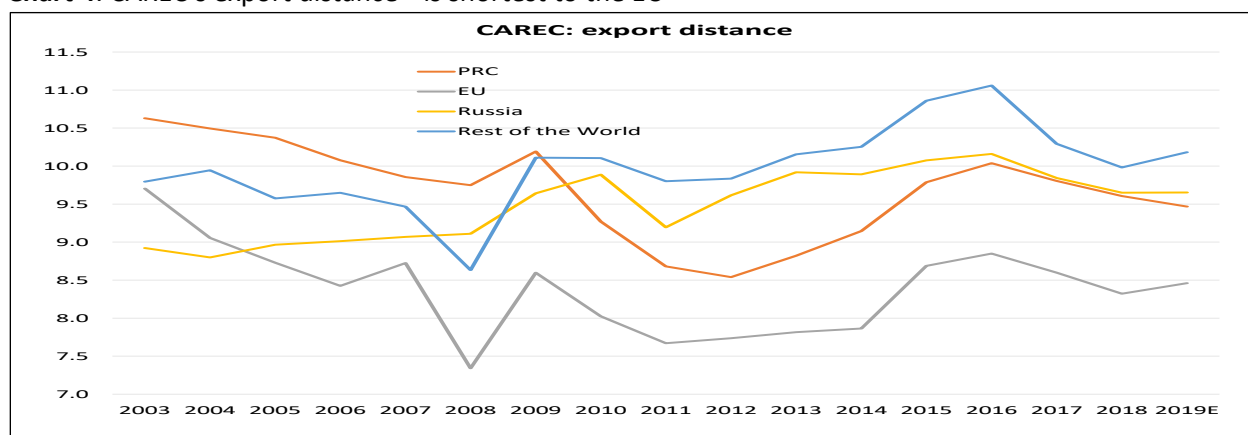
Chart 3: CAREC trade distance¹⁰ to partners: Russia closest, followed by the EU and the PRC*



* The absolute distance values between CAREC and partners and CAREC with CAREC are not comparable since CAREC's trade share in GDP is inflated by cross-border trade within CAREC¹¹. The CAREC with CAREC line is therefore omitted in this chart. However, the shapes of the lines are comparable.

Source: Trademap, World Development Indicators, author's calculations

Chart 4: CAREC's export distance¹² is shortest to the EU*



* The [annex](#) shows export and import distances for individual CAREC countries.

Source: Trademap, World Development Indicators, author's calculations

⁹ World minus the CAREC region, Russia, the PRC and the EU

¹⁰ Formula as given in footnote 6

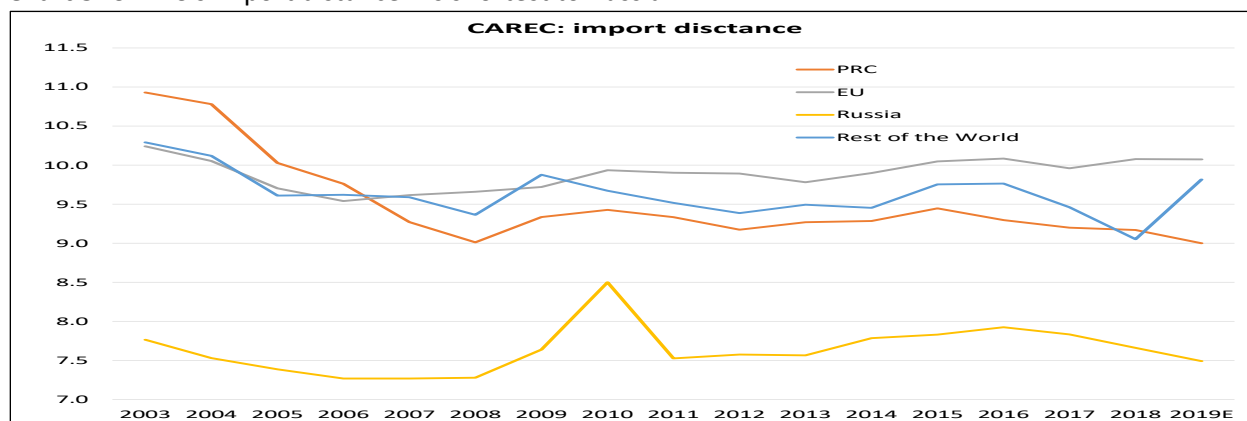
¹¹ Looking at the relation between trade and GDP in a single country, domestic trade, e.g. between provinces is not recorded. However, if looking at the relation between the GDP of the CAREC region as whole and CAREC to CAREC trade there is inside CAREC trade, and therefore the quotient of GDP/trade is automatically lower than it is for CAREC trade with an outside partner with the same GDP as CAREC as a whole.

¹² The formula is $D_{ij} = \ln((Y_i/X_{ij}) * (Y_j/M_{ji}))$, where X_{ij} is the export of region I to region J, and M_{ji} the import of region J from region I. Since X_{ij} is equal M_{ji} , the formula can also be written as $D_{ij} = \ln(Y_i * Y_j / X_{ij}^2)$.

CAREC's most significant export destination is the EU (always adjusted for GDP) thanks to CAREC's oil exports, mostly from Kazakhstan. Chart 4 depicts the "export distance" (see footnote 12) from the CAREC point of view. The export distance to the PRC has strongly decreased until 2012, overtaking Russia, but has somewhat re-increased since, mostly due to the leveling off value of oil, gas, and coal exports.

Chart 5 shows the "import distance". CAREC's import relations are closest with Russia. The CAREC region's imports from the PRC grew strongly until 2008, adjusted for GDP, with about flat growth since then. Imports from the EU are relatively modest.

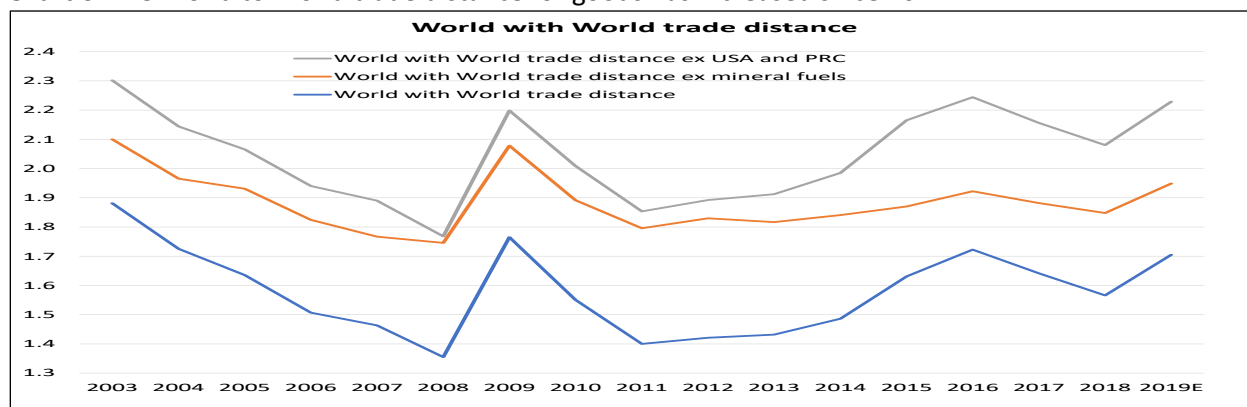
Chart 5: CAREC's import distance¹³ is shortest to Russia



Source: Trademap, World Development Indicators, author's calculations

While there has been a shortening of CAREC's trade distance to the PRC and the EU until 2011-2012, driven by the export side, trade intensity with the trading partners has stagnated or slightly diminished since. This is in line with global developments (Chart 6). The upturn in the World with World trade distance since 2012 indicates that globalization has stalled, at least for trade in goods, adjusted for GDP growth. This reflects in part - but not only - lower commodity prices, perhaps some globalization fatigue, and in 2019 presumably the US-China trade disputes. However, we argue below that there should be opportunities and efforts to enhance the CAREC region's trade performance.

Chart 6: The World to World trade distance for goods has increased since 2011



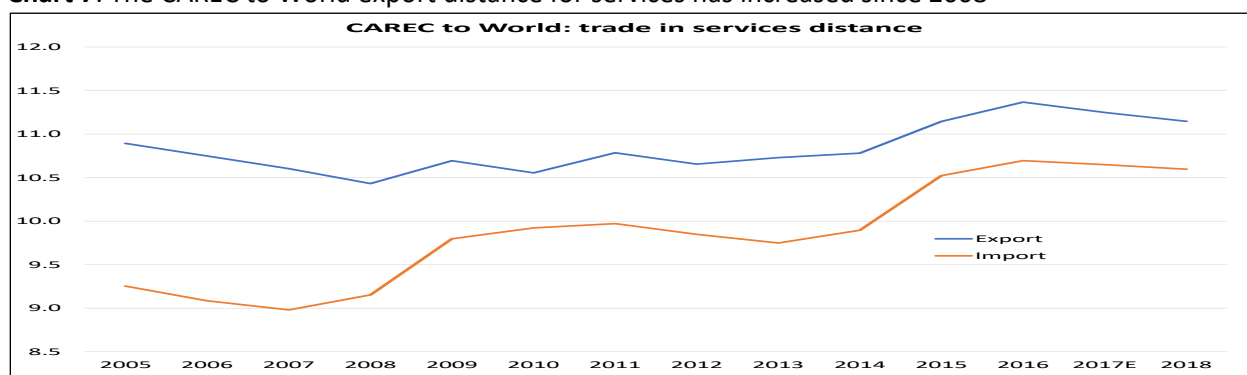
Source: Trademap, World Development Indicators, author's calculations

¹³ The formula is $D_{ij} = \ln((Y_i/M_{ij}) * (Y_j/X_{ji}))$, where M_{ij} is the import of region I from region J, and X_{ji} the export of region J to region I. Since M_{ij} is equal X_{ji} , the formula can also be written as $\ln(Y_i * Y_j / M_{ij}^2)$.

For services, the CAREC to World export distance has increased since 2008

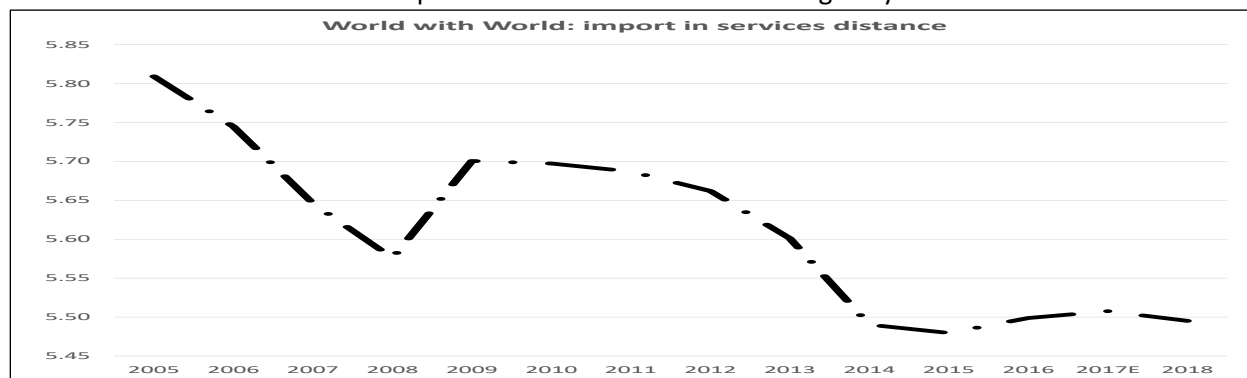
The share of services in GDP is increasing globally and in the CAREC region, but this has not led to higher CAREC cross-border activities in services. CAREC's cross-border trade in services decreased between 2008 and 2018, adjusted for GDP (Chart 7)¹⁴. This contrasts with the global development, where the import distance remained largely stable or even marginally diminished (Chart 8) thanks to fast growth especially in ITC services, charges from intellectual property, and other business services. The decrease in CAREC's trade in services took place on both the export and the import side, with the trade deficit narrowing, however.

Chart 7: The CAREC to World export distance for services has increased since 2008



Source: Trademap, World Development Indicators, author's calculations

Chart 8: The World from World import distance for services has marginally decreased



Source: Trademap, World Development Indicators, author's calculations

Developments have varied for various countries, but the simple average over CAREC countries confirms that intra-CAREC trade has been rather stagnant

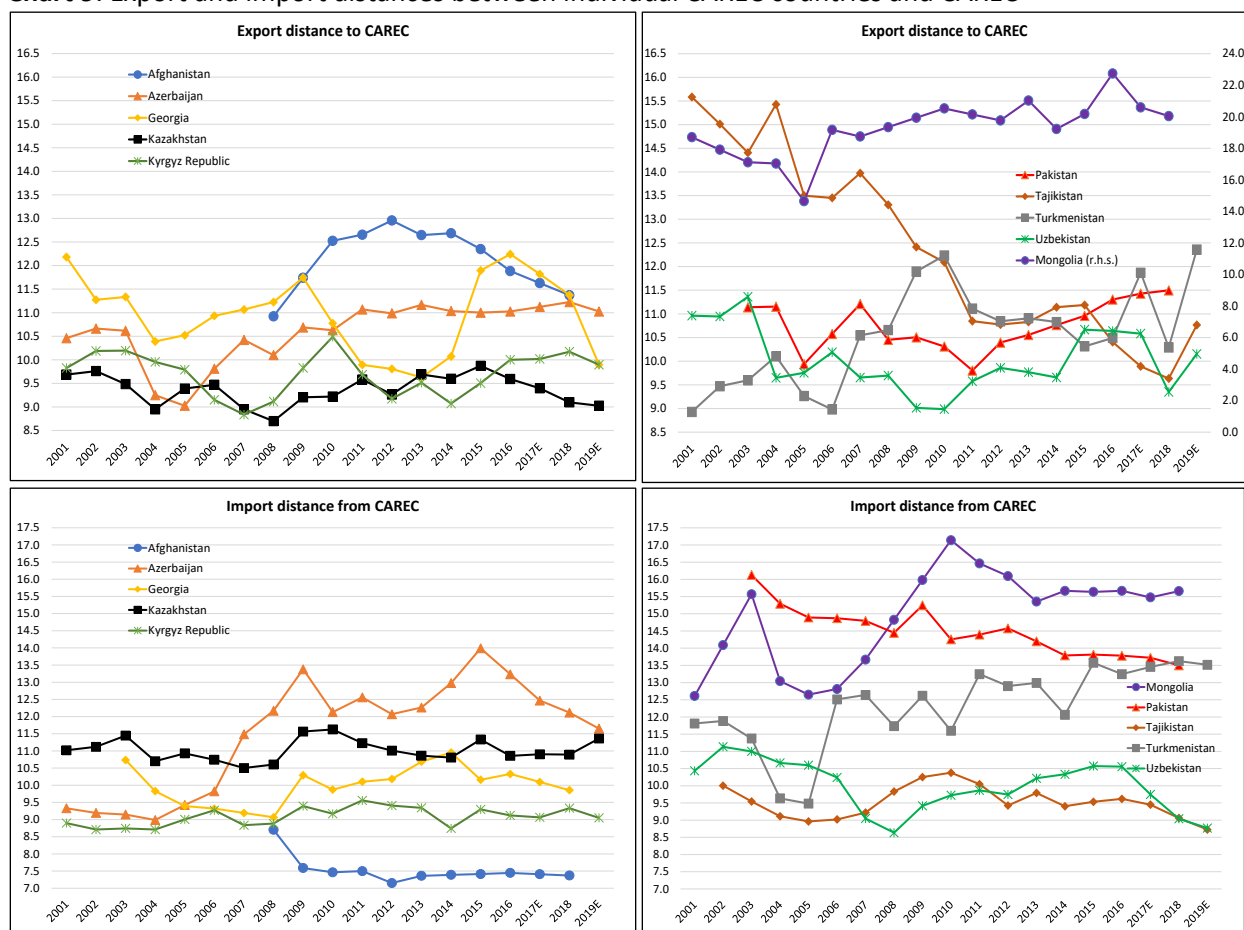
Chart 9 summarizes the export and import distances of individual CAREC countries to the CAREC region¹⁵. Mongolia is rather far away from CAREC. Tajikistan strongly shortened its export distance, possibly because exports to Russia go through CAREC countries and are recorded there. Afghanistan's distance is among the farthest on the export side, but the closest on the import side thanks to low distances to

¹⁴ To our knowledge there is no breakdown by trading partners available of the CAREC cross-border trade in services. Therefore we discuss only CAREC's global trade in services.

¹⁵ The distances of the individual countries also to Russia, the EU and the PRC can be seen in the [annex](#).

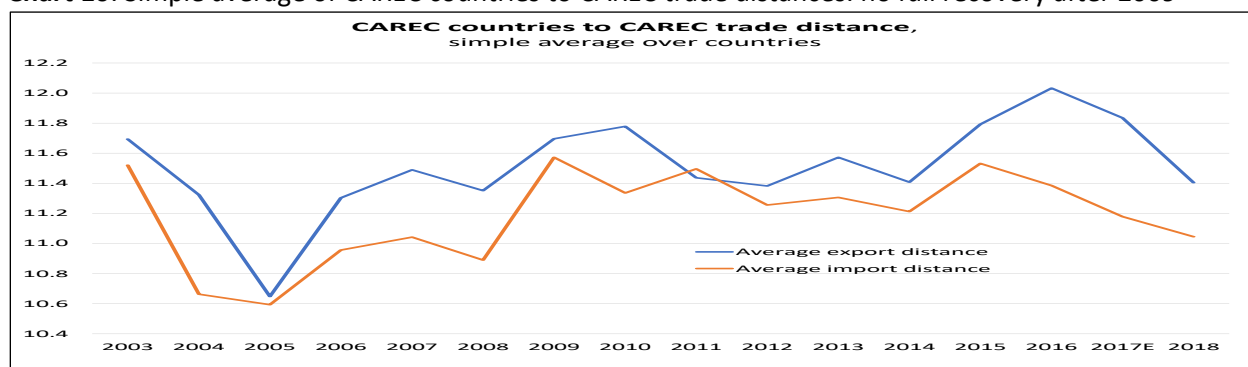
Pakistan, Turkmenistan, and Uzbekistan. Pakistan in turn has a relative short export distance thanks to its closeness to Afghanistan. On the import side, Pakistan is also not too far away from Afghanistan, but is far away from the other CAREC countries, farthest from Mongolia. By contrast, Pakistan has a close relation to the PRC and the “Rest of the World”.

Chart 9: Export and import distances between individual CAREC countries and CAREC



Source: Trademap, World Development Indicators, author's calculations

Chart 10: Simple average of CAREC countries to CAREC trade distances: no full recovery after 2009*



* The simple average export and import distances are not completely the same due to the “distance” formula and differences in the statistic and mirror statistic.

Source: Trademap, World Development Indicators, author's calculations

The simple averages of the export and import distances depicted in Chart 9 are shown in Chart 10. They became shorter from 2003 until 2005, re-increased until 2009-10, and have moved broadly sideward since. Intra-CAREC trade grew faster than GDP in the 2003-2005 period, but not in the others. This can in part be attributed to the trade in mineral fuels but holds also net of them. All in all, there was little trade intensification within CAREC over the last 15 years

Uzbekistan and Kazakhstan are at the center of the CAREC region

Table 1 is a matrix of mutual distances of the CAREC countries in the year 2018. The columns show export distances from the point of view of the country headings above the table, the rows show import distances

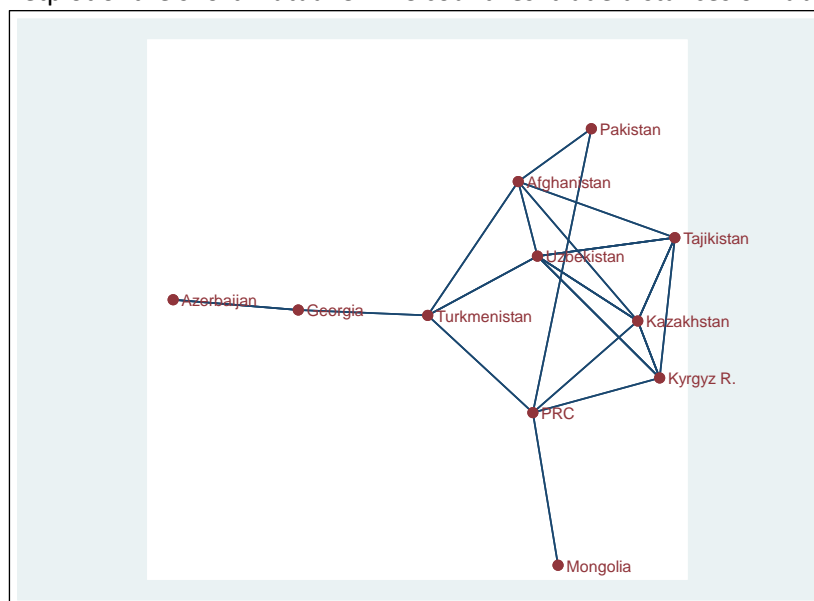
Table 1: Mutual CAREC countries' trade distances* in the year 2018

Exporters Importers	Afgha-- nistan	Azer- baijan	PRC	Georgia	Kazakh- stan	Kyrgyz R.	Mon- golia	Paki- stan	Tajiki- stan	Turkme- -nistan	Uzbe- kistan
Afghanistan		12.1	13.3	24.4	9.5	17.6	N/A	8.1	10.2	8.6	8.1
Azerbaijan	29.2		14.7	10.2	12.1	18.5	24.2	18.1	24.7	12.0	14.5
PRC	19.6	17.7		15.7	11.0	17.2	8.3	14.1	16.7	9.0	11.8
Georgia	N/A	8.1	12.2		13.9	17.2	15.0	19.0	20.3	10.1	16.5
Kazakhstan	19.0	15.2	9.9	14.3		10.1	19.1	15.8	9.6	17.6	9.4
Kyrgyz R.	21.6	17.0	8.2	13.4	8.2		22.0	20.8	12.6	18.9	9.5
Mongolia	N/A	N/A	11.1	18.8	13.0	16.9		23.3	28.3	N/A	19.2
Pakistan	10.7	23.8	9.6	25.2	23.1	23.5	35.9		17.0	17.5	21.1
Tajikistan	14.8	15.9	10.8	15.9	8.5	10.2	N/A	17.1		11.9	10.1
Turkmenistan	20.5	15.0	15.5	13.2	13.8	17.2	N/A	23.7	20.6		10.5
Uzbekistan	19.0	17.1	10.7	12.4	8.1	9.7	22.1	17.8	9.7	10.5	

* Defined as in footnote 12

Source: Trademap, World Development Indicators, author's calculations

Chart 11: Netplot of the short mutual CAREC countries' trade distances of Table 1



Source: Trademap, World Development Indicators, author's calculations

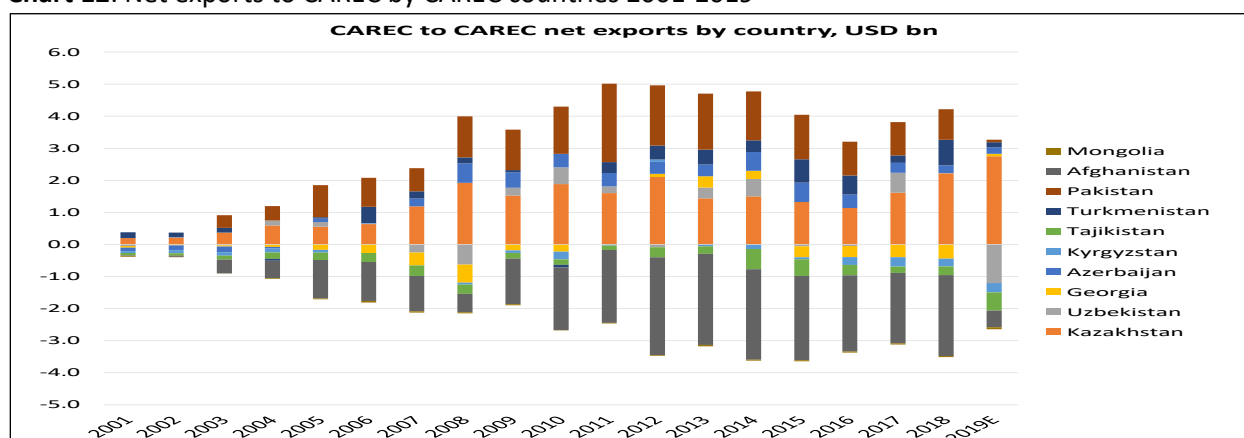
from the point of view of the country headings left of the table. Values below 10.502, the value above which three quarters of the entries in Table 1 lie (the first quartile), are given as red figures. They indicate close relationships.

Chart 11 depicts close distances, the red ones in Table 1, as a netplot. With 5 connections each, Uzbekistan and Kazakhstan have the highest number of short trade distances to the other CAREC countries, and they find themselves in the center of the plot. This reflects the crucial position these countries have in intra-CAREC trade. The PRC has also 5 connections, but 2 of them are with Mongolia and Pakistan, countries which are less connected than the ones Uzbekistan and Kazakhstan have connections with.

There is a rather constant group of net exporters and one of net importers in CAREC

Turkmenistan, Pakistan, Kazakhstan, and Azerbaijan are net exporters to CAREC, little changed over the time (Chart 12). Afghanistan and Tajikistan have been constantly on the net importer side, the other countries sometimes on the net importer and sometimes on the net exporter side. Turkmenistan, Kazakhstan, and Azerbaijan are large net exporters of hydrocarbons. Pakistan's net exports to CAREC include a broad range of products, but the most important are sugars and sugar confectionery, cereals and products of the milling industry, but also pharmaceutical products and mineral fuels. Intra-CAREC trade relations provide little intra-CAREC import content to CAREC exports and thus little developed backward linkages between the main exporters of the region and the smaller CAREC countries.

Chart 12: Net exports to CAREC by CAREC countries 2001-2019

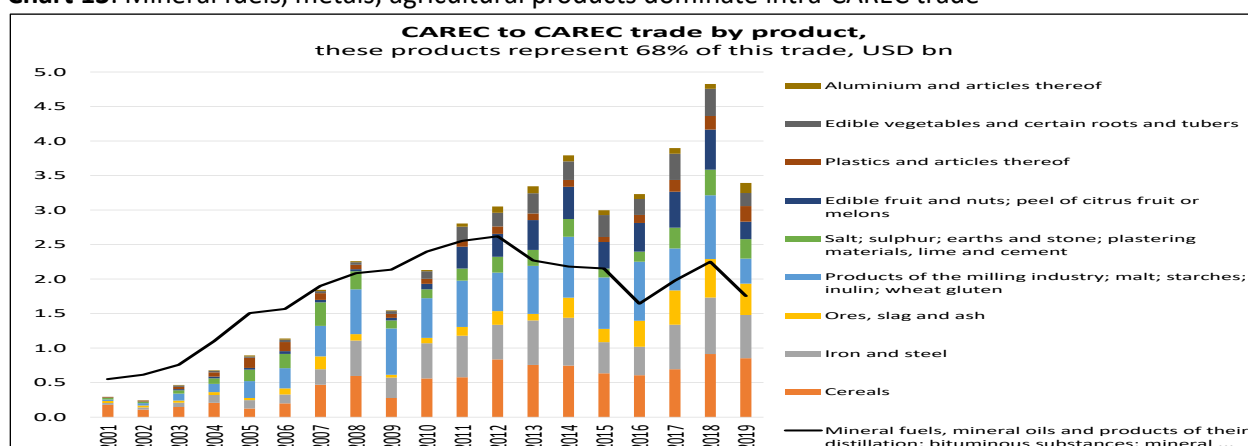


Source: Trademap, World Development Indicators, author's calculations

Intra-CAREC trade is dominated by mineral fuels, although not to the extent as global exports

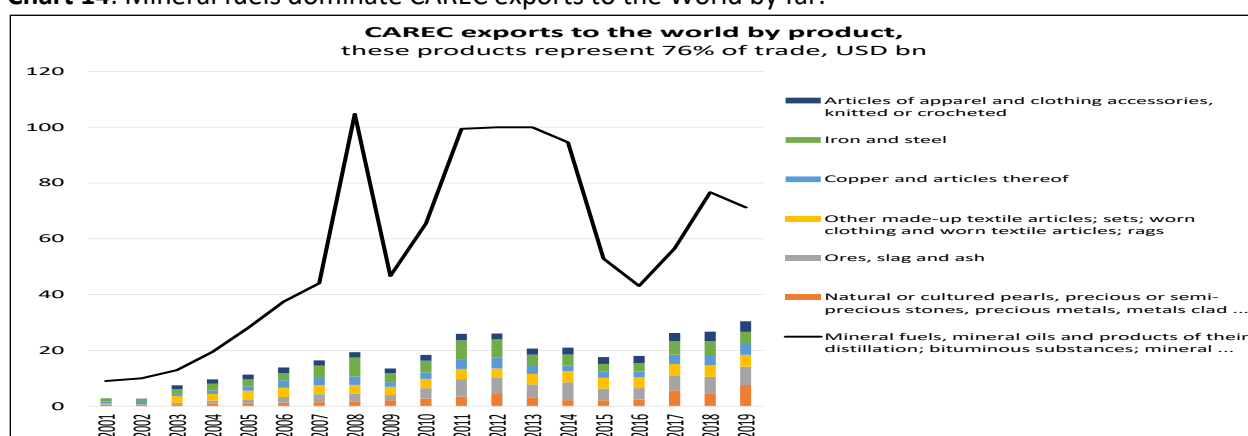
Intra-CAREC trade and global trade are closely related via the product structure of the CAREC economies: Mineral fuels, metals, agricultural products account for the largest part of intra-CAREC trade (Chart 13). Especially mineral fuels dominate intra-CAREC trade, even though far less so than CAREC's global exports (Chart 14). Metals too play an important role both in CAREC's internal trade and global exports. Agricultural products and clothing are important export products especially for the smaller CAREC countries and Pakistan.

Chart 13: Mineral fuels, metals, agricultural products dominate intra-CAREC trade



Source: Trademap, World Development Indicators, author's calculations

Chart 14: Mineral fuels dominate CAREC exports to the World by far.



Source: Trademap, World Development Indicators, author's calculations

As shown above, CAREC countries produce and export a large volume of mineral fuels. However, within this industry¹⁶ the portfolio of (6 digit) products is strongly concentrated on the left-hand side of Chart 15, much more than world demand (depicted as line in Chart 15) and also CAREC's own import demand would suggest. There might be opportunities to increase the production of at least some of the products, which are located more on the right-hand side of the chart, given that CAREC countries already export them as the blue bars in Chart 15 indicate. The mineral fuels industry is only one example where downstream activities appear necessary, a similar reasoning applies also to metals and agricultural products.

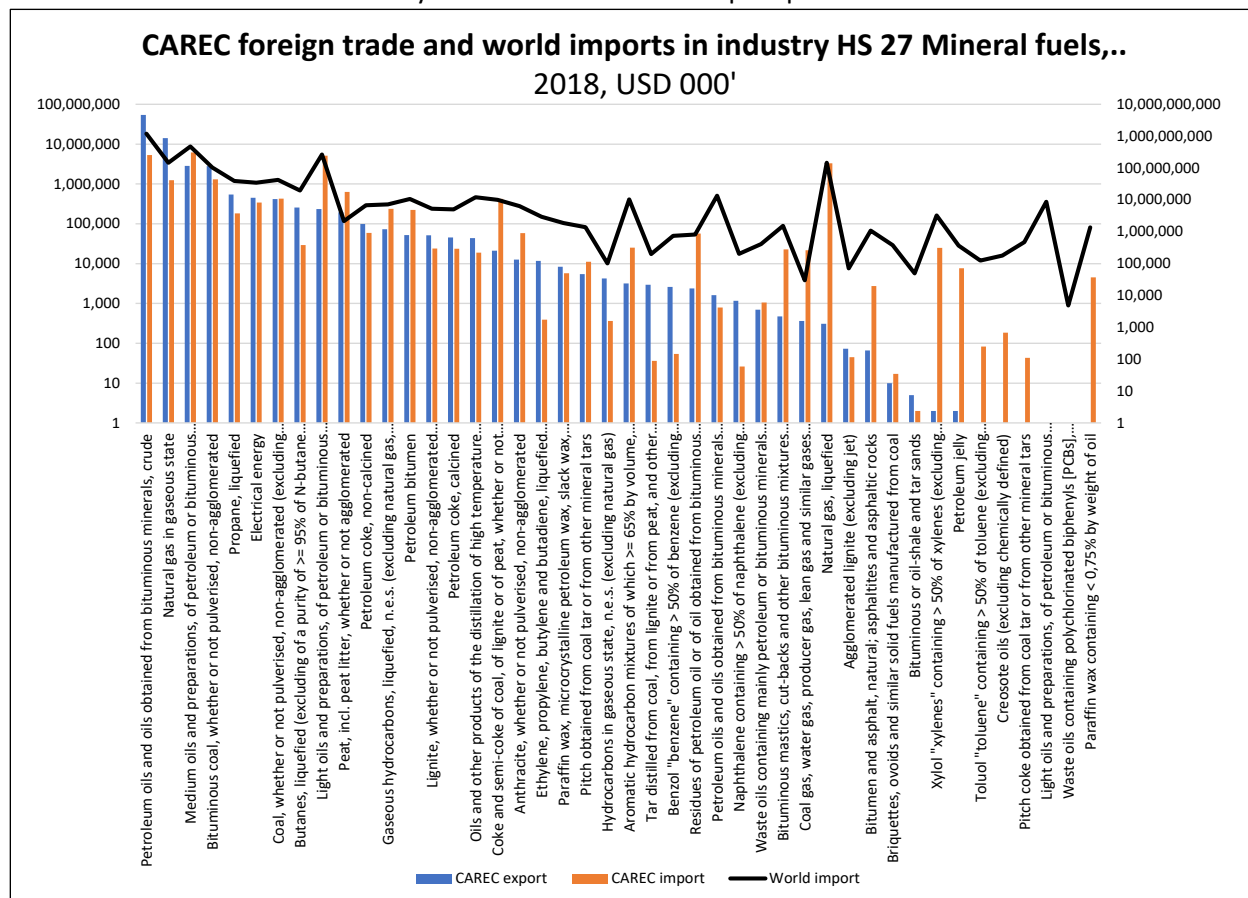
And indeed, there are activities going on to build petrochemical industrial complexes in Turkmenistan, Azerbaijan and Kazakhstan. It was announced recently that Jizzakh Petroleum JV LLC, a joint venture of JSC Uzbekneftegaz and Gas Project Development Central Asia (a subsidiary of Gazprom International) will begin to carry out a major revamp of the Ferghana oil refinery that will enable the introduction of a hydrocracking process and the launch of production of AI-92 motor gasoline and Euro-5 diesel fuel on July 1, 2023¹⁷. Earlier, the oil refinery in Shymkent, one of three refineries in Kazakhstan, has been modernized.

¹⁶ Number 27 according to the Harmonized System of trade classification

¹⁷ [https://globuc.com/news/jizzakh-petroleum-begins-modernization-of-ferghana-refinery-in-uzbekistan/?conf\[\]=49563](https://globuc.com/news/jizzakh-petroleum-begins-modernization-of-ferghana-refinery-in-uzbekistan/?conf[]=49563)

However, developing downstream productions is not an easy task, as the recent withdrawal of Borealis from investing in the construction of a polyethylene factory in the Atyrau region of Kazakhstan shows.

Chart 15: There is room to diversify CAREC's mineral fuels export portfolio



Source: Trademap, World Development Indicators, author's calculations

Table 2: Commodity prices forecasts, nominal USD

Commodity	Unit	2017	2018	2019	Forecasts					
					2020	2021	2022	2023	2025	2030
Energy										
Coal, Australia	\$/mt	88.5	107.0	77.9	65.0	68.0	67.1	66.1	64.3	60.0
Crude oil, avg	\$/bbl	52.8	68.3	61.4	35.0	42.0	44.5	47.0	52.7	70.0
Natural gas, Europe	\$/mmbtu	5.7	7.7	4.8	3.1	4.1	4.4	4.6	5.2	7.0
Natural gas, U.S.	\$/mmbtu	3.0	3.2	2.6	2.0	2.3	2.4	2.6	2.9	4.0
Liquefied natural gas, Japan	\$/mmbtu	8.6	10.7	10.6	8.7	8.9	8.9	8.8	8.7	8.5

Source: World Bank, Commodity Markets Outlook (Pink Sheets), April 2020

Diversifying is the more urgent as global decarbonization strategies will reduce the use of these fuels for heating purposes, the generation of energy and the running of combustion engines. Due to the Covid-19 pandemic even more emphasis is being put on the green economy transition now, with some loans and investments aimed at reviving the global economy tide to progress in this direction. Although the process might still take a while, global demand for and prices of mineral fuels might remain subdued for some years and in the longer term, perhaps even more than in the current World Bank forecast (Table 2).

Conclusions

The CAREC region's share in overall CAREC trade remained constant over the last one-and-a-half decades. Adjusted for GDP growth, intra-CAREC trade even slightly decreased since 2005. The product structure of intra-CAREC trade resembles the one of CAREC's global exports: it is dominated by mineral fuels, metals, and agricultural products, even though not to the extent as for CAREC's global exports. The future of CAREC's global exports and of intra-CAREC trade are interlinked, and strongly depend on the development of CAREC's industrial profile and the range of products the CAREC countries can produce.

CAREC countries have already undertaken initiatives and should further intensify taking initiatives to further develop production that is based on their natural or historically accumulated comparative advantages, especially by broadening the product portfolio of the mineral fuels, metals and agricultural industries.

The green transition and decarbonization strategies, intensively discussed now in connection with measures aimed at reviving the economy to overcome the outfall of the Covid-19 pandemic, along with the substantial decrease in the cost of renewable energy, make a change in the CAREC countries' production portfolio even more necessary. Although this transition might not advance as fast as many wish, it will substantially affect the CAREC region's global export opportunities and revenue sources both for the business sector and governments in the medium run. At the same time, the green transition and the general move to more science-intensive production provides opportunities for new products and employment. The CAREC economies can also exploit their proximity to the PRC with its fast-growing GDP and household incomes and drive for modernization and high-quality products. The PRC's 14th Five Year Plan will probably put stronger emphasis on sourcing closer to the domestic shore.

Organizing or supporting techno-parks, special economic zones, and start-up incubators, including by the cooperation of more than one country, supporting universities and think tanks can help fostering technological skills and developing business services, also for exporting. If initiatives can be clustered into economic corridors that provide economies of scale and scope and good connectivity, the impact can be scaled up.

Especially important is to develop services exports, including by joint CAREC efforts, to profit from the global growth in services trade. In branches such as tourism, this might be slowed due to the Covid-19 pandemic, but longer-term joint tourism initiatives should pay off. Digitalization has further advanced during the pandemic. This opens additional opportunities for business services. Trade in services like ITC, banking, logistics, aviation etc. complement the processes of economic expansion and integration in multiple ways.

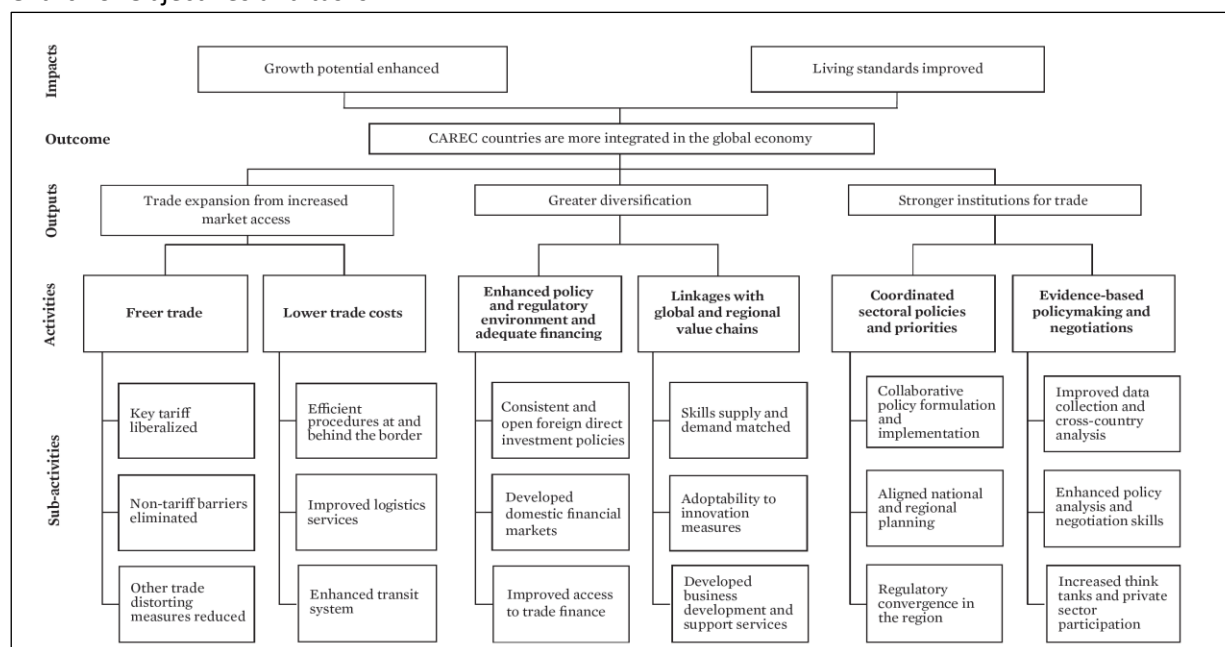
However, to achieve progress is not easy and requires skills and human capital, better infrastructure and connectivity, technology transfer and investment. To advance these, a whole system of interdependent measures needs to be adopted stepwise.

The CAREC program's Integrated Trade Agenda 2030 calls for and intends to support:

“(i) More open trade policies and deepening of customs cooperation by measures to liberalize tariffs, eliminate nontariff barriers to trade, make border and behind the border procedures more efficient, improve logistics services, enhance transit systems, and limit or avoid resorting to trade distorting measures and protectionist tendencies.

- (ii) Greater diversification through supporting reforms, providing financing, and linking CAREC countries with the global and regional value chains by measures to improve access to trade finance, adopt consistent and open foreign direct investment policies, develop domestic financial markets, strengthen support services, promote skills upgrading, and embrace innovation.
- (iii) Better coordination of sectoral policies and priorities by measures for collaborative policy formulation and implementation, alignment of national and regional planning, and regulatory convergence in the region, including by increasing the participation of think tanks and the private sector”¹⁸. Chart 16 summarizes the objectives and tasks.

Chart 16: Objectives and tasks



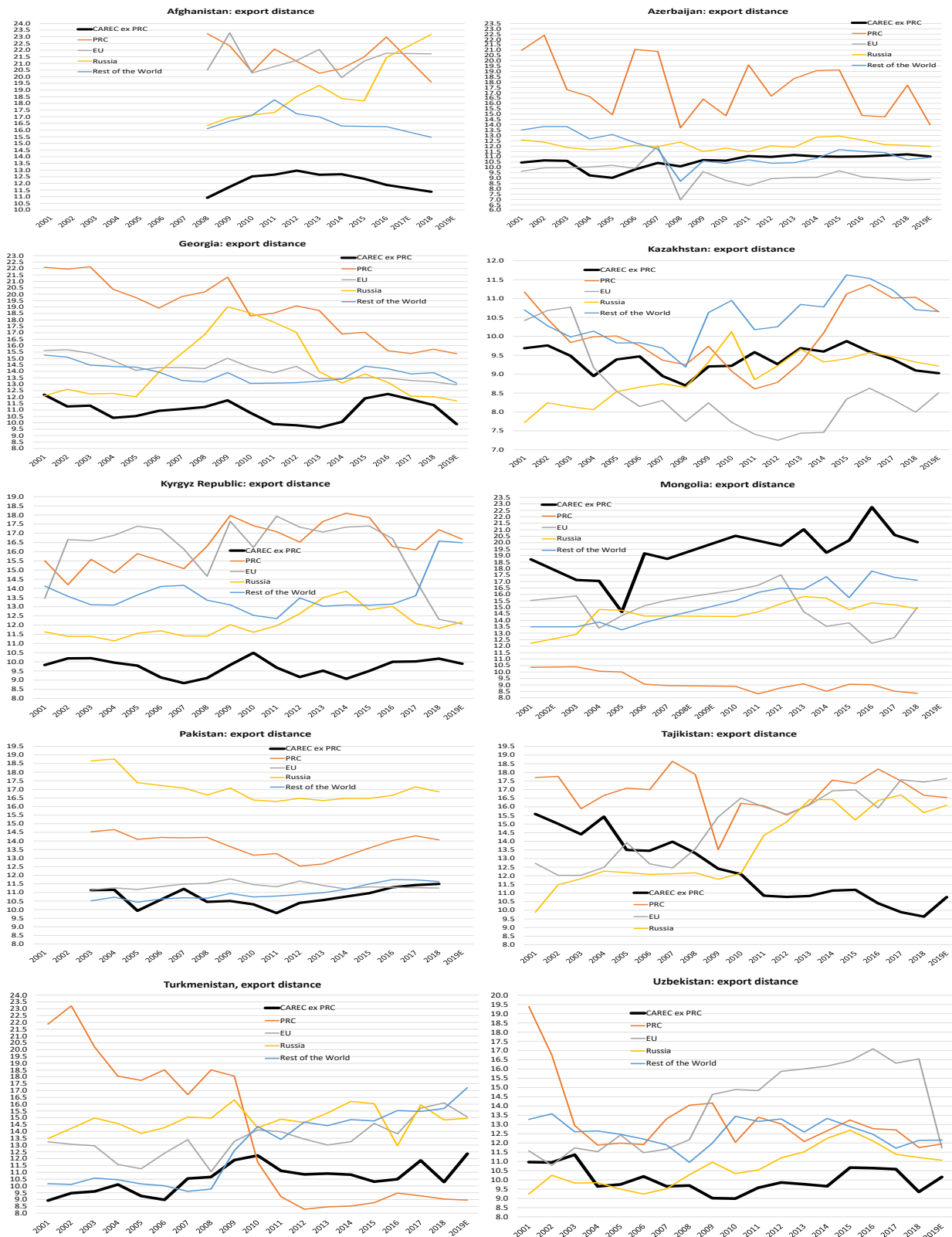
Source: The CAREC Integrated Trade Agenda 2030

Progress will require re-designing schemes for investments in productive sectors of economy, both for local and foreign investments, along with development of capital markets and currency regime reforms. Trade facilitation remains an over-arching objective, as lowering of tariff and non-tariff barriers can significantly augment the process of development and integration in regional and global value chains.

It is time to leave “business as usual” behind and scale up regional collaboration efforts and better exploit economies of scale and scope for increasing the global weight of the region. The countries in the center of the CAREC region’s trade flows should adopt a leading role in advancing regional integration.

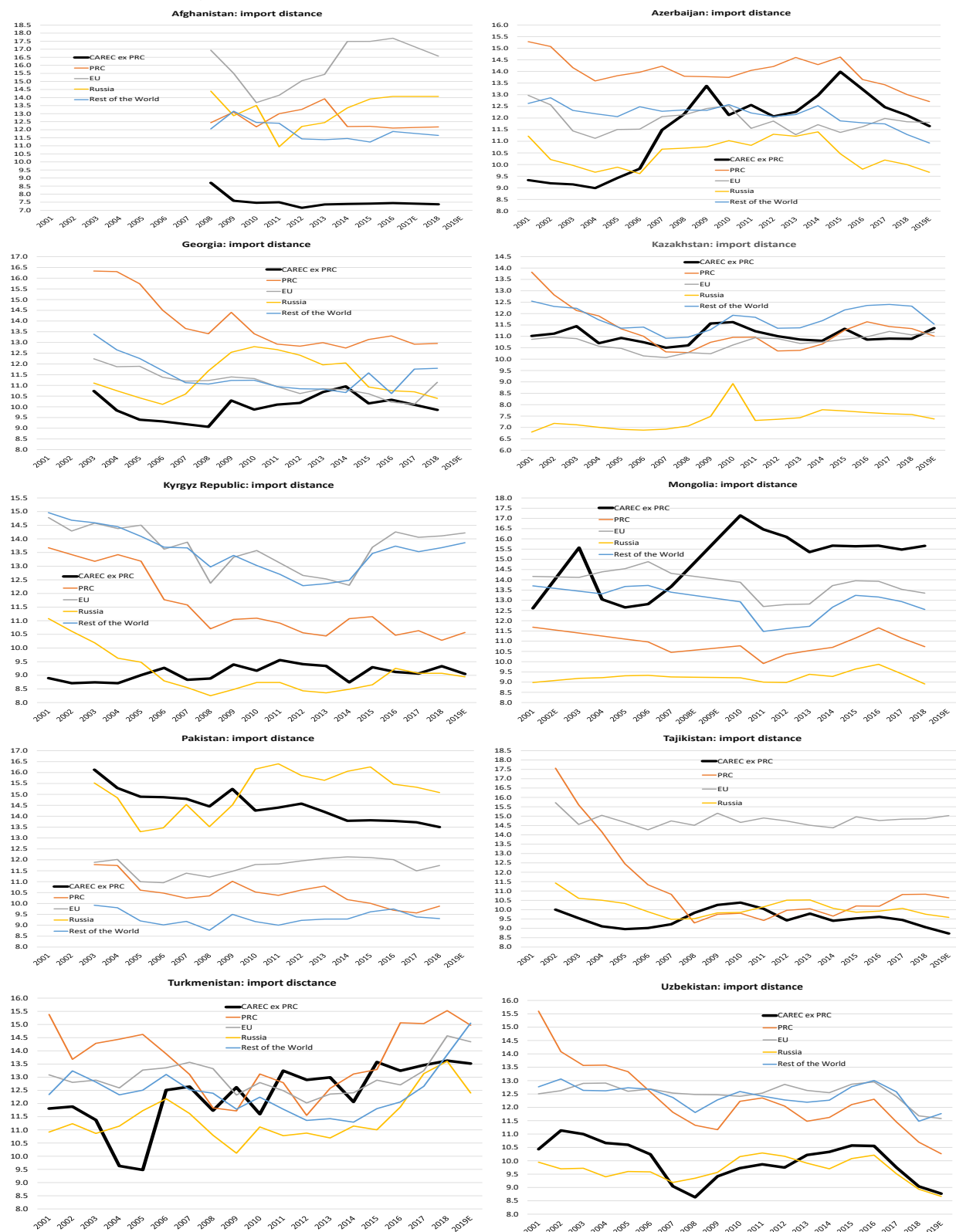
¹⁸ <https://www.carecprogram.org/uploads/CAREC-Integrated-Trade-Agenda-2030.pdf> (somewhat shortened by the author)

Annex: Export distance



Source: Trademap, World Development Indicators, author's calculations

Annex continued: Import distance



Source: Trademap, World Development Indicators, author's calculations