

REdiCAP

Regional Dialogues on Carbon Pricing: Central Asia



25-26 FEBRUARY 2021

Report from the Regional Dialogue on Carbon Pricing (REdiCAP) in Central Asia

25-26 February 2021

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Disclaimer

The findings, interpretations and conclusions expressed in this internal report are those of the Technical Expert and do not necessarily represent the views of the organizing partners.

Executive Summary

This report from the Regional Dialogue on Carbon Pricing (REdiCAP) in Central Asia (25 to 26 February 2021) aims to summarize (i) the outcomes from the pre-study and interviews conducted before the dialogue, (ii) the discussions held at the REdiCAP, as well as (iii) the preliminary roadmap developed for advancing carbon pricing in Central Asia. The report provides not just an overview of the current state and trends of employing carbon-pricing instruments as part of the broader climate policy architecture but also recommendations for the potential way forward for advancing their use in the five Central Asian countries: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. The report has been prepared based on a desk review of publicly available information on climate policies, official national communications to the UNFCCC, online interviews with policy makers working in the participating countries, live discussions held at the REdiCAP on 25-26 February, as well as various publications related to carbon pricing and other climate policies.

During both the interviews and REdiCAP, the country representatives reflected the need for collaboration within Central Asia to share experiences and lessons learned from other countries where more progress has already been made regarding the adoption of carbon pricing instruments. As proposed activities for the way forward, the participants discussed the need for a platform for coordination between countries on capacity building, information exchange and awareness raising regarding both the benefits and challenges of introducing carbon pricing instruments. Apart from the need for capacity building on carbon pricing in technical level, the participants also highlighted the need for mobilizing high-level political support from key decision makers in Central Asia.

All five Central Asian countries have ratified the Paris Agreement, now planning to share their updated NDCs in 2021. Three countries, Kazakhstan, Turkmenistan, and Uzbekistan, identified national objectives within their Green Economy concept, rest two of them, Kyrgyzstan and Tajikistan, preferred to focus on Climate Change mitigation and adaptation programs due to high share hydropower in their energy mix. The region has high sensitivity to currency volatility and proponent a devaluation. Its leads to decrease investment trust and to bad payback period.

Considering the common background of countries in the region, there are many similarities to build upon for increased climate ambition; including the opportunity to organize regional dialogues, exchange experiences and develop communication materials and technical publications on carbon pricing in the Russian language. In Central Asia only Kazakhstan has implemented a carbon pricing instrument in the form of a domestic ETS. Based on interviews by country participants at the REdiCAP, all other countries in Central Asia are now considering carbon pricing instruments at different levels in their institutions. There is a strong need for capacity building and developing local expertise in all of the Central Asian countries, where international and regional partners could help.

The REdiCAP in Central Asia was co-organized by the United Nations Framework Convention on Climate Change (UNFCCC), United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP) and the Asian Development Bank (ADB). The Regional Environmental Centre for Central Asia (CAREC) was commissioned as a Technical Partner for the Dialogue. Nurkhat Zhakiyev was commissioned as the Technical Expert for the REdiCAP and is the author of this report.

Abbreviations

ADB	Asian Development Bank
BAU	Business as Usual
CA	Central Asia
CAREC	The Regional Environmental Centre for Central Asia
CASA-1000	Central Asia-South Asia power project
CPI	Carbon Pricing Instrument
ETS	Emission Trading Scheme
GCF	Green Climate Fund
GHG	Greenhouse gas
ICSD	Interstate Commission on Sustainable Development
IEA	International Energy Agency
IFAS	International Fund for saving the Aral Sea
KAZ	Kazakhstan
KYR	Kyrgyzstan
MRV	Monitoring, Reporting, Verification
NAMA	Nationally Appropriate Mitigation Actions
NDC	Nationally Determined Contribution
PMR	Partnership for Market Readiness
RE	Renewable Energy
REdiCAP	Regional Dialogue on Carbon Pricing
TAJ	Tajikistan
tCO ₂ e	ton (metric) of Carbon Dioxide Equivalent
TRK	Turkmenistan
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UZB	Uzbekistan

1. Introduction to Carbon Pricing

The ongoing climate crisis is already having a negative impact on millions of people across the world and is one of the most serious threats to ecologic, economic and social development. To limit the impacts from the global climate crisis, greenhouse gas (GHG) emissions need to be reduced drastically over the coming years. Through the Paris Agreement, Parties have agreed to limit the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change. In order to achieve this goal, Parties should aim to reach global peaking of greenhouse gas emissions as soon as possible, and to undertake rapid reductions thereafter to achieve net-zero emissions by the second half of this century (or earlier).

One of the key policy interventions to reduce GHG emissions is by setting a price on those emissions: a carbon price either directly through a carbon tax or by capping the quantity through a cap-and-trade system such as an emissions trading system (ETS). This policy intervention increases the cost of emitting greenhouse gases, dealing with the root cause of climate change and provides incentives to reconsider investment, development, and consumption habits for businesses and individuals. Carbon pricing can offer the right conditions for the much-needed large-scale transition to a low-carbon economy by sending a strong and efficient price signal [1]. Moreover, decreased air pollution as a result of carbon pricing instruments can provide additional health and socio-economic co-benefits, while at the same time helping reduce the expenses needed for adapting to the impacts of climate change [3].

There are two major carbon pricing approaches: emissions trading systems (ETS) and carbon taxes. Carbon tax is a simple fee imposed on the amount of greenhouse gas emissions from the covered entities, usually as a fixed price per tonnes of CO₂e released [3]. Emission trading schemes, also commonly referred to as “cap and trade” systems, sets a total level of greenhouse gas emissions which can be emitted by all participants in the scheme. Participants must obtain a permit (referred to as “emission allowance”) for every ton of CO₂ they emit but can also trade these permits with other entities. Industries with a surplus of emission rights can sell their allowances to those with a deficit of emission rights, allowing a higher degree of flexibility. In the case of an ETS, the carbon price will form from the balance between availability of emission rights (the cap) and the demand for emission rights to cover GHG emissions. In the case of a carbon tax, the government sets directly the tax rate, and the taxed companies are required to pay this amount for every ton of released CO₂e.

There is a growing momentum for the use of carbon price instruments globally as an efficient policy instrument to reduce GHG emissions and tackle climate change. The total number of implemented and proposed carbon pricing instruments have almost doubled since 2012. In 2020, there were about 61 carbon pricing initiatives in place or scheduled for implementation worldwide, consisting of 31 ETSs and 30 carbon taxes. Together, they cover 12 gigatons of carbon dioxide equivalent or about 22 percent of global GHG emissions. This is an increase compared to 2019, in which 20 percent of global GHG emissions were covered by ETSs and carbon taxes that were implemented or scheduled for implementation. Governments raised more than \$45 billion from carbon pricing programs including carbon taxation and emissions trading schemes in 2019 [2, 3].

Despite the strides achieved, approximately 78% of global carbon emissions are not yet priced. Additionally, most of the carbon pricing schemes in effect are having a significantly lower tariff than the 40-80 dollars per ton argued to be necessary to achieve the goals of the Paris Agreement [4].

2. Regional Overview

2.1 Emissions Profile, Vulnerability and Fossil Fuel Subsidies

The Central Asian region, covering Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, is a land-locked region, characterized by a sharply continental dry climate with significant seasonal and daily temperature fluctuations and uneven distribution of precipitation, and is one of the most vulnerable regions to the impacts of climate change [5]. At the same time, the region is highly dependent on fossil fuels, both in terms of production and consumption, with Kazakhstan, Uzbekistan and Turkmenistan having the largest carbon footprints and being listed among the top 100 countries in the world for CO₂ emissions from heavy industries [7]. According to latest inventories/biennial reports, more than 80% of Central Asia's GHG emissions originate from energy production and consumption. Agriculture is the second highest emitting sector, followed by waste and industrial processes.

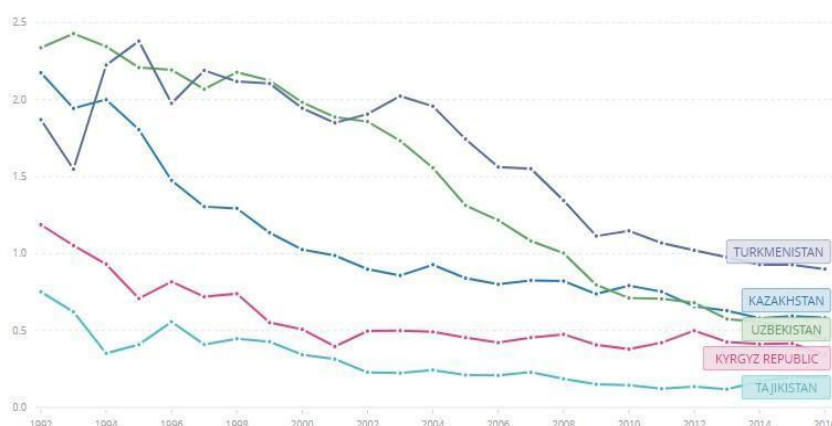


Figure 1. National CO₂ emissions of C countries (kg per PPP \$ of GDP) 1992-2016 [9]

In total, the region emitted 710.5 million tons of CO₂e in 2019, with Kazakhstan accounting for ~396 mtCO₂e (55,7%), Kyrgyzstan accounting for ~15 mtCO₂e (2,1%), Uzbekistan ~205 mtCO₂e (28,9%), Turkmenistan ~85 mtCO₂e (12%) and Tajikistan ~9.5 mtCO₂e (1,3%). Notably, emissions for the region peaked in the 1990's before the dissolution of the Soviet Union, and has since still not reached the same levels. However, the difference between countries is stark (Fig.1).

Kazakhstan and Turkmenistan are large oil and gas exporters who have significantly increased their per capita emissions with more than 70% from 1998 to 2014, approaching the baseline 1990 year. During the same time period, per capita emissions in Uzbekistan decreased by 1.6 metric tons. Kyrgyzstan and Tajikistan on the other hand, largely relying on agriculture and Tajikistan utilizing hydropower for 98% of the country's electricity generation [6], remain below 2 tonnes of CO₂ emissions per capita (Fig.2).

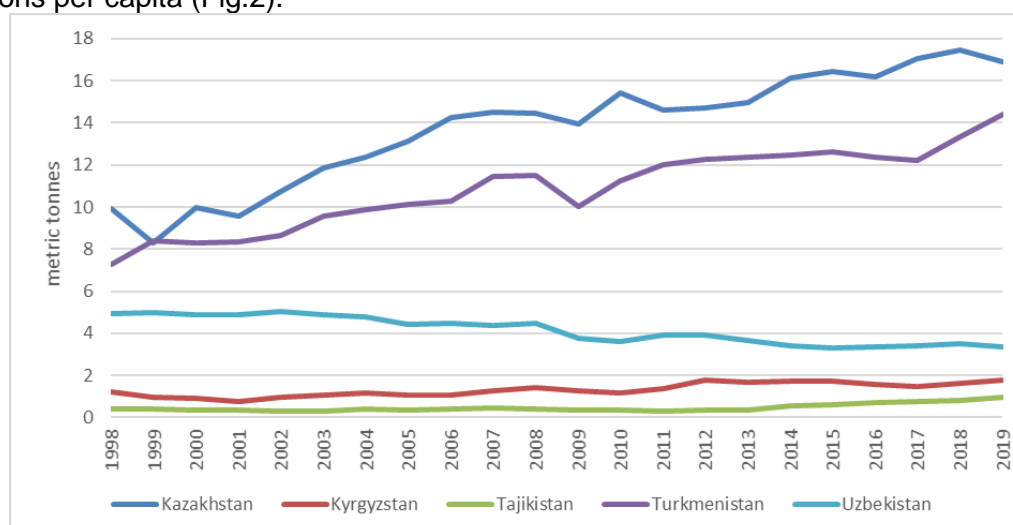


Figure 2. CO₂ Emissions Per Capita of Selected Countries in Central Asia [7, 8]

Results suggest that those countries with a higher economic growth have also faced higher energy demands and increasing CO₂ emissions due to the heavy reliance on fossil fuels. This clearly highlights the urgent need for a transition to green economy approaches, where economic growth is decoupled from growing carbon emissions.

On the other hand, although the regional economic growth trend has been determined by rising gas and oil exports in Kazakhstan and Turkmenistan, efficiency measures and hydropower investments have generated a decreasing trend of the Central Asian region in terms of CO₂ emissions per GDP.

Besides the expected risks related to climate change and global warming, the Central Asian region is highly vulnerable to external economic shocks, heavy reliance on resource rents and fluctuations in the global oil price. The currency volatility and devaluation decrease investment trust and leads to increased risks in renewable energy projects and payback period. If the Central Asian energy system is subject to additional environmental-oriented policies, different trade-offs and responses of the energy mix options can be generated [12].

Simultaneously Kazakhstan, Uzbekistan and Turkmenistan heavily subsidize fossil fuels, pushing the retail electricity prices lower than the global average and creating an unequal playing field for the growth of renewable energy. As carbon pricing instruments aim to increase the cost of carbon to reduce GHG emissions, large-scale fossil fuel subsidies counteracts this and, essentially, prevents the effective implementation of CPI. As such, countries should consider revising their fossil fuel subsidies in tandem with the development of carbon pricing approaches (Fig.3).¹

Increasing evidence is pushing for more stringent global climate policies, including carbon content-based taxation, which might result in the CA region finding itself trapped with stranded assets in fossil fuel infrastructure. This is especially true for the major fossil-fuel extracting countries of the region. With growing pressures both inside the countries, in the region and from external sources, there is a growing momentum to transition from fossil fuel based economies in Central Asia [7, 12].

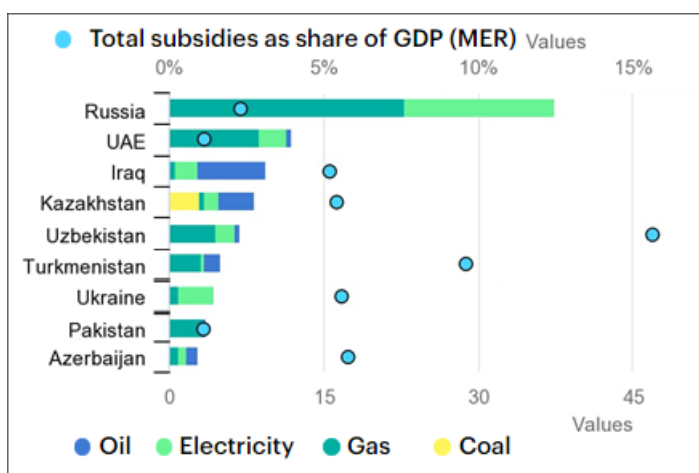


Figure 3. Fuel consumption subsidies by country, adopted for CA from IEA data [10]

2.2 Climate Commitments and Potential for Renewable Energy

All five Central Asian countries have ratified the Paris Agreement and have submitted their first Nationally Determined Contributions (NDCs) to the UNFCCC. According to interviews, all five planning to share their updated NDCs in 2021.

The Central Asian region has a high potential for renewable energy power generation, both in terms of wind, solar and hydropower. Uzbekistan already exploits 40% of its technically feasible hydropower potential, while Kazakhstan, Kyrgyzstan and Tajikistan utilize only 13%, 15% and 5% respectively of their technically feasible potential. Similarly, Turkmenistan has only one hydropower station [29]. In Kazakhstan and Uzbekistan, legislation for renewable energy has been adopted and

¹ The IEA measures fossil fuel consumption subsidies using a price-gap approach. This compares final end-user prices with reference prices, which correspond to the full cost of supply the international market price, adjusted for the costs of transportation and distribution. The estimates cover subsidies to fossil fuels consumed by end-users and subsidies to fossil-fuel inputs to electricity generation. They tend to be understated as a basis for assessing the impact of subsidies on economic efficiency and trade [10]. Estimating subsidies for comparative analysis of subsidy levels across countries is shown in the figure 3.

financial incentives such as an auction mechanism with PPA contracts for 25 years, tax exemptions and access to the grid have been introduced.

There are however, nuances within the region and each country have its own unique national circumstances despite some common regional characteristics. Kazakhstan, for example, hesitates to allow a too high penetration of RE, due to the perceived threat that the power system can't handle more than 10% of intermittent renewables until 2030 due to the limited number of gas power plants. This point of view was confirmed during an interview with a local expert from Zhasyl Damu JSC². The integration of multiple energy sources (e.g. gas, water, wind, solar) and enhanced cooperation and coordination between the CA countries could offer significant opportunities to enable higher RE penetration at lower costs while preserving grid stability more efficiently. Electricity supply in Central Asia is not organized on a centralized basis despite high hydropower production potential in Tajikistan and Kyrgyzstan in the summer and thermal electricity production in Uzbekistan and South Kazakhstan in the winter. Cross-border electricity exchanges in the region could reduce the need for peak and back-up capacity in the system and reduce the required capacity reserve within the respective national systems. Also, optimizing the export of hydropower from higher to lower riparian states could minimize water spilling in the summer.

Power system modelling analysis for Central Asia shows that the region can reduce operating expenses by as much as \$6.4 billion in the next 10 years [30]. This can become a reality when neighboring system operators leverage interconnected electricity transmission infrastructure. Discussions are underway to expand interconnections and derive optimal value from coordinated system operation. Progress in development of CASA-1000 project connecting Central and South Asian countries will increase opportunities of electricity trade [30]. In this context, the region may increasingly find opportunities to capitalize on its renewable power potential for exporting green electricity. Additionally, there are major opportunities to greatly improve energy efficiency and reduce leakage of GHG emissions to align the region with low-carbon development pathways.

2.3 Availability of Emissions Data and MRV Systems

The availability of emissions data is a precondition for the implementation of carbon pricing instruments. In particular, emission data from large-scale emitting facilities is required for ETSS or carbon tax directly applying to them. One of the key elements to implement CPI is a measurement, reporting and verification (MRV) system which allows to collect, manage, analyze, use and verify climate change-related data. At the moment, the five countries in Central Asia are in different stages of MRV realization (aggregated on national level and facility-level). For instance, Kazakhstan has implemented facility-level MRV as a basis for their domestic ETS [11]. In February 2019, the country implemented an online platform that allows major emitters in the region to transmit and record data on GHG emissions and trade emission rights online. Uzbekistan has experience in creating MRV systems within the framework of Nationally Appropriate Mitigation Actions (NAMA) projects, making an initial assessment and primary road map for the national MRV system. Kyrgyzstan and Tajikistan have also conducted initial assessments of institutional and technical capacities in their MRV systems. Still, the implementation of MRV for GHG emitting facilities are very limited in Central Asia due to lack of technical capability and legislation. Nevertheless, the general view strongly shared by the Central Asian countries is that the development and application of appropriate MRV is considered as an important first step towards advancing carbon pricing in the region.

2.3 Consideration of Carbon Pricing Instruments

Kazakhstan is the only country in Central Asia that has implemented a carbon pricing instrument. This is in the form of a domestic ETS, which was introduced as a pilot in 2013. Based on interviews and interventions by country participants at the REDiCAP, all other countries in Central Asia are now considering carbon pricing instruments at different levels in their institutions. However, no policy

² Zhasyl Damu JSC – company responsible for KAZ ETS, GHG inventory, verification, MRV, quotas allocation, etc. More in <http://www.zhasyldamu.kz/en/>.

commitments towards CPI have been formally endorsed by the governments. The implementation of the Kazakh ETS, however, has led to several other countries in the region to be their industries more environmental responsible, and now considering carbon pricing as an instrument to reduce emissions in line with their commitments as outlined in their NDCs under the Paris Agreement.

Table 1. Consideration of CPI in Central Asian countries

Country	Consideration or Adoption of carbon pricing instruments	Other Relevant Climate Policies
Kazakhstan	ETS Adopted	Green Economy concept 2013. Carbon Tax considered as a deep decarbonization scenario for 2021-2030 in updated NDC Roadmap for 2021-2030 and Low Emission Development Strategy - 2050.
Kyrgyzstan	ETS considered	Climate Change Adaptation Program. NDC roadmap for 2021-2030
Tajikistan	ETS or green certificates considered	NDC roadmap, Climate Change mitigation and adaptation Program, 2019. Program for supporting hydropower.
Turkmenistan	ETS or green certificates considered	National Strategy on CC 2019. National Green Economy concept 2020. Considering green certificates
Uzbekistan	ETS considered	Green Economy concept 2019, Carbon price mechanism is one of the priorities in the Carbon Neutral Electricity Sector program, 2020 (explained below)

3. Carbon Pricing Considerations in Central Asian Countries

As preparations for the REdiCAP, the Technical Expert conducted individual interviews with each of the participating countries. At the REdiCAP, each country presented their considerations of carbon pricing instruments. The results from these dialogues are presented in the section below.

3.1 Kazakhstan

Kazakhstan is the largest emitter of greenhouse gases in Central Asia. According to the National inventory report of Kazakhstan, its GHG emissions in 2018 amounted to 396 million tons in CO₂-equivalent, approaching its 1990 base year emission level. Noting this, a strategic policy document named “Concept of Transition towards Green Economy until 2050” was developed by the Ministry of Environmental Protection and UNDP and approved by the President in 2013. The policy document defines a number of targets for electricity production. The share of alternative energy sources in electricity production achieved the targeted 3% in 2020 (excluding large hydropower accounting for 10%). The upcoming targets are 30% by 2030 and 50% by 2050 (including all renewables and nuclear power); and increase the share of gas-fired power plants in electricity generation to 20% by 2020, 25% by 2030 and 30% by 2050. GHG emissions from electricity production compared to 2012 is to be reduced by 15% by 2030 and by 40% by 2050. However, to be consistent with the goals of the Paris Agreement, these goals must be significantly strengthened. In particular, the share of renewable energy sources (RES) should be increased and the share of natural gas and especially coal should be reduced. Although the country is yet to demonstrate an increased ambition under the Paris Agreement, Kazakhstan recognizes its large carbon footprint and coal dependency and is taking steps to increase the share of renewables in the energy balance, to expand its carbon emission trading system and to increase gasification [13].

At the Climate Ambition Summit in December 2020, President K. Tokayev announced the new pledge that Kazakhstan shall reach carbon neutrality by 2060, as part of the country’s strengthened climate plan. To reach the goal, Kazakhstan has committed to develop and adopt an ambitious long term development strategy to lower emissions and decarbonize the economy.

Based on preliminary discussions of the country’s NDC updating process, in one of the scenarios, methane emissions studied under the ETS from 2026, and auctions have been introduced. Proceeds from auctions and fines will be accumulated in a national decarbonization fund, which will be set up in the coming years. Additionally, a carbon tax also considered for unregulated industries in the country, as an optional way to achieve the goals of the NDC.

As a means to reduce emissions in a cost-effective manner, Kazakhstan launched its National Emissions Trading Scheme (ETS) in 2013, supported with technical assistance by The World Bank Partnership for Market Readiness (PMR). The aim of the ETS is to act as the main instrument for regulating domestic GHG emissions. Currently, almost 50% of total GHG emissions in Kazakhstan are covered by the scheme. It also imposes obligations to report emissions of other greenhouse gases from installations more than the 20,000 tons CO₂-eq threshold per year [14].

Three National Plans for the allocation of quotas for GHG have been adopted during the different phases of implementation of the ETS. In Phase 1, covering 2013 (Pilot phase) – the First National Plan of allocation of quotas for GHG emissions tested.

In 2014-15, ETS Phase 2 started with the allocation of quotas based on historical emissions. In 2015, independent verification companies started to verify the GHG emission reports of facilities. The process of collection, processing and analysis of data on GHG emissions was initiated to assess the benchmarking system for allocating quotas.

In 2016-17, Kazakhstan suspended the ETS in terms of trading quotas until 2018 due to certain distortions in the system and defects that needed to be eliminated (historical method). Moreover, it addressed legal conflicts and gaps in carbon regulation that was found in the first two phases of ETS. The previous stages of ETS operation had limited impact, representing either stabilization of emissions from enterprises subject to restrictions by 2013 and 2014 (compared to 2010 and 2011 levels), or cap emission (reductions 1.5% by 2015, compared to 2012 levels) [13,15].

On January 1, 2018, the ETS resumed its operations after a two year suspension, with new distribution methods and trading procedures: based on a baseline or benchmarking level. However,

the Kazakhstani ETS does not provide robust methodologies for monitoring greenhouse gases other than CO₂. The requirements of the national ETS do not contain the obligation of operators to cover emissions of greenhouse gases other than CO₂. Emissions of other GHGs, account for approximately 17% of the total GHG emissions in Kazakhstan [15]. As such, addition of non-CO₂ gases could allow for increased potential and flexibility for cutting GHG emissions.

Phase 3, during 2018-20, utilizes distribution of quotas by benchmarking and historical method. The National GHG Allocation Plan, adopted in January 2018, sets an emission limit for 129 companies for the period 2018-2020, as well as a 5% emission reduction limit by 2020 compared to 1990. Next steps are related to global carbon pricing and include the preparatory phase and the full participation phase:

1) Preparatory phase (2023-2025) - expansion of the MRV system (including equipment for continuous measurement of nitrous oxide emissions from nitric acid production, possibly - for measuring perfluorocarbon-PFC emissions), preparation for the allocation and distribution of free quotas (collection and verification of data on baseline emissions, revision of benchmarks and methodology for determining the type of activity for such benchmarks, operator training, etc.).

2) Full participation in the ETS - from 2026 (subject to amendments to the Environmental Code of the Republic of Kazakhstan no later than 2023 and the preparation of the necessary by-laws).

The choice of an auction platform is essential to ensure the stability of the quota market. At present, trading in quotas was carried out on the Caspian commodity exchange, and only accredited brokers and dealers of this exchange are allowed to trade (according to the exchange website <https://caspy.kz>). The minimum price for the initial sale of quotas at auctions for the first quarter of sales at \$1.15 USD per tCO₂. The national ETS in Kazakhstan is gradually being tightened. Cement plants at the first stage of the implementation of the NDC (2021-2022) are affected by a deficit of free quotas and will have to buy additional quotas from the market, which will lead to increase in the price of domestic cement. In its NDC Roadmap 2021, Kazakhstan considers the implementation of a carbon adjustment border tax on imports as a protective measure against the dumping of cement and glass producers from countries in the region where GHG emissions are not regulated. Implementation of the NDC and the further tightening of the ETS can be supported by such an introduction of a carbon border adjustment mechanism, more commonly referred to as a carbon border tax [3]. Along with the development of their revised NDC, the GIZ project "Supporting the Green Economy in Kazakhstan and Central Asia for Low-Carbon Economic Development (2020)" has initiated the development of a Long-term Low Emission Development Strategy (LT-LEDS) for the Republic of Kazakhstan until 2050 [16].

The transition to renewable energy sources and speed of development will have a determining impact on the decarbonization of the Kazakh economy and achievement of their NDC. To achieve climate goals, it is imperative that the electricity generated from coal is rapidly reduced while achieving a just transition. The national ETS is going to play a crucial role in this transition and along with national commitment and development of capacity, regional collaboration can be an enabling factor.

3.2 Kyrgyzstan

Kyrgyzstan is a land-locked, lower-middle-income country with a relatively low carbon footprint. The country has significant natural resources, including minerals, forests, arable land and pastures, as well as a vast potential for the expansion of its agriculture sector, hydroelectricity production, and tourism industry. In the country's first NDC from 2016, Kyrgyzstan recognizes their vulnerability to climate change and low GHG emissions per capita, but also that their planned economic development will lead to a sharp increase in greenhouse gases emissions if unabated.

Kyrgyzstan submitted its first NDC under the Paris Agreement to the UNFCCC in February 2020. In their NDC, Kyrgyzstan commits to reduce GHG emissions in the range of 11.49 - 13.75% below BAU (Business as usual) in 2030. As a conditional target based on international support, Kyrgyzstan aims to implement mitigation measures to achieve total reduction of GHG emissions in the range of 29.00 - 30.89% below BAU in 2030. The country's longer term unconditional contribution to 2050 is to reduce GHG emissions in the range of 12.67 - 15.69% below BAU. The conditional contribution is to achieve total reductions in the range of 35.06 - 36.75% below BAU in 2050. Their

long-term commitment is to limit the per capita GHG emissions to a maximum of 1.23 t/CO₂, or 1.58 t/CO₂ in 2050 to achieve the below 2°C objective.

The low emissions of Kyrgyzstan are largely because 90% of the total electricity generation is supplied by the hydroelectric power plants. However, the expected impacts from climate change might have an impact on the water flows and reduce the potential from hydropower, at the same time as electricity demand will increase significantly in the country. At the moment, while there is formal support for Renewable Energy under the renewable energy's law from the Ministry of Energy, there is room for further support.

Given its emissions profile and goals under the Paris Agreement, carbon pricing are being considered in the country, however, a number of barriers to introduce carbon-pricing mechanisms in the country have been raised, including:

- Lack of conceptual understanding on the benefits of carbon pricing instruments and impacts of climate change
- Lack of political will, and facilitative legal and fiscal frameworks
- Lack of a monitoring, reporting and verification (MRV) system
- Lack of institutional framework for implementation and maintenance of CPI
- Lack of capacity, technical knowledge as well as knowledge products on implementing CPI

Due to these barriers, Kyrgyzstan is yet to consider carbon pricing. Moreover, there are perceived inherent challenges to the introduction of carbon pricing instruments, including that businesses might perceive this as a barrier to growth and that the costs of carbon might hurt consumers, noting that in conditions of a high level of poverty, price increases on carbon might create social tensions if not addressed correctly. Therefore, especially in the context of post-COVID-19 economies, it is highly important to gradually introduction of CPI into the economy can allow for a smoother implementation in CA countries through help businesses adjust and provided rebates to soften the impact on consumers taking into account the national circumstances.

3.3 Tajikistan

In Tajikistan, the climate mitigation and adaptation actions are reflected in the National Development Strategy until 2030 (October 2019) and in the medium-term development program of Tajikistan for 2021-2025. By the Decree of the Government of the Republic of Tajikistan on October 2, 2019 No. 482, the National Strategy for Adaptation to Climate Change of the Republic of Tajikistan for the period up to 2030 was adopted. The strategy consists of five chapters and covers the period up to 2030 [21].

Tajikistan submitted its Nationally Determined Contribution to the Paris Agreement in 2017, with targets for the country's emission reductions, as seen below.

Table 2. Conditional and Unconditional targets of Tajikistan up to 2030

#	Conditions	Reduction potential from 1990 level (25.5 Mt CO ₂ e)	Specific emissions per capita, tCO ₂ e per capita
1	Unconditional target 2030 (with own efforts)	Minus 10-20% (20.4-23 Mt CO ₂ e)	1.7-2.2
2	Conditional target 2030 (with international support)	Minus 25-35% (16.6-19.1 Mt CO ₂ e)	1.2-1.7

Compared to the 1990 baseline, GHG emissions in Tajikistan decreased by 64.3% until 2014 and amounted to 9.1 Mt CO₂e. This is largely due to a heavy utilization and expansion of hydropower, accounting for 98% of the country's electricity generation [6]. A number of international projects are also ongoing and approved in the country, amounting to over USD 211 million from the Climate Change Strategic Fund, Global Environment Facility (GEF), Green Climate Fund Adaptation Fund, German Development Bank, ADB, WB, EBRD, UNDP and TFES- European Union Trust Fund [22].

In 2019, the first Biennial Report of Tajikistan was submitted, and the process of preparing the fourth National Communication under the UN Framework Convention is currently underway.

The carbon pricing system of Tajikistan is in its nascent stage. However, according to the focal point at the REdiCAP, the country plans to create a regulatory legal framework for MRV by 2025 and create a pricing system by 2030. The main barriers to introducing a carbon pricing mechanism in the country include organizational, financial, informative and human capacity. Due process is critical to operationalize the MRV system, which is currently lacking in Tajikistan. Moreover, the current budget of the country does not include financial allocations for the establishment and implementation of the MRV system in Tajikistan, which is a serious obstacle to the successful implementation of this system and requires financial assistance from development partners. Also, the main problem that Tajikistan may face with the introduction of the MRV system is data collection. The main problem may not be access, but the lack of data to develop an MRV system. Finally, the country faces major challenges due to lack of local MRV technical experts and external support to build local capacity.

3.4 Turkmenistan

In their first NDC under the Paris Agreement, submitted in 2016, Turkmenistan explains that the main sources of GHG emissions in the country are from oil and gas enterprises, energy, agriculture and transport industries, as well as housing and communal services. The largest emissions are generated from fuel combustion, mining, transportation and storage of oil and gas. Turkmenistan has the highest energy and carbon intensity in the CA region [23] Energy production is dominated by natural gas and oil, and significant emissions reductions could be achieved by reducing energy losses in electricity and gas networks, and by tackling venting and flaring. The solar and wind potential in the country is very high but still underutilized. The development of Turkmenistan during the years of independence was marked by a high growth in industrial production and investments in the country's economy. Intensive economic growth of the country is associated with the increase in the use of energy products, primarily oil and gas, which in turn contributed to the increase in greenhouse gas emissions. According to the results of emissions estimates for 18 years (2000-2017), the total amount of greenhouse gas emissions in the country more than doubled (Fig.4).

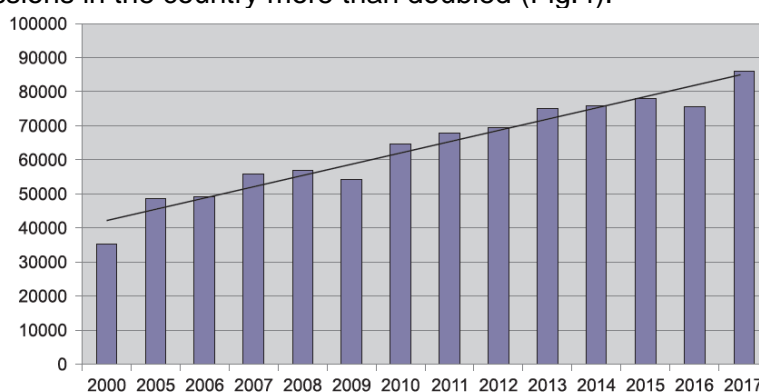


Figure 4. Total greenhouse gas emissions in Turkmenistan for 2000-2017(ktCO₂e) [24]

In order to reduce emissions, Turkmenistan developed a National Strategy on Climate Change (NSTCC), identifying 3 main areas for a greener economic development, including: energy efficiency and conservation, sustainable use of natural gas and petroleum products and an increased use of alternative energy sources.

The President of Turkmenistan signed the Decree “On Approval of the State Energy Saving Program for the Period 2018-2024”, which says that a National Inventory System for greenhouse gas emissions should be prepared. To ensure transparency in the realization of the National Inventory, the implementation of a set of Monitoring, Reporting and Verification (MRV) guidelines shall be set up. Initial assessment of the institutional and technical capacity to create the MRV system (GHG inventory) is underway. Important next steps include the preparation of a primary road map for the creation of a national MRV system. Country expert during an interview noted that carbon pricing

instruments feasible to only after 2025, however, no any policy commitments towards CPI have been formally endorsed by the government yet. All national programs more focused to environmental responsible fostering an instrument to reduce emissions as outlined in their NDCs under the Paris Agreement.

In the National strategy for developing Renewables (Project of the document under review, 2020) one of the key proposed actions is studying international experience and preparing a proposal for the development of a green certificates trading system. Such a complex task provides recognition of the results of national inventory conducted by local experts and international reputable organizations.

3.5 Uzbekistan

Uzbekistan emits around 205 million tons of CO₂, which is equivalent to 6.9 tons per capita (~31.1 million of people). About 89.4% of the GHG emissions in Uzbekistan arise from the energy sector in the western part of the country, where the capital Tashkent is located.

Currently, hydropower provides 2.004 GW, or 14.3% of the installed capacity. The Department of Energy plans to increase this figure to 3.8 GW by 2030. Outside of hydropower, there are potential of utilizing other renewable energy, in particular solar, wind, and biomass energy. But bioenergy is difficult to develop due to the lack of raw materials. The available raw material is used to increase the humus content of low-yielding soils in Uzbekistan.

Uzbekistan has major environment-related legislation, included in the development and financing programs for energy, construction, transport, water, and forestry, as well as in the draft strategy for structural reforms of Uzbekistan "Vision-2030". This strategy sets temporary targets for reducing the energy intensity of GDP and expanding the use of renewable energy sources, primarily solar energy. Currently, Uzbekistan is developing legislation in the field of renewable energy sources, considering the experience of developed countries and the country's growing need for energy. The country has also revised building codes and regulations to bring them in line with higher energy efficiency standards [25-27]. As the result of the implementation of the Strategy, by 2030 it is expected:

- reduction of specific greenhouse gas emissions per unit of gross domestic product by 10% from the level of 2010;
- a twofold increase in energy efficiency and a decrease in the carbon intensity of gross domestic product;
- further development of renewable energy sources, bringing their share to more than 25% of the total electricity generation

In 2018, the Republic of Uzbekistan ratified the Paris Agreement. A number of policy measures have been adopted that will facilitate Uzbekistan's transition to low-carbon energy and the National Green Economy Strategy for the period up to 2030. This decree determines an increase in the share of electricity production using renewable energy sources to a level of at least 25% by 2030. Moreover, it provides for the construction of almost 10 GW of new renewable energy facilities, including 5 GW of solar (excluding the capacity of individual households), 3 GW of wind and 1.9 GW of hydroelectric power stations [25, 26].

Despite the fact that these events are positive signals regarding the trajectory of development of renewable energy sources in Uzbekistan, gaps in the existing regulatory framework remain an obstacle for Uzbekistan to adopt a sufficiently ambitious, comprehensive and long-term strategy to decarbonize the country's energy sector. A more ambitious target is possible beyond the existing 10% emission reduction target from 2010 levels [27].

According to data received from the main website of the Ministry of Energy Uzbekistan, reducing the climate impact from GHG emissions became one of the political issues raised in 2020. Thus, at the last meeting of the chamber, deputies discussed preliminary targets by 2030 included:

- Modernization of the energy and industry sectors for reducing CO₂ emissions by 20 million tons;
- Increasing the share of renewable energy sources, including solar and wind energy, in the fuel and energy balance to at least 20 percent;
- Reducing the energy intensity of gross domestic products (GDP) by half.

One of the main decisions adopted by Uzbekistan as a goal was taking measures for reducing specific GHG emissions per unit of GDP by 10% by 2030. To be more specific it is planned to expand the scale of the introduction of environmental protection measures, to strengthen legislation in the field of ecology, to introduce the appropriate world standards in terms of equipping newly built enterprises with special equipment that will minimize the level of greenhouse emissions. The level of development of all industries in the Uzbekistan Republic is still low, while the country is trying to keep the minimum level of GHG emissions [25]. However, due to its high sensitivity and still low ability to adapt, the World Bank ranked Uzbekistan among the group of countries most vulnerable to the negative impacts of climate change and adaptation is still a key priority for the country [26].

Uzbekistan published a Roadmap for a Carbon Neutral Electricity Generation Sector by 2050, developed by The Ministry of Energy of Uzbekistan in cooperation with the Ministry of Investments and Foreign Trade, with the support of EBRD, the Government of Japan and a consortium of international experts. The roadmap concludes that Uzbekistan can reach a carbon neutral electricity generation sector as early as 2050, both from a technical and economic point of view. Investment needs are estimated to be less than 2% of annual GDP for the period 2030-2050. The expected benefits in terms of new value chains and reduced environmental impacts far outweigh the financial costs. In addition, the roadmap will enable Uzbekistan to conserve domestic gas reserves, as well as potentially use excess renewable energy production to support the development of a hydrogen economy. The government already plans to end all gas exports by 2025, as it believes it can generate greater economic benefits, create jobs and attract investment by converting gas into more valuable products [27, 28].

The proposed transformation will require significant technical and regulatory reforms, which must be backed by strong political support. The roadmap offers the government a framework to formulate an ambitious, comprehensive and long-term strategy to decarbonize the country's electricity sector and mobilize public support against those who resist change [28]. Additionally, the study provides an Action Plan built around five priority areas, where the third revolves around Market reform and a carbon pricing instruments. The roadmap argues that Uzbekistan needs to create a level playing field by terminating regulatory and institutional preferences for carbon-intensive sources and eventually setting up a carbon pricing mechanism, which can help to phasing out from subsidies for fossil fuel, in favor of renewables and investments in the green economy. However, carbon pricing is unlikely to the operators of fossil-based power plants in the absence of a fully liberalized electricity market where renewables can compete and deliver both price and environmental benefits to consumers. Providing support to transparency on the use of revenues in the case of the implementation of a carbon price are prerequisites to securing public acceptability of ambitious decarbonization measures, according to the EBRD study in 2020 [28].

As of today, the implementation of carbon pricing instruments in Uzbekistan exists only in the form of an idea, however it has big potential to reduce problems with landfill methane or as an incentive for reducing CH₄ from oil and gas production sectors. The idea is also applicable as an incentive for reducing N₂O from industrial processes and reducing fluorinated gas emissions, which should be explored further.

4. Opportunities for Carbon Pricing and Regional Cooperation on Climate Action

There are significant opportunities for Regional Cooperation on Climate Action and Carbon Pricing according to the participants at the REdiCAP and the analysis from international partners. As pressure is growing for the Central Asian countries to transition from fossil fuel-based economies towards a low-carbon development pathway, regional cooperation can help to expedite the transition and enhance ambition. Notably, as discussed in 2.2, the Central Asian region has a high potential for deployment of renewable energy sources, especially through the connection of regional electricity grids. The integration of multiple energy sources (e.g. gas, water, wind, solar) and enhanced cooperation and coordination between the CA countries could offer significant opportunities to enable higher RE penetration at lower costs while preserving grid stability more efficiently.

Power system modelling analysis for Central Asia shows that the region can reduce operating expenses by as much as \$6.4 billion in the next 10 years [30]. This can become a reality when neighboring system operators leverage connected electricity transmission infrastructure. Discussions are already underway to expand interconnections and derive optimal value from coordinated system operation. Progress in development of CASA-1000 cross-regional power interconnection project connecting Central and South Asian countries will increase opportunities of electricity trade [30]. In this context, the region may increasingly find opportunities to capitalize on its renewable power potential for exporting green electricity.

Increasing investments and creating a favourable policy environment for renewable energy will reduce dependency on fossil fuels and avoid large natural resource rents. Energy systems in the region should be reformed to reduce energy losses by the grid and heat transmission and improve the efficiency of the energy production and distribution systems. For example, in Central Asia, energy subsidies may facilitate wasteful consumption because it increases government spending and pushes prices below true costs. In addition, retail electricity prices are lower than the global average [6].

To develop internationally competitive manufacturing and service sectors, it is important to improve the energy and resource efficiency and incentivise the use of renewable energy in those sectors. Additionally, emissions will need to be controlled because of the associated high-levels of air pollution above the WHO guidelines [32], which are causing serious health issues on the populations and consequently impact the economic development of the region.

Additionally, against the background of a growing momentum of carbon pricing instruments globally in achieving NDCs cost-effectively, alongside the case of regional first-movers in CPI such as Kazakhstan, there is an increased interest among other countries in the region to consider carbon pricing approaches, while reaping the benefits that could be explored through regional collaboration.

Table 3. SWOT analysis of CPI opportunities in Central Asia

<p>Strengths:</p> <ul style="list-style-type: none"> - Government support via programs, projects; - Could utilize already developed IT based and transparent MRV instruments in developed countries; - Ongoing regional cooperation through regional platforms; - The major emitting sectors in the CA countries are suitable for ETS; 	<p>Weaknesses:</p> <ul style="list-style-type: none"> - Not being in line with some governmental and state programs and strategies of the country; - Institutional capacity and resources; - Limited experience of CPI (except in Kazakhstan) - Not enough funding from government, only in the frameworks of international organizations' projects and programs focused for development of CPI implementation in Central Asia; - Small number of local specialists that have enough knowledge of techniques, but having a holistic view of the current situation in the region;
<p>Opportunities:</p>	<p>Threats/barriers:</p> <ul style="list-style-type: none"> - The costs associated with emissions trading are included in the production costs of the business;

<ul style="list-style-type: none"> - Less competitions among state bodies and private companies (enterprises) in terms of the institutions that will realize CPI; - Existing support structure from international organizations such as UN, World Bank, USAID, EBRD, ADB, GIZ, among others. - Large GHG mitigation opportunities; - Opportunities to capitalize on green development to diversify the economy and create new sources of export (green electricity, green hydrogen, emission reduction units, etc.); - Opportunity to cut costs of fossil fuel subsidies; - Opportunity to align CPI policy development with NDC implementation, green economy strategies and a green COVID-19 recovery; - Large potential for RE in the region; - Bilateral and regional electricity cooperation, can facilitate regional ETS; 	<ul style="list-style-type: none"> - The rise in prices may create tensions unless effective compensation schemes for vulnerable groups are developed and financed through the CPI revenues; - CPI is perceived as an additional burden on administrative costs (statistics, audit, verification, ISO standards, training); - Lack of staff and capacity; - Insufficient technical information in Russian language; - Vested interests in fossil-fuel based industries; - Trade relations with countries outside of CA that might be impacted by CPI;
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As seen in the SWOT-analysis in the Table 3, a number of barriers and weaknesses and barriers remain to the implementation of CPI in Central Asia, however there are also significant strengths and opportunities that might help facilitating the development of carbon pricing instruments in the region. In the end, the effectiveness and acceptability of CPI is largely dependent on the design considerations of the instrument, such as sector coverage, allocation of emission rights and revenue usage.

To strengthen regional cooperation on climate action, there is a large number of opportunities that could be explored:

1. The opportunity to learn from the experience of Kazakhstan and expand the K-ETS to a sub-regional emission trading scheme, which could reduce distorted carbon costs between countries, increase liquidity in the emissions trading market, further enhance allocation to low-carbon investments and incentivize the green economy development pathway for all countries.
2. All CA countries exchanging their commitments under the Paris Agreement and setting up long-term low emission development strategies (LT-LEDS) towards net-zero, showcasing their long-term planning which can act as a basis for regional collaboration.
3. Building political will among the CA governments for the introduction of innovative climate policy tools, including CPI, to support implementation of NDCs, national green economy and sustainable development strategies and green COVID-19 recovery plans.
4. Countries adopting more ambitious climate commitments in their updated Nationally Determined Contributions (NDCs), including the willingness and preparation to use new market mechanisms under Article 6 of the Paris Agreement - allowing for trade of emission reduction units between countries.
5. Considering the common background of countries in the region, there are many similarities to build upon for increased climate ambition; including the opportunity to organize regional dialogues, exchange experiences and develop communication materials and technical publications on carbon pricing in the Russian language. There is a strong need for capacity building and developing local expertise in all of the Central Asian countries, where international and regional partners could help.

6. The CA region, especially Kazakhstan, Uzbekistan and Turkmenistan, all have very significant fossil fuel subsidies (see figure 3), distorting the cost of energy and fuels and resulting in increased GHG emissions. Consequential opportunities could be explored by introducing a regional discussion on phasing out these subsidies in favor of renewable energy and other investments in the green economy.
7. The CA region is highly vulnerable to socio-economic impacts; therefore, it is necessary to design carbon pricing instruments in a way that is sensitive to the social circumstances of the countries, for example by utilization of revenues in softening the impacts or removing other distortionary taxes, as well as a gradual launch scheme to help businesses and consumers adjust.
8. Invest in the re-establishment of cross-border electricity exchanges in the region, which could reduce the need for peak and back-up capacity in the system, support seasonal trading with hydropower, reduce the required capacity reserve within the respective national systems and support the development of renewable energy systems. Improving the potential for seasonal exchange of renewable energy will enable Central Asia to attract international green investments to the economy.
9. Countries in the region may require further economic diversification to retain and increase competitiveness at the global level, in the context of a global economy heading towards decarbonization. In particular, while reliance on fossil fuel based economy may need to be reduced, opportunities exist for the region to position itself as a powerhouse for green electricity and the production of green hydrogen, given the huge untapped potential for renewable power production.

5. Conclusion

The countries in Central Asia are highly vulnerable to climate change and are heavily dependent on fossil fuels. There is a strong need for the countries to transition to a low-carbon development pathway, to achieve sustainable growth with a decoupling of emissions and to achieve their commitments under the Paris Agreement. There are also significant opportunities in the region for the expansion of renewable energy, phasing out of fossil fuel subsidies, improving energy efficiency and attracting international green investments.

The Regional Dialogue on Carbon Pricing (REdiCAP) revealed a growing interest by the Central Asian countries in carbon pricing instruments. So far, Kazakhstan is the only country in the region with an ETS, which was first implemented in 2013 and has since undergone several major revisions. However, according to the country focal point, Tajikistan is now aiming to create a pricing system by 2030.

Regulatory and institutional indirect support for carbon-intensive sources recommends being progressively minimized to give equal opportunity to a fair market in CA. Starting with the phasing out of energy subsidies to be replaced by cost-reflective tariffs. In particular, subsidies to the oil, gas and coal sectors gradually in progress to remove as soon as possible. For new investment proposals at the government level, a shadow carbon price could be introduced. Ultimately, a carbon pricing instrument considering also be introduced, possibly with developed carbon emission standards/rules. Economic benefits bring to the closure of the most obsolete facilities to facilitate the decommissioning of carbon-intensive plants. Expected that carbon pricing will initially put pressure on fossil fuel power plants. The liberalization of the renewable energy market can compete and bring both cost and environmental benefits to consumers. Likewise, the fully liberalized gas market will be more transparent if provide the market with the true value of the goods once it is free of subsidies. Recommended to stakeholders to be responsible for the workflow of these initiatives. It will take a while before they begin to materialize. Ongoing market reform offers a unique opportunity to integrate the missing aspect of sustainability into legal and regulatory frameworks.

There are significant opportunities for regional cooperation on climate action, and countries expressed large interest in learning from Kazakhstan as well as other countries with more experience on CPI. In the longer term, phasing out fossil fuel subsidies, aligning MRV guidelines and forming a regional ETS could be considerations to drive low-carbon development in the region.

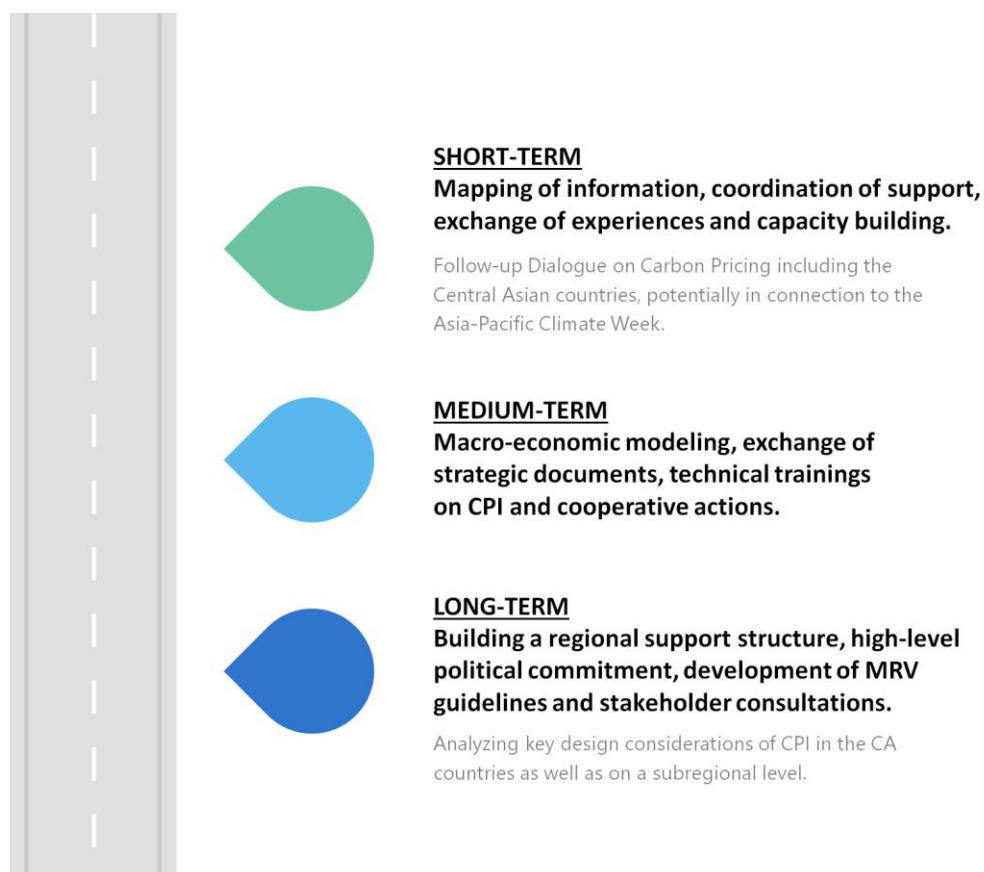
To further facilitate the consideration of carbon pricing in Central Asia, there is a clear need for capacity building regarding the benefits, challenges and design considerations of CPI, both on a technical and political level. Based upon the proposed activities by country participants and international partners at the REdiCAP, the following Roadmap for Advancing Carbon Pricing in Central Asia has been developed.

6. Preliminary Roadmap of Activities for Advancing Carbon Pricing in Central Asia

This preliminary roadmap for advancing carbon pricing in Central Asia is based on the proposed activities by country participants and international partners at the Regional Dialogue on Carbon Pricing (REdiCAP) in Central Asia on 25-26 February 2021. The roadmap reflects the priorities and discussions from the REdiCAP and is subject to review from the country stakeholders and partners. Broadly, the activities proposed can be put into four different thematic areas:

1. Sharing and development of documents Such as NDCs, green economy strategies, CPI information and Article 6 instruments in Russian language between countries and international partners.	2. Technical capacity building Training on MRV and carbon pricing, development of MRV guidelines as a basis for CPI and cooperative approaches.
3. Scenario modelling Developing subregional and country specific macro-economic models/scenarios on the impacts of CPI and related climate policies.	4. Generating high-level political support Building support from political decision makers by high-level capacity building events, stakeholder engagement and studies to highlight benefits from CPI.

Below the activities are presented in the form of a roadmap, based on the proposed time frame of implementation.



Short-term activities (0-6 months):

1. Create a mapping of what information and capacity building support on CPI exists in the Russian language to understand if any new material needs to be developed or translated to build local capacity regarding carbon pricing, as well as cooperative approaches under Article 6 of the Paris Agreement.
2. Continue coordination and strengthening of support between international partners and countries in the region on carbon pricing.
3. Capacity building on the benefits and process of introducing CPI for technical experts and political decision makers in the region
 - Exchanging experiences and best practices on carbon pricing both within the Central Asian region, as well as from other countries/regions and international partners.
4. Follow-up Dialogue on Carbon Pricing including the Central Asian countries, potentially in connection to the Asia-Pacific Climate Week.

Mid-term activities (6-12 months):

1. Develop macro-economic modeling studies on the socioeconomic and environmental impacts of the possible introduction of carbon pricing instruments in the region.
2. Exchange national strategic documents (e.g. green economy roadmaps) and NDCs to share experiences that could facilitate regional collaboration for increased ambition and reduced emissions.
3. Conduct technical training sessions on MRV and carbon pricing for national experts and policymakers.
 - Transfer of knowledge and lessons learned from the national ETS in Kazakhstan to other countries of Central Asia, including regarding the MRV infrastructure (e.g. Kazakhstan's MRV Portal)
4. Support to the consideration and potential use of cooperative action under the Paris Agreement
 - Increase awareness on opportunities and options for cooperative approaches at the regional and international level under Article 6 of the Paris Agreement and applicable provisions.
 - Transfer of knowledge and lessons learned on the set-up of national registries for tracking of mitigation outcomes to facilitate cooperation under Article 6 of Paris Agreement.

Long-term activities (12+ months):

1. Establish a regional support structure (e.g. through CAREC, The Interstate Commission on Sustainable Development – ICSD under IFAS, or other platforms) for coordination between Central Asian countries on capacity building, information exchange and awareness raising regarding carbon pricing

- Initiate a political dialogue on the establishment of a potential subregional carbon trading market and associated benefits.
 - Support and build capacities of CA countries and entities for participation in cooperative approaches under Article 6 and in international and voluntary carbon markets
2. Mobilize high-level political support from decision makers in Central Asian countries for more ambitious climate policies, including carbon pricing instruments, by alignment with NDC implementation, green economy strategies and by building on the momentum for a green recovery from COVID-19.
 3. Development and adoption of facility-level MRV guidelines for carbon pricing instruments in applicable sectors.
 4. Support CA countries in initiating stakeholder consultations on the readiness for, scope and ambition of climate pricing instruments, involving private sector entities, consumers, vulnerable groups and other key stakeholders.
 5. Analyze the key design considerations for a potential subregional ETS and associated implications, including the sectors covered, allocation of emission rights and revenue usage.

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Appendix 1. List of Participants at the REdiCAP 25-26 February 2021

Country	Name, title
Kazakhstan	Aidyn Bakdolotov , Director of the Department of Modeling, Forecasting and Analysis of JSC Zhasyl Damu of Ministry of Ecology Geology and Natural Resources of the Republic of Kazakhstan. Zulfiya Suleimenova Mazhilis Parliament of the Republic of Kazakhstan (tbc)
Kyrgyzstan	Alexander Marlenovich Temirbekov , Aizada Barieva , Head of the Department of Environmental Strategy and Policy, State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic
Tajikistan	Samiev Saginmurod , Head of the Environmental Protection Monitoring Department, Agency for Hydrometeorology of the Committee on Environmental Protection under the Government of the Republic of Tajikistan
Turkmenistan	Mergen Yusupov , Deputy Chief, Department for Coordination of International Environmental Cooperation and Projects, Ministry of Agriculture and Environmental Protection of Turkmenistan
Uzbekistan	Taryannikova Raisa V. , Center of the Hydrometeorological Service of the Republic of Uzbekistan

In addition to the aforementioned country participants, a large number of representatives from international partners were present, including ADB, UNDP, UNEP, UN ESCAP, UNFCCC, RCC Bangkok and CAREC.