Topic: Turkmenistan´s achievements in the field of climate change mitigation

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Turkmenistan´s achievements in the field of climate change mitigation

Among Central Asian countries, Turkmenistan has the most flat terrain, with about 80% of the territory being deserts and semi-deserts. Turkmenistan is characterized by some of the harshest climatic conditions in the Central Asian region. The climate is sharply continental, dry, with a predominance of very high air temperatures and very low precipitation. Summers are hot and dry, lasting from May to September, while winters are generally mild and dry.

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Over the past 55 years, there has been intense warming observed in the country, which, due to country´s climatic conditions, is occurring at a faster pace than on the planet as a whole. During this period, the average air temperature has increased by 1.4ºC, while global temperatures have increased by an average of 0.8ºC over the past 100 years. According to research, further climate warming is expected in Central Asia in general, and in Turkmenistan in particular: an increase in air temperature and a decrease in precipitation, as well as an increase in the strength of natural hydrometeorological hazards.

In order to evaluate probable climate change and its possible consequences in Turkmenistan, the country has developed regional climate scenarios. In accordance with these scenarios, atmospheric temperature is expected to increase, whereas precipitation is expected to decrease in the whole territory.

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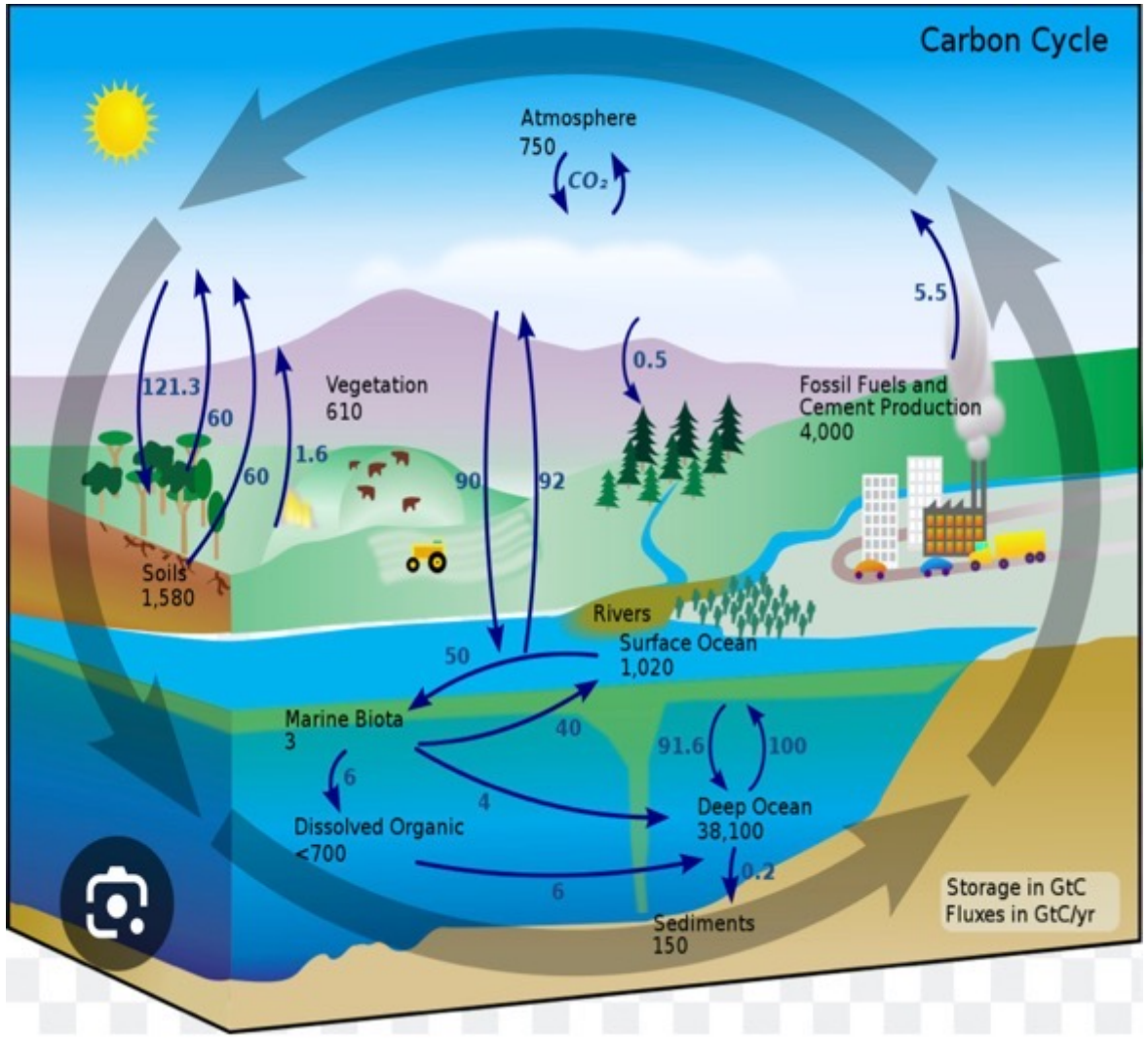

That is why climate change adaptation is one of the main directions of the National strategy on climate change.

Within this Strategy, specific measures to adapt to climate change are being implemented.

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Currently, the country continues implementing activities in the **healthcare system** in accordance with the National Action Plan for adapting the health of the population of Turkmenistan to climate change and its adverse effects for 2020–2025. To further improve the healthcare system in the light of climate change, the following is planned:

- ✓ strengthening the healthcare system to minimize the impact of climate change on public health;
- ✓ raising awareness among the public, healthcare workers, and policy makers about the impact of climate change on human health to implement healthcare measures;
- ✓ including issues of the impact of climate change on public health in the curricula of the State Medical University of Turkmenistan and medical schools;
- ✓ strengthening regional and international cooperation of the Ministry of Health and Medical Industry of Turkmenistan in the development of specific mechanisms for the implementation of health sector action plans in connection with climate change and other issues.

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Today, **agriculture** in Turkmenistan is considered not only as a type of economic activity, but also as a factor affecting the environment. To illustrate, greenhouse gas emissions from this sector account for 12.44% of total emissions and are growing year by year.

In accordance with the National strategy of Turkmenistan on climate change, the following measures are planned:

- ✓ development and implementation of a set of measures to adapt agricultural production to climate change;
- ✓ optimization of agricultural production location, taking into account the country's needs for necessary agricultural products and minimizing the use of water resources;
- ✓ creation of agricultural innovation systems that provide advisory services to agricultural producers, as well as other measures.

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In the light of **water resource scarcity,** it is important to study the impact of global climate change on the hydrological regime of water bodies in Turkmenistan. In accordance with the National strategy of Turkmenistan on climate change, to adapt the water sector to climate change, numerous adaptation measures are planned, including:

- ✓ increasing the efficiency of irrigation systems through modernization and technical re-equipment;
- ✓ improving water resources management through transition to integrated water resources management (IWRM);
- ✓ improving legal regulation of management, protection and use of water resources;
- ✓ improving the system of joint management of water resources in the region;
- ✓ developing smart information systems for irrigation planning;
- ✓ converting diesel-drive pumping stations to electric drive; the use of renewable energy sources (solar, wind), and other measures.

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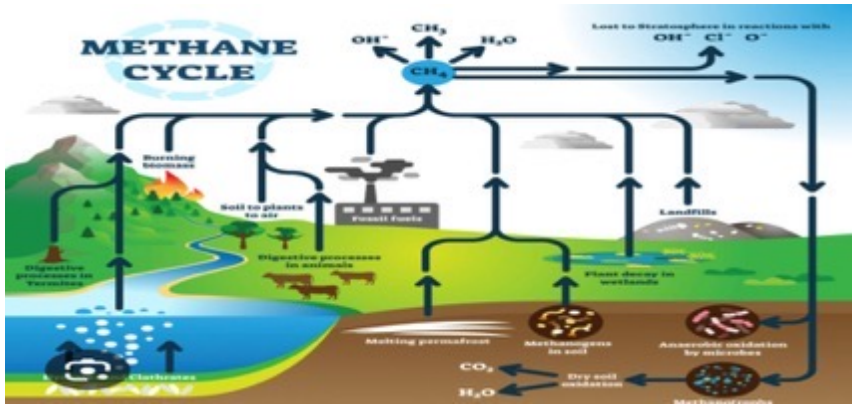
Soil and land resources play a unique role in climate change, being both a target and a source of greenhouse gas emissions that lead to climate change, and a carbon sink. To preserve the quality of soil and land resources in the light of climate change, as well as to strengthen their adaptation potential, numerous adaptation measures are planned, including:

- ✓ updating the National Action Program to Combat Desertification;
- ✓ conducting a comprehensive inventory of soil and land resources with a detailed description of the country's irrigated lands and pastures;
- ✓ widespread introduction and use of GIS technologies in processing data on land resources;
- ✓ improving the regulatory framework and

other measures.



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Natural ecosystems maintain the conditions necessary for life on Earth: they purify air and water, stabilize and soften the climate, restore soil fertility, process waste, etc. In order to implement preventive measures to increase the resilience of ecosystems to climate change, numerous adaptation measures are planned, including:

- developing the National Report on Improving the Resilience of Ecosystems;
- developing a system of comprehensive observations of environmental state (monitoring), assessing and forecasting changes in its state under natural and anthropogenic factors;
- improving the funding of specially protected natural areas (SPNA), as well as introducing innovative funding sources

and other measures.

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Forests in Turkmenistan are valuable as a source of food products, raw materials for medicine and the production of dyes, ornamental plants, seeds of various plant species, and are also the main sink for carbon, the main greenhouse gas. **To adapt forestry** to climate change numerous adaptation measures are planned, including:

- protection and improvement of the forests quality as GHG accumulators and sinks;
- reforestation and afforestation using sustainable forestry practices;
- creation of new forest areas;
- improving the regulatory framework;
- development of international cooperation in the field of forestry and other activities.

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Hydrometeorological activities in Turkmenistan are regulated by the Law of Turkmenistan "On Hydrometeorological Activities". In order to further develop the potential of the hydrometeorological sector and promptly provide all industries with reliable information on the actual and expected climate, the National Strategy of Turkmenistan on Climate Change provides for a set of measures to:

- expand agrometeorological observations in order to take appropriate measures to protect agro-ecosystems;
- improve the climate monitoring system for hazardous weather phenomena;
- create a center for monitoring, assessment and forecasting of climate change and natural hazards, and other activities.

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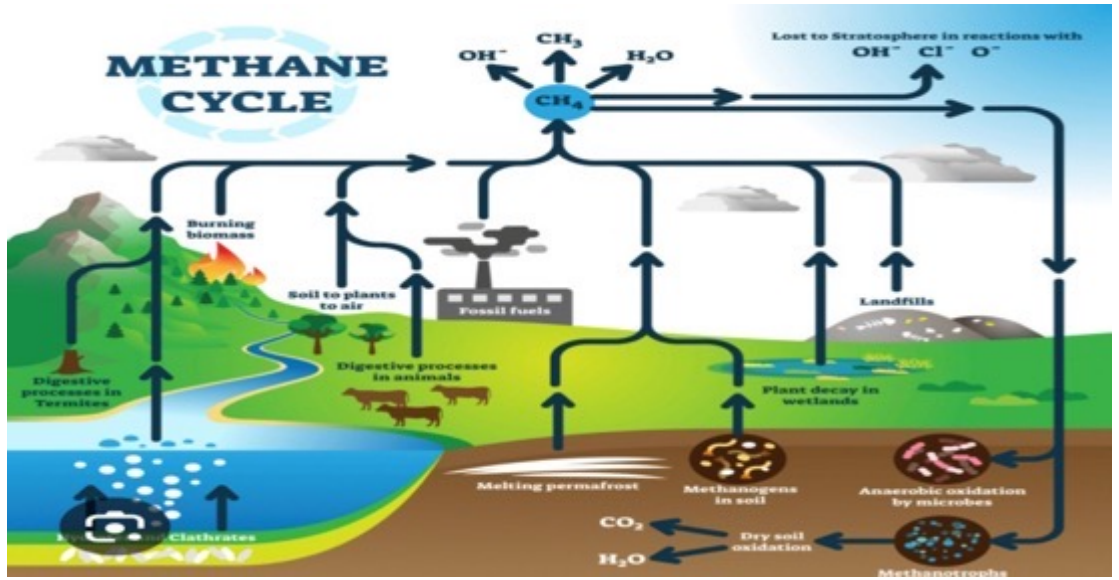
In terms of greenhouse gas emissions, Turkmenistan is one of the world's carbon-intensive economies with above-average per capita incomes.

The main goal of Turkmenistan's national actions to limit emissions is to develop and implement urgent measures in priority sectors to mitigate the current and expected consequences of climate change (for the timely implementation of obligations under the UN Framework Convention on Climate Change and the Paris Agreement), as well as to develop measures to significantly reduce greenhouse gas emissions.



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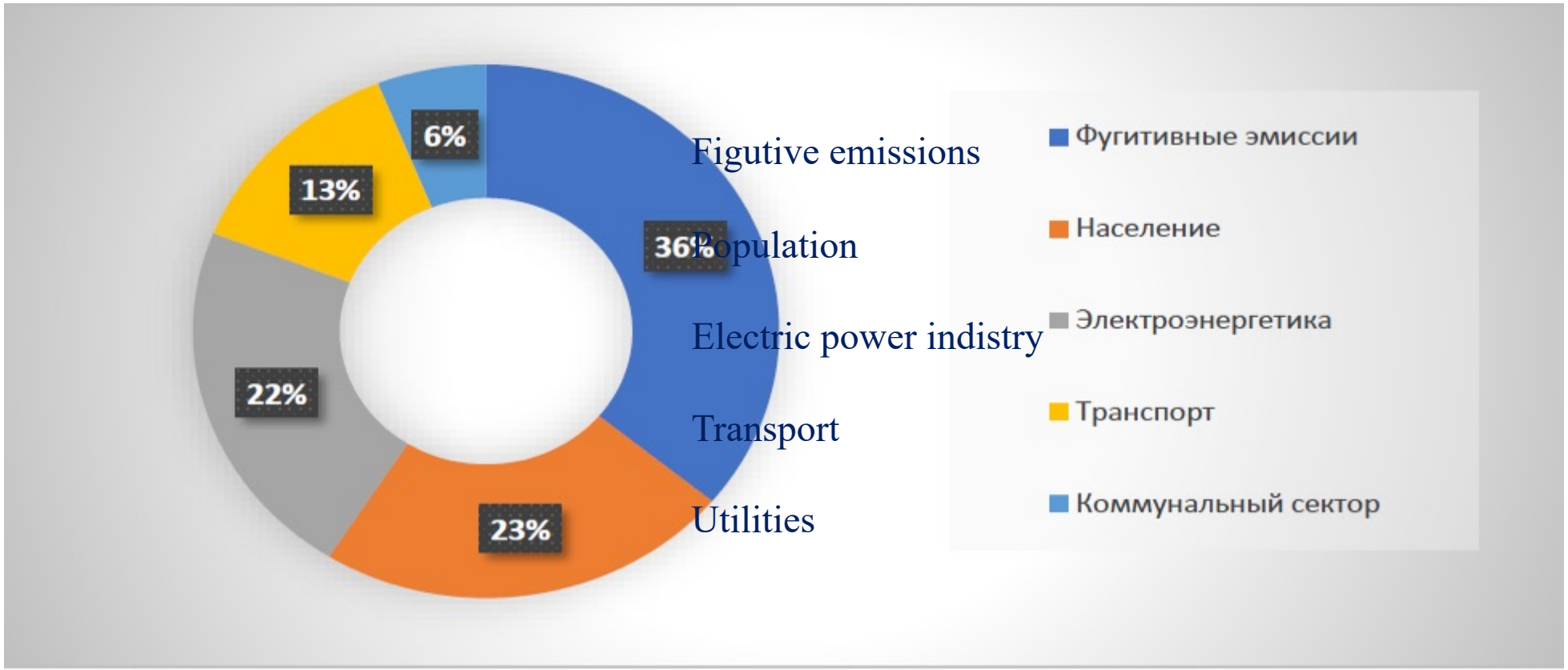

Fig.1. Greenhouse gas emissions by sector

According to 2010 data, fugitive emissions account for 36% of the total GHG emissions, the population accounts for 23%, the electric power industry - 22%, transport - 13%, and the utilities sector - 6%.

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To implement a policy to reduce GHG emissions, it is necessary to use appropriate tools and measures in key economic sectors - energy, industry, transport and housing and communal services. These measures, at the same time, help to keep high economic growth rates as a whole. The priority measures in Turkmenistan include:

- measures to improve energy efficiency, energy and resource conservation in all sectors of the economy;
- developing renewable energy sources (RES);
- technological growth for future development;
- improving energy security through economic diversification.

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It is worth noting that in June 2023, by decree of the President of Turkmenistan Serdar Berdimuhamedov, a Roadmap for the development of international cooperation to study the issue of Turkmenistan's accession to the Global Methane Pledge for 2023–2024, as well as an action plan for its implementation, was approved.

The road map was adopted in order to fulfill tasks arising from international environmental obligations, including the Paris Agreement to reduce greenhouse gas emissions.

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Renewable energy sources (RES): the natural and climatic conditions of Turkmenistan are extremely favorable for the widespread use of renewable energy sources, such as solar, wind, geothermal energy and biomass energy in the production of electricity, vegetable oil fuels, heat and cold. In order to increase the role of renewable energy sources in the country's energy balance and the development of renewable energy, the following measures will be implemented:

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- ✓ further support for research development and testing of renewable and alternative energy technologies, as well as their adaptation to the climatic conditions of Turkmenistan;
- ✓ in the short term, the introduction of small and medium-sized renewable energy installations in remote and sparsely populated areas;
- ✓ in the medium and long term, the introduction of own production capacities and an increase in the share of renewable energy in the country's energy balance;
- ✓ creating economic incentives for the use of renewable energy sources.

Thank you for attention!