

CACIP REVIEW

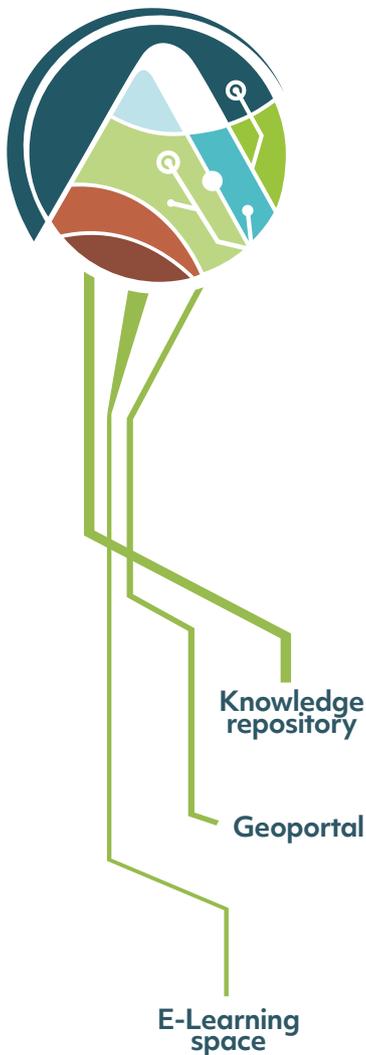


Issue 1: July-September 2021

SUSTAINABLE ENERGY AND GREEN RECOVERY



CENTRAL ASIA
CLIMATE INFORMATION PLATFORM
centralasiacclimateportal.org



The Central Asian Climate Information Platform (CACIP) collects, structures and visualises public-domain climate and climate-relevant data and information, and supports their analysis, dissemination and decision-making in this field. The platform provides links to high-quality datasets from global, regional and local sources, and to analytical tools and interfaces for data visualization and interpretation.

The CACIP Review is a series of quarterly informational and analytical publications with accessible and comprehensive analysis of various aspects of the environment and climate change in Central Asia, based on the themes and content of the information platform. The review is intended both to inform the general public and to support evidence-based and effective policy decisions in combating climate change. The first issue of the CACIP review focuses on sustainable energy in Central Asia and the green economic recovery of the region after the COVID-19 pandemic.

CACIP is developed by the Regional Environmental Center for Central Asia (CAREC) in collaboration with the International Center for Agricultural Research in the Dry Areas (ICARDA) within the framework of the Climate Adaptation and Mitigation Program for the Aral Sea Basin funded by the World Bank. The information platform continuously receives reliable data and information provided by its key partners such as relevant authorities, international organizations and Central Asian NGOs.

@CACIP centralasiacclimateportal.org

Renewable and efficient energy

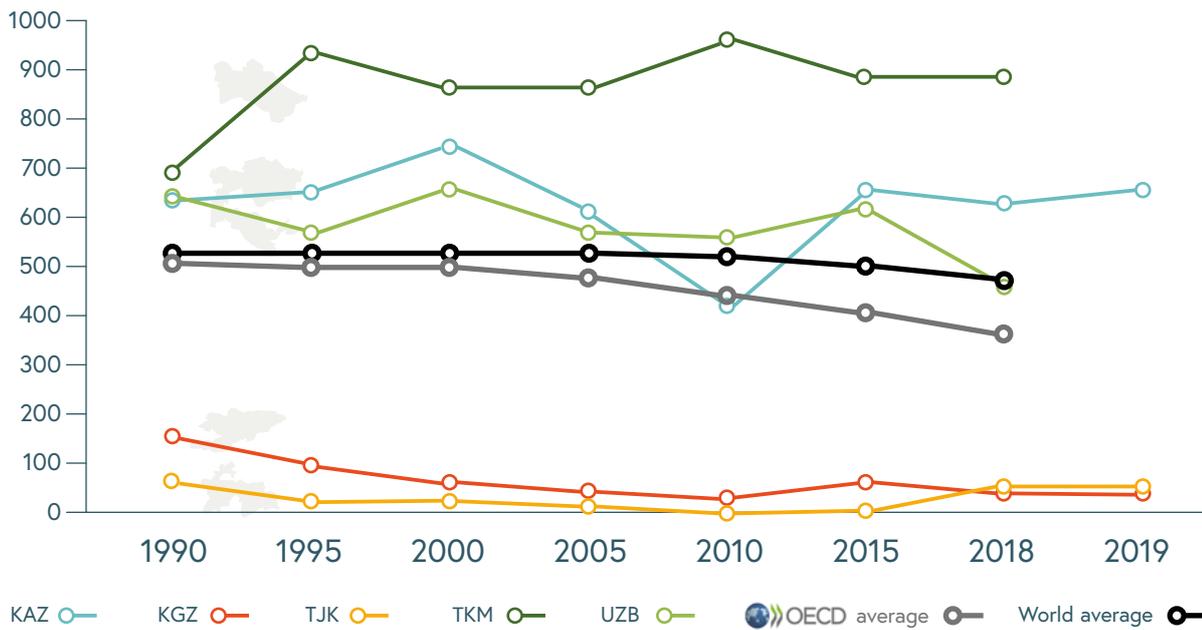
Efficient production and use of energy are key to achieving environmental goals and meeting global climate challenges under the Paris Agreement. To a large extent, greenhouse gas emissions from the energy sector depend on the efficiency of power generation, which can be measured and compared on the basis of the volume of emissions per unit of produced electricity. This latter ratio greatly varies among Central Asian countries.

In Kyrgyzstan and Tajikistan, large hydropower plants generate most of the power, and current greenhouse gas emissions per unit of electricity produced are almost an order of magnitude below the global av-

erage. Between 1990 and 2019, Kyrgyzstan's already low emissions per unit of produced electricity declined by more than 70 per cent.

In contrast, Kazakhstan and Turkmenistan have remained primarily dependent on coal or gas for power generation, and their greenhouse gas emissions per unit of electricity produced are significantly higher than the global average. Uzbekistan's efforts in recent years to modernize its thermal power plants and to build new hydropower plants and highly efficient combined-cycle plants has resulted in emissions per unit of power produced at a level just below the global average.

CO₂ emissions per kWh of electricity (gCO₂/kWh), all power plants



Source:
International Energy Agency. Emissions Factors 2020. Annual time series of CO₂ emissions from electricity generation. Updated September 2020

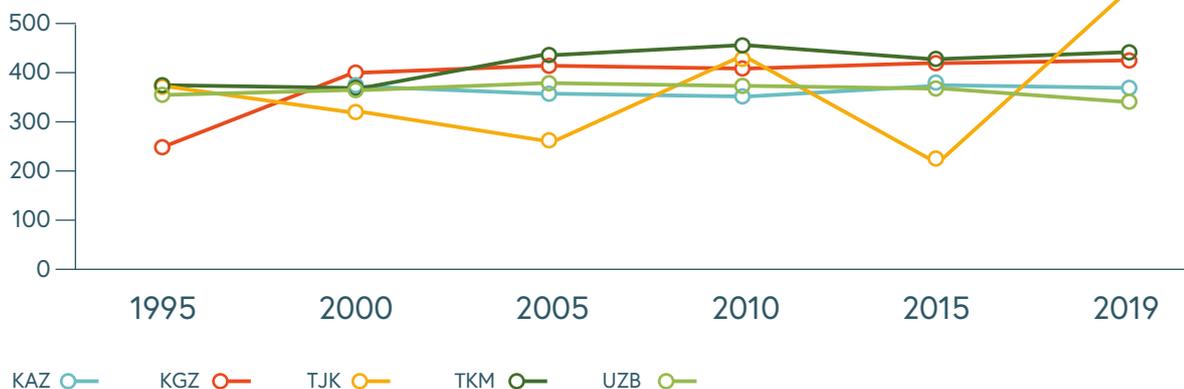
@CACIP [Energy in Central Asian countries: situational analysis](https://centralasiacimateportal.org/topics/energy/)

@CACIP [Central Asian water and energy data portal](https://centralasiacimateportal.org/tools/4)

The efficiency of fossil fuel consumption in thermal power plants – another opportunity for improvement – is measured by the amount of fuel consumed per unit of electricity produced. In Kazakhstan and Uzbekistan this value has remained practically unchanged since 1995, while in the other three countries it has increased. Given the heavy reliance on hydropower in Kyrgyzstan and Tajikistan, the effi-

ciency of thermal power plants in those countries offer little opportunity for significant gains in regional efficiency. In Kazakhstan, Turkmenistan and Uzbekistan, however, further improvements in the efficiency of thermal power plants through modernization holds the prospect of reducing the carbon intensity of the region's power-generation sector.

Fuel consumption per kWh of electricity (grams of fuel-equivalent/kWh), thermal power plants



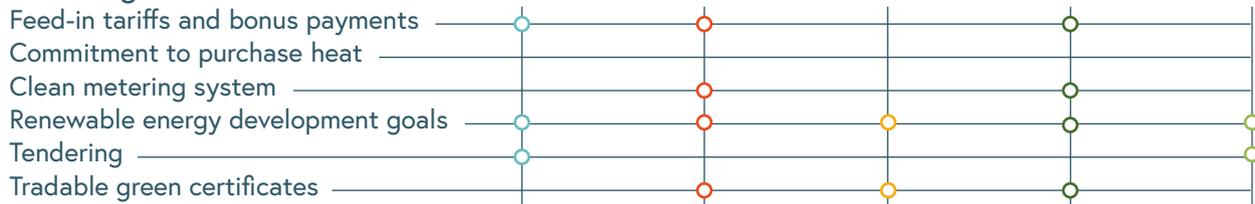
Source:
The CIS Electric Power Council. Jubilee edition of the consolidated report on key questions of ecology, energy efficiency and renewable energy in electric power industry of the CIS member states — 2020

A major opportunity for improving the environmental impact of power generation lies in the extended use of power from renewable energy sources: wind, solar and hydro. All the countries in Central Asia have

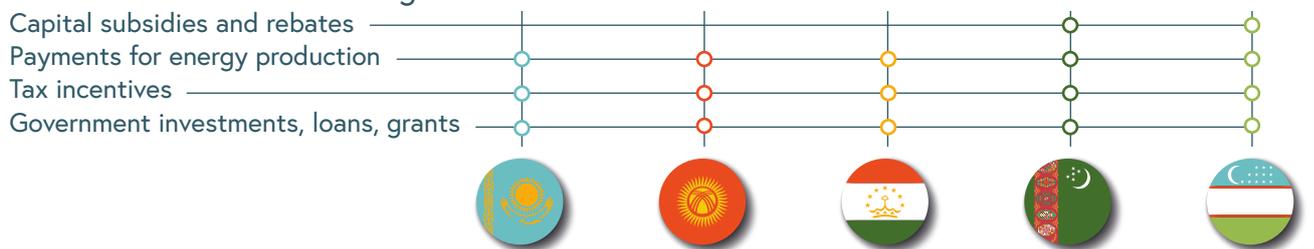
enacted laws and developed financial support mechanisms to regulate and stimulate the development of renewable energy.

Support mechanisms for renewable energy in Central Asia

State regulation



Tax credits and state funding



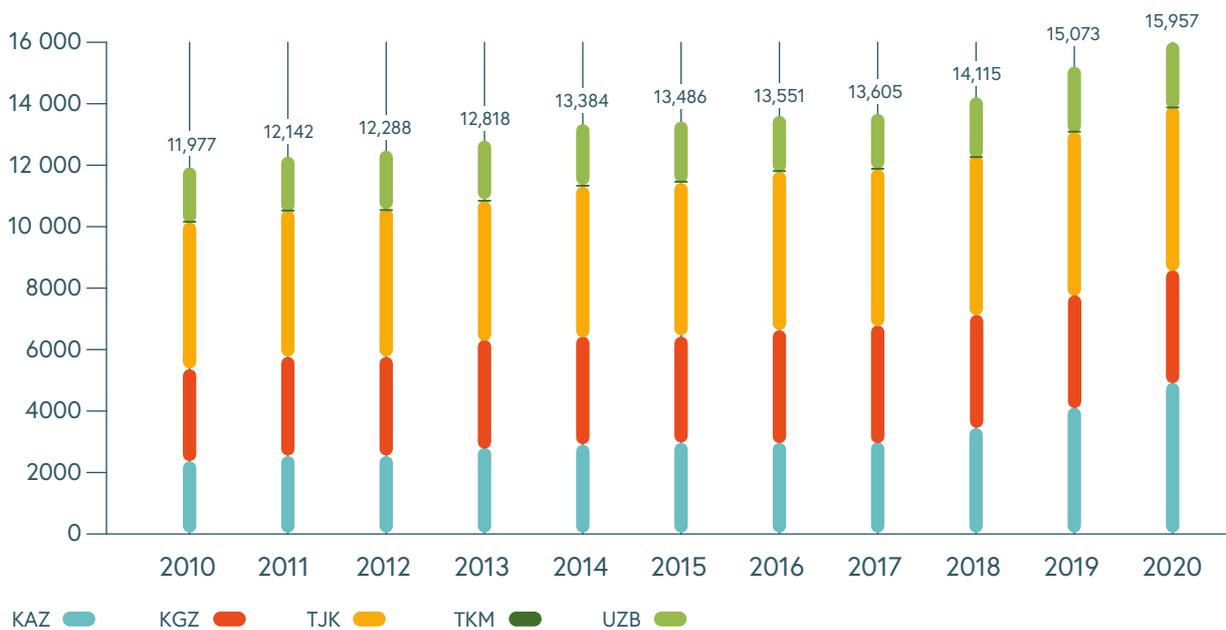
Source:

The CIS Electric Power Council. Jubilee edition of the consolidated report on key questions of ecology, energy efficiency and renewable energy in electric power industry of the CIS member states — 2020

As a result of these measures, over the past decade the countries have seen progressive growth in installed generation capacity of renewable energy, including hydropower. Moderate growth in installed capacity for wind and solar power from 2010 to

2014 increased at an ever-faster pace from 2014 to 2020: the total installed capacity of wind power has increased almost 10-fold, from 53 to 487 GW, and solar power more than 20-fold (from 77 to 1,723 GW).

Installed generation capacity, renewable energy (including hydropower), MW



Source:

IRENA Renewable Capacity Statistics 2021, <https://www.irena.org/publications/2021/March/Renewable-Capacity-Statistics-2021>

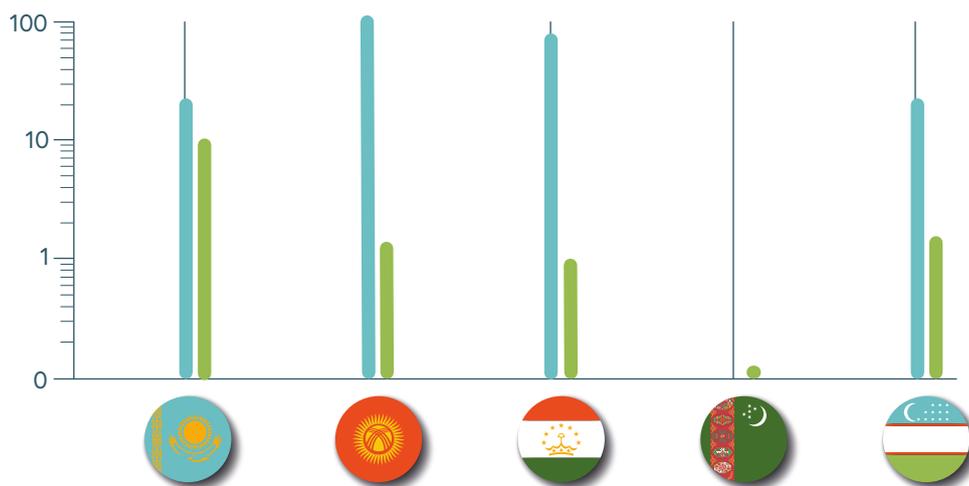
Despite the growth in the use of renewables, the share of renewable power in the region remains low, but Kazakhstan is making significant progress. Without large hydropower plants, Kazakhstan's share of renewable energy in total power generation rose from less than 1 per cent in 2016 to 3 per cent by 2020. The country's plan for transition to a

green economy and its strategic development plan call for successive increases in the share of renewable power – 6 per cent by 2025, 10 per cent by 2030, and 50 per cent by 2050. In addition, Uzbekistan has approved 2030 targets for commissioned capacities of hydro (3,800 MW), solar (5,000 MW) and wind power plants (3,000 MW).

@CACIP [Global solar atlas](https://centralasiacimateportal.org/tools/82/) centralasiacimateportal.org/tools/82/

@CACIP [Wind speed and other climate trends on CACIP Climate Dashboard](https://centralasiacimateportal.org) centralasiacimateportal.org

Share of renewable generation in total installed capacity, %



Large hydropower

Small hydropower and other renewables

Calculated on the basis of data from the following sources:

The CIS Electric Power Council. Jubilee edition of the consolidated report on key questions of ecology, energy efficiency and renewable energy in electric power industry of the CIS member states — 2020

IRENA Renewable Capacity Statistics 2021, <https://www.irena.org/publications/2021/March/Renewable-Capacity-Statistics-2021>

Samruk Energy. Анализ рынка электроэнергетики и угля Казахстана. Январь-декабрь 2020 года, <https://www.samruk-energy.kz/ru/se/39#2020>

Sputnik. В Таджикистане на малые ГЭС приходится выработка менее 1% электроэнергии. 08.12.2020,

<https://tj.sputniknews.ru/20201208/tajikistan-malye-GES-vyrobotka-elektroenergii-1032412544.html>

Yet difficulties remain, ranging from the still insufficient legislation to uncompetitive tariffs, significant investment risks, the lack of support for micro-generation projects, and issues with the integration of renewable sources into the countries' energy systems. A distinguishing characteristic of the power system in Central Asia is the degree to which it is centralized – in contrast to power systems in Western Europe, where decentralized regulation of power units is used. Russian power plants regulate the frequency of the centralized parts of the Central Asia system in order to maintain system stability in the event that some

parts of the system suddenly produce much more or much less power. Such imbalances in the power system are currently rare, but with the large-scale additions of power capacity based on variable renewable energy sources, the risks of power imbalances in power systems – and power failures with serious economic consequences – rise sharply. Since Central Asia is still developing its own capacity for flexible power regulation on a regional scale, the mass introduction of renewable energy must be accompanied by an equally large-scale optimization of the entire power and gas supply systems of the region.

@CACIP [Interactive map of the best water, land, and energy practices in Central Asia](https://cawater-info.net/best-practices/en/base/index) cawater-info.net/best-practices/en/base/index via CACIP Tools centralasiacimateportal.org/tools/



Renewable energy

- Hydropower plant, existing/projected
- Solar power plant, existing/projected
- Wind power plant, existing/projected

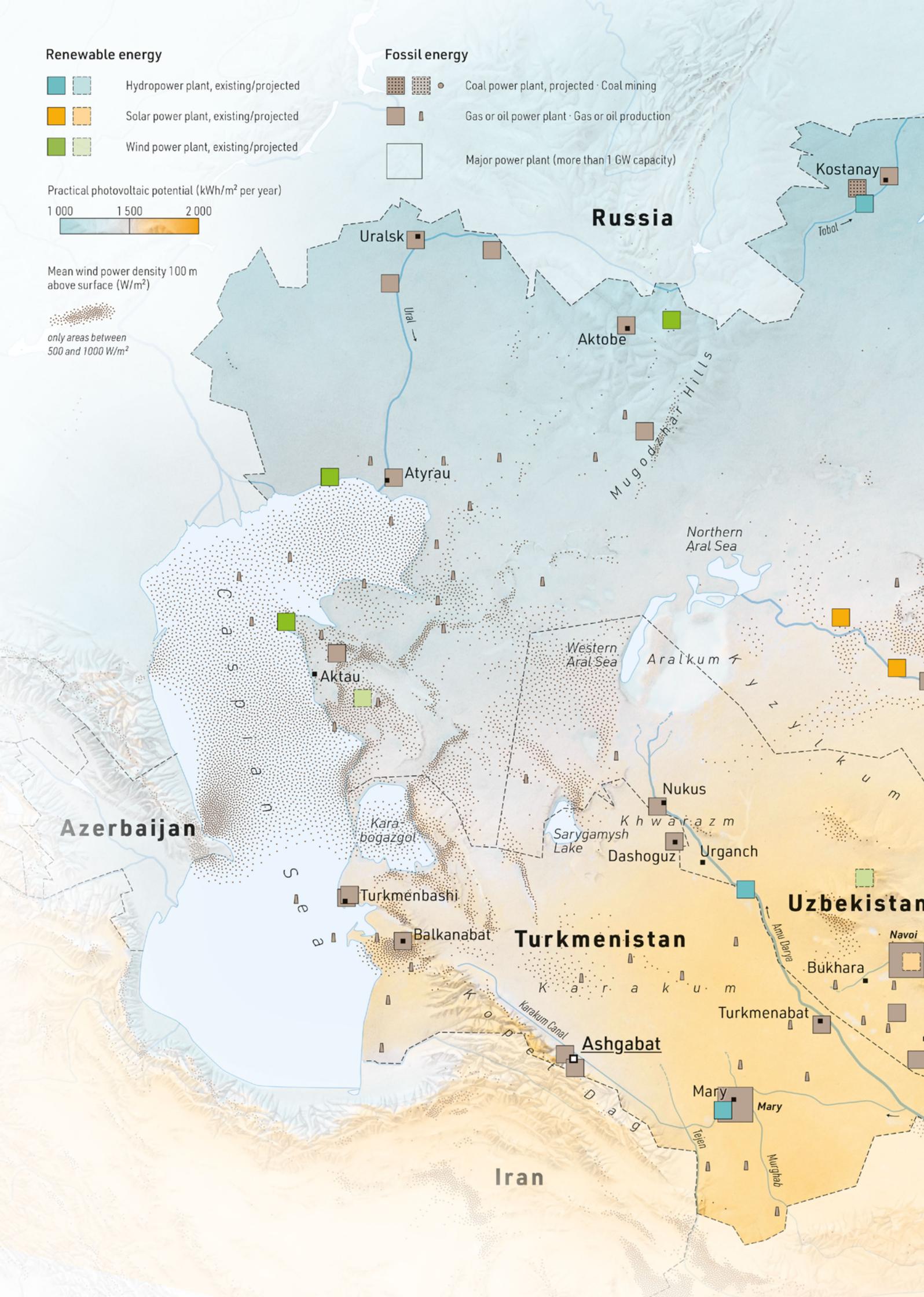
Fossil energy

- Coal power plant, projected · Coal mining
- Gas or oil power plant · Gas or oil production
- Major power plant (more than 1 GW capacity)

Practical photovoltaic potential (kWh/m² per year)



Mean wind power density 100 m above surface (W/m²)



Power generation and renewable energy potential in Central Asia



0 200 km
Map produced by Zoi Environment Network, August 2021

Source: OSCE data for the analysis of energy security and regional cooperation in Central Asia, 2021; Predictive mapping of the global power system using open data, C. Arderne, C. Zorn, C. Nicolas & E. E. Koks, 2020 (www.gridfinder.org); Openstreetmap (www.openstreetmap.org); Global Energy Observatory, Google, KTH Royal Institute of Technology in Stockholm, Enipedia, World Resources Institute. 2018. Global Power Plant Database (<http://resourcewatch.org>, <https://earthengine.google.com>)

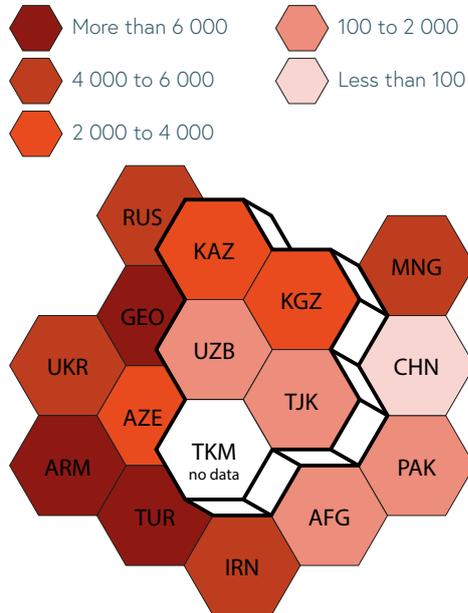
Afghanistan

Pakistan

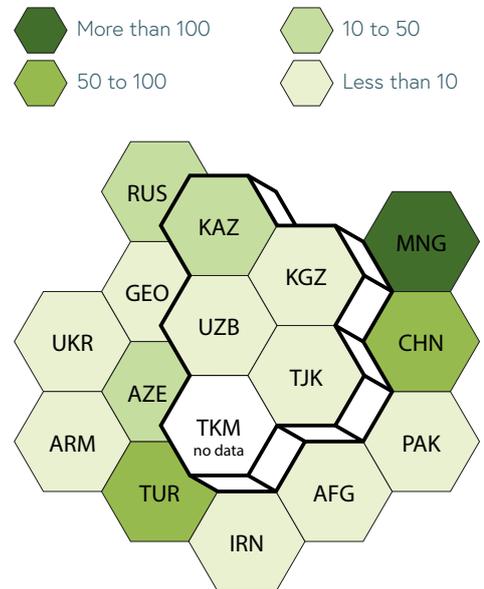
COVID-19 challenge and green recovery

COVID-19 statistics for Central Asia and neighbouring countries

COVID-19 cases per 100 000 population, as of 14 July 2021



COVID-19 vaccination, total doses administered per 100 population, as of 14 July 2021



Map produced by Zoi Environment Network, July 2021
 Source: WHO Coronavirus (COVID-19) Dashboard (<https://covid19.who.int>)

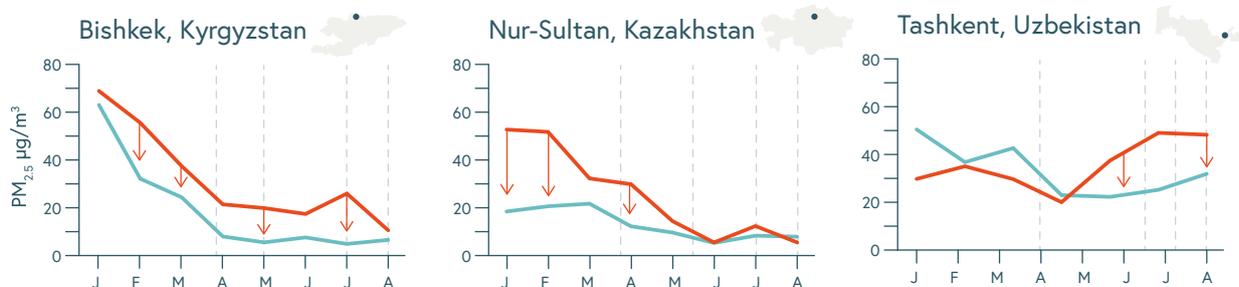
@CACIP [Global burden of disease centralasiacimateportal.org/tools/41/](https://centralasiacimateportal.org/tools/41/)

As in many countries, the economies of Central Asia have been negatively affected by the global COVID-19 pandemic. The governments responded by addressing the health impacts and providing relief to affected businesses and workers. Many countries have also implemented measures that will help ad-

vance environmental objectives as part of their rescue and recovery plans.

Policy measures taken to slow down the spread of the virus have had both negative and positive impacts on the environment in the region.

PM_{2.5} levels in selected cities during the 2020 lockdown compared to the same period in 2019



2020 —
 2019 —

Note: Dotted lines represent the periods with quarantine restrictions in the cities.

Source: AirNow US Department of State, www.airnow.gov/international/us-embassies-and-consulates/

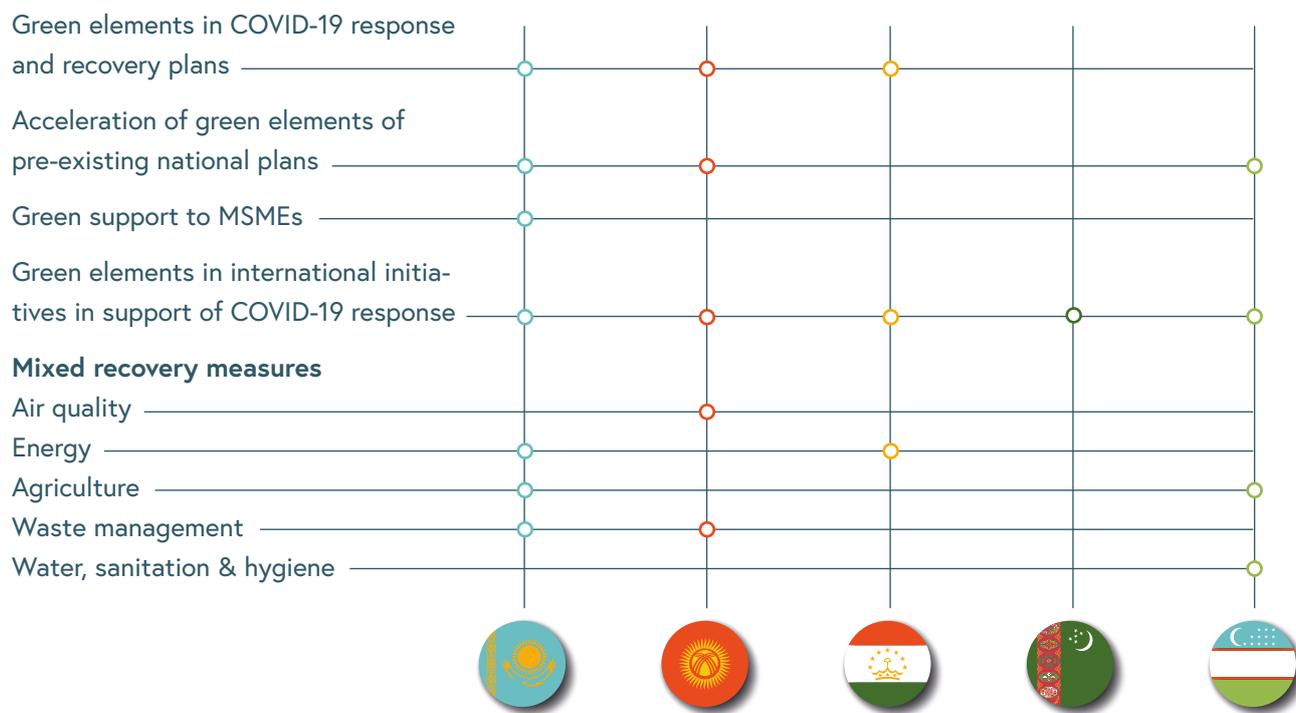
Negative impacts include an increase in single-use plastic waste and reduced environmental compliance monitoring. With regard to positive effects, countries have experienced short-term improvements in air quality due to limited mobility of people and reduced activity of enterprises, also leading to reduced emissions of CO₂. However, these improvements are only temporary, and much more needs to be done to ensure that recovery plans accelerate a green transition, simultaneously building resilience against external shocks.

As governments in the region accelerate medium- and long-term national strategies to stimulate a post-pandemic economic recovery, they have an opportunity to build back better in the face of the environmental challenges and climate change.

Existing and planned green measures of the post COVID-19 government recovery plans include:

- greening COVID-19 responses;
- creating green jobs;
- accelerating environmental plans;
- providing green support to micro, small and medium enterprises; and
- incorporating in COVID-19 responses water-related measures.

Examples of EECCA government responses to COVID-19 with environmental implications



Note: data are per end of 2020.

Source: OECD, COVID-19 and greening the economies of Eastern Europe, the Caucasus and Central Asia, 17 February 2021, <https://www.oecd.org/coronavirus/policy-responses/covid-19-and-greening-the-economies-of-eastern-europe-the-caucasus-and-central-asia-40f4d34f/>

At the same time, countries have adopted measures that may limit progress towards a green economy, such as rolling back or freezing the adoption of environmental regulations, providing unconditional tax exemptions to energy-intensive industries, or imposing a prolonged moratorium on ecological control.

Given the high reliance on extractive and carbon-intensive industries in the region, it is imperative that

green transition is placed higher on the policy agenda to accelerate economic transformation as part of the recovery and to meet global climate goals. This, in turn, implies better aligning economic recovery measures with national environmental goals and international commitments on climate change.

> Recommendations for green recovery by the UN system and the OECD

UN system calls on countries to better include environmental and climate change perspectives in national recovery plans



UN Resident Coordinators in Europe and Central Asia have noted that most countries are prioritizing economic recovery during the COVID-19 period and that environmental perspectives are often ignored. The regional interagency Issue-based Coalition on Environment and Climate Change thus issued a compendium of measures to provide guidance, tools and practical examples for assisting countries in integrating environmental and climate change perspectives into their recovery strategies and in supporting a green recovery. The compendium is a follow-up to summary recommendations for pandemic socioeconomic assessments and post-pandemic recovery strategies issued in 2020 and intended to provide guidance to UN country teams in assessing the socioeconomic impacts of the pandemic and in beginning to work with governments on a green recovery.



Increase energy efficiency of buildings.

Support micro-, small and medium-sized enterprises in delivering energy-efficient products and in providing renewable energy technologies and equipment.



Integrate biodiversity into recovery plans to minimize risks of future pandemics, strengthen economic resilience, and support human and animal well-being.

Establish and manage biosphere reserves through an integrated approach to nature conservation and sustainable development.

Unlock the potential of domestic tourism to support sustainable rural and urban development.

Promote nature-based solutions to adapting to, and helping to limit, climate change.

Support sustainable and climate resilient agriculture that contributes to economic profitability, a healthy environment, and social and economic equity.

Acknowledge the importance of forests for human health and well-being, and integrate health and nutrition aspects into forest management.

- > Inspiring fruit tree cultivation and use in Central Asia (all countries)



Introduce environmentally sound management of healthcare waste.

- > Solid waste management for public health emergency preparedness in Kazakhstan

Promote low-carbon urban transport through improved urban planning, shifting to sustainable travel means, improved fuel efficiency and electrification of vehicles.

Promote cycling in urban areas to decrease air pollution and improve health of city dwellers.

Improve and innovate the rail transport as a component of green infrastructure.

Promote greener cities (including through nature-based solutions), urban air quality and healthy urban lifestyles to build resilience to respiratory diseases and to the health impacts of COVID-19.

Provide equitable access to clean water, sanitation and hygiene through investing in resilient infrastructure and systematic services for all.

- > Access to safe drinking water and water monitoring in Tajikistan

Support sustainable water management by increasing water-use efficiency and ensuring sustainable withdrawals and supply of freshwater.

- > Laser land levelling technology application in Turkmenistan

Support transboundary water cooperation to support the provision of safe water, sanitation and hygiene, economic development, climate adaptation, protection of ecosystems, peace and security.

- > Transboundary water cooperation in the Chu-Talas River Basins, Kazakhstan-Kyrgyzstan

Facilitate green technologies and innovation through investments, access to markets, transfer of technology and greening public procurement.

- > International Centre for Green Technology and Investment in Kazakhstan

Set up systems for sustainable public procurement to provide financial savings for public authorities and equip them to meet evolving environmental challenges.

Facilitate issuing green bonds by the governments to raise money for climate and environmental projects.

Create strategic frameworks for applying green budgeting to increase the efficiency of budgetary processes and to align them with environmental sustainability objectives.

Source: adapted and abridged from UN system in Europe and Central Asia call on countries to better include environmental and climate change perspectives in their recovery plans, 1 February 2021, <https://unece.org/circular-economy/press/un-system-europe-and-central-asia-calls-countries-better-include> and Issue-based Coalition on Environment and Climate Change. Measures to green the post-pandemic recovery, 31 January 2021, https://unece.org/sites/default/files/2021-02/IBC_Env_Green_post-pandemic_measures_31.1.21.pdf

- > Examples from Central Asia in the compendium of recommendations

OECD recommendations for short-term, sector-specific and macroeconomic policy response to COVID-19

General recommendations

- Systematically evaluate possible unintended negative environmental impacts of new short-term fiscal and tax provisions. This would avoid creating perverse and unintended consequences that might damage future resilience and environmental health of societies.
- Avoid rolling back existing environmental standards as part of recovery plans. As countries implement urgent measures, they should not retreat from gains in recent decades in addressing climate change, air and water pollution, biodiversity loss and other environmental challenges.
- Make sector-specific measures conditional on environmental improvements where possible. Financial support measures could be directed towards stronger environmental commitments and performance in pollution-intensive sectors that may be particularly affected by the crisis.
- Ensure that measures will enhance levels of environmental health to strengthen resilience of societies. A cleaner environment will have a positive impact on human health.
- To strengthen public support, clearly communicate the benefits of improving the overall environmental health of societies.

Additional recommendations for countries of Eastern Europe, the Caucasus and Central Asia

- Ensure that moratoria on environmental inspections and monitoring during the lockdown, as well as fossil fuel subsidies, are well-justified, targeted, and temporary.
- Incorporate environmental conditions in specific support provided to the agriculture and aviation industries to incentivise firms to transition towards cleaner technologies and fuels.
- Ensure strong links between financial support, including from development partners, to strengthen economic recovery, and incorporation of green measures by the recipients.
- Maintain, and where possible, increase commitments to fund green measures, and ensure that funding for environmental agencies and ministries returns at least to pre-pandemic levels.
- Share good practices on effective greening of economic stimulus packages among the countries in the region and beyond.
- Ensure that social and economic resilience to future shocks, including impacts from climate change, is made a strategic priority.

Sources: adapted and abridged from OECD, COVID-19 and greening the economies of Eastern Europe, the Caucasus and Central Asia, 17 February 2021, <https://www.oecd.org/coronavirus/policy-responses/covid-19-and-greening-the-economies-of-eastern-europe-the-caucasus-and-central-asia-40f4d34f/> and OECD Policy Responses to Coronavirus (COVID-19): From containment to recovery: Environmental responses to the COVID-19 pandemic, 20 April 2020, <https://www.oecd.org/coronavirus/policy-responses/from-containment-to-recovery-environmental-responses-to-the-covid-19-pandemic-92c49c5c/>



Towards UNFCCC COP26: Central Asia to present itself for the first time as one region on an important global platform

The COVID-19 pandemic has shown the futility of trying to achieve effective solutions to global problems without coordinated efforts at the state, sectoral, intergovernmental, and regional levels. Having already learned this lesson, the countries of Central Asia will present themselves as one region at the 26th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP26) to be held in Glasgow in November 2021. The 72 million people living in Central Asia are among the most vulnerable to climate change. Confronting climate threats to food, water resources, energy, biodiversity and security are among the most pressing challenges currently facing the region. In 2020, the Regional Environmental Centre for Central Asia (CAREC) initiated work to support countries in preparing for COP26. One result of that work is the formation of the Consortium and the Regional Network of Civil Society Organizations on Climate Change (RNCSCO).

The Consortium has drafted a regional statement for UNFCCC COP26 developed through national and regional consultations that led to the decision to take a common position on the solution of urgent issues caused by climate change and exacerbated by the COVID-19 pandemic in the countries of Central Asia.

In turn, RNCSCO is called to support the efforts of civil society organizations in the context of the global post-Paris climate process in Central Asia, and to combine the efforts of NGOs and civil society networks for more effective, coordinated implementation of regional and national priorities, including climate change policies. RNCSCO is currently formulating a Regional Civil Society Statement for a Climate Resilient Future to ensure that COP26 hears a regional voice of conviction and strength from Central Asian NGOs.

In 20 years of working together, the Central Asian countries accumulated enormous potential in environmental legislation, strategic planning and the introduction of innovative technologies, creating a clear advantage for the region. Now it is necessary to create a common Central Asia brand for unified representation both at the forthcoming UNFCCC COP26 and in the work of UNFCCC as a whole. CAREC has started to prepare a Central Asia pavilion at the UNFCCC COP26 – a unique opportunity for Central Asia to demonstrate its investment potential, its role in the global climate process, its prospects and financing needs, its technologies and its expertise. In addition, CAREC intends to draw global attention to the high vulnerability of the region and the risks of climate migration, especially in the current context of the need to maintain geopolitical stability.

Information sources for the narrative:

Renewable and efficient energy

- Executive Committee of the Electric Power Council of the Commonwealth of Independent States
- Eurasian Development Bank. Investment in the Water and Energy Complex of Central Asia, Almaty, July 2021, <https://eabr.org/en/analytics/special-reports/investment-in-the-water-and-energy-complex-of-central-asia/>
- PWC, Renewable Energy Market in Kazakhstan: Potential, Challenges, and Prospects, May 2021, <https://www.pwc.com/kz/en/assets/pdf/esg-dashboard-eng.pdf>
- Насиров Т.Х., Непомнящий В.А., Шамсиев Х.А. Влияние ветровых и солнечных электростанций на управляемость и надежность функционирования энергосистем // Семинар «Информационные издания по экологии, энергоэффективности, ВИЭ и климату, посвященные 30-летию Содружества Независимых Государств», Москва, 6 апреля 2021 г.

COVID-19 challenge and green recovery

- OECD, COVID-19 and greening the economies of Eastern Europe, the Caucasus and Central Asia, 17 February 2021, <https://www.oecd.org/coronavirus/policy-responses/covid-19-and-greening-the-economies-of-eastern-europe-the-caucasus-and-central-asia-40f4d34f/>

© Regional Environmental Centre for Central Asia, 2021



Text, design and layout, maps, graphics, editing and translation: Zoï Environment Network.



The contents, opinions, judgments and conclusions in this publication are those of its authors and do not necessarily reflect the official views of the Regional Environmental Centre for Central Asia, organizations involved in its financing or operations, or the Governments of the Central Asian states. The designations used and the information are not an expression of any opinion on the part of these organizations or countries about the legal status of any country or territory, cities or areas under its jurisdiction, or the delimitation of borders.