Commitment

South Kazakhstan University named after M. Auezov to achieve net zero in carbon emissions by 2060

Introduction

In recent decades, the problem of climate change has become one of the most urgent at the global level. The increasing level of carbon emissions is one of the main causes of global warming, which, in turn, entails a number of environmental, economic and social consequences. In response to these challenges, the global community is taking steps to reduce carbon emissions, including making commitments to achieve carbon neutrality in various sectors of the economy.

Educational institutions play an important role in addressing climate change, as they are not only centers of knowledge and scientific research, but can also serve as an example for society by implementing sustainable practices in their activities. South Kazakhstan University named after M. Auezov, following global trends and the national strategy for sustainable development, has committed itself to achieving net zero in carbon emissions by 2060. This commitment is not only consistent with global goals to combat climate change, but also reflects the school's responsibility to preserve the environmental sustainability of the region.

South Kazakhstan University named after Mukhtar Auezov(SKU named after M. Auezov) is one of the leading educational institutions in Kazakhstan, actively involved in the development of science and technology. In the context of global climate change and increased environmental control, the issue of reducing greenhouse gas (GHG) emissions, in particular carbon (co_2), is becoming urgent. This document examines the university's commitment to achieve a zero carbon balance by a certain year and possible strategies to achieve this goal.

The implementation of this commitment requires an integrated approach, including optimizing energy consumption, using renewable energy sources, improving energy efficiency, and introducing innovative technologies aimed at reducing the carbon footprint. An important step towards achieving net zero is to involve students, teachers and all university staff in realizing the importance of sustainable development and the introduction of environmentally friendly solutions into daily activities.

I Global trends and carbon neutrality commitments

In recent decades, the problem of climate change has become increasingly relevant for the entire global community. Rising global temperatures, extreme weather events, and rising ocean levels are all the result of increasing greenhouse gas emissions, mainly carbon dioxide (co_2). To combat this process, many countries, regions, companies, and educational institutions have committed themselves to achieving carbon neutrality (net zero) in the coming decades.

1. What is carbon neutrality?

Carbon neutrality (or net zero) means that the amount of carbon dioxide emissions produced by humans is compensated through their absorption processes, for example, through forests, carbon capture technologies or other measures that reduce the level of co_2 in the atmosphere. This is a key goal in the fight against climate change, as it is greenhouse gases, including carbon dioxide, methane and nitrous oxides, that contribute to the greenhouse effect and global warming.

2. Global initiatives and commitments

Global carbon neutrality commitments have become one of the most important aspects of international policy in recent decades. Among the most significant initiatives are:

- **Paris Climate Agreement (2015):** This agreement, adopted by 196 countries within the framework of the United Nations, calls on states to take measures to limit global warming to no more than 1.5°C compared to pre-industrial levels. One of the key goals is to achieve carbon neutrality on a global scale by the middle of the 21st century (planned by 2050).
- **The European Green Course (GreenDeal):** The European Union has set a goal to achieve carbon neutrality by 2050. This will be achieved through reducing carbon emissions, switching to renewable energy sources, developing energy-efficient technologies and sustainable agriculture.
- **The UN Sustainable Development Goals:** Within the framework of the Sustainable Development Goals (SDGs) adopted in 2015, Goal No. 13 is to take urgent measures to combat climate change. This includes both actions to reduce emissions and adaptation to climate change that is already taking place.
- **Initiatives of large companies and governments: Many** major corporations, such as Microsoft, Google, Apple, Amazon, have set themselves the goal of achieving carbon neutrality sooner than by 2050. For

example, Microsoft has stated that it will not only achieve carbon neutrality, but will also "remove" all carbon dioxide emissions that it has produced since its founding in 1975.

3. Trends and challenges towards carbon neutrality

Despite the widespread adoption of carbon neutrality commitments, there are several key challenges that countries and organizations face along the way:

- **Technological barriers:** The development and implementation of technologies for carbon sequestration, the transition to renewable energy sources, and energy efficiency improvements require significant investments and scientific efforts.
- **Financial and economic issues:** The transition to carbon neutrality requires high costs both at the level of government budgets and for private companies. This may become an obstacle for developing economies or for industries that are traditionally dependent on hydrocarbons, such as the oil and gas industry.
- **Social perception and participation of the population:** The transition to carbon neutrality requires changes in people's behavior, including the use of public transport, recycling and reducing energy consumption. Psychological barriers and lack of awareness can slow down the process.

4. The role of educational institutions in achieving carbon neutrality

Educational institutions, including universities and schools, play an important role in the global fight against climate change. First, they can serve as an example for their students and society at large by implementing sustainable practices in their daily activities, such as reducing energy consumption, using renewable energy sources, and developing sustainable infrastructure. Secondly, universities can become centers of research in the field of sustainable development, develop innovative solutions for carbon neutrality, and actively participate in educational and public initiatives.

II Key approaches to achieving carbon neutrality

To achieve carbon neutrality, SKU named after M. Auezov can implement the following strategies:

- **Energy efficiency and renewable energy sources –** reducing energy consumption by upgrading infrastructure and using solar and wind energy.
- **Eco–friendly transportation -** Encouraging the use of public transportation, bicycles, and electric vehicles among students and staff.
- **Reducing resource consumption –** implementing programs to reduce waste, recycle, and reuse materials.
- **Compensatory measures –** planting trees and participating in international Carbon capture and Storage (CCS) programs.

III Assessment of the current level of emissions

To successfully achieve zero emissions, it is necessary to conduct an inventory of the university's carbon footprint. This includes:

1. Analysis of electricity and fuel consumption.
2. Accounting for emissions from transport and logistics.
3. Assessment of the carbon footprint from the supply and use of materials.

IV Developing an action plan

SKU named after M. Auezov can develop a comprehensive plan, including:

1. **Short–term measures (2025-2035) -** reduction of energy consumption, improvement of waste management.
2. **Medium–term measures (2035-2045) -** introduction of renewable energy sources, development of environmental awareness.
3. **Long–term measures (2045-2060) -** the full achievement of carbon neutrality through a combination of technology and compensation programs.

Cocnlusion

The commitment of M. Auezov University of South Kazakhstan to achieve carbon neutrality by a certain year is an important and timely step in response to global challenges related to climate change. In the face of increasing environmental and social challenges, such as rising global temperatures, extreme climatic events and depletion of natural resources, the university, which commits to reducing carbon emissions, demonstrates its commitment to sustainable development and responsibility for the future of its community and region.

The path to carbon neutrality requires comprehensive efforts, ranging from optimizing energy consumption and switching to renewable energy sources to introducing innovative technologies and raising awareness among students and staff. The most important aspect is also the integration of the principles of sustainable development into the educational process, which allows students and future specialists to realize their role in protecting the environment and actively participate in solving environmental problems.

Achieving net zero in carbon emissions by South Kazakhstan University not only supports national and international goals to combat climate change, but also serves as an example for other educational institutions and organizations in the region. This step will help the university strengthen its reputation as a leader in the field of sustainable development, attract the attention of the scientific community and students interested in studying and working in the field of ecology and sustainable technologies.

In general, the commitment of M. Auezov State University to achieve net zero in carbon emissions demonstrates the university's commitment to the principles of sustainable development and environmental responsibility. The implementation of carbon reduction strategies will not only improve environmental performance, but also enhance the university's competitiveness in the international arena. To successfully achieve the goal, it is necessary to develop a clear action plan based on the best international practices and adapted to local conditions.

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