



MODERN PROBLEMS IN EDUCATION AND THEIR SCIENTIFIC
SOLUTIONS

THE ROLE OF THE GREEN ECONOMY IN THE GLOBAL
ENERGY TRANSITION

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Under the influence of changes in energy policy and the development of new technologies, the world is entering the stage of the 4th energy transition to the widespread use of renewable energy sources and displacement of fossil fuels. Rapid development of renewable energy sources will allow them to provide 35-50% of the world electricity production and 19-25% of the total energy consumption by 2040. Among fossil fuels, only gas will be able to increase its share in the world energy balance from 22% to 24-26%. Coal will reduce its share from 28 per cent to 19-23 per cent. The Paris Climate Agreement, concluded in 2015, was a prerequisite for the energy transition. It was supported by all 197 parties to the FCCC (193 UN member states, as well as Palestine, Niue, the Cook Islands and the EU). The Agreement entered into force on 4 November 2016. The stated goal of the Paris Agreement is to prevent the global average annual temperature on the planet from exceeding more than 2°C above pre-industrial levels by 2100 and to do everything possible to keep warming within 1.5°C (currently, the average temperature is 0.75°C higher than the annual average in 1850-1900). The Agreement consolidates and formalises the turn to a new, low-carbon model of economic development based on the gradual abandonment of traditional technologies of extraction, processing and use of fossil resources (primarily hydrocarbons) in favour of 'green' technologies.

Uzbekistan signed the Paris Agreement on 19 April 2017 and ratified it on 2 October 2018. The country has committed to reduce specific greenhouse gas emissions per unit of GDP by 10 per cent of the 2010 level by 2030. Measures and actions to achieve the target are set out in sectoral development programmes aimed at structural transformation, modernisation and diversification of production, reduction of energy intensity of GDP and introduction of energy-saving technologies in economic sectors and social spheres. Since the energy sector is the largest source of greenhouse gas emissions in the country, it is the sector that is the focus of most climate mitigation measures. Climate mitigation measures are mainly aimed at improving energy efficiency and increasing the share of renewable energy sources in the energy balance. The country plans to increase the share of RES in the total energy mix to 25 per cent by 2030, including solar power to 8.8 per cent and wind power to 5 per cent (Presidential Decree PP-4422 2019). The Ministry of Energy, in co-operation with the Ministry of Investment and Foreign Trade, with support from the EBRD and the Government of Japan, engaged a consortium of international experts (Corporate





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Solutions, Tractebel and Guidehouse) to develop a roadmap to study the feasibility of establishing a carbon-neutral electricity generation sector in Uzbekistan by 2050.

The action plan described in the roadmap is structured around five priority areas:

- transformation of the electricity generation infrastructure through ongoing reform and further development of more efficient and low-carbon capacity and associated grid development.
- Establishment of a legal and regulatory framework to increase renewable energy penetration, regulatory and transformation of the electricity generation infrastructure; institutional reforms to enable and support the development of renewable energy in Uzbekistan.
- Subsidy reform and a carbon pricing mechanism that creates a level playing field by ending regulation and creating institutional preferences for carbon-intensive sources, and ultimately a carbon pricing mechanism.
- Awareness-raising campaigns to mobilise public support, social acceptance and sustainability of the changes introduced.
- Protecting the environment, both in terms of climate change mitigation and resilience building, and in terms of reducing other negative environmental impacts.

A key conclusion in the roadmap is that Uzbekistan's transition to a zero-carbon energy sector by 2050 is technically and economically feasible. It points to the trajectory set by the Ministry of Energy's Concept for 2020-2030 and to the ability of the Government of Uzbekistan to be a leader in climate change action in Central Asia and beyond, while supporting sustainable economic growth.

In recent years, the country has made significant steps towards switching to clean energy sources, which has become an important part of its sustainable development strategy. Uzbekistan currently operates nine solar photovoltaic plants with a total capacity of 2.7 GW and one wind farm, located in seven regions. These facilities play a key role in the production of green energy, which contributes to reducing dependence on fossil fuels and improving the environmental situation.

Since the beginning of the year, solar power plants in Uzbekistan have cumulatively generated 3 billion 493.6 million kWh of electricity, while wind farms have generated 506.4 million kWh. There has been a steady increase in electricity production from these facilities.

Total electricity generation saved 1.2 billion cubic metres of natural gas and helped prevent the emission of 1 million 680 thousand tonnes of harmful gases into the atmosphere. This effect not only improves air quality, but also contributes to the fight against global climate change. It is important to note that the amount of electricity generated by solar and wind farms corresponds to the 10-month social norm for two million households or the annual norm for 1 million 666 thousand households, which emphasises the importance of these projects in ensuring the country's energy security.





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The measures taken to develop renewable energy sources not only contribute to economic growth, but also ensure the country's energy independence, creating the basis for a future in which ecology and economy go hand in hand.

In the face of global challenges such as climate change and economic turmoil, Uzbekistan must actively develop its resources, innovate and invest in a sustainable future.

Experts estimate that the solar power plants will enable Uzbekistan to generate a total of 600 billion kilowatt hours of electricity. This is eight times more than the country's current electricity demand. By 2030, it is planned to increase the capacity of solar power plants to at least 5,000 megawatts, and for wind power plants to 3,000 megawatts. The Republic of Uzbekistan is taking active action on climate change issues in the context of its contribution to achieving the goals of the Paris Agreement on climate change mitigation and adaptation. Thus, decarbonisation of electricity generation will play a crucial role in achieving Uzbekistan's climate goals.

Conclusions

One of the key steps towards a sustainable future is the transition to a green economy, and Uzbekistan is already demonstrating that this path is yielding results. By actively developing renewable energy sources, the country is showing how economic growth can be combined with concern for the environment. Solar and wind power plants, which already play an important role in the energy system, are clear proof that progress is possible.

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