



Economic Brief

**Fiscal Instruments supporting the Green
Energy Transition in the Central Asian
Countries: Overview and recommendations**

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Abbreviations

ADB	Asian Development Bank
CBAM	Carbon Border Adjustment Mechanism
CBT	Climate Budget Tagging
CAREC	Central Asia Regional Economic Cooperation
CA	Central Asia
CAFC	Corporate Average Fuel Consumption
CCS	Carbon Capture and Storage
CI	CAREC Institute
EDB	Eurasian Development Bank
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
ETS	Emission Trading Systems
FSC	Financial Settlement Center
FITs	Feed-in Tariffs
GBT	Green Budget Tagging
GFEI	Global Fuel Economy Initiative
GHG	Greenhouse gas
IFC	International Finance Corporations
MPTF	Multi-Partner Trust Fund
MRV	Monitoring, Reporting, Verification
NEV	New Energy Vehicles
NDC	Nationally Determined Contributions
PFM	Public Financial Management
RE	Renewable energy
RES	Renewable energy sources
SCC	Social Cost of Carbon
WB	World Bank
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
ZEV	Zero emission vehicle

1. Introduction

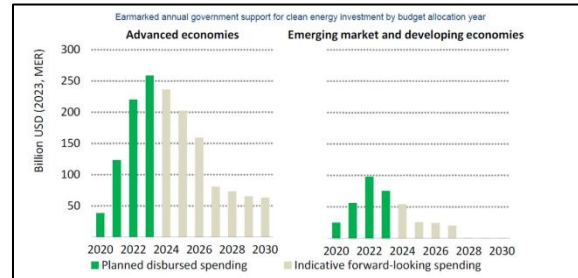
The rate of green transformation at the global level has gained stronger momentum in recent years from the increasing realization of the risks that climate change poses to our planet and the magnitude of its impacts. Apart from the environmental imperatives, the shift toward sustainability has become a swift and urgent economic necessity that redefines policy and practice for nations across the globe. Countries have adopted strategies for reducing greenhouses, increasing energy efficiency, and boosting renewable energy sources while focusing on economic growth.

Fiscal policy is a crucial lever at the heart of this global shift. Governments worldwide use various fiscal tools like taxes, subsidies, or public expenditures to change economic incentives and channel resources toward sustainable infrastructure and innovation, also known as green fiscal policy. Essentially, green fiscal policy involves rearranging government spending and revenue collection to promote sustainability, reduce carbon emissions, encourage renewable energy adoption, and foster long-term economic growth while addressing environmental challenges.¹

Advanced economies have earmarked approximately USD 640 billion in clean energy spending during the last 4 years, and emerging markets USD 240 billion (Figure 1). Around 80% of the global spending is concentrated in the United States, the European Union, and China (Figure 2). These investments target sectors like low-emissions electricity, energy-efficient buildings, and mass transit systems. Realignment of fiscal spending and public investment is critical to phase out fossil-fuel subsidies, venture into innovation, and hasten the emergence of clean technology into all energy systems, allowing for

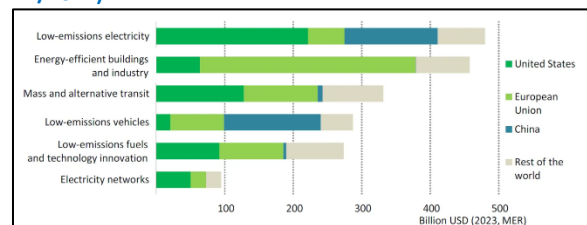
less carbon-intensive and low-polluting energy consumption.

Figure 1. Comparison of Government Support for Clean Energy Investments: Advanced vs. Emerging Economies (2020-2030)



Source: International Energy Agency (IEA). (2024). *Government energy spending. In State of Energy Policy 2024.*

Figure 2. "Distribution of Earmarked Government Spending on Clean Energy Sectors by Region (2020-H1/2024)



Source: International Energy Agency (IEA). (2024). *Government energy spending. In State of Energy Policy 2024.*

How have fiscal instruments contributed to such a realignment? Sweden’s experience, for instance, provides a clear example. By introducing a carbon tax in 1991— set at \$127 per ton now—the country has effectively reduced its CO2 emissions by 25% while achieving 75% economic growth over the same period. This demonstrates that well-designed fiscal policies, like carbon pricing, can incentivize the shift from fossil fuels to renewable energy without compromising economic growth. Sweden’s success highlights the potential of

¹ Green fiscal policy, UN CC: e-Learn.

fiscal tools to drive both sustainability and economic progress.²

CA countries face challenges and opportunities on the path toward alignment with global sustainability goals. They have all made significant commitments under various international agreements, such as the Paris Agreement, to cope with GHG emissions and enhance sustainable development. The green transition is highly ambitious. Long-term sustainability will require major fiscal reforms, which at the same time ensure competitiveness. CA countries need to strike a careful balance in promoting economic growth and environmental sustainability because fiscal constraints, political considerations, and heavy reliance on fossil fuels mean serious implementation challenges. This requires well-designed, environmentally friendly, economically viable, and socially equitable reforms.

This brief gives an overview of CA countries' fiscal policy tools and policies, and strategies individual countries adopt to enable the green transition. It also identifies the challenges the region faces in fiscally aligning to the sustainability goals and the opportunities enhanced regional cooperation could offer for achieving them.

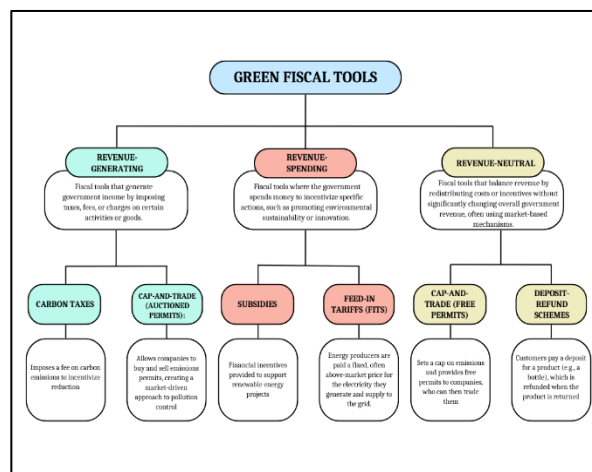
2. Fiscal Policy Tools Driving the Green Energy Transition

The transformation towards a green economy requires the design of fiscal measures that deal with environmental challenges together with facilitating sustainable development under the umbrella of broader economic policies. These comprise mechanisms that internalize the cost of environmental depreciation, navigate towards cleaner production and consumption, and stimulate innovation in green technology.

However, the applicability and efficiency of such tools depend heavily on the specific forms of economic, social, and environmental circumstances in different countries. Green fiscal policies are very flexible and manifold; they are, in fact, large-scale and shaped for individual nations depending on their specific needs and situation. Hence, there is no “Rule of thumb” for applying these policies since each economy shapes its set of instruments depending on resource endowment, reliance on energy, political willingness, and fiscal capacity.

It is, therefore, important that the specific green fiscal policies of the CA countries should be compared against a broader backdrop of existing green fiscal instruments in practice.

Figure 3. Classification of Green Fiscal Policy Tools



Source: Based on *Energy Economics and Policy* by MITx (edX platform). Graph authored and adapted by the author.

Understanding these tools will help with the context under which they can be applied in each country's peculiar situation. Green fiscal tools are broadly categorized into three: revenue-generating, revenue-spending, and revenue-neutral tools, each to be used for the different objectives set within a sustainable fiscal policy.

² Fiscal Policies to Curb Climate Change, IMF blog. <https://www.imf.org/en/Blogs/Articles/2019/10/10/fiscal-policies-to-curb-climate-change>

Figure 3 highlights several tools, each offering distinct benefits based on the context in which they are applied. For example, in developed countries with significant emissions, carbon taxes and cap-and-trade schemes (auctioned permits) work especially well since they directly incentivize emissions reductions while generating government revenue.

On the other hand, subsidies and feed-in tariffs (FiTs) might be more applicable in developing economies, where renewable energy sectors need financial support to compete with fossil fuel-based industries.

Deposit-refund schemes or targeted subsidies can help balance environmental goals with the need to protect vulnerable populations from increased costs.

Additionally, cap-and-trade systems (free permits) offer flexibility in economies that remain reliant on traditional energy sources, allowing gradual shifts without destabilizing key industries. Ultimately, the choice of green fiscal tools should be based on thoroughly considering each country's fiscal capacity, economic priorities, and social equity concerns, ensuring the transition to a green economy is sustainable and inclusive.

3. Green Fiscal Reforms in Central Asia: Key Insights from the Region

CA is strategically significant as a bridge between Europe and Asia. It is endowed with vast natural resources that fuel its economy. The region displays a range of economic development stages, from upper-middle-income to lower-income economies, primarily driven by resources such as oil, gas, and minerals.

From the Caspian Sea to the borders of China and Mongolia, CA geography profoundly influences its economy. Mountain ranges feed essential

rivers supporting agriculture in otherwise arid areas, including deserts like the Kyzyl-Kum and Kara-Kum. This combination of natural wealth and diverse landscapes highlights the strong economic potential and the urgent need for sustainable regional development.

The Economic Landscape of CA

Since the dissolution of the Soviet Union, CA economies have evolved significantly, though they remain reliant on natural resources like oil, gas, and minerals alongside agriculture. While resource extraction remains crucial, the service sector has grown substantially in most countries, with manufacturing also notable in some, reflecting varied levels of diversification and industrial development.

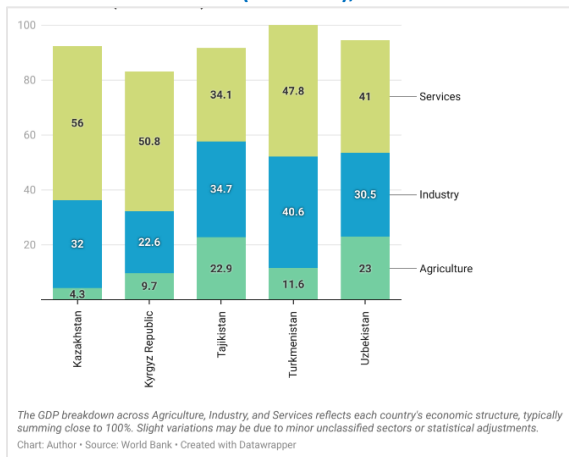
In 2023, Kazakhstan led the region's economy, contributing 59.65% of CA's GDP with \$261.42 billion in nominal GDP and a 5.1% growth rate, underscoring its dominant economic role. Uzbekistan followed with 20.74% of the regional GDP at \$90.89 billion and a growth rate of 6.0%, driven by economic reforms. Turkmenistan held a 13.67% share with \$59.89 billion and 6.3% growth, fueled by natural gas exports.

The Kyrgyz Republic and Tajikistan comprised smaller portions, 3.19% and 2.75% of the regional GDP, with \$13.99 billion and \$12.06 billion and growth rates of 6.2% and 8.3%, respectively. This rapid growth, especially in smaller economies, indicates their potential as they pursue reforms and regional cooperation for enhanced economic activity.

Beside the varied GDP growth and economic contributions across CA, sectoral compositions reveal further nuances in each country's economic structure. Agriculture remains a key contributor in Tajikistan and Uzbekistan, representing 22.9% and 23.0% of GDP, respectively (Figure 4), though it plays a smaller role in Kazakhstan (4.3%). Industry (including mining) is one of CA's most significant

contributors to GDP, primarily driven by resource extraction. It holds a significant share in Turkmenistan and Kazakhstan, accounting for 40.6% and 32.0% of GDP, respectively. The service sector dominates the region's GDP, with the largest contributions in Kazakhstan (56%), highlighting a shift toward economic diversification beyond primary industries. This sectoral emphasis reflects CA's varied economic bases and a drive toward balanced growth.³

Figure 4. Breakdown of GDP by Value Added Sectors in Central Asian Countries (% of GDP), 2023



Electricity mix

Focusing on the electricity mix in CA provides a practical lens for understanding each country's progress towards renewable energy adoption. Unlike the broader energy mix, which includes fuels across all sectors, the electricity mix reflects countries' specific choices in power generation — a key area for implementing green energy initiatives and reducing emissions.

Due to abundant local resources, CA countries' energy mix is often dominated by fossil fuels, particularly in Kazakhstan and Turkmenistan. However, with growing international pressure to reduce emissions and the economic risks of fossil fuel dependency, these countries are increasingly considering shifting toward

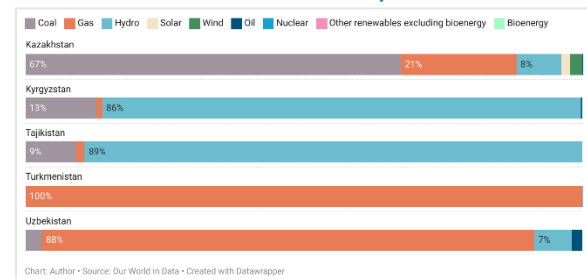
renewable energy sources to create a more balanced and sustainable energy landscape.

According to the “Our World in Data”⁴, Kazakhstan's energy mix relies heavily on coal, which accounts for 67% of its electricity production, with natural gas at 21% and a modest 8% from hydro (Figure 5). This fossil-fuel-heavy mix challenges Kazakhstan's green transition despite recent efforts to incorporate renewables. In Turkmenistan, natural gas dominates the energy landscape, making up 100% of electricity production, underscoring its reliance on this resource.

In contrast, the Kyrgyz Republic and Tajikistan rely primarily on hydroelectric power, comprising 86% and 89% of their energy mix, respectively. This high reliance on hydro reflects their geographical advantage in water resources and exposes them to climate-related risks, such as droughts, which can impact hydroelectric generation. Uzbekistan shows a mixed profile, with 88% of its electricity generated from natural gas, supplemented by a small share from other sources like hydro (7%) and oil.

This diverse energy profile across CA highlights each country's challenges and opportunities in balancing economic growth with the sustainability goals.

Figure 5. Share of Electricity Production by Energy Source in Central Asian Countries, 2022



Created by the author based on the data from “Our World in data”

³ World Development Indicators, World Bank Group. <https://wdi.worldbank.org/table/4.2>

⁴ <https://ourworldindata.org/electricity-mix>

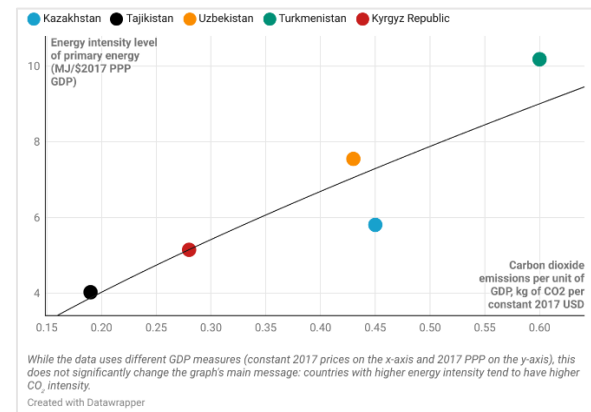
Energy and Carbon Intensity Trends

The electricity mix in CA countries plays a significant role in shaping their energy and carbon intensity profiles. A heavy reliance on fossil fuels like coal and natural gas, as seen in countries like Kazakhstan, Turkmenistan, and Uzbekistan, leads to higher energy intensity and CO₂ emissions per unit of GDP. This is because fossil fuels are generally less efficient in converting fuel into electricity and produce more CO₂ emissions than renewable sources.

For example, Kazakhstan's electricity generation relies heavily on coal (67%), which contributes to its relatively high energy intensity (5.81 MJ per unit of GDP)⁵ and CO₂ intensity (0.45 kg CO₂ per unit of GDP)⁶. Similarly, Turkmenistan's 100% reliance on natural gas for electricity production translates into high energy and carbon intensities. Uzbekistan, with 88% of its electricity sourced from natural gas, also exhibits high energy and CO₂ intensities, though it is more carbon-efficient than Turkmenistan (Figure 6).

In contrast, countries like the Kyrgyz Republic and Tajikistan, which derive most of their electricity from hydroelectric power (86% and 89%, respectively), show much lower energy and carbon intensities. Hydropower is more efficient and emits no direct CO₂, contributing to lower CO₂ intensity values in these economies. Tajikistan's low energy intensity (4.03 MJ) and very low CO₂ intensity (0.19 kg) reflect this cleaner energy mix, underscoring the environmental benefits of renewable energy in reducing both energy use and emissions.

Figure 6. Energy Intensity vs. CO₂ Intensity of GDP in Central Asian Countries, 2021



Source: Created by the author based on data from the World Bank Group data, UNECE portal, 2021

CO₂ emission per capita

Therefore, the high energy and carbon intensities per unit of GDP in Kazakhstan and Turkmenistan result in CO₂ emissions per capita that exceed both the CA and global averages (Figure 7). In contrast, Uzbekistan has reduced the carbon intensity of its GDP by about 50% since 2010, more than any other CA country. This reduction is largely due to energy efficiency reforms, such as the Energy Efficiency Facility for Industrial Enterprises⁷, and industrial modernization. While renewables like solar and wind have contributed, the main driver has been the modernization of its carbon-intensive industries⁸. These efforts have led to a 7.7% decrease in CO₂ emissions per capita since 2010, bringing Uzbekistan's emissions below the CA and world averages. In Kazakhstan and Turkmenistan, the reduction was even more substantial at 15% and 19%, respectively. However, due to their high dependence on fossil

⁵ Energy intensity level of primary energy (MJ/\$2017 PPP GDP), World Bank Group, 2021.

<https://data.worldbank.org/indicator/EG.EGY.PRIM.PP.KD>

⁶ Carbon dioxide emissions per unit of GDP, kg of CO₂ per constant 2017 USD, UNECE, 2021.

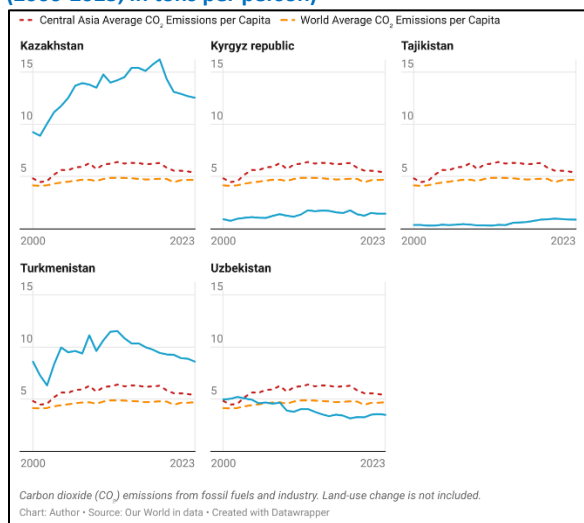
<https://w3.unece.org/SDG/en/Indicator?id=28>

⁷ https://www.worldbank.org/en/news/press-release/2018/01/30/industrial-enterprises-to-become-more-energy-efficient-reducing-overall-energy-consumption-in-uzbekistan?utm_source

⁸ <https://www.worldbank.org/en/news/press-release/2023/05/09/uzbekistan-to-invest-in-modernizing-its-energy-sector-to-meet-growing-demand-with-private-sector-participation-and-world>

fuels, their CO₂ emissions per capita remained above the CA and world averages. The Kyrgyz Republic and Tajikistan have consistently low per capita CO₂ emissions, remaining below Central Asian and world averages. This is due to their limited industrial activity and high reliance on hydropower, resulting in a cleaner energy mix with lower carbon intensity.

Figure 7: Per capita CO₂ Emissions in Central Asian Countries compared to Regional and Global Averages (2000-2023, in tons per person)



International Commitments

The heavy reliance on fossil fuels has intensified the need for greener economies in CA. In response to growing emissions and international pressure, these countries have committed to reducing GHG through their NDCs under the Paris Agreement. These commitments aim to promote RE adoption and improve energy efficiency.

Table 1. GHG Emissions Reduction Targets of Central Asian Countries (INDCs and Updated NDCs)

Country	First INDGs Targets for GHGs Emissions Reduction	Updated NDCs Targets for GHGs Emissions Reduction
Kazakhstan	15% by 2030 from 1990 level; 25% by 2030 from 1990 level, subject to international assistance	No new target submitted
Kyrgyz Republic	11.49%-13.75% by 2030 from 2010 level	15.97% under BAU scenario by 2030 from 2017 level
Tajikistan	23%-35% by 2030 from 1990 level	50%-60% by 2030 from 1990 level
Turkmenistan	GHGs emissions in tune with GDP growth by 2030	No new target submitted
Uzbekistan	10% by 2030 from 2010 level	35% by 2030 from 2010 level

Source: *Prospects for inclusive green growth and sustainability in the CAREC region*. CAREC Institute.⁹

4. Green Fiscal Instruments and Policies in CA

CA countries increasingly integrate sustainability into their economic frameworks to address climate challenges and promote long-term growth. Each nation has adopted unique green fiscal policies, ranging from carbon pricing mechanisms and RE incentives to energy efficiency programs and subsidy reforms. These initiatives aim to reduce GHG emissions, diversify energy sources, and foster sustainable innovation while addressing their unique economic and environmental contexts.

⁹ Falendra Kumar. (2024). Achieving carbon neutrality in the CAREC region: Barriers, challenges, and policy. In CAREC Institute, *Prospects for inclusive green growth and sustainability in the CAREC region* (Table 2.1, Central Asian countries only). CAREC Institute.

I. Kazakhstan: Transitioning from Fossil Fuels to Green Leadership

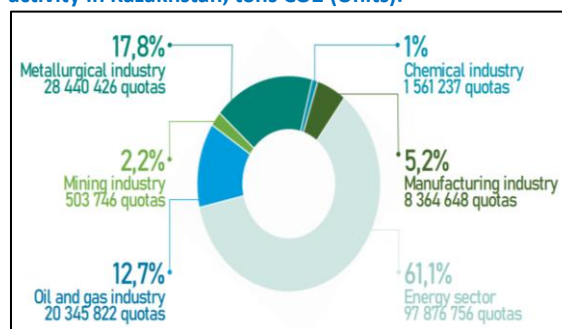
Kazakhstan has taken significant steps toward integrating sustainability into its fiscal and energy policies to address climate challenges and promote economic diversification. Three major green fiscal initiatives stand out: ETS, RE development policies, and fossil fuel subsidy reform. These policies demonstrate the country's commitment to aligning its economic growth with environmental goals.

Emissions Trading System (ETS)

In 2013, Kazakhstan introduced its ETS, making it CA's first carbon pricing mechanism. The ETS targets major GHG emitters, focusing on sectors such as the metallurgical, manufacturing, chemical, and mining industries. It regulates facilities emitting over 20,000 tons of CO₂ annually (Figure 8). Its overarching goal is to reduce CO₂ emissions, with a 2024 cap of 161.2 MtCO₂ and a long-term aim of cutting power sector emissions by 40% by 2050 compared to 2012 levels.

The ETS employs a benchmarking approach to ensure fair allocation, rewarding efficient producers. The system has achieved substantial milestones, covering 47% of national CO₂ emissions and issuing 8.7 MtCO₂ allowances to 57 installations in 2022. These efforts are supported by a strengthened MRV framework embedded within the Environmental Code of 2021. The ETS highlights Kazakhstan's leadership in adopting market-based solutions to reduce emissions.

Figure 8. GHG of quoted entities based on sectors of activity in Kazakhstan, tons CO₂ (Units).



Source: Aimira Bazarbayeva, "Zhasyl Damu" JSC¹⁰

Renewable Energy Development Initiatives

Kazakhstan's RE policies date back to 2009, with further enhancements introduced through legislative amendments in 2013, 2017, and 2020. The government has set ambitious targets to generate 15% of electricity from RES by 2030 and 50% by 2050, with nuclear energy also included in its long-term strategy.

The FSC is critical by facilitating guaranteed FITs for projects developed before 2018. For RES projects initiated after 2018, auction-based tariffs were introduced, encouraging competition and cost efficiency. Between 2018 and 2021, 41 auctions were held, awarding 75 contracts for 1,305 MW of projects, with wind and solar energy being the most prominent contributors (Figure 9). By the end of 2021, Kazakhstan had achieved an RES capacity of 3,106 MW, reflecting its steady progress in diversifying the energy mix.¹¹ However, challenges remain, such as reliance on imported equipment and risks associated with tenge depreciation, which continue to affect investor confidence.

¹⁰<https://www.adb.org/sites/default/files/event/938496/files/session-2-implementation-low-carbon-development-kazakhstan-and-plans-development.pdf>

¹¹ <https://iea.blob.core.windows.net/assets/fc84229e-6014-4400-a963-bccea29e0387/Kazakhstan2022.pdf>

Figure 9 RE auction results in Kazakhstan, 2018-2021

		Wind	Solar	HPP	Bio	TOTAL
Installed capacity offered (MW)	2018	620	290	75	15	1 000
	2019	100	80	65	10	255
	2020	65	55	120	10	250
	2021	50	20	120	10	200
	Total	835	445	380	45	1 705
Projects selected (MW/No. of projects)	2018	500.85 / 16	270 / 12	82.08 / 7	5 / 1	857.93 / 36
	2019	108.99 / 5	86.5 / 3	7 / 2	10.4 / 3	212.89 / 13
	2020	64.95 / 3	60 / 4	23 / 9	0 / 0	147.95 / 16
	2021	50 / 1	20 / 1	11.8 / 4	5.15 / 2	86.95 / 8
	TOTAL	724.79 / 25	436.5 / 20	123.88 / 22	20.55 / 6	1 305.72 / 75

Source: IEA, *Kazakhstan 2022*, adapted from USAID (2021a).

Reforming Fossil Fuel Subsidies for Sustainability

Kazakhstan’s energy transition also centers on reforming its substantial fossil fuel subsidies, which amounted to \$9 billion in 2019. These subsidies, largely delivered through regulated pricing, have historically encouraged overconsumption and strained fiscal resources. Recognizing the need for change, the government has adopted a multi-pronged approach:

1. The Tariff for Investment Program allows energy companies to recover infrastructure costs through regulated tariffs, encouraging modernization and efficiency.
2. A New Tariff Methodology, introduced in 2023, links financial incentives to sustainable practices and energy efficiency in the electricity and heating sectors.
3. Social Protection Measures ensure that vulnerable populations are cushioned against potential price increases, with provisions such as targeted cash transfers.

A WB partnership further supports these reforms, providing technical assistance to design and implement equitable and economically viable policies. By reducing subsidies and redirecting fiscal resources, the government aims to promote renewable energy competitiveness,

conserve energy, and encourage investment in low-carbon development.

Nuclear Energy: Balancing Clean Energy Commitments

Kazakhstan has moved forward with plans to build its first nuclear power plant near Lake Balkhash to diversify energy sources and reduce carbon emissions. After a national referendum, the country decided to develop the plant with a planned capacity of 1.2 GW, aiming to reduce its dependence on coal and meet growing energy demands in an environmentally sustainable manner. This initiative reflects Kazakhstan’s long-term vision of a balanced energy mix and carbon-neutral growth.

Carbon Farming: Encouraging Sustainable Practices

At COP29, Kazakhstan presented an innovative carbon farming initiative that focuses on enhancing carbon storage in soils through sustainable agricultural practices. With its 200 million hectares of agricultural land, Kazakhstan has significant potential to lead in this area. The initiative emphasizes modern technologies and legislative support to make carbon farming viable and impactful. The goal is to reduce greenhouse gas emissions and improve soil quality, contributing to global climate goals while strengthening Kazakhstan’s agricultural sector.

Policy Challenges and Implementation Gaps

Kazakhstan's green fiscal policies face significant challenges due to its heavy reliance on emissions-intensive industries, weak carbon pricing¹² (approximately USD 1.04 per ton of CO₂), and financial sector exposure to fossil fuel-based industries (17 banks hold roughly half their corporate loans in electricity, fossil energy, and heavy industries like metals and chemicals)¹³.

¹² https://icapcarbonaction.com/en/ets/kazakhstan-emissions-trading-system?utm_source=chatgpt.com

¹³ Republic of Kazakhstan: Financial Sector Assessment Program-Technical Note on Climate-Related Risks and Financial Stability, IMF country report, 2024. <https://www.elibrary.imf.org/view/journals/002/2024/096/002.2024.issue-096-en.xml>

These factors, coupled with transition risks like the EU CBAM, threaten economic competitiveness and increase the risk of stranded assets.

II. Kyrgyz Republic: Building Green Foundations through Fiscal Reforms

The Kyrgyz Republic strives to become the “greenest country in the region,” guided by its National Development Strategy 2018–2040, which envisions achieving negative CO₂ emissions and fostering inclusive, sustainable growth. Central to these efforts is the development of RE, with the Law on Renewable Energy enacted in 2008 to establish a legal framework for promoting RES. However, implementation was delayed due to the absence of regulatory measures.¹⁴

Significant amendments in 2019 addressed these gaps, introducing compensation mechanisms for distribution companies and establishing FiTs to incentivize RE production. These changes facilitated practical application of the law, advancing the RE sector. By integrating targeted programs, fiscal reforms, and international partnerships, the Kyrgyz Republic is prioritizing green energy, sustainable infrastructure, and climate resilience, aligning its development with global environmental goals.

Green Budget Tagging

The Kyrgyz Republic has introduced GBT¹⁵ as part of its fiscal policy framework for 2024–2028, with the GBT Guidelines launched in 2024. These guidelines aim to integrate environmental considerations into public financial management by tracking and monitoring public expenditures contributing to climate mitigation, adaptation,

and environmental protection. The initiative aligns with the country’s NDCs and SDGs.

Led by the Ministry of Finance, the guidelines define methodologies for identifying and classifying green expenditures, ensuring they are aligned with international best practices. The implementation follows a phased approach, beginning with pilot ministries and scaling up over time. The initiative ensures transparency and effective integration into the budget cycle by building capacity and incorporating lessons from countries like Indonesia and Uzbekistan.

The guidelines are expected to enhance fiscal accountability, improve resource allocation for green initiatives, and attract international financing. Despite challenges, such as mobilizing resources and avoiding misclassification, the initiative represents a critical step in aligning fiscal policies with climate goals, reinforcing the Kyrgyz Republic’s commitment to sustainable development and climate resilience.

Fiscal and Public Management Support

The ADB is providing \$50 million under the Sustainable Fiscal Management and Governance Improvement Program to support fiscal and public management reforms in the Kyrgyz Republic¹⁶. This initiative aims to enhance the country’s capacity to fund its low-carbon transition and climate adaptation needs while integrating gender inclusiveness into budget processes.

The funding for subprogram 1 includes a \$43 million policy-based concessional loan and a \$7 million grant from the Asian Development Fund. This support addresses the country’s economic vulnerabilities, which stem from limited economic diversification, weak governance, and

¹⁴ Dimitris Symeonidis, *Geo-economic Implications of a Shift to Green Energy Carriers and the Energy Transition on Sustainable Development in CAREC*, Prospects for Inclusive green growth and sustainability in the CAREC region, CAREC Institute

¹⁵ <https://www.worldbank.org/en/events/2024/09/17/green-budget-tagging-in-the-kyrgyz-republic>

¹⁶ <https://www.adb.org/news/adb-support-public-sector-and-governance-policy-reforms-kyrgyz-republic>

restricted fiscal space—factors that also hinder the government’s ability to respond to emerging challenges and climate risks.

Green Fiscal Challenges in the Kyrgyz Republic

The Kyrgyz Republic faces significant green fiscal challenges, with adaptation costs exceeding \$2.8 billion (33% of 2021 GDP) and only 29% of funding sourced domestically, necessitating international support. Limited fiscal space, weak carbon pricing mechanisms, and inefficient energy subsidies further complicate efforts to align policies with green development goals. The energy sector, reliant on hydropower, faces risks from changing rainfall patterns and glacier melt, while vulnerable populations disproportionately bear the impact of climate impacts.¹⁷

III. Tajikistan: Addressing Fiscal Constraints in Green Development

Tajikistan is taking significant steps to integrate green policies into its fiscal framework to address climate change and promote sustainable development. These efforts aim to balance economic growth with environmental protection and build resilience to climate risks.

The country’s Green Economy Development Strategy (2023–2037) sets the foundation for sustainable growth, emphasizing the efficient use of natural resources to improve living standards while maintaining environmental balance.¹⁸

As part of these efforts, Tajikistan plans to introduce carbon taxation ranging from \$10 to \$30 per ton of CO₂ by 2030 (already endorsed by the government). This initiative aims to reduce emissions by encouraging cleaner technologies while generating revenue to fund green projects. Additionally, the government aims to eliminate energy subsidies by 2027. This reform is designed to reflect the true cost of energy, encouraging efficiency and conservation while easing fiscal pressures.¹⁹

Tajikistan is also making strides in leveraging innovative financial instruments like green bonds to fund its sustainable development and climate goals. In February 2024, Eshkhatta Bank became Tajikistan's first issuer of green bonds, with support from the IFC. The proceeds from these bonds are earmarked for financing environmental protection initiatives and ecological enhancements, aligning with Tajikistan's Green Economy Development Strategy for 2023–2037.²⁰

To finance its ambitious green agenda, Tajikistan is working to mobilize climate finance through international grants and concessional loans, supplementing limited domestic resources to implement critical projects. The Government is strengthening institutional and regulatory frameworks to ensure the success of these policies. Measures include introducing price incentives, adopting climate budgeting, and improving governance to integrate environmental goals into fiscal planning.²¹

¹⁷ IMF country reports, Climate Change Adaptation and Mitigation in the Kyrgyz Republic, 2023.

<https://www.elibrary.imf.org/view/journals/002/2023/092/article-A002-en.xml>

¹⁸ https://leap.unep.org/en/countries/tj/national-legislation/government-decree-no-482-validating-strategy-development-green?utm_source

¹⁹ Tajikistan Country Climate and Development Report, World Bank Group, November 2024.

²⁰ https://daryo.uz/en/2024/02/18/eskhata-bank-becomes-tajikistans-first-green-bonds-issuer-with-ifcs-10mn-support?utm_source

²¹ https://www.worldbank.org/en/country/tajikistan/publication/ccdr?utm_source

Green Fiscal Challenges and Opportunities

Tajikistan faces significant fiscal constraints in advancing its green development agenda, primarily due to limited domestic financial resources. The country relies heavily on international grants and concessional loans to fund climate adaptation and mitigation projects, underscoring the importance of effective mobilization of external financing. Existing energy subsidies also strain public finances and reduce incentives for energy efficiency, prompting the government's plan to phase out subsidies by 2027 to reflect the true cost of energy and promote conservation. Additionally, institutional and regulatory challenges persist, as the country must strengthen its capacity to implement green fiscal policies and attract private investments effectively.

Climate vulnerability further complicates Tajikistan's green transition, with risks to infrastructure, agriculture, and livestock productivity that could significantly impact the economy. Climate-related damages could reduce real GDP by 5-6% by 2050, highlighting the urgent need for adaptive measures. Addressing these challenges will require balancing fiscal sustainability with strategic international cooperation and improving governance and regulatory frameworks to ensure the success of green development initiatives.²²

IV. Turkmenistan: Exploring Pathways for Green Policy Reform

Turkmenistan is gradually laying the groundwork for green fiscal policies, primarily through legislative measures rather than active fiscal interventions. In 2021, the country adopted the Law on RES,²³ aiming to foster the practical

application of green energy across various economic sectors. This legislative move reflects the intent to transition towards sustainability, although specific regulatory acts are still in development. Additionally, Turkmenistan has demonstrated international commitment by joining the UNFCCC and the Paris Agreement, with updates to its National Climate Change Strategy in 2019 and an Action Plan in 2022 for the Paris Agreement's implementation.

Despite these steps, the practical application of green fiscal policies like carbon taxes, green bonds, or subsidies for renewable energy technology is less evident. There have been moves towards reducing energy subsidies, such as a significant hike in tap water prices in 2017,²⁴ signaling a shift towards cost recovery pricing to encourage efficiency. The country has the potential to leverage its natural resources for renewable energy, but this would require more explicit fiscal incentives and a transparent policy framework.

Turkmenistan's enhancing of institutional capabilities and the engagement with international bodies like the Green Climate Fund shows the interest in climate finance. However, up to now green fiscal policies have remained constrained by the reliance on legislative frameworks rather than on direct fiscal actions.

Key Challenges in Green Fiscal Policy Implementation

The implementation of green fiscal policies in Turkmenistan faces several challenges including a lack of transparency and accountability in governance, which undermines effective policy execution²⁵. The heavy reliance on hydrocarbon revenues makes diversification towards green

²² Tajikistan Country Climate and Development Report, World Bank Group, November 2024.

²³ <https://turkmenistan.gov.tm/en/post/82525/future-green-energy>

²⁴ <https://greenfiscalspolicy.org/turkmens-face-25-fold-rise-in-water-price-as-state-starts-scrapping-subsidies/>

²⁵ <https://www.imf.org/en/News/Articles/2024/04/15/pr24118-turkmenistan-imf-staff-completes-2024-article-iv-mission>

policies difficult, as the energy sector is heavily subsidized. While the government is beginning to take steps to reduce these subsidies to curb domestic demand and boost exports, resistance remains, as reallocating these funds to support green initiatives presents economic challenges.²⁶ Moreover, certain gaps hinder the transition to a low-carbon economy and reduce the adaptive capacity to climate change. One major issue is the lack of cross-sectoral coordination in climate actions, which limits the involvement of relevant ministries, agencies, and other stakeholders.²⁷ The transition requires significant investment in renewable energy infrastructure, and fiscal reforms to redirect funds towards sustainable development.

V. Uzbekistan: Advancing Green Finance and Policy Innovations

Uzbekistan is actively implementing green fiscal policies to promote sustainability and economic growth. These policies include fiscal tools to incentivize green investments, reduce greenhouse gas emissions, and support sustainable development.

Notably, the issuance of green bonds has become a key mechanism for mobilizing both domestic and international capital for environmental projects.

Green Bonds for Sustainable Financing

Uzbekistan first ventured into the green bond market with the issuance of its sovereign sustainability bond, often referred to as an SDG bond, in July 2021. This bond was structured in two tranches: one for USD 635 million with a 10.25-year maturity, and another for UZS 2.5

trillion (approximately USD 235 million at the time) with a 3-year maturity. The bond was issued by the Government of Uzbekistan, facilitated by the Ministry of Economy and Finance. The proceeds from this bond were earmarked for projects aligned with SDGs, focusing on areas like public transport, health, education, and water management. Following this, in October 2023, Uzbekistan issued its first sovereign green bond valued at UZS 4.25 trillion (approximately \$349.18 million), through the Ministry of Economy and Finance.²⁸ Additionally, in August 2023, SanoatQurilishBank (SQB), a state-owned bank in Uzbekistan, made history by issuing the country's first corporate green bond, valued at USD 100 million. These issuances reflect Uzbekistan's commitment to financing its green transition through innovative financial instruments.²⁹

Green Mortgages and Renovation Loans

Uzbekistan is also developing green financial products, including green mortgages and renovation loans. With support from the ADB, which approved a \$150 million loan in November 2022, commercial lenders are being funded to offer affordable home loans, home improvement loans, and green renovation loans that focus on energy efficiency improvements, such as installing solar panels and enhancing insulation. The program also encourages product innovation and aims to increase access to housing finance, with at least 32.5% of loans targeting women, while promoting climate mitigation and energy-saving upgrades in homes.³⁰

²⁶ Energy system of Turkmenistan, IEA. <https://www.iea.org/countries/turkmenistan>

²⁷ Readiness proposal, with the Food and Agriculture Organization of the United Nations (FAO) for Turkmenistan, 2023. https://www.greenclimate.fund/document/improving-capacity-turkmenistan-access-climate-finance-through-capacity-building-and?utm_source=chatgpt.com

²⁸ <https://daryo.uz/en/2023/10/06/uzbekistan-debuts-green-sovereign-bonds-on-the-london-stock-exchange>

²⁹ Financing Uzbekistan's Green Transition, OECD, 2023.

³⁰ <https://www.adb.org/news/adb-supports-housing-finance-uzbekistan>

Integrating Green Budgeting Practices

In 2022, the government began tagging budget expenditures in alignment with the SDGs, including those with environmental impacts. According to the SDG tagging of the 2022 budget, 71% of state spending was directly linked to SDG financing. However, funding for specific environmental goals, such as those related to climate change, was considerably lower than social SDGs.³¹

To address this gap, UNDP prepared a methodology and implementation roadmap for CBT in 2022. The initiative was launched to integrate climate change considerations into Uzbekistan's public finance management system and align the country's budgetary processes with its environmental goals and international climate commitments.³²

Developing a National Green Taxonomy

Uzbekistan adopted a national green taxonomy in October 2023³³ to define and classify economic activities contributing to environmental sustainability, aligning with its green economy strategy. This taxonomy, which will be experimentally applied to all green bonds and loans starting from October 1, 2024, includes seven categories of green activities, though specifics remain undisclosed. Managed by the Ministry of Economy and Finance, it aims to standardize the identification of green projects to attract domestic and international investment, with an understanding that the taxonomy will evolve through ongoing refinements and capacity building to prevent greenwashing and ensure alignment with global standards and

potential future climate goals like achieving net-zero emissions.³⁴

Reforming Fossil Fuel Subsidies

Uzbekistan is also making efforts to reform its fossil fuel subsidies as part of broader energy sector reforms. In 2020, subsidies on natural gas, electricity, and oil totaled USD 3.8 billion, or 6.6% of GDP, keeping energy prices artificially low (table 2). This has led to inefficiencies, discouraging energy-saving measures and the adoption of renewable energy. The government plans to phase out gas subsidies by 2026, gradually aligning prices with actual costs while protecting vulnerable households. These reforms aim to improve energy efficiency, attract private investment in RE, and reduce reliance on fossil fuels, supporting the country's green transition and climate goals.³⁵

Table 2. Energy subsidies in Uzbekistan, 2010-2020 (real 2019 USD, million)

	2016	2017	2018	2019	2020
Oil	155	442	980	748	455
Electricity	344	1363	2488	1471	1188
Gas	1977	3810	5562	3024	2161
Total	2476	5614	9030	5244	3805

Source: International Energy Agency (IEA). (2021). *Fossil Fuel Subsidies Database*. In *Uzbekistan 2022 Energy Policy Review*.

Developing Nuclear Power Program

As Uzbekistan expects energy demand to double by 2050 and taking its aspirations to increase the share of renewable energy to 40% into account, the country reached an agreement with Russia to construct a Small Nuclear power Plant on 27 May 2024.³⁶ The six-reactor nuclear power plant with a total 330MW capacity is planned to be constructed in the Jizzakh region. This small

³¹ Financing Uzbekistan's Green Transition, OECD, 2023.

³² https://erc.undp.org/api/download?filePath=%2Fdocuments%2F13028%2Fmgmtresponse%2Fkeyaction%2Fdoc_5634281773208682076IntegratedCBTmethodologyandroadmap_OCT20221.pdf

³³ <https://www.fao.org/platforms/green-agriculture/home/uzbekistan---country-work-on-green-agriculture/en>

³⁴ Guidance note on Uzbekistan Green taxonomy, World Bank, 2023

³⁵ Uzbekistan 2022, Energy Policy Review, IEA, 2022.

³⁶ <https://thediomat.com/2024/05/uzbekistan-russia-to-start-construction-of-small-nuclear-power-plants/>

nuclear power plant will serve to build the capacity and expertise for the larger, more advanced nuclear power plant planned for completion by 2040, which will play a crucial role in meeting Uzbekistan's growing energy needs and reducing carbon emissions.³⁷

Challenges in Implementing Green Fiscal Instruments

Uzbekistan faces several fiscal challenges in achieving its green transition. The country's economy is highly energy- and GHG-intensive, largely due to its reliance on natural gas, which is nearing depletion. This situation is compounded by an annual investment gap of at least USD 6 billion to meet its climate and development goals, with current public finance falling short. The domestic capital market is underdeveloped, dominated by state entities, which limits private investment opportunities. Regulatory issues, including an opaque legal framework and prohibitions on subnational debt issuance, further complicate market participation. There's also a lack of capacity in managing new financial instruments like green bonds, and no regulatory framework for Islamic finance tools like sukus, despite potential demand. Sectors like energy, transport, agriculture, housing, and water management require significant green investments, but these are hindered by these financial and regulatory barriers. To address these, Uzbekistan needs to reform its market structure, enhance private sector involvement, and develop expertise in green finance.³⁸

Regional Cooperation: Uniting for Sustainable Growth in CA

CA countries are increasingly focusing on regional cooperation to implement green fiscal

policies aimed at combating climate change and promoting sustainable development.

One of the key initiatives is the Dushanbe Pact for Green Growth, which was adopted in November 2024 during the 2024 SPECA Economic Forum and Governing Council meeting in Tajikistan with the support of the ESCAP and the UNECE.³⁹

A cornerstone of this initiative is the SPECA MPTF, which offers a financial mechanism to operationalize the goals outlined in the Dushanbe Pact. By pooling resources from international donors, governments, and organizations, the Fund is set to drive the implementation of tailored climate, innovation, and green development projects across the region.

In addition to international frameworks, regional institutions are contributing to the green growth agenda. For instance, the EDB has taken a proactive role by issuing its debut green bonds, raising 20 billion tenge on the Kazakhstan Stock Exchange in 2021. These bonds comply with international green bond principles and aim to finance sustainable projects, such as RE and eco-friendly initiatives in Kazakhstan. This milestone reflects the growing engagement of regional financial institutions in advancing green fiscal policies and demonstrates how targeted financing mechanisms can accelerate progress toward shared sustainability goals.⁴⁰

Moreover, through frameworks like the CAREC Program, countries are working together to integrate more renewable energy into their energy mix, reduce greenhouse gas emissions, and enhance regional energy security. The CAREC Institute as a knowledge arm of CAREC program contributes significantly to regional cooperation in green fiscal policies across CA by

³⁷ <https://www.gazeta.uz/en/2024/10/08/nuclear-power-plant/>

³⁸ Financing Uzbekistan's Green Transition, OECD, 2023.

³⁹ <https://www.miragenews.com/central-asia-adopts-dushanbe-pact-for-green-1367897/>

⁴⁰ <https://infragreen.ru/news/135357>

providing essential research, knowledge management, capacity-building initiatives.

However, given the diverse economies of the region, regional cooperation on specific green fiscal tools and programs remains limited, making it difficult to harmonize fiscal measures for green initiatives and highlighting an area with potential for improvement.

5. Policy Recommendations for Advancing Green Energy Transition

CA countries should design their fiscal policies to ensure a balance between economic growth and sustainable development goals. To achieve this, they must adopt comprehensive policy frameworks that incorporate environmental considerations into economic decisions, while securing financing in a way that does not place excessive pressure on their national budgets. The following recommendations shall provide some guidelines for formulating such policies:

Recognizing the Social Cost of Carbon in Green Fiscal Policies

Incorporate SCC into green fiscal policies to recognize the full economic impact of carbon emissions, including climate change effects like extreme weather, agricultural losses, and water scarcity. This is especially important for carbon-intensive economies like Kazakhstan, Turkmenistan, and Uzbekistan, where the effects of climate change may be more pronounced. By factoring environmental costs into decision-making, these countries can design more effective climate policies, promote sustainable economic growth, and address their specific

environmental and economic challenges. For example, the IMF's report on climate change highlights the importance of integrating SCC into economic models to guide policy decisions. Models such as DICE, PAGE, and FUND are commonly used to estimate the economic impact of emissions and provide valuable insights for designing climate action strategies tailored to national circumstances.⁴¹

Precautionary Climate Policies to Address Uncertainty

As countries quantify the impact of carbon emissions, they should adopt precautionary climate policies that account for uncertainty in predicting climate impacts. This may involve setting carbon taxes higher than current SCC estimates, acting as "insurance" against worst-case scenarios.

Encouraging Innovation through Hybrid Carbon Pricing Models

Encourage Innovation through Hybrid Carbon Pricing Models: Carbon pricing is a proven tool for reducing emissions and encouraging cleaner technologies. Globally, countries use mechanisms like carbon taxes (e.g., Sweden's \$130/tCO₂ tax) and ETS (e.g., the EU ETS) to align economic activities with environmental costs. However, in CA, most countries have yet to introduce carbon pricing. Kazakhstan (Figure 10), the only country with an ETS, has a carbon price significantly below the global average, offering room for improvement by gradually aligning prices with international benchmarks.⁴²

Globally, jurisdictions with high carbon prices, such as Sweden and Switzerland, are closer to the 2030 target range of \$50–100/tCO₂, while

⁴¹ Chapter 4. The Social Cost of Carbon: Valuing Carbon Reductions in Policy Analysis, Fiscal Policy to Mitigate Climate Change: A guide for policymakers. 2012.

<https://www.elibrary.imf.org/display/book/9781616353933/ch04.xml>

⁴² Chapter 5 Carbon Pricing Around the World, Data for a Greener World: A Guide for Practitioners and Policymakers, IMF 2023

countries like Kazakhstan fall below this. Some rely on carbon taxes, while others use ETS, or a combination of both. CA countries can draw from these practices to establish tailored solutions.

A hybrid carbon pricing model, combining carbon taxes with performance standards (e.g., Renewable Portfolio Standards), could be highly effective for CA. Kazakhstan could enhance its ETS by expanding coverage and increasing prices to global averages, while using revenue for renewable energy and economic diversification. Uzbekistan might begin with phasing out energy subsidies and introducing modest carbon taxes aligned with WTO standards. Kyrgyz Republic and Tajikistan can implement small taxes on coal or imported fuels, directing revenues toward clean energy and efficiency programs. Turkmenistan could focus on subsidy reforms and introduce sector-specific carbon taxes to maintain export competitiveness.

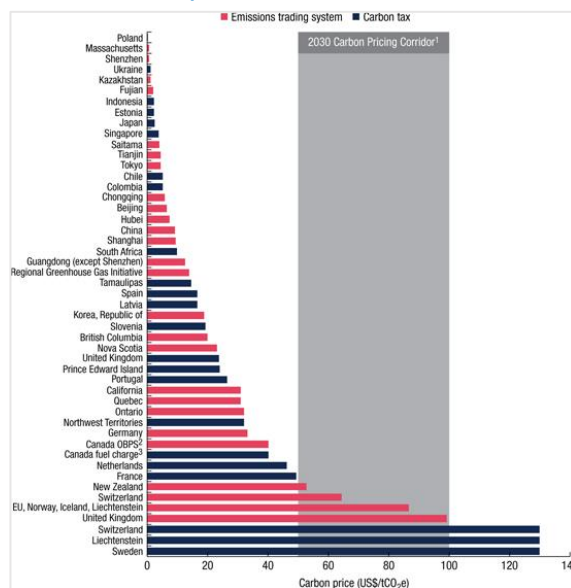
Leveraging Global Frameworks for Green Development in CA

CA countries should consider adopting practical frameworks from well-known organizations to support their green development efforts. Two examples of such frameworks are:

Improving Public Investment with Climate-PIMA:

The IMF's Climate-PIMA is a practical tool that helps governments assess and improve the integration of climate priorities into public investment decisions.

Figure 10. Direct Carbon Prices per Jurisdiction and Instrument as of April 1, 2022



Source: World Bank (2022a). State and Trends of Carbon Pricing 2022. The graph shows nominal carbon prices (US\$/tCO₂e) as of April 1, 2022, for jurisdictions using emissions trading systems (red) and carbon taxes (blue). Data adapted from the Carbon Pricing Dashboard.

Notably, in November 2024, Tajikistan became the first country in CA to publish a Climate-PIMA assessment⁴³, providing a valuable example for the region. By utilizing this framework, other CA countries can enhance the efficiency and climate resilience of their infrastructure investments, prioritizing projects that support low-carbon and sustainable development.

Implementing Green PFM

Green PFM provides a clear way to align fiscal policies with environmental goals. Governments can introduce measures such as green budgeting, climate-sensitive tax policies, and better reporting to ensure that financial management supports sustainability. Specific actions include:

1. Green Budgeting: Including environmental objectives in the budgeting process.

⁴³ <https://infrastructuregovern.imf.org/content/PIMA/Home/Region-and-Country-Information/Countries/Tajikistan.html>

2. **Climate-Sensitive Policies:** Introducing tools like carbon taxes or renewable energy subsidies.
3. **Green Reporting:** Tracking and reporting on climate-related spending to improve transparency and accountability.

By adopting these ready-made tools, CA countries can better integrate climate considerations into their public investment and financial systems, paving the way for sustainable and resilient development.

Advancing Clean Transportation and Energy Integration in CA

CA countries might want to adopt fuel economy standards or ZEV mandates to promote cleaner transportation technologies. Drawing from international examples, these policies could ensure that manufactured or/and imported vehicles meet minimum fuel efficiency levels or include a certain percentage of zero-emission vehicles, such as electric cars. Initiatives like the GFEI, which aims to halve fuel consumption of light-duty vehicles by 2030, provide valuable frameworks and technical support for developing such standards.

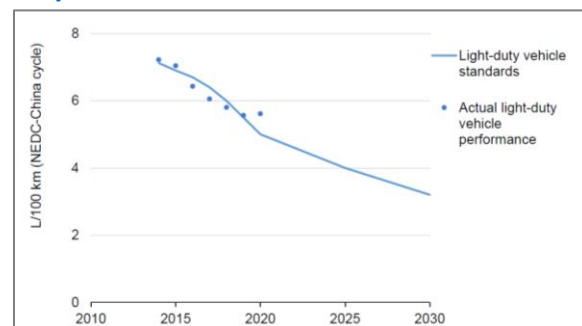
For instance, China’s comprehensive approach to fuel economy, exemplified by its CAFC targets and dual credit scheme, demonstrates how regulatory standards can drive both environmental and economic progress. By combining stringent fuel efficiency goals—reducing consumption from 5 L/100 km in 2020 to 3.2 L/100 km by 2030—with incentives for NEVs, China encourages innovation in battery technology and vehicle efficiency (Figure 11)

The dual credit system, which rewards NEV production while allowing credit trading and penalizing non-compliance, ensures flexibility and innovation. This approach, along with phased-out subsidies and long-term targets like 20% NEV sales by 2025, highlights how integrated policies can effectively reduce

emissions, enhance energy security, and support green technology advancement. CA countries can draw lessons from this model to design fuel economy and clean vehicle strategies tailored to their contexts.

For countries like Tajikistan and the Kyrgyz Republic, where the electricity grid is predominantly powered by clean hydropower, transitioning to EVs would have a substantial impact in reducing emissions. However, in countries where electricity generation relies heavily on fossil fuels, such as Kazakhstan, Uzbekistan, or Turkmenistan, the environmental benefits of EV adoption may be limited unless accompanied by efforts to green the energy grid. These countries should prioritize expanding renewable energy capacity and reducing the carbon intensity of electricity production alongside transportation policies. By addressing both vehicle standards and the energy mix, CA countries can create a comprehensive and sustainable pathway toward decarbonization.

Figure 11. Fuel consumption standards for light-duty vehicles in China



Source: *Global Fuel Economy Initiative: Vehicle Fuel Economy in Major Markets 2005-2019*, International Energy Agency (IEA). Page 25. Accessed from the *Global Fuel Economy Initiative 2021 Report*.

Leveraging Green Fiscal Policies to Unlock CCS Potential in CA

CA countries hold significant potential for implementing CCS, supported by their advantageous geographical and infrastructure

conditions. The region’s extensive sedimentary basins, depleted oil and gas fields, and saline aquifers provide ideal sites for secure long-term CO2 storage. Additionally, existing oil and gas infrastructure, such as pipelines, can be repurposed to support CCS, reducing costs and simplifying implementation.

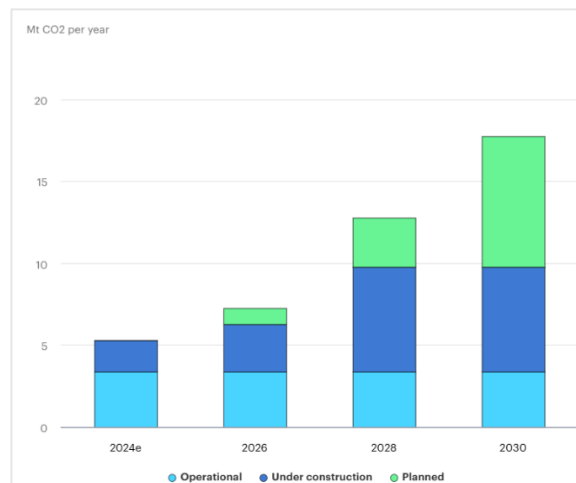
Green fiscal policies can play a pivotal role in advancing CCS initiatives. Governments could introduce targeted incentives such as tax credits for CCS investments, subsidies for pilot projects in high-emission sectors like coal power plants and natural gas processing, or carbon pricing mechanisms to make CCS economically viable. A strong example of this approach is China, where CCUS capacity is projected to grow from 6 million tons of CO2 per year (figure 12) in 2024 to over 18 million tons by 2030⁴⁴. Fiscal instruments, including subsidies, tax credits, and public infrastructure funding have driven this expansion. CA countries can adopt similar measures, utilizing fiscal tools to fund geological surveys, develop infrastructure, and accelerate the deployment of CCS technologies. Harmonized regional frameworks and cross-border collaboration could further reduce costs and position the region as a leader in emissions reduction and green economic growth.

Fostering Regional and Global Cooperation for Green Fiscal Policy in CA

CA countries stand to benefit significantly from regional and global collaboration in implementing green fiscal policies.

By working together, these nations can avoid common challenges, align their policies to prevent environmental leakage, and adopt best practices that have been proven successful internationally.

Figure 12. China's Operational and Planned CCUS Capacity Growth (2024–2030)



Source: IEA (2024), *CCUS Projects Explorer*, <https://www.iea.org/data-and-statistics/data-tools/ccus-projects-explorer>, License: CC BY 4.0

Regional platforms for policy dialogue can foster knowledge exchange, build capacity among policymakers, and ensure harmonized approaches to fiscal incentives and environmental standards. Such cooperation would help minimize competitive disadvantages and encourage a shared commitment to ambitious green goals.

Additionally, developing regional carbon markets and engaging with global initiatives like the Carbon Pricing Leadership Coalition, the Green Fiscal Policy Network and Coalition of Finance Ministers for Climate action can provide technical expertise, funding opportunities, and international recognition.

For instance, the Coalition of Finance Ministers for Climate Action brings together finance ministers from over 80 countries, including Central Asian nations such as Kazakhstan, the Kyrgyz Republic, and Uzbekistan, to integrate climate considerations into economic and financial policies⁴⁵. The coalition operates under

⁴⁴ <https://www.iea.org/data-and-statistics/data-tools/ccus-projects-explorer>

⁴⁵ <https://www.financeministersforclimate.org/member-countries>

six core principles, known as the Helsinki Principles, which focus on promoting carbon pricing, green budgeting, climate-resilient public investment, and the development of sustainable financial systems.

Participation in such initiatives can strengthen regional cooperation and position CA as a proactive player in the global green economy transition.

Reviving CAPS with Energy Storage and Grid Integration

The Central Asian Power System (CAPS) was once a vital network providing regional electricity exchange among Central Asian countries.⁴⁶ The Soviet Union's collapse caused network fragmentation due to isolated energy policies. Cooperation of CA countries in regional energy integration, built upon the revival of CAPS and with the support of development organizations like ADB (which has already been implementing significant projects in this area), could enhance regional energy security and foster regional collaboration.⁴⁷

- Introduce Energy Storage Systems: Invest in pumped hydro storage and battery technologies to stabilize seasonal fluctuations and integrate renewable energy sources.
- Modernize grids using smart grid technologies, harmonize technical standards, and improve infrastructure for seamless electricity trade.
- Establish a regional energy fund supported by ADB and other partners to finance grid modernization and energy storage projects. Exploring green bonds, carbon pricing mechanisms, and climate

investment funds can also enhance innovation in funding the projects.

- Create a regional energy market with long-term agreements to balance supply and demand across countries.

These efforts, combined with ADB's ongoing initiatives, can revitalize CAPS and contribute to a more interconnected and resilient energy network in Central Asia.

6. Areas for future research

Successful transitioning to green energy does not only rely on rolling out and implementing policies. The transition also requires solid and reliable monitoring, verification, reporting (MVR), and accountability. The focus of future research building upon the given economic brief can be on existing MVR frameworks adopted in CA countries, as well as international MVR frameworks that can be localized. In addition, the transition to green energy necessitates a significant amount of government and foreign investment. From this point of view, it is also crucial to study the role of accountability in the process, especially in terms of how Supreme Audit Institutions (SAIs) can contribute to the transparency and efficiency of green investments.

⁴⁶ <https://thedi diplomat.com/2024/07/reviving-energy-interdependence-in-central-asia/>

⁴⁷ <https://www.eurasian-research.org/publication/central-asian-countries-power-systems-are-now-isolated-but-not-everyone-is-happy/>

7. Annex: Overview of Green Fiscal Policies and Programs in Central Asian Countries

Country	Green fiscal policies/programs	Implementation year	Objectives	Coverage/sectors	Fiscal tool	Policy Impact
Kazakhstan	Emissions Trading system (ETS)	January 2013	Reduce CO2 emissions: - 161.2 MtCO2 (2024) cap, By 2050: - 40% reduction in CO emissions in the power sector from 2012 levels	Regulates facilities emitting more than 20,000 tons of CO2 per year across energy-intensive industries.	Carbon pricing	<ul style="list-style-type: none"> - First ETS in Central Asia. Covers 47% of CO2 emissions. - Implemented benchmarking for allowance allocation. - Developed domestic offset program (Qazaq Green Certificate). - Strengthened MRV under Environmental Code (2021). - Issued 8.7 MtCO2 allowances to 57 installations in 2022.
	Renewable energy development	2009 (legislation), 2013 (amendments)	Increase RES to 15% by 2030 and 50% by 2050	Renewable energy: wind, solar, hydro	FiTs (2009-2018), Auction-based tariffs (2018 onward), FSC as centralized buyer and seller	<ul style="list-style-type: none"> - Reached 3% target by 2020, goal raised to 15% by 2030. - 3,106 MW RES capacity by 2021 - Conducted 41 auctions (2018-2021), awarding 1,305 MW of projects (724 MW wind, 436 MW solar)
	Fossil Fuel Subsidy Reform	Ongoing, milestones: 2019, 2023	Reduce fossil fuel subsidies, incentivize green energy, and free up fiscal space for low-carbon development	Fossil fuel production and consumption	Tariff for Investment Program, New Tariff Methodology, World Bank partnership, Gradual subsidy reduction	<ul style="list-style-type: none"> - Subsidies peaked at \$9B in 2019. - Gradual reduction began, saving up to \$403M annually. - Introduced incentive-based tariff regulation in 2023
Kyrgyz Republic	Renewable Energy Development	2008 (law), 2019 (amendments)	Promote renewable energy. Bringing the share of	Renewable energy: wind, solar, hydro	Feed-in Tariffs (FiTs), compensation mechanisms for	<ul style="list-style-type: none"> - Facilitated practical application of the 2008 law -Incentivized renewable energy projects through FiTs

			sustainable public procurements to the level of 30% by 2023 and 50% by 2050		distribution companies	<ul style="list-style-type: none"> - GDP energy intensiveness was reduced by 4,5% by 2023 - Renewable energy projects commissioned by 2023 generating 50 MW⁴⁸
	Green Budget Tagging (GBT)	2024	Integrate environmental considerations into fiscal policy; improve resource allocation	Public expenditures across sectors	Budget tagging guidelines, phased implementation, lessons from international best practices	<ul style="list-style-type: none"> - Launched guidelines in 2024. - Enhanced tracking of climate-related expenditures
	Green Economy Development Strategy	2023–2037	Transition to a low-carbon, resilient economy; improve living standards; ensure environmental balance.	Economy-wide	Strategic framework	<ul style="list-style-type: none"> - Adoption of a comprehensive strategy outlining the country's commitment to sustainable development.
Tajikistan	Carbon Taxation	Planned by 2030	Reduce CO ₂ emissions; generate revenue for green projects.	Energy, industry, transport	Carbon pricing	<ul style="list-style-type: none"> - Government plans to introduce carbon taxes ranging from \$10 to \$30 per ton of CO₂ by 2030.
	Elimination of Energy Subsidies	Planned by 2027	Reflect true cost of energy; encourage efficiency and conservation;	Energy	Subsidy reform	<ul style="list-style-type: none"> - Targeted phase-out of energy subsidies to promote energy efficiency and fiscal sustainability.

⁴⁸ https://climate-laws.org/document/program-for-the-development-of-a-green-economy-in-the-kyrgyz-republic-for-2019-2023_934c

			reduce fiscal burden.			
	Development of Green Bond Market	2024	Mobilize private and public finance for climate adaptation and mitigation projects.	Finance, infrastructure	Green bonds	- In February 2024, Eskhata Bank became Tajikistan's first issuer of green bonds
Turkmenistan	Law on Renewable Energy Sources	2021	-Promote the use of renewable energy. -Diversify energy sources. -Reduce greenhouse gas emissions.	Solar and wind energy across economic sectors.	Legal framework	- Established the legal basis for renewable energy development. - Facilitates investment and innovation in renewable energy technologies.
Uzbekistan	Green Bonds	July 2021 (Sovereign SDG Bond), October 2023 (Sovereign Green Bond), August 2023 (Corporate Green Bond)	Raise funds for sustainable development projects aligned with SDGs (public transport, health, education, water management).	Government and corporate sectors, targeting environmental projects.	Green bond issuance	- First sovereign SDG bond issued in July 2021. - Issued first corporate green bond (USD 100 million) by SanoatQurilishBank. - Earmarked funds for SDG-aligned projects.
	Green Mortgages and Renovation Loans	November 2022 (ADB support)	Promote energy efficiency improvements	Residential sector, targeting home improvements	Green financial products (mortgages and loans)	- ADB's USD 150 million loan to fund commercial banks. - At least 32.5% of loans target women.

			in homes (solar panels, insulation). Provide affordable loans for housing finance.	and energy efficiency.		- Supports climate mitigation through energy-efficient home improvements.
	Green Budgeting	2022	- Align public spending with the SDGs. - Track and tag expenditures supporting environmental goals.	National budget across various sectors, with an emphasis on environmental SDGs.	Budget tagging system	- 71% of state spending tagged to SDG financing. - Developed a methodology for Climate Budget Tagging (CBT) with UNDP.
	Green Taxonomy	October 2023	Define and classify economic activities contributing to sustainability.	All economic sectors with a focus on green activities.	Green taxonomy	- Adoption of national green taxonomy. - Standardizes green projects for investments. - Prevents greenwashing and ensures alignment with global climate goals.
	Fossil Fuel Subsidy Reform	2020 (subsidy reduction plan)	- Phase out fossil fuel subsidies. - Align energy prices with actual costs while protecting vulnerable households.	Energy sector (natural gas, electricity, oil).	Subsidy reduction and price alignment	- Plan to phase out gas subsidies by 2026 to improve energy efficiency and support green transition.

