



Eurasian Development Bank



Carbon Pricing Policy Opportunities in Central Asia and Azerbaijan

Klochkova, E. (EDB); Samad, G., Nabi, G. (CI) (2025). Carbon pricing policy opportunities in Central Asia and Azerbaijan. Report 25/10. Urumqi: CAREC Institute. Almaty: Eurasian Development Bank.

This joint report by the Eurasian Development Bank (EDB) and the CAREC Institute (CI) provides a comprehensive analysis of the status, prerequisites and prospects of the carbon pricing instruments in Central Asia and Azerbaijan. The study produces a cross-country analysis of emissions structure and the institutional background relating to climate policies. It also presents the climate pricing Readiness Assessment Tool, to evaluate countries' readiness for carbon pricing and carbon pricing frameworks. The study explores carbon pricing frameworks for each of the selected countries and provides recommendations for policymakers. It seeks to contribute to the discussion about opportunities for introducing or developing carbon pricing frameworks, provide insights into attitudes towards carbon pricing at a country level, and promote prospective designs of carbon pricing frameworks for the Central Asian countries and Azerbaijan. The study may also lay the groundwork for modeling of economic and social outcomes of implementing carbon pricing in developing countries.

Keywords: Central Asia, Azerbaijan, carbon pricing, climate policy, carbon emissions, low-carbon growth, carbon tax, ETS, NDC

JEL: E02, F18, Q13, Q20, Q23, Q54, R11

The text of this Report may be reprinted and otherwise copied, either wholly or in part, including any large fragments, and published on external electronic resources subject to obligatory reference to the original text.

The electronic version of this Report is available on the Eurasian Development Bank website at <https://eabr.org/en/analytics/special-reports>, and the CAREC Institute website at <https://www.carecinstitute.org/publications/>.

© Eurasian Development Bank, CAREC Institute, 2025 Report Design:
Eurasian Development Bank

Disclaimer

The views expressed in this publication are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank (ADB), CAREC Institute (CI), or its Governing Council or the governments they represent.

ADB and CI do not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use. The mention of specific companies or products of manufacturers does not imply that they are endorsed or recommended by ADB and CI in preference to others of a similar nature that are not mentioned.

By making any designation of or reference to a particular territory or geographic area in this document, ADB and CI do not intend to make any judgments as to the legal or other status of any territory or area. The boundaries, colors, denominations, and any other information shown on all maps do not imply, on the part of the ADB and CI, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, colors, denominations, or information.

This publication is available under the Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO) <https://creativecommons.org/licenses/by/3.0/igo/>. By using the content of this publication, you agree to be bound by the terms of this license. This CC license does not apply to other copyright materials in this paper. If the material is attributed to another source, please contact the copyright owner or publisher of that source for permission to reproduce it. The ADB and CI cannot be held liable for any claims that arise as a result of your use of the material.

Contact Information:

Central Asia Regional Economic Cooperation (CAREC) Institute
21st Floor, Commercial Building Block 8, Vanke Metropolitan,
No. 66 Longteng Road, Shuimogou District, Urumqi, Xinjiang, the PRC, 830028
f: +86-991-8891151
LinkedIn: carec-institute
km@carecinstitute.org
www.carecinstitute.org

Notes:

In this report, "\$" refers to United States dollars.
ADB recognizes "China" as the People's Republic of China.

Contents

| | |
|--|----|
| Acknowledgment | 5 |
| Introductory Note by the Chief Economist of the Eurasian Development Bank ... | 6 |
| Foreword by the Director of the CAREC Insitute | 8 |
| Executive Summary | 10 |
| Introduction | 15 |
| 1. Overview of Carbon Pricing Frameworks | 17 |
| 1.1 Global State of Carbon Pricing | 17 |
| 1.2 Prerequisites for Introducing Carbon Pricing Instruments | 19 |
| 1.3 Carbon Pricing Practices and Challenges..... | 20 |
| 1.4 Future Direction of Carbon Pricing Adoption..... | 22 |
| 2. Overview and Analysis of GHG Emissions in Selected Countries | 23 |
| 2.1 Emission Footprint in Central Asia and Azerbaijan | 24 |
| 2.2 Carbon Intensity of GDP..... | 25 |
| 2.3 Sectoral Emissions in Central Asia and Azerbaijan | 26 |
| 2.4 Country Level Analysis..... | 29 |
| Azerbaijan | 29 |
| Kazakhstan..... | 30 |
| Kyrgyzstan..... | 31 |
| Tajikistan | 32 |
| Turkmenistan..... | 33 |
| Uzbekistan | 34 |
| 3. Climate Policies in the Selected Countries | 35 |
| Azerbaijan | 38 |
| Kazakhstan..... | 40 |
| Kyrgyzstan..... | 43 |
| Tajikistan | 46 |
| Turkmenistan..... | 48 |
| Uzbekistan | 50 |
| 4. State of Carbon Pricing in Central Asia and Azerbaijan | 53 |
| Azerbaijan | 56 |
| Kazakhstan..... | 59 |
| Kyrgyzstan..... | 68 |

| | |
|--|------------|
| Tajikistan | 72 |
| Turkmenistan..... | 74 |
| Uzbekistan | 77 |
| 5. Carbon Pricing Introduction: Evaluation for Selected Countries | 81 |
| 5.1 Developing a Readiness Assessment Tool for Carbon Pricing..... | 81 |
| 5.2 Assessing Countries' Readiness for Introducing Carbon Pricing Instruments..... | 95 |
| Azerbaijan | 96 |
| Kazakhstan..... | 98 |
| Kyrgyzstan..... | 99 |
| Tajikistan | 101 |
| Turkmenistan..... | 102 |
| Uzbekistan | 103 |
| 6. Conclusions and Policy Recommendations | 105 |
| Annex..... | 108 |
| References | 118 |
| Abbreviations | 126 |

Acknowledgment

This publication was prepared jointly by the Eurasian Development Bank (EDB) and the CAREC Institute (CI). The Report's authors would like to express their sincere gratitude to all those who encouraged and supported them in bringing this publication to fruition.

Ms. Evgenia Klochkova, representing the EDB team, provided climate policy reviews and analysed prerequisites for carbon pricing. Mr. Ghulam Samad from CAREC Institute, and Mr. Ghulam Nabi (independent economist) collected and analyzed emissions-related data to produce foundational analysis. The two teams worked closely together to develop the Readiness Assessment Tool for Carbon Pricing and provide useful policy recommendations.

We would also like to acknowledge the valuable contributions and support of Dr. Evgeny Vinokurov (EDB Chief Economist), Dr Alexander Zabojev (Head of the EDB's Centre for Integration Studies), Dr Vladimir Pereboev (Head of Projects, EDB Academy), and Dr. Kuat Akizhanov Deputy Director two, CAREC Institute.

We would like to express our gratitude to the external experts who reviewed the report and provided their comments. Our special thanks also go to the Climate Policy Initiative team who provided valuable feedback.

We hope that this report will contribute to the development of the comprehensive and balanced carbon pricing policies and lay the groundwork for the further assessment of outcomes of the carbon pricing implementation in developing countries.

Introductory Note by the Chief Economist of the Eurasian Development Bank



Evgeny Vinokurov,
Vice Chairman and Chief Economist,
the Eurasian Development Bank

I am pleased to present the report “Carbon pricing policy opportunities in Central Asia and Azerbaijan”, a joint product of the CAREC Institute and the Eurasian Development Bank.

The carbon pricing is a tool for reducing emissions and thus aligning with the objectives of the Paris Agreement. An increasing number of countries are considering carbon pricing as a key tool in achieving their climate-related targets. Incidentally, while we were drafting this paper, five additional carbon pricing instruments came into effect. For those who are still catching-up, the delays could have a negative impact on long-term competitiveness, as many jurisdictions — not only EU — are considering taxation on carbon-intensive imported goods.

Emission trading schemes and carbon taxes generate additional revenue — over \$100 billion per year globally. This is a double-edged sword. On the one hand, this revenue can be allocated into green projects. On the one hand, this is a quasi-tax imposed on producers, visibly skewed towards developing countries. This way or another, this is a reality exporters and producers have to live with.

Developing economies all over the world — and in the EDB zone of operations as well — want to grow not only sustainably but also rapidly. This dual task requires industrialization and growing exports. Thus, working with the issue of carbon pricing is necessary. The countries of Central Asia and Azerbaijan that fall within the scope of this research account for only about 1% of global greenhouse gas emissions. They all address the carbon pricing dilemma in different ways. Some of them consider its implementation in the long-term, while others are concerned about the potential downsides for the economic growth. In some cases, carbon pricing is already an integral part of national climate policy landscape, while in others, climate adaptation instruments are prioritized over mitigation. The global benchmarks recommend a wide range of carbon prices, from \$25 to \$120 per tonne of CO₂.

This turns the exercise of carbon taxation into a complex equation with many unknowns. There is no universally applicable approach to carbon pricing. This is a challenge that requires coordination of numerous stakeholders' interests and alignment with the broader national strategies.

This report provides a comprehensive overview of the prerequisites for introducing carbon pricing, as well as the key enablers and barriers that should be considered. It outlines a number of factors shaping readiness assessment tool and demonstrates its actual use in the context of the Central Asian countries and Azerbaijan. The paper provides recommendations for policymakers that can facilitate further discussion on tailor-made carbon pricing policies and instruments and assist in preparatory work. Based on the country-specific conditions, it is possible to determine an appropriate policy mix. This will enable achievement of climate targets while using the existing advantages and ensuring that socio-economic development is not compromised.

The Eurasian Development Bank is committed to promoting balanced green growth. We are therefore interested in research, technical assistance and investment opportunities that have the potential to stimulate low-carbon industries. This is our first report dedicated to the prospects of carbon pricing in Central Asia and Azerbaijan, as well as the first report prepared in cooperation with the esteemed CAREC Institute. We hope that this research will generate new ideas, encourage collaboration, and help our member states and other countries.

Foreword by the Director of the CAREC Institute



Charymuhmet Shallyyev,
Director, CAREC Institute

I am pleased to present the report “Carbon pricing policy opportunities in Central Asia and Azerbaijan”, a joint product of the Eurasian Development Bank and the CAREC Institute.

Carbon pricing has emerged as one of the most effective and timely policy instruments to align economic growth with environmental sustainability. For the CAREC region, where countries face diverse energy structures and development needs, advancing carbon pricing is not only an environmental imperative but also a strategic economic opportunity. It enables member countries to accelerate their transition to low-carbon pathways, mobilize green investments, and integrate more effectively into global markets that are increasingly guided by carbon regulations.

This report highlights several important findings. First, the Central Asia and Azerbaijan have already taken steps toward climate policy and carbon pricing readiness, but implementation remains uneven and at an early stage. Energy systems remain carbon-intensive, and current policies are not sufficient to achieve long-term climate commitments. Second, there is clear potential for both domestic and regional action. Introducing carbon pricing can help reduce emissions cost-effectively, generate fiscal revenues to support just transitions, and send the right signals for private-sector innovation. Third, international experiences show that well-designed carbon pricing—adapted to national circumstances and coordinated across borders—can also enhance competitiveness, ensure social equity, and unlock green growth opportunities in Central Asia and Azerbaijan.

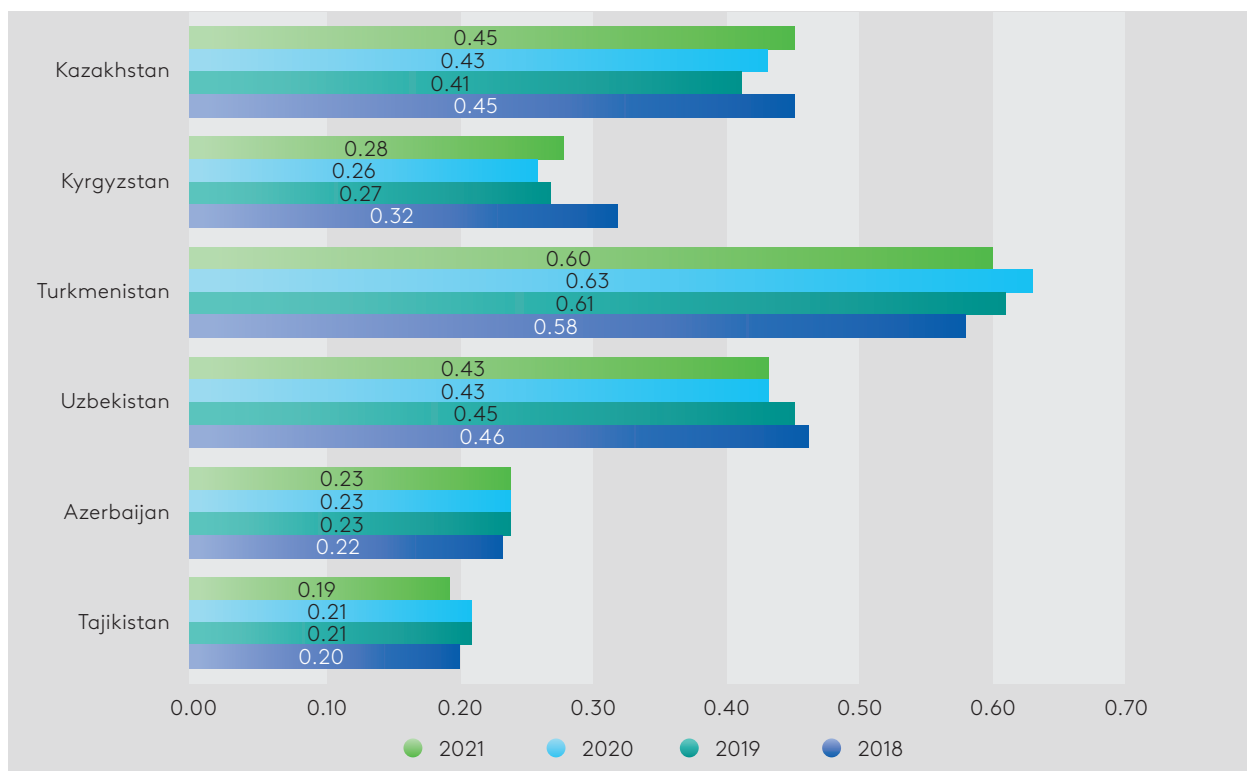
The report recommends that Central Asia and Azerbaijan can strengthen their institutional readiness for carbon pricing, enhance data and monitoring systems, and adopt gradual but credible pricing trajectories. It also emphasizes the importance of complementary measures, such as energy subsidy reforms, targeted support for vulnerable groups, and investments in renewable energy and energy efficiency. Regional collaboration—through knowledge exchange, capacity building, and potential carbon market linkages—can amplify the impact of national actions.

The CAREC Institute remains deeply committed to supporting our member countries in advancing climate-related priorities. Through evidence-based policy research, analytical tools, and tailored capacity-building programs, we will continue to work with governments, private sector partners, and development organizations to build pathways toward low-carbon, climate-resilient economies. This report is part of our broader commitment to provide timely knowledge solutions, foster policy dialogue, and strengthen regional cooperation in addressing one of the most pressing challenges of our time.

Executive Summary

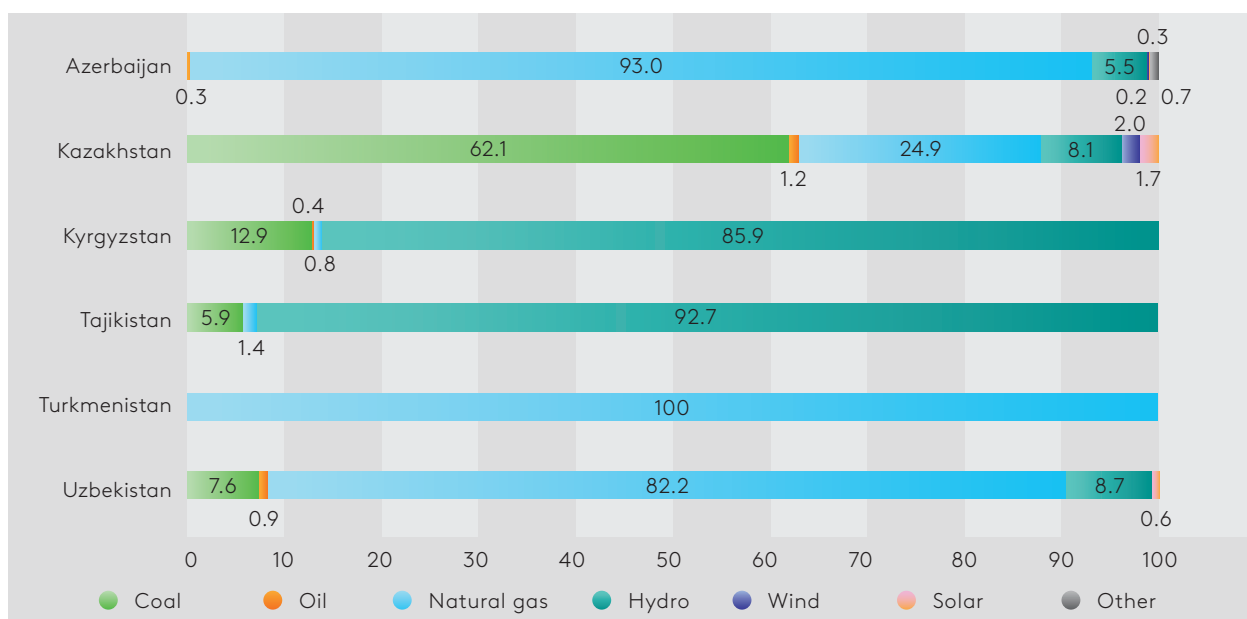
1. Carbon pricing is one of the most powerful climate-related policy instruments to reduce carbon emissions in a flexible way. **While serving its primary goal of climate change mitigation, when implemented effectively it can also generate revenue that can be reinvested to promote green technologies and provide market participants with more clarity and predictability about emissions levels, supporting long-term planning and decision making.** Initially more widespread in high-income economies, carbon pricing mechanisms are now also increasingly being adopted in middle-income countries, reflecting a global shift toward more inclusive climate engagement. As of 2024, 75 carbon pricing instruments (CPIs) are operational worldwide, highlighting the instrument's versatility and applicability in different economic contexts ([World Bank, 2024](#)). More interest to carbon pricing could be expected amid the recent progress made at COP29 around the international carbon trading rules.
2. **The deployment of CPIs presents significant challenges, as it requires robust policy and regulatory frameworks as well as institutional capacity.** Effective administration, monitoring, rules-setting mechanisms, defined targets and timelines are critical to achieving emissions reduction. Equally important is the support of stakeholders, as public perception of carbon pricing could be mixed.
3. **The share of countries of Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) and Azerbaijan in global greenhouse gas (GHG) emissions is very small (1.4%),** with Kazakhstan and Uzbekistan having the highest share in the region (0.73% and 0.32%, respectively) ([IEA, 2024](#)). The share of these countries in global GDP and population is even smaller: 0.87% and 1.08%, respectively. In terms of carbon intensity per GDP, Turkmenistan has the highest value among the countries considered (0.60 kg CO₂ per USD). Although these ratios may seem negligible on a global scale, the region's collective contributions could play a crucial role in global climate efforts and sustainable economic growth.
4. **The energy sector is responsible for the largest share of carbon emissions in all countries of the region except Kyrgyzstan and Tajikistan, where agriculture is the largest emitting sector.** Azerbaijan, Kazakhstan, Uzbekistan, and Turkmenistan have a larger footprint due to their dependence on coal and natural gas for power generation, industry, and transportation, while Kyrgyzstan and Tajikistan have the largest share of renewables in power generation — 67.9% and 87.2%, respectively ([IEA, 2022](#)). This sharp contrast reflects the region's economic diversity and emphasizes the importance of context-specific climate policies.

↓ Figure A. Emission Intensity of GDP, 2018–2021, kg CO₂ per USD



Source: SDG Indicator 9.4.1, UNECE, 2024.

↓ Figure B. Electricity Generation Sources, %



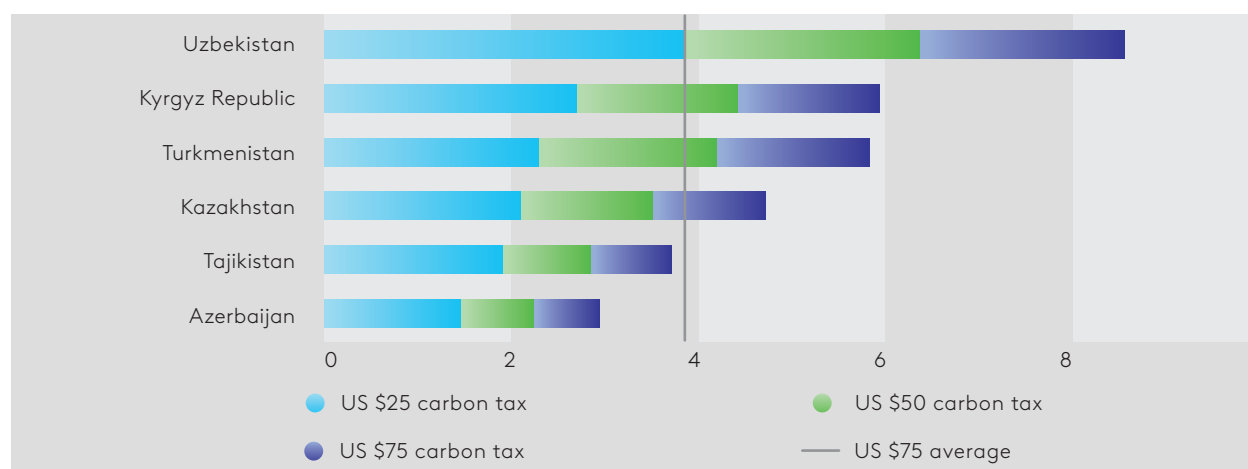
Source: IEA, 2022.

5. **Central Asian countries and Azerbaijan are actively integrating climate-related provisions in their policies, considering international agreements and tailoring best practices to national conditions and priorities.** All countries in the scope of this research have developed Nationally Determined Contributions (NDCs). The countries also recognize development and expansion of renewable energy sources as priorities of climate policy. Kazakhstan and Kyrgyzstan have

taken decisive action by committing to net-zero emissions targets, showcasing their ambition to lead the climate agenda in the region. Tajikistan carved out a unique approach, being the only country in the scope of this research that prioritizes adaptation over mitigation, addressing its vulnerability to climate impacts.

6. CPIs are considered to be a power tool to meet the NDCs, and also a source of additional revenue contributing to the strength of national budgets. By pricing carbon, governments can encourage markets to reduce emissions and build a financial base for climate technologies and sustainable development initiatives. According to the IMF, the current mitigation policy mix in Azerbaijan, the Kyrgyz Republic, and Kazakhstan may not be sufficient to curtail emissions to their target, while Uzbekistan and Tajikistan appear to be on track to meet their unconditional commitments (IMF, 2023). **The IMF assesses that the weighted average NDC emissions target in the Caucasus and Central Asia can be met with a uniform US\$25 per tonne of CO₂ carbon tax on average, which could generate about 2.6% of GDP in revenue in the Caucasus and Central Asia** (for example, almost 3% of GDP in Turkmenistan and Uzbekistan) (IMF, 2022). Nevertheless, the possible downsides for businesses and households from introducing the carbon tax of this value should be also considered case by case.

↓ Figure C. Potential Carbon Tax Revenue, % of GDP, 2030



Source: Country authorities; and IMF staff calculations.

Note: Estimations are based on a model calculation from the IMF Fiscal Affairs Department's Carbon Pricing Assessment Tool.

7. Although all the countries in the scope of this research have pledged to reduce emissions, their **approach, willingness, and readiness to move to specific CPIs are strikingly different**. Among these nations, only Kazakhstan has a CPI in place. Azerbaijan signaled the development of a Zero Emissions Development Strategy that could include carbon tax as an incentive. Uzbekistan is taking incremental steps towards carbon pricing by building the necessary infrastructure and institutions. The reasons for both common and different practices lie in the

diverse economic structures and GHG emissions profiles, when some factors defining the country's readiness to introduce carbon pricing require additional examination prior to decision-making, ensuring that future CPIs are both feasible and impactful.

8. **The Readiness Assessment Tool was developed to assess a number of factors that could influence the importance of carbon pricing for achievement of a national climate target, the country's readiness for fiscal climate regulation, and the potential effectiveness of such an instrument in the national context.** It includes such country-specific criteria as economic and emissions profiles, climate policy focus and level of NDC, current policy gaps and overlaps, Measurement, Reporting, and Verification (MRV) systems, the existing carbon markets track record, institutional capacity, and efficiency of stakeholder engagement.
9. **Analysis of the Central Asian countries and Azerbaijan demonstrates that CPI could not be considered as a "one-size-fits-all" approach, underscoring the need for tailored strategies to maximize the value and impact they would generate for the country.**
 - **Azerbaijan** is more integrated into international trade, and is taking some efforts to join carbon markets. Using the momentum of being a COP29 host country, Azerbaijan could consider fiscal carbon measures to raise the competitiveness of its exports and pave the way for further diversification of its carbon-intensive economy.
 - **Kazakhstan** is a unique example of a country that already has a CPI in the form of the emission trading system (ETS). The country's low-carbon ambitions prove that carbon pricing is justified for its importance, efficiency, and readiness; it is considered a key element of carbon regulations; and the country will follow the path of further adjustment of its CPI.
 - **Kyrgyzstan** has a unique intention to create a vision of a "negative emissions" country. Considering the country's energy mix and its ambition to further increase RES generation, introduction of CPI is not a binding requirement for the country to achieve its climate commitments. Kyrgyzstan lacks internal prerequisites for CPI implementation, but could use opportunities of carbon markets and other sources of international funding to support decarbonization.
 - **Tajikistan** is the region's lowest CO₂ emitter and prioritizes adaptation over mitigation, given its acute vulnerability to climate change effects. The country also has opportunities for green growth that are sufficient to reach its NDC and could be beneficial in the international carbon markets. Nevertheless, the country acknowledges the need to gradually reduce energy subsidies that hamper investment in clean technologies.

- **Turkmenistan** is the largest emitter of GHGs relative to GDP in the Central Asia, and does not plan to raise its climate mitigation ambitions, prioritizing economic growth. Introduction of CPI could be considered as a beneficial, but premature measure, since the country lacks the initial elements of climate regulation. Gradual phase-out of fossil fuel subsidies, which are the highest in the world, could be a significant prerequisite for efficient climate policies.
 - **Uzbekistan** has most prerequisites for efficient carbon pricing in place, and introducing CPI could be considered as a reasonable next step on the country's low-carbon development path. Moreover, the country has some experience in the global carbon trade and is already establishing its MRV system, which would provide assistance in future CPI implementation.
10. According to the common and different features of the countries in the scope of this research, as well as the challenges that could arise when designing carbon policy, **the following steps can be recommended when considering introduction of a CPI:**
- First, **to conduct a readiness assessment** to identify the level of development of the carbon pricing policy, mechanisms and instruments, and technical readiness required in each country. This stage also includes establishing an institutional MRV system that would be beneficial to any climate policy. A country should also assess how fossil fuel subsidies could be gradually phased out while also ensuring safety net to the most vulnerable population.
 - Second, if the preparatory work indicates a need and readiness of a country to implement CPIs, **carbon pricing enablers should be strengthened.** This stage could include alignment of carbon pricing policies with complementary country's policies as well as harmonization of the CPI frameworks with the national and regional context. It is also important to provide institutional capacity-building for efficient carbon pricing, as it requires additional efforts and skills for administration. Additionally, stakeholder engagement and public awareness to gain public buy-in will secure longer-term policy stability.
 - Third, regardless of whether carbon pricing is considered premature or unnecessary at the current stage of climate policies, **a country could still unlock a wide range of complementary instruments to promote low-carbon growth.** These instruments could include feed-in-tariffs incentivizing renewable energy investments, mechanisms for emission reduction or tradable carbon credits, and international funding opportunities via development banks, funds, and other agencies. Such tools could serve as effective transitional decarbonization measures that would be added to future carbon pricing systems.



www.eabr.org



www.carecinstitute.org