CLIMATE PUBLIC EXPENDITURE AND INSTITUTIONAL REVIEW: UZBEKISTAN

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ABBREVIATIONS

ADB	Asian Development Bank
AFD	Agence Française de Développement
BREAM	Building Research Establishment Environmental Assessment Method
BUR	Biennial Update Report
CAREC	Central Asia Regional Economic Cooperation Program
CBT	Climate Budget Tagging
CC	Climate Change
CCBII	Climate Change Budget Integration Index
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
COP	Conference of Parties of UNFCCC
CPEIR	Climate Public Expenditure and Institutional Review
CPF	Country Partnership Framework
CPI	Consumer Price Index
DRM	Disaster Risk Management
ECA	Europe and Central Asia
ESG	Environmental, Social, Governance
ETS	Emissions Trading System
FDI	Direct Foreign Investment
FOLU	Forestry and Other Land Use Sector
GDP	Gross Domestic Product
GEF	Global Environment Facility
GGGI	Global Green Growth Institute
GGSF	Green Growth Strategic Framework
GHG	Greenhouse Gas
GW	GigaWatt
IAC	Inter-Agency Council for Coordinating Measures for the Transition of the Republic of Uzbekistan to a “Green” Economy
IAWG	Inter-agency working groups
IDA	International Development Agency
IFC	International Finance Corporation
IFI	International Financial Institutes
INDC	Intended Nationally Determined Contributions
INFORM	Index for Risk Management
IPPU	Industrial Processes and Product Use
IRENA	International Renewable Energy Agency
JCM	Joint Crediting Mechanism
LEED	Leadership in Energy and Environmental Design
LMIC	Lower-middle-income country
M&E	Monitoring and Evaluation
MDB	Multilateral Development Bank
MEEPCC	Ministry of Ecology, Environmental Protection and Climate Change
MoEF	Ministry of Economy and Finance
MRV	Measuring, Reporting, Verification
MW	MegaWatt
NAP	National Adaptation Plan
NDC	Nationally Determined Contributions
NDC2	Updated Nationally Determined Contributions
NGO	Non-governmental Organization

OECD	Organization for Economic Co-operation and Development
PB	Program Budgeting
PFM	Public Financial Management
PPP	Public Private Partnership
RES	Renewable Energy Sources
SDG	Sustainable Development Goal
UMIC	Upper-middle-income country
UN	United Nations
UNDP	United Nation Development Program
UNFCCC	United Nations Framework Convention on Climate Change
UzHydromet	The Hydrometeorological Service Agency under the Ministry of Ecology, Environmental Protection and Climate Change
VAT	Value-added tax
WB	World Bank
WMO	World Meteorological Organization
WWW	World Weather Watch

EXECUTIVE SUMMARY

This report provides the results of a Climate Public Expenditure and Institutional Review (CPEIR) for Uzbekistan. The CPEIR is a diagnostic tool consisting of three pillars – a policy review, an institutional review, and an expenditure review – which collectively identify the extent to which climate change issues are integrated into the policy direction of the country, are supported by a strong institutional framework, and reflected in the government budget. The report also includes the results of a complementary analysis – the Climate Change Budget Integration Index (CCBII) – which considers the extent to which climate change issues are integrated into a country's public financial management processes.

The Republic of Uzbekistan is a landlocked country with a total land area of 448,978 square kilometers, situated in the heart of Central Asia, bordering Kazakhstan, Turkmenistan, Afghanistan, Tajikistan, and Kyrgyzstan. The country is the most populous in Central Asia, with a population of 36 million in 2022. The GDP of Uzbekistan grew by 7.4% in 2021, after a contraction of 1.9 percent in 2020. Uzbekistan ranks among the top 30 countries based on its subsoil assets, including natural gas, gold, copper, uranium, and coal. With natural resources per capita of US$5,045 (2018 estimate), Uzbekistan's natural resources are second only to Kazakhstan in the Central Asia region and substantially above the lower-middle-income country (LMIC) average.

Climate change is of critical importance to Uzbekistan's future development. The changing climate threatens the country's natural capital, agriculture, land, and water productivity, and will exacerbate natural disaster risks. By the end of this century, average temperatures in Uzbekistan are expected to rise significantly more than the global average. Average temperatures could rise by as much as 4.8°C above the 1986-2005 baseline by the 2090s. In the nearer term, the economic cost of the physical impact of climate change is estimated at 1 percent of GDP by 2030 with the largest effect on agriculture, followed by water and biodiversity loss, labor productivity, and increased weather hazards.

The country can also play an important role in contributing to global efforts to reduce greenhouse gas (GHG) emissions. In doing so it will both open up new growth opportunities domestically and reduce the risks it could otherwise face from the global shift towards net zero emissions as set out by the Paris Agreement. The government's initial target in its first Nationally Determined Contribution was that, by 2030, it would reduce its greenhouse gas emissions per unit of GDP by 10 percent from its level in 2010. However, in recognition of the importance of reducing emissions, its updated NDC in October 2021 increased this ambition to 35 percent. According to Uzbekistan's first biennial update report under the UN Framework Convention on Climate Change (2021), the total GHG emissions of Uzbekistan amounted to 189 million tons of CO_2-equivalent in 2017.

In this context, the policy review of the CPEIR identifies that the country has made a strong performance in integrating climate change into its policy direction. The emission reduction goal of the first NDC is reflected in the overarching New Uzbekistan Development Strategy for 2022-2026 and "Uzbekistan – 2030" Strategy which also include a strong commitment to green growth. Climate change issues – both mitigation and adaptation – are also reflected in a number of the most important sector-specific policies including the energy sector (where there is a focus on increasing renewable energy production), industry (with a focus on green industrial development and energy efficiency) and agriculture (where there is a strong focus on improving water efficiency, of critical importance given expected climate impacts). However, there is also further progress that the country can take to embed climate change issues into national policy including:

- addressing the current absence of an integrated and overarching climate change policy framework.
- further strengthening the integration of climate change into development planning and budget setting processes (see below), including through making use of a recently completed climate vulnerability analysis to help integrate climate change resilience considerations across policy and planning decisions.
- improving data collection and monitoring, reporting, evaluation, and learning processes including through the development of a monitoring and evaluation framework for climate change adaptation, the development of a green economy data roadmap and improving the monitoring, reporting and verification of GHG emissions.

Institutionally, there are a wider number of institutions involved in developing and executing climate change-related policies and projects. These are generally organized rationally and with clear institutional mandates. However, there are areas where further institutional strengthening on climate change issues would be valuable. One of the most important actions is to finalize the establishment of the Inter-Agency Commission for Co-ordination on Climate Change Actions to strengthen coordination across different institutions with an interest in climate change policy. The government might also consider following international best practices by convening an independent advisory mechanism to advise on the adequacy and completeness of existing climate change policy and action. There is also an urgent need to strengthen capacity, especially for those regional or local authorities with climate change-related responsibilities and within scientific and research institutions so that they are better able to provide relevant expertise to the government.

The expenditure review made use of a bespoke methodology reflecting the specifics of the current Uzbek budgeting system. The application of this methodology reveals that in recent years around 10-11% of the budget (around 2-3% of GDP) has been allocated to climate-positive activities. These are heavily focused on the agriculture, transport, and water sectors. These expenditures are also heavily focused on activities that support climate change adaptation, which accounts for around 95% of total climate-positive expenditures. The Uzbekistan budget does also contain expenditures that are considered to be climate negative, although these have declined over the period 2020-22 from 0.9% of the budget to 0.6% of the budget (0.2-0.1% of GDP). These largely relate to expenditures to support mineral resource exploitation.

The Climate Change Budget Integration Index (CCBII) identifies that, despite important recent developments with improved budget transparency and scrutiny, there are important ways in which the PFM system could better integrate climate change considerations. This would facilitate an increase in the proportion of the budget allocated to climate-positive expenditures over time (and a reduction in climate-negative expenditures). In addition to those reforms related to policy and institutions (as discussed above), other opportunities for further enhancement of the PFM system to integrate climate change considerations include:

- the introduction of a climate budget tagging model (as is already underway)
- continued rollout of the program budget reforms.
- the use of climate change-related criteria for budget prioritization and project appraisal
- the introduction of a framework that allows budgetary discussions and budget scrutiny relating specifically to climate change.

INTRODUCTION

The Climate Public Expenditure and Institutional Review (CPEIR) is a diagnostic tool providing a starting point to mainstream climate change into the budgeting and planning process. A CPEIR assesses opportunities and constraints for integrating climate change concerns within the national and sub-national budget allocation and expenditure process through a qualitative and quantitative analysis of a country's public expenditures and how they relate to climate change, its climate change plans and policies, institutional framework, and public finance architecture.

The CPEIR methodology through identifying and elaborating climate change (CC) response areas seeks to achieve such objectives as (i) assessing current policy formulation and implementation as it relates to CC, thereby practically contributing to greater cooperation between diverse stakeholders, (ii) providing a tool to track climate finance through national delivery channels by identifying opportunities and constraints for integrating CC within the national and sub-national budget allocation and expenditure process, and (iii) strengthening stakeholders' capacity to formulate more informed policy proposals that respond to CC through presenting cross-government coordination, as well as the involvement of the private sector, civil society, and development partners.

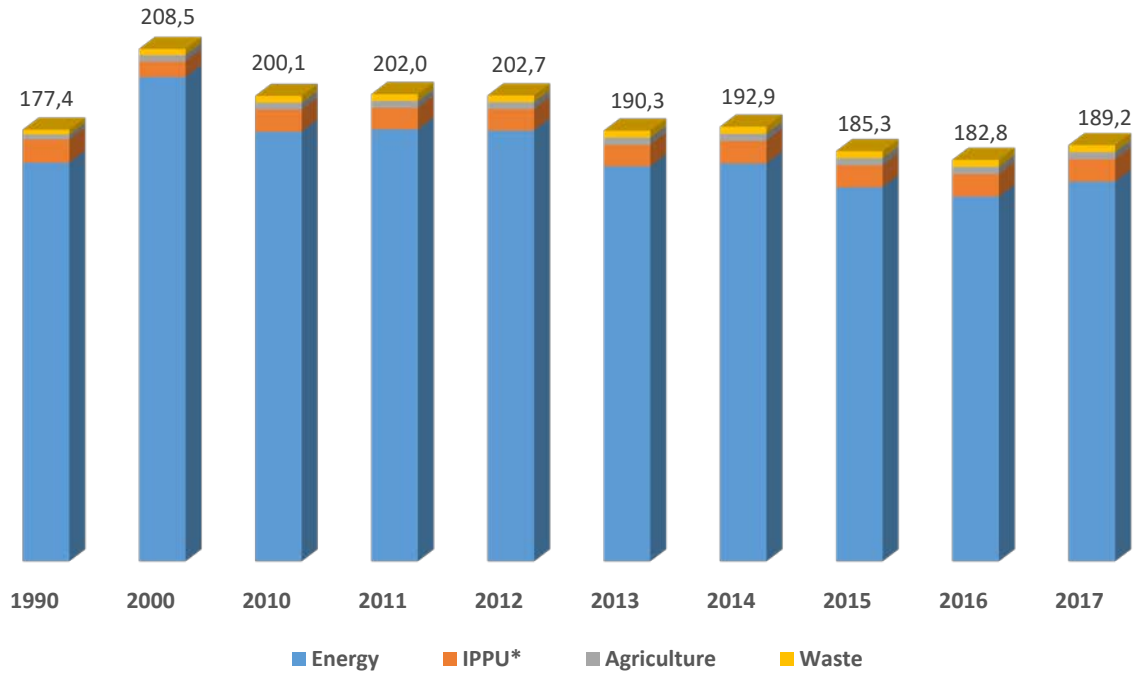
The Republic of Uzbekistan is a landlocked country with a total land area of 448,978 square kilometers, situated in the heart of Central Asia, bordering Kazakhstan, Turkmenistan, Afghanistan, Tajikistan, and Kyrgyzstan. The country is the most populous in Central Asia, with a population of 36 million in 2022. The GDP of Uzbekistan grew by 7.4% in 2021, after a contraction of 1.9 percent in 2020 (National Accountants, 2022). The fiscal deficit widened to 6.2 percent of GDP in 2021, up from 4 percent of GDP in 2020, but has narrowed to 4 percent in 2022 and expected to further narrow to 3% in 2023. Uzbekistan ranks among the top 30 countries based on its subsoil assets, including natural gas, gold, copper, uranium, and coal (World Bank, 2021). At per capita US$5,045 (2018 estimate), Uzbekistan's natural resources are second only to Kazakhstan in the Central Asia region and substantially above the lower-middle-income country (LMIC) average.

The changing climate threatens its natural capital, agriculture, land, and water productivity, and exacerbates natural disaster risks. By the end of this century, the average temperatures in Uzbekistan are expected to rise significantly above global averages. Average temperatures could rise by as much as 4.8°C above the 1986-2005 baseline by the 2090s (World Bank & ADB, 2021). There is a significant 3.4°C gap between the temperature rise projected by 2080–2099 under the highest emissions pathway (RCP8.5), and the rise expected under the lowest emissions pathway (RCP2.6), indicating the large difference in outcomes for Uzbekistan achievable by reducing global emissions (World Bank & ADB, 2021). The increase in average temperatures by the 2090s is expected to be strongest in the Fergana valley. Uzbekistan is prone to earthquakes and floods that are estimated to affect an average of 1.4 million people every year and cause almost US$3 billion in losses (World Bank, 2017). Climate change is expected to increase risk exposure, especially to droughts, floods, and landslides.

Climate change will therefore further exacerbate the current economic growth model risks in the country. The economic cost of the physical impact of climate change is estimated at 1 percent of GDP by 2030 (World Bank & MEDPR, 2022) with the largest effect on agriculture, followed by water and biodiversity loss, labor productivity, and increased weather hazards. For instance, about 50 percent of irrigated lands are exposed to different degrees of salinity, and up to 26 percent of croplands are severely degraded. Particulate air pollution from urban and industrial sources is aggravated by windblown dust from degraded land. Land degradation is causing economic losses equivalent to 4 percent of GDP and is the result of interlinked environmental and resource issues (World Bank & MEDPR, 2022).

According to Uzbekistan's first biennial update report under the UN Framework Convention on Climate Change (2021), the total GHG emissions of Uzbekistan amounted to 189 million tons of CO_2-equivalent in 2017 (Figure 1.1). The energy sector is responsible for 76–80 percent of GHG emissions, including 50 percent from fossil fuel combustion and 26–30 percent from methane leaks in the coal, oil, and gas sector. Energy emissions have been declining over the past 10 years. In contrast, GHG emissions in agriculture are growing due to an increase in livestock and represent 18 percent of the total. Industrial processes contribute 5 percent of the total emissions. Emissions from waste management stand at only 1 percent, but these emissions are growing rapidly.

Figure 1.1: GHG emissions by inventory sector, mln t CO2-eq



IPPU - The Industrial Processes and Product Use

METHODOLOGY

The CPEIR consists of 3 complementary strands:

- Policy Review. A review of the climate change policy framework and its monitoring framework as well as how the policy objectives translate into programs and instruments.
- Institutional Review: An assessment of the institutional nexus related to CC policy delivery, and the modes of cross-government synchronization, accountability, and decentralization.
- Expenditure Review: A quantification of the climate-relevant expenditure allowing comparison with the total national budget.

In addition, this report contains the results of the application of the CCBII in Uzbekistan. This is a complementary diagnostic tool to the CPEIR, which considers the extent to which climate change issues are integrated with public finance management systems to help identify areas for further integration.

Each of these elements was conducted through a combination of a review of relevant documentation, including both official documents and secondary literature, alongside interviews undertaken with key stakeholders (as outlined in **Annex 8**). The expenditure review involved additional quantitative analysis assessing budgetary data from the period 2020-2022 and assessing the climate relevance of this expenditure using a bespoke methodology that reflects the specifics of the Uzbek budgeting system.

BRIEF STRUCTURE (CHAPTERS) OF THE REPORT

The remainder of the report is structured as follows:

- Chapter 1 provides a review of the climate change policy framework in Uzbekistan, identifying important recent changes, highlighting key strengths and areas where there is scope for further development over time.
- Chapter 2 considers the institutional set up for addressing climate change in Uzbekistan, including the roles played by different organizations and the extent of coordination between them. It concludes with a series of recommendations for how the institutional framework could evolve into the future.
- Chapter 3 provides the methodology for, and the results of, the expenditure analysis identifying the extent to which Uzbekistan's budget currently supports climate action, as well as the extent to which there are expenditures within the budget that have negative implications for addressing climate change.
- Chapter 4 presents the key results of the Climate Change Budget Integration Index, identifying how there are opportunities for Uzbekistan's public financial management system to further integrate climate change considerations.

1.1. INTRODUCTION

Uzbekistan signed the Paris Agreement by providing the Intended Nationally Determined Contribution (INDC) to the UN Framework Convention on Climate Change (UNFCCC) Secretariat in 2017, and after ratifying the Paris Agreement in 2018 the INDC became the country's First Nationally Determined Contribution (NDC).

Over the past four years, the Government has paid great attention to the creation of a regulatory framework, improving planning, and developing strategic plans defining long-term mitigation targets for the country, and implementing programs for climate change mitigation and adaptation, transition to a green economy, and green growth.

Uzbekistan will also continue its efforts for adaptation capacity building to reduce the risk of climate change`s adverse impact on various sectors of the economy, and social sector.

This section presents the policy frameworks for climate change mitigation and adaptation and their specific characteristics in the Republic of Uzbekistan.

1.2. POLICY DOCUMENTS AND PROCESSES

1.2.1. International treaties, agreements, and conventions

On April 19, 2017, the Paris Agreement on the UN Framework Convention on Climate Change was signed by Uzbekistan's Ambassador Extraordinary and Plenipotentiary of the Republic of Uzbekistan to the United States at the United Nations Headquarters in New York.

The Republic of Uzbekistan, according to the decision of the 20th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, and following the national circumstances and sustainable development goals, considering the transition of the country to a resource-efficient development model, identified and presented its Intended Nationally Determined Contribution (INDC) for the period up to 2030.

In the long-term perspective up to 2030, the Republic of Uzbekistan intends to strengthen measures and actions to struggle against climate change, to decrease specific emissions of greenhouse gases per unit of GDP by 10 percent by 2030 from a level of 2010 (INDC, 2017).

The Republic of Uzbekistan submitted its Updated NDC`s in October 2021 by increasing its commitments in the updated Nationally Determined Contribution (NDC) and intending to reduce specific greenhouse gas emissions per unit of GDP by 35 percent by 2030 from the level of 2010 instead of 10 percent specified in the NDC1 (NDC1, 2021).

Uzbekistan has also ratified several documents (**Annex 1**) that partly consider issues connected with climate change response, adaptation and mitigation processes in economic sectors including the Kyoto Protocol and the Paris Agreement under UNFCCC.

In August 2020 Uzbekistan started the implementation of the project on development of sectoral and regional adaptation plans (NAP) for the country, funded by the Green Climate Fund within the framework of its Readiness Program. The project aims to strengthen institutional and technical capacity for the iterative development of the NAP and the integration of climate change adaptation into national and local planning and budgeting processes in Uzbekistan. The National Adaptation Plans for Uzbekistan is based on the following outcomes:

- The mechanism for coordinating intersectoral adaptation planning and implementation of adaptation measures and actions at various levels has been strengthened.

- The statistical database strengthened, and climate change adaptation issues were identified as priorities for national, sectoral and regional planning and budgeting.
- Adaptation finance and investment strategy developed for Uzbekistan.

The project aims to facilitate the process of planning adaptation measures and actions and their respective budgeting, with a focus on the most climate-sensitive sectors (agriculture, water resources, health, energy-efficient building construction, and emergency management) and three target regions (the Republic of Karakalpakstan, Bukhara and Khorezm areas). The project plans to develop five sectoral and three regional adaptation plans by November 2023.

In close cooperation with relevant ministries and agencies, including international and national experts, Uzhydromet is in the process of developing sectoral (agriculture, water resources, health, energy efficient building construction, and emergency management) adaptation plans that have planned to finish in 2023.

1.2.2. Laws and legislative acts

In the last five years, the Uzbekistan government has made consistent efforts to improve its national policies and plans on climate change, but it does not have an integrated climate change policy framework. The governance of climate change is composed of presidential decrees, laws, government resolutions, sectoral strategies, and plans. However, these rules are fragmented over a large number of texts (59 laws, 50 presidential decrees, and about 200 resolutions) that can be considered as relating to climate change in some way.

The Government of Uzbekistan does not have a focused and overarching climate change policy document that provides a strategic management framework. However, some laws regulate the areas of environmental protection, and the use of renewable energy sources.

The Law of the Republic of Uzbekistan “On Nature Protection” establishes the legal, economic, and organizational foundations for the conservation of the environment, and rational use of natural resources, and aims to ensure a balanced harmonious development of relations between man and nature, the protection of ecological systems. The relations in the field of the development and the use of renewable energy sources in Uzbekistan are regulated by the Law of the Republic of Uzbekistan “On the Use of Renewable Energy Sources” which came into force in 2019.

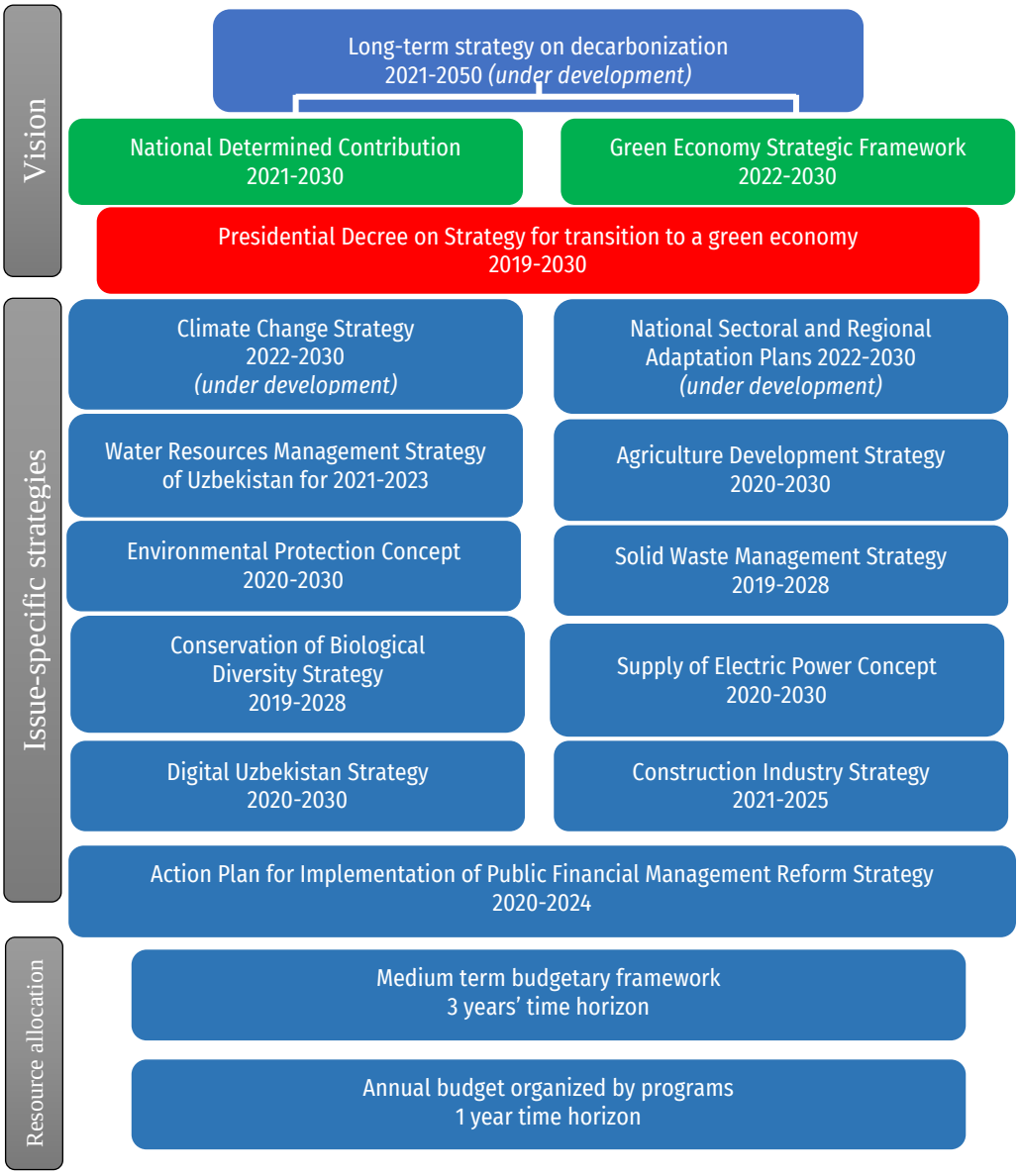
The government is currently in the process of drafting an Environmental Code and Law “On limiting greenhouse gas emissions”. The Environmental Code aims to consolidate norms spread over many acts into one legislation to introduce or reinforce principles supporting a rational use of natural resources through key principles such as polluter-pays (actors responsible for environmental degradation are financially liable for damage and restoration) and public participation (citizens should be informed of environmental risks and consulted in projects affecting their environment). The Environmental Law aims to define the basis for the regulation of economic and other activities that cause greenhouse gas emissions within the territory of the country, to then reduce these emissions.

To harmonize and improve existing laws and regulations, the Government of Uzbekistan could consolidate and simplify existing texts into a single legal act by assessing the potential for the introduction of new principles or alignment with international standards.

1.2.3. Strategies, policies, and planning documents

Since 2017 Uzbekistan has adopted three strategic documents which define the socio-economic and sector/industry-specific development visions, objectives, outcomes, targets, strategic approaches, and measures for their achievement, as well as define policy directions which are then further articulated into sectoral and issue-specific strategies.

Figure 1.2: National and sectoral planning of green growth and climate change policy



The first of these is the Strategy for Further Development of Uzbekistan which took a period from 2017 to 2021 and which slightly identifies the systematic measures needed to mitigate the negative impact of global climate change and the drying up of the Aral Sea on the development of agriculture and the livelihoods of the population. However, the other two documents, The New Uzbekistan Development Strategy for 2022 – 2026 and "Uzbekistan – 2030" Strategy comprise a hundred goals and around four hundred measures. The documents cover the main issues related to the effective introduction of green technologies in sectors of economy, ecology, and environmental protection; "green" energy development; increasing energy efficiency; introduction of "green" certification, ecolabeling, as well as a monitoring and assessment system in the climate change; the improvement

of the ecological surroundings in cities and districts; implementation of the nationwide project "Green Space"; expansion of the area of forests and strengthening their protection to decrease the negative influence of GHG emission, and adapt to climate change.

Uzbekistan's policies on climate change and green growth are governed by a set of strategies that combine long and medium-term visions with more detailed plans (**Figure 1.2**). The conceptual documents adopted by the government in the last few years include the Concept of Environmental Protection until 2030 and the Strategy for Green Economy Transition till 2030. Their primary purpose is to mitigate and adapt to climate change effects by reducing emissions and pollution, encourage the rational use of water resources, support the introduction of environmentally friendly technologies, boost renewable energy sources, increase collection and removal of waste services to the population, improve energy efficiency, and reduce the use of hydrocarbons.

The Strategy for Green Economy Transition till 2030 highlights the main directions for action implementation through ensuring the fulfillment of the obligations of the Paris Agreement. The Strategy defines priorities in such areas as electricity, thermal power, oil and gas, chemical industry, renewable energy sources, building and building materials, transport, water management, agriculture, forestry, solid waste management, green technology implementation, education, science, supporting the transition to a green economy and green investments.

Each area has its strategy and concept that includes the climate change adaptation and mitigation plans and actions which are discussed in **Section 1.4**.

In addition to the above documents, the Government is in the process of developing a Climate Change Strategy by 2030 and a complementary National Adaptation Plans in close cooperation with relevant stakeholders.

1.3. POLICY AND PLANNING FRAMEWORKS: CROSS-SECTORAL

With the adoption of the Strategy for the Transition to a Green Economy in Uzbekistan in 2019, climate change issues began to be considered in development programs and strategies at the national and regional levels. This is evidenced by the contents of the Development Strategy of Uzbekistan for 2017-2021, the New Uzbekistan Development Strategy for2022-2026, "Uzbekistan – 2030" Strategy, as well as several sectoral and regional development programs. However, it should be noted that this approach is at an initial stage and there is a need to improve the development planning procedure based on the main directions of mitigation and adaptation to climate change.

1.3.1. Recognition of climate risks in Uzbekistan's development policy and planning

A comprehensive assessment of the country's vulnerability to climate change was carried out by the Ministry of Economy and Finance in conjunction with the World Bank in 2021-2022 (World Bank & MEDPR, 2022), which covers the economic costs of environmental degradation, the economic impacts of climate change on food prices with an assessment of priority areas in the agricultural sector in the context of climate and environmental effects, and also issues of influence on the fight against poverty, gender equality and others. This report is available in open sources as on the official websites of the Ministry of Economy and Finance (MoEF), and the World Bank in three languages (full text in English, executive summary in Uzbek and Russian).

Within the framework of the **"**Policy Action for Climate Security in Central Asia" regional project of UNDP and UK Government, in 2022 there has been performed a preliminary analysis of regional

climate change-related risks for power generation, transmission and distribution infrastructure in Kyrgyz Republic, Republic of Tajikistan and Republic of Uzbekistan (in English, Uzbek and Russian)[1].

According to the assessment, the country is somewhat vulnerable to environmental and natural disasters. Overall, Uzbekistan is currently ranked 111 out of 191 countries in terms of natural hazard risks, with earthquake, flood, and drought risks as the main natural hazards, based on the Index for Risk Management (INFORM). In terms of relative ranking, Uzbekistan appears to be less vulnerable than other Central Asian countries, including Tajikistan.

Climate change is affecting natural resource sustainability, such as water use, land degradation, and biodiversity. The issue of water scarcity is indicated by the low availability of internal freshwater per capita and higher rates of attributable mortality. The share of land found to be degraded in Uzbekistan is above the upper-middle-income countries (UMICs) average. Uzbekistan also has a much higher energy intensity per GDP than other ECA countries, including fugitive emissions from its energy systems. The percentage of the population exposed to harmful air pollution is also higher relative to comparators, while environment expenditures as a percentage of GDP are low.

Considering the full economic impact on the affected population, Uzbekistan is found to be more socially vulnerable than other countries in the region. In Uzbekistan, the share of population that is affected by geophysical, meteorological, hydrological, or climatological natural disasters is below the UMIC or LMIC average. However, the impact of dry shocks on agricultural productivity is more severe and the impact on agricultural communities in poor regions is greater.

Moreover, the assessment shows that female-headed households, persons living with disabilities, and communities depending on agriculture and natural resources for income are particularly vulnerable to climate change and natural disasters. Natural disasters and climate shocks, which often destroy homes and assets or affect agricultural yields and income-earning opportunities, are likely to worsen existing vulnerabilities for these households. Persons living with disabilities spend more time collecting water than people without disabilities and reduced rainfall will worsen this burden.

As the results of the assessment were published in August 2022 and presented at the International Economic Forum in October 2022, the integration of the assessment results into priority policy objectives of the government such as poverty reduction, climate adaptation, and gender equality is at a preparatory stage.

In addition, the obligation for government bodies and policymakers to integrate the issues of climate change objectives into national, sectoral and regional development programs was established in December 2022. Thus, the Presidential Resolution “On measures to increase the efficiency of reforms aimed to transition of the Republic of Uzbekistan to a “green” economy until 2030” (PQ-436, 2022) defines that, based on the characteristics of the industries and territories` sensitivity to climate change, measures and investment projects on climate change adaptation have to be covered as part of the development of sectoral and territorial development strategies. To date, the government is working to determine the procedure for this mechanism.

To fully and effectively integrate climate change issues into development planning, it is necessary to integrate mitigation and adaptation measures at all stages of planning, starting from setting development goals to determining financing and implementation mechanisms, when developing the regulation of the above-mentioned obligation`s mechanism. Secondly, the government should

[1] https://odi.org/en/publications/managing-climate-risks-to-protect-net-zero-energy-goals-net-zero-transition-opportunities-in-kyrgyzstan-tajikistan-and-uzbekistan/

prepare and approve a long-term decarbonization strategy for 2050 to guide the priorities and instruments of achieving net-zero carbon emissions goals with mitigation and adaptation measures.

1.3.2. Integration of emission reduction objectives into Uzbekistan's development policy

As discussed above, one of the high-level strategic documents called the New Uzbekistan Development Strategy for 2022-2026, aims, among other issues, to ensure the alignment of national development goals with climate change objectives. The Strategy sets out 100 high-level objectives deriving from the overall vision, two of which (Goal 24 and Goal 80) are directly related to climate change mitigation and adaptation issues.

The Strategy identifies the goal of reducing the volume of GHG emissions into the atmosphere per unit of GDP by sectors of the economy by 10 percent by 2026 compared to 2010 levels. The NDC and the Program for the transition to a "green" economy and ensuring "green" growth in the Republic of Uzbekistan until 2030 define the goals of reducing greenhouse gas emissions per unit of GDP by 35 percent in 2030 from their level in 2010.

The next high-level strategic document is the "Uzbekistan – 2030" Strategy, which outline 100 main directions and goals of reforms until 2030. The aim of this strategy is to facilitate sustainable economic development, ensuring that Uzbekistan becomes one of the countries with upper-middle income. Additionally, the strategy prioritizes the need for a green economy (Goal 51), environmental protection, mitigation and adaptation to climate change (Goals 66-71).

As set out in **Box 1.1**, The Strategies cover the energy and transportation sectors, and environmental protection and climate change issues.

Box 1.1 The main strategic goals and the priority directions of the intervention in terms of climate change mitigation and adaptation defined by the New Uzbekistan Development Strategy for 2022-2026 and "Uzbekistan – 2030" Strategy.

NEW UZBEKISTAN DEVELOPMENT STRATEGY FOR 2022-2026	"UZBEKISTAN – 2030" STRATEGY
GOAL 24: Uninterrupted supply of electricity to the economy, active implementation of green economy technologies in all areas, increase in the energy efficiency of the economy by 20 percent	***GOAL 51: Transition to a green economy, dramatically increasing the use of renewable energy as its basis***
Increasing electricity generation by an additional 30 billion kWh by 2026, bringing the total generating capacity to 100 billion kWh.	Bringing renewable energy sources to 25 thousand megawatts and the share in total consumption to 40 percent.
Saving up to 3 billion cubic meters of natural gas by increasing the share of renewable energy sources to 25 percent by 2026.	Reducing natural gas consumption by modernizing 3 thermal power plants with a capacity of 3 GW.
Ensuring the stable operation of the energy system of Uzbekistan and ensuring its reliability when interacting with the energy systems of neighboring states.	Creating a monitoring system covering all greenhouse gases in the field of climate change (MRV).
Widespread introduction of renewable energy sources and improvement of energy efficiency in housing and communal services, at social facilities and in other areas.	Introducing a system for assessing energy efficiency (energy audit) of apartments in multi-stored buildings.
Reducing losses in industries and improving the efficiency of resource use.	Developing the market for "green certificates" in industry and the introduction of "ecological labeling" practices.
Reducing the volume of GHG emissions into the	Reducing greenhouse gases per unit of GDP by 30

NEW UZBEKISTAN DEVELOPMENT STRATEGY FOR 2022-2026	"UZBEKISTAN – 2030" STRATEGY
atmosphere per unit of GDP by sectors of the economy by 10 percent compared to 2010 levels.	percent compared to their level in 2010.
Acting on the production and use of electric vehicles.	Transfer of urban public transport completely to environmentally friendly fuel.
GOAL 80: Protection of the ecology and the environment, improvement of the ecological state of cities and regions, implementation of the nationwide project "Green Land"	**GOALS 66-71: Environmental protection, preventing the negative impacts of climate change**
Planting at least 200 million tree seedlings annually as part of the nationwide Green Land project.	Planting 200 million tree seedlings annually and bringing the level of greening in the republic to 30 percent, creating a care and irrigation system for each planted tree.
Establishment of a system of aerobiological monitoring in 10 regions of the republic in accordance with the initiatives of the national project "Green Land".	Installing and modernizing existing highly efficient dust and gas treatment equipment and local water treatment facilities, introducing an environmentally friendly territory regime in 14 regions.
Bringing the level of collection of household waste to 100 percent, and for recycling rates to increase from the current 21 percent to 50 percent in 2026.	Increasing the level of coverage of solid waste collection and removal services by 100 percent, and the level of waste recycling by 65 percent.
Completion of work on the definition of sanitary protection zones and coastal areas of 51 terrestrial natural water bodies (rivers, small rivers, and natural lakes) in the republic.	Increasing water use efficiency by 25 percent, bringing the total area of land covered by water-saving technologies for irrigating crops to 2 million hectares, including drip irrigation technology to 600 thousand hectares.
Transformation of the city of Tashkent into a comfortable for the population, ecologically clean area with all conditions for living, bringing the level of its landscaping to 30 percent.	Increasing the area of green space in the city of Tashkent by 5 times, bringing it to 5 thousand hectares.
Creation of an additional 500,000 hectares of green space on the dry bottom of the Aral Sea, bringing the total area to 2.5 million hectares, or 78 percent of the territory, by the end of 2026.	Creating an additional 600 thousand hectares of green space at the bottom of the dried-up Aral Sea, bringing their total volume to 2.6 million hectares or up to 80 percent of the territory.
Implementation of projects in the Aral Sea region based on the programs of the International Green Climate Fund and the Global Environment Facility aimed at protecting biodiversity, and preventing climate change and soil erosion, worth 300 million US dollars.	Expanding protected areas to 12 percent, annual bio botanical testing of plants in natural pastures and hayfields on 2 million hectares.
Organization in cities and regional centers of "public parks" for every 50 - 100 thousand people.	Ensuring the creation of green areas on at least 30 percent of their territory in drawing up master plans for cities and ensuring in constructing residential buildings that "green areas" are proportional to the population size.

To achieve these key economy-wide targets related to emission reduction, the State Programs for 2022 and 2023 on the implementation of the New Uzbekistan Development strategy for 2022-2026 and "Uzbekistan – 2030" Strategy comprises 28 measures and projects on the decarbonization of the energy and industry sectors and the development of renewables and energy-efficient technologies.

However, the impact of Uzbekistan's green economy priorities and NDC emission reduction targets

on national development planning and budgetary allocations is negligible. Financing from the budget of the green transition and the reduction of greenhouse gas emissions measures is carried out upon their approval by decisions of the President and the Government of the country within the framework. But budget planning processes and budget documents (Medium-Term Fiscal Strategy, Budget Message) do not outline CC or GHG emission reduction policies as a distinct direction of public expenditures.

Uzbekistan has moved steadily along the path to a less carbon-intensive economy, but there is still some way to go. Uzbekistan's NDC sets a mitigation objective to decrease carbon intensity. The NDC recognizes that structural reforms are needed in the long run for the low-carbon transition.

The transition to low carbon along the lines of the government's plans will need a range of instruments, including fiscal incentives to adopt cleaner low-carbon technologies. Fiscal instruments are a critical and necessary part of the policy package needed to reduce emissions. Green growth is like most types of policy reforms that advocate the acceptance of short-term adjustment costs in the expectation of long-term gains. Fiscal tools such as energy subsidy reform (a study to develop a toolkit for assessment of environmental, economic, and social impacts from scaling-down subsidies in the fossil fuel sector in Uzbekistan with different reform scenarios has been undertaken by UNDP in 2022-2023) and price policies (for example, carbon taxation) are critical.

It should be noted that the government has begun work on the inventory and reduction of subsidies for fossil fuels, a phased reduction in measures to subsidize and support the fossil fuel industry, a plan of practical measures for which will be developed during 2023 (PQ-436, 2022).

After addressing the issue of energy subsidies, further steps could be taken to introduce a carbon tax or equivalent pricing of fossil fuels. In this area, it is planned to develop a package of "green" taxation, reflected in the draft budget, which provides for the transfer of the tax burden of enterprises and households to activities that lead to environmental pollution and waste of resources. At the same time, it is considered extremely important to clarify in detail the potential for increasing budget revenues, the socio-economic impact and implementation methods when introducing a carbon tax.

1.4. POLICY FRAMEWORKS: SECTORAL POLICIES RELATED TO CLIMATE CHANGE

1.4.1. Energy production (including power)

The fuel and energy complex of Uzbekistan includes electric power, heat power, oil and gas industry. The main consumption of energy resources in the country falls on the energy sector - 33.6 percent, energy consumption by the population - 20.6 percent, then industry and construction -22.3 percent, transport - 16.9 percent, agriculture - 0.1 percent. The energy sector is the largest source of GHG emissions in country. The contribution of energy sector to the total emissions is about 76 percent - around 144,4 million tons of CO_2-eq. in 2017.

Emissions intensity in Uzbekistan is more than twice the level of its Central Asian peers, more than six times the global average, and eighteen times the average in the ECA region (Norkulov I., Kholbadalov U., et al, 2022). Obsolete infrastructure results in high electricity losses, estimated at 20 percent of net generation, and frequent power outages, undermining economic activities and the well-being of citizens.

The economy of Uzbekistan is characterized by high energy intensity, therefore, the modernization and diversification of the fuel and energy industry is one of the main priorities for the country's development. Several key targets for "green" energy development are included in the country's NDC, the Strategy for Green Economy Transition, the Green Growth Program, and the Concept for the

Development of the Electric Power Industry. The Government plans to increase the share of renewable energy sources to 25 percent by 2026 and to 30 percent by 2030 of total power generation, double the energy-efficiency indicator by 2030 relative to the level of 2018 and halve the energy intensity of GDP.

In April 2020, the Government approved a 2020–2030 generation expansion plan,[2] which targets to increase the share of renewables in the power generation capacity mix from 0.2 percent to 25 percent over 2019–2030, a significant development. After that, the target was increased – expanding the share of RES in Uzbekistan to 30% – 7 GW for solar and 5 GW for wind energy, which will have the capacity to produce around 39,8 billion kWh of electricity from RES that helps the country to save the burning natural gas to produce it and prevent 15.9 million tons of CO2-eq. GHG emission. Moreover, the government set the goal to rise the capacity of hydroelectric power plants in the republic to 3,416 MW in 2030 (PQ-44, 2021).

Initial steps have been taken to develop renewable energy resources with private sector participation. In August 2021, Uzbekistan began operating its first solar photovoltaic plant, which will produce 270 GW hours per year of electricity from solar energy resources, enough to power more than 31,000 households and prevent the release of 156,000 metric tons of GHG annually. New tenders on solar and wind power will follow to increase the share of renewable energy in the power mix and further contribute to the country's clean energy transition.

At the current stage, 6 projects are being implemented for the construction of solar and wind stations with a total capacity of 2557 MW. In addition, it is planned to hold tenders for 5 solar and wind station projects with a total capacity of 900 MW.

To encourage the population and the private sector to use renewable energy, several benefits and preferences have been provided. Thus, the Law "On the Use of Renewable Energy Sources" and the Tax Code of the Republic of Uzbekistan provide tax incentives and preferences for the generation and use of renewable energy sources. The Presidential Decree No UP-220 dated September 9, 2022, introduces compensation schemes ranging from $190 to $1,400 for population and private sector for installing and the use of RES with a capacity of 0,5 – 5 kW.

However, it should be noted that the pace of development and modernization of electricity distribution system does not correspond to the pace of the renewable energy capacities expansion in the country, which in the medium term may increase the loss of generated energy due to the low efficiency of distribution networks. In this regard, it is important to take measures to digitalize the distribution of electricity, modernize and expand the distribution infrastructure, and involve the private sector in the distribution of electricity.

Regarding energy efficiency, the Government sets the target to increase energy efficiency in the industry by at least 20 percent and reduce energy intensity per unit of GDP by 30 percent (PQ-436, 2022). To reach these goals, during the period of 2020-2022, it conducted energy auditing on 285 large industrial enterprises. However, the continuation of this mechanism in 2023 and beyond is not determined by the government yet.

1.4.2. Transportation

The transportation sector, dominated by road modality, has been emitting a rising amount of GHG in recent years on the back of growing freight and passenger movement. The GHG emission by the

[2] In April 2020, the Government of Uzbekistan approved its 2020–2030 Generation Expansion Plan, which calls for development of about 15 gigawatts of net generation capacity (at an estimated investment cost of US$14.7 billion) by 2030, with 5,000 megawatts and 3,000 megawatts of solar and wind power, respectively.

sector surged to 12.3 million tCO_2-eq in 2017 from 9 million tCO_2-eq in 2012 primarily due to expanding economic activities as freight - 90 percent of which is transported by roads - jumped 70 percent in 2020 in physical terms compared to five years earlier.

The Law of the Republic of Uzbekistan “On Transport” has already highlighted that the main principle of transport activities should be environmental friendliness. In line with Law, to import and use the motor vehicles equipped with gas, gasoline, and diesel engines whose level of toxicity does not meet the requirements of the "Euro-4" ecological category have been restricted since January 1, 2022 (VMQ-50, 2022).

The Strategy for Green Economy Transition defines the following priorities of “green” transportation development:

- the development of “green” transportation in accordance with long-term urban development plans and environmental safety measures;
- the expansion of the production and the use of vehicles with improved energy efficiency and environmental performance in accordance with Euro-4 and higher standards, electric vehicles, vehicles with hybrid engines, and gas-fueled;
- the renewal of the vehicle fleet, the development of an incentive program for the disposal of old and the purchase of new, more environmentally friendly vehicles;
- stimulating the electric transport development, the development and improvement of efficient public transport systems;
- the development of new transport and logistics systems, and road infrastructure, strengthening state control over the environmental condition of vehicles.

At the regional level, the Concept for Transportation Development for Tashkent city was developed and approved (PQ-111, 2022). Its priorities are to increase the level of use of public transport by the population by at least two times, improve the environmental situation in the city by reducing the negative impact of transport on the environment by (i) renewing public transport with modern, environmentally friendly buses, including electric buses, and (ii) development of unified state standards that define the requirements for transport, a gradual increase in the level of transition to environmentally friendly “green” transports.

Uzbekistan still does not have a strategy for the transport sector development including green, sustainable, and environmental components. In 2021, the draft of the Strategy for Transportation Development of Uzbekistan till 2030 was developed but has been not approved yet. To plan sustainable and environmentally friendly transportation development in the country it is crucial to finalize the Strategy for Transportation Development of Uzbekistan till 2030 and to work on an Action Plan for its implementation, covering such priority areas as increasing the level of digitalization and introducing innovations in the transport system; ensuring the environmental friendliness of transport, creating conditions for the development of “green” transport.

Investments in the transportation sector (including storage) have been relatively substantial (6% of all investments from all sources in 2019, or appr. $ 1.3 billion) and greening criteria have not always been applied in the processes of design and implementation of the projects in the sector. In this regard, reinforcement of environmental requirements for new investment projects and applying adaptive measures to retrofit or improve the environmental performance of existing transportation infrastructure is crucial.

1.4.3. Buildings

The Government of Uzbekistan set the main directions of construction sector development in the mid-term Strategy for modernization, accelerated and innovative development of the construction industry of the Republic of Uzbekistan for 2021-2025 that covers only urban development and planning activities (PF-6119, 2020).

Sustainable and energy-efficient buildings are mentioned in the Strategy for Green Economy Transition, which defines the priorities in production of building materials/building exploitation as well:

- introduction of innovative energy-efficient technologies for the production of the following types of building materials: cement, brick, lime, aerated concrete products using the autoclave method, heat-insulating materials, roofing materials, and chipboards;
- introduction of advanced technologies for the production of cement (dry method) using heat recovery technologies and technological processes for generating electrical energy;
- implementation of state programs to improve the energy efficiency of buildings;
- creation of a system of energy certification for buildings;
- development of a mortgage lending system for energy-efficient repairs, in particular, the use of “green” mortgage loans.

It should be noted that the implementation of specific measures for the development of green buildings is not noticeable. There is a need to develop standards and requirements for green and energy-efficient buildings, introduce energy-efficient standards for household equipment, as well as the mandatory implementation of these requirements for new buildings under construction.

The housing sector added over 12 million square meters of new residential buildings every year on average in 2010-2019, primarily in the capital city Tashkent at over 1.6 million square meters on average a year. It has also significantly contributed to the worsening of urban air quality.

Having realized that the existing housing stock is highly energy inefficient, the government introduced in 2018 a procedure of checking for compliance of buildings and structures of state bodies and institutions, as well as multi-apartment housing stock during the design, reconstruction, construction and commissioning with urban planning norms and rules in terms of the use of energy-efficient and energy-saving technologies. The new regulation also required the mandatory installation of certified solar water heaters for hot water supply, as well as energy-saving lamps during the design, reconstruction and construction of all buildings and structures (except for individual housing construction) (PQ-3379, 2017).

Moreover, in 2020 came into force (Decree of the President No. UP-5577 of 2018), a mandatory requirement that all new housing must be equipped with energy-efficient and energy-saving equipment and receive an energy audit passport or a certificate according to international standards BREEAM (Building Research Establishment Environmental Assessment Method) and LEED (Leadership in Energy and Environmental Design).

1.4.4. Industry

The industrial sector, dominated by chemical manufacturing and mining, uses almost a quarter of the total energy used in the country, and almost all of it is natural gas. The sector emitted 8.5 million tons of CO_2 or 4.9 percent of the total in 2017, having risen 6.3 percent compared to the 2013 level, albeit from a low base. Metallurgy, cement, chemicals, and textiles are the areas that contributed the most

GHG emissions. While the share of emissions in the sector is small, it could be expected to rise significantly, as the government supports the expansion of export-oriented and import-substitution capacities.

To decarbonize the industry sector in the country, the Government approved the Concept of transition to a "green" economy and energy conservation in industries, which identifies key targets and indicators such as:

- reducing energy intensity by 20 percent, including by 5 percent in 2022, by saving up to 3.9 billion cubic meters of natural gas, 4 billion kWh of electricity and 21,000 tons of oil products;
- increasing the energy efficiency of buildings and structures by 30 percent;
- development of programs to improve the efficiency of resource use and energy saving in the context of each industry, and introduction of mechanisms to encourage the introduction of waste-free production technologies.

Considering the current situation in the country`s industry sector, reaching the above-mentioned targets may require the Government to create a system that incentivizes industry to channel financial, technological, management and human resources to reduce existing carbon-intensive assets and projects to new green, zero-carbon ones. As such transition may take several years, the authorities could offer compensation or subsidy schemes to industries to minimize potential negative impacts on them and the wider economy. The incentives for producers, importers and exporters of green products and services may include measures that have been introduced in many other countries in recent years, including import restrictions, environmental tax exemptions, income tax exemptions, import duty and excise tax exemptions, loan interest rate subsidies, and reduced VAT.

1.4.5. Water

Uzbekistan could be among the countries with the highest freshwater withdrawal rates in the world.[3] According to the World Resources Institute, Uzbekistan is among the 25 countries most exposed to water stress, and water scarcity will be exacerbated by climate change. Outdated physical infrastructure, lack of incentives for water saving, and lack of a professional development system lead to inefficient water use and poor on-farm agricultural practices that result in low productivity and severe land degradation through soil salinization, forcing land out of production and contributing to toxic dust storms in the Aral Sea basin (UNECE, 2020).

Uzbekistan is committed to reaching its SDG 6 targets aimed at providing access to safe drinking water for everyone. While the government has been spending substantial public financing in the sector, the population is growing and most water infrastructure is 50–60 years old and deteriorating.

Wastewater management is heavily underdeveloped and needs substantial financing. Centralized sewerage system penetration is extremely low, covering only 15.6 percent of the population against a government target of 31.4 percent by 2030 (VNR SDG, 2020). The wastewater treatment efficiency rate is also low at 55 percent, as the infrastructure is old and needs replacement.

The Government adopted a comprehensive Program on the development of the Water Management sector for 2020-2030, signed by the President in July 2020. The 2021-2023 Water Management and Irrigation Sector Development Strategy, which is aimed at implementing the priority areas identified in the Program on the development of the Water Management sector for 2020-2030, includes several

[3] Target 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

infrastructural, political, institutional and capacity-building measures covering the issues of sustainable water management and modernization of the country`s irrigation sector, taking into account future changes, including climate change impacts and economic growth.

According to the Strategy, in 2021 (i) technical requirements for conducting research to improve forecasting capacity were developed, an expert group was formed and an action plan was developed taking into account future climate change forecasts; (ii) methodological instructions were developed for farms, cluster organizations, cooperatives, water consumer associations and water management organizations, describing water needs in various soil and climatic conditions, selection of export-oriented crops and methods for their cultivation.

However, the following climate change adaptation actions in water management system are indicated in the Strategy for Green Economy Transition:

- improving the efficiency of water use and preventing further salinization and degradation of land quality;
- construction and reconstruction of hydraulic structures, pumping stations, and reservoirs;
- widespread use of information and communication technologies and innovations in the water sector;
- renewal, modernization, and automation of water facilities;
- widespread use of energy-efficient and water-saving technologies for irrigating crops, improving mechanisms for stimulating water conservation;
- development of mechanisms for sustainable management of water resources.

1.4.6. Forest management

To strengthen the institutional base of forest management, the State Committee for Forestry was created in 2017 with the following main tasks (in 2022 it was transformed into the State Forestry Agency under the Ministry of Ecology, Environmental Protection and Climate Change):

- implementation of a unified state policy in the field of forestry, aimed at the comprehensive expansion and rational use of forest resources;
- organization of effective management of the forest fund and protected natural areas, creation, reproduction, protection and protection of forest plantations, rational and careful use of forests;
- keeping strict records and studying the forest fund, fauna, and flora, introducing the achievements of science and best practices into the practice of forestry, etc.

Uzbekistan has accepted a Concept on the development of a forest management system (PQ-4850, 2020) that indicates reaching, by 2030, up to 14 million hectares of forest fund lands or 32 percent of the country's territory, optimal and careful use of forests, accelerating the creation of forest belts and forest plantations. As a result of the implementation of the Concept, in 2030 6.1 million hectares of land will be covered with forest, 3,500 hectares of protective forest plantations will be created annually, 11,674 tons of medicinal plants will be harvested and the system will generate an income of 1 trillion sums per year.

The State Forestry Agency during its activity created 582,6 thousand hectares of forests including 507,2 thousand hectares on the dried bottom of the Aral Sea (PQ-4424, 2019). As a result of this work, forestry incomes received through economic activities increased by 3.7 times compared to 2016, bringing 133 billion sums in 2018.

In 2017, the total sinks of CO_2 amounted to -8632,2 Gg, around 4.5% of the total GHG emission in the country. The transition from emissions to sinks in this sector between 2006-2017 is associated with a significant increase in the area of forest land, as a result of the purposeful planting of forest plantations on desert lands in the Aral Sea region and the territories of Navoi and Bukhara regions.

1.4.7. Waste management

In 2017, emissions in the waste sector amounted to 2.7 Gg CO2-eq., which is 1.4 percent of total greenhouse gas (GHG) emissions. Methane emissions in the waste sector accounted for 94.8 percent of total GHG emissions, with 5.2 percent from nitrous oxide.

Waste management activities in the country are coordinated by the Ministry of Ecology, Environmental Protection and Climate Change. Currently, the population's access to services for the collection and removal of solid waste is provided mainly in the large cities of the country.

The country has 296 landfills for burial and waste disposal, including for solid waste (221), industrial waste (16), construction waste (4), sludge collectors (21), tailing dumps (15), special landfills (19), and also 23 landfills for the disposal of hazardous waste. There is also a mechanism for the collection and removal of mixed solid waste.

Uzbekistan has a Law "On Waste" that aims at preventing the harmful effects of waste on the life and health of citizens, the environment, reducing the generation of waste and ensuring their rational use in economic activity.

Uzbekistan's Solid Waste Management Strategy 2019-2028 (PQ-4291, 2019) identifies key problems in solid waste management: the insufficient provision of services for the collection and removal of solid waste in rural settlements, the unsatisfactory state of the infrastructure in the field of solid waste management, and the inadequacy of the existing landfills for solid waste with the requirements of sanitary and environmental standards.

The amount of municipal solid waste generated increased from 6.1 million tons in 2010 to 7.0 million tons in 2017 (UNECE, 2020). The Solid Waste Management Strategy estimates further growth to 14-14.5 million tons per year, and possibly 16-16.7 million tons in the worst-case scenario in 2028.

The Strategy defines a number of target indicators, including bringing, by 2028, the coverage of the population with services for the collection and removal of waste to 100 percent, and the level of processing of solid waste to 60 percent. However, in the new Environmental Protection Concept there is an updated target on increasing the volume of processing of generated municipal solid waste by up to 65 percent (PF-5863, 2019).

The Presidential Decree to promote public-private partnership in Solid Waste Management set even more ambitious targets (PQ-4865, 2020) such as coverage of the population with services for the collection and removal of household waste to 90 percent by the end of 2020, to 100 percent by the end of 2021; the volume of processing of solid household waste to 21.8 percent by the end of 2020, to 36.5 percent - by the end of 2021; bringing to 50 percent the share of the private sector in the organization of services for the collection and removal of household waste by the end of 2022.

Climate change mitigation projects help to reduce emissions from waste dumps, but they do not address the root cause of growing emissions – the growing amount of waste from production and consumption coupled with limited regulations, standards, controls, information and incentives for material reuse and recycling.

Solid Waste Management Strategy 2019-2028 aims at building a new integrated waste management system because an institutional and legal framework is largely missing. The norms for rational waste management are insufficient, and the responsibility for the building and functioning of a more

integrated system is not distributed. There are no provisions to mandate sustainable financing of both infrastructure development and its operation. In this regard, this system could be formed using such approaches as establishing organized waste management, full-service provision, and landscape protection across the board; reducing landfill numbers through a broad shift to recycling/reuse and energy recovery.

1.4.8. Disaster Risk Management (DRM)

Uzbekistan approved the Constitution Law on Emergency in 2021 which determines the conditions and procedure for introducing a state of emergency throughout the territory or in certain areas of the Republic of Uzbekistan.

In addition, the Cabinet of Ministers Resolution "On Measures for the Implementation of the Constitutional Law of the Republic of Uzbekistan "On the State of Emergency" (VMQ-600, 2022) introduces:

- the regulation on the procedure for attracting unemployed people and paying them for their work for the implementation and provision of emergency-rescue and other non-delayed works in the area where there is a state of emergency;
- regulation on the procedure for providing the necessary assistance to the injured persons in the area where there is a state of emergency and the procedure for compensation for the damage caused;
- regulation on the procedure for taking into account the persons involved in the provision (maintenance) of the emergency, as well as the procedure for applying additional guarantees and compensations to these persons;
- regulation on the procedure for the implementation of international humanitarian aid in the territory where there is a state of emergency.

In November 2022 the Presidential Decree "On Measures to Protect the Population and Territories from Emergency Situations Associated with Dangerous Hydrometeorological Phenomena and Geological Processes" (PQ-426, 2022) was adopted. This document defines early detection of possible dangerous hydrometeorological phenomena and geological processes, organization of the activities of the Governmental Flood Control Commission and territorial commissions, the procedure for protecting the population and territories from emergency situations associated with dangerous hydrometeorological phenomena and geological processes.

To strengthen the DRM system against climate change it is very important to mainstream climate change adaptation and DRM in national policies, socio-economic development planning and budgetary processes, i.e., to establish a participatory approach in planning, implementation, monitoring and evaluation of climate change adaptation, mitigation, and disaster risk reduction. It might be very effective if this action is implemented together with the improvement of legal, regulatory and institutional frameworks to improve the effectiveness of measures for developing and implementation of responses to climate change and disaster risks at the national level.

1.4.9. Agriculture

The agriculture sector in Uzbekistan is the second biggest emitter of GHGs. In 2017 it accounted for 17,8 percent - 33,7 million tons CO_2-eq. of total GHG emission in the country. Methane emissions (62,7 percent from overall emissions in the agriculture sector) are significantly higher than nitrous oxide emissions (37,3 percent), measured on a GHG-equivalent basis. The sector's emissions derive from:

- methane emissions from fermentation of livestock and rice cultivation;
- methane and nitrous oxide emissions from manure management;
- nitrous oxide emissions from managed soils as a result of the introduction of nitrogen fertilizers and manure, decomposition of plant residues, etc.

The Strategy for Agricultural Development of the Republic of Uzbekistan for 2020-2030 covers adaptation measures to climate change in directions where the country has a high level of dependence on irrigation and water management. Therefore, water management is defined as the main priority for sustainable development of agricultural sector of Uzbekistan. The Action plan for the effective realization of the Strategy includes around 60 measures in the following priority directions:

- ensuring food security of the population, creation of a favorable agribusiness climate and value chains;
- reducing the role of the state in managing the area of increasing the competitiveness of the agri-food sector and increasing investment attractiveness, ensuring rational use of natural resources and environmental protection;
- development of modern public administration systems, phased diversification of public spending in support of the sector;
- development of science, education, systems of information and consulting services in agriculture, rural development, development of a transparent system of sectoral statistics.

The agriculture sector is the most direct channel for addressing rural needs and reducing poverty rates, and all measures should be considered to maintain growth for the sector. The assessments show (UNDP, 2021) that a decline in water availability implies a constraint on agricultural production if no action is taken. For a decline of 10–30 percent in water availability, total agricultural output could fall by 6–28 percent. Employment correspondingly declines by 55,000–250,000. Therefore drought-induced job losses can be significantly limited if climate-smart agriculture and sustainable land and water conservation measures and investments are taken. Policy makers faced with competing priorities should bear in mind the link between jobs and sustainable land and water conservation measures (drip and solar irrigation, strict water consumption metering and accounting, soil erosion control, no tillage, and water harvesting). Moreover, drip technology saves both water and energy consumption, given the use of pumped irrigation in the country.

1.5. MONITORING, REPORTING, EVALUATING AND LEARNING

Monitoring of the country's economy-wide targets and plans related to climate change, including NDC, the Strategy for Green Economy Transition, the Green Growth Program, and the Action Plan, is carried out by the authorized bodies through periodic reports and indicators of the results of the implemented measures.

According to Presidential Resolution No PQ-436, dated December 2, 2022, the monitoring and evaluation of programs implementation are carried out in the following order:

- ministries and departments, local executive authorities, and enterprises with state participation - quarterly, by the 5th day of the month following the reporting quarter, submit to the Ministry of Economy and Finance a report on the implementation of measures provided for in the Action Plan and sectoral programs on resource saving, as well as the achievement on the target parameters;

- The Ministry of Economy and Finance coordinates the activities of the responsible ministries and departments, quarterly, by the 15th day of the month following the reporting quarter, submits generalized analytical information to the Interdepartmental Council;
- The Interdepartmental Council submits to the Prime Minister of the Republic of Uzbekistan and the Administration of the President of the Republic of Uzbekistan information on the work carried out based on the results of each quarter.

Moreover, the efficiency and effectiveness of the work carried out are assessed based on the target indicators for the transition to a "green" economy and ensuring "green" growth in the Republic of Uzbekistan by 2030. Monitoring and evaluation are carried out by the Ministry of Economy and Finance through the Interdepartmental Working Group through developing a matrix of expected results and target indicators by sector, region and each priority area for M&E.

It should be noted that there is no overarching M&E framework for CC adaptation. Currently, in Uzbekistan, environmental and economic data are collected from many sources (i.e., the Statistics Agency under the President of the Republic of Uzbekistan, the Ministry of Ecology, Environmental Protection and Climate Change, Academy of Sciences, etc.). This data is used to compute different environmental and economic indicators. The absence of a unifying framework for these indicators (the last one having been abandoned in 2011) creates measurement gaps, does not ensure alignment with international standards and the results are not consolidated as a single database available to all institutions.

To improve data collection and management on the green economy, the Government of Uzbekistan could (i) conduct a review of existing local and international data, collection methods and management processes, (ii) adopt a green economy data roadmap to address potential data gaps and methodological issue and (iii) establish an integrated environmental information system interlinking databases of different public authorities involved in the green economy.

To monitor GHG emissions and climate policies, Uzbekistan needs a state-of-the-art monitoring, reporting and verification (MRV) system. Since 1999, Uzbekistan has only submitted three national communications on its GHG emissions. In 2021, it submitted its first Biennial Update Report (BUR) – complete with an inventory of GHG emissions carried out in accordance with international standards and covering the years 1990-2017. Starting in 2022, Uzbekistan plans to release national communication and BUR at a quickened pace. This will allow policymakers to use up-to-date data to monitor the results of the green economy strategy. However, the current system lacks coverage on two GHG (SF6 and PCFs).

In addition, it does not cover support delivered by the international community to help Uzbekistan reach its climate goals. Covering these gaps will not only allow Uzbekistan to get a better view of its emissions but also enable it to track the delivery of climate finance in case it set a conditional target in a future NDC. To better monitor its response to climate change, the Government of Uzbekistan could (i) formulate an action plan to bring its MRV system in line with UNFCCC standards, (ii) publish update reports covering all major GHG every two years and (iii) publish national communications including reporting on climate finance, technology transfer and capacity-building every six years.

1.6. CONCLUSIONS AND RECOMMENDATIONS

Based on the foregoing, the following conclusions and recommendations for their solution can be drawn:

First, The Climate Change Strategy and the National Adaptation Plan which aims to strengthen institutional and technical capacity for the adaptation measures implementation and the integration of climate change adaptation into national and local planning and budgeting processes in Uzbekistan, are in the process of development and are not approved yet. After the ratification of the Paris Agreement, the Uzbekistan government has made consistent efforts to improve its national policies and plans on climate change, but it does not have an integrated and overarching climate change policy framework. The governance of climate change is composed of presidential decrees, laws, government resolutions, sectoral strategies, and plans in a fragmented way. To harmonize and improve existing laws and regulations, the Government of Uzbekistan could consolidate and simplify existing texts into a single legal act by assessing the potential for the introduction of new principles or alignment with international standards. The government should also submit a long-term decarbonization strategy for 2050 to guide the priorities and instruments of achieving net-zero carbon emissions goals with mitigation and adaptation measures.

Second, The Government in cooperation with international partner organizations has recently conducted a comprehensive assessment of the country's vulnerability to climate change, but the integration of its results into priority policy objectives of the government such as poverty reduction, climate adaptation, and gender equality is at a preparatory stage. Moreover, the government introduced the obligation for policy makers to integrate the issues of climate change mitigation and adaptation into national, sectoral and regional development programs, but regulation of procedures and mechanisms of its implementation are not developed and adopted yet. The impact of Uzbekistan's green economy priorities and NDC emission reduction targets on national development planning and budgetary allocations is negligible. Budget planning processes and budget documents do not outline CC or GHG emission reduction policies as a distinct direction of public expenditures. To fully and effectively integrate climate change issues into development planning, firstly, it is necessary to take into account and to integrate mitigation and adaptation measures at all stages of planning, starting from setting development goals to determining financing and implementation mechanisms, when developing the regulation of above-mentioned obligation`s mechanism.

Third, there are a range of ways in which data collection, monitoring and reporting can be improved.

- In the country, there is no overarching M&E framework for CC adaptation. The absence of a unifying framework for key indicators creates measurement gaps in key dimensions, does not ensure alignment with international standards and the results are not consolidated as a single database available to all institutions. In addition, the current M&E and MRV systems do not cover support delivered by the international community to help Uzbekistan reach its climate goals. Covering these gaps will not only allow Uzbekistan to get a better view of its emissions but also enable it to track the delivery of climate finance in case it set a conditional target in a future NDC.
- To improve data collection and management on the green economy, the Government of Uzbekistan could (i) conduct a review of existing local and international data, collection methods and management processes, (ii) adopt a green economy data roadmap to address potential data gaps and methodological issue and (iii) establish an integrated environmental information system interlinking databases of different public authorities involved in the green economy.

- To monitor GHG emissions and climate policies, Uzbekistan needs a state-of-the-art monitoring, reporting and verification (MRV) system. However, the current system lacks coverage on two GHG (SF6 and PCFs). In this regard, the Government of Uzbekistan could (i) formulate an action plan to bring its MRV system in line with UNFCCC standards, (ii) publish update reports covering all major GHG every two years and (iii) publish national communications including reporting on climate finance, technology transfer and capacity-building every six years.

2.1. INTRODUCTION

Over the last four years, the Government of Uzbekistan has been enhancing its institutional foundation to effectively support climate change policy and actions from both public and private sector actors.

The country's intergovernmental coordination body is the Inter-Agency Council. Among other things, it is responsible for managing national green economy transition actions and UNFCCC commitments. National strategies and policies are developed by interagency working groups, considering the views of subnational governments, but on a limited basis.

The scientific research institutes under sectoral ministries provide constant support in the development of plans with climate change adaptation and mitigation elements. The representatives of public institutions, academic, technical and research entities assist the government to develop country commitment reports for the UNFCCC.

This section presents the institutional frameworks in the field of climate change and their characteristic features in the Republic of Uzbekistan.

2.2. NATIONAL INSTITUTIONAL FRAMEWORKS OF CLIMATE CHANGE

2.2.1. National Authorities on Cross-Sectoral Streamlining and Coordination of Climate Change Issues

Inter-Agency Council for Coordinating Measures for the Transition of the Republic of Uzbekistan to a "Green" Economy

To improve coordination of the implementation of the Strategy for Green Economy Transition and deliver on green growth, the Government of Uzbekistan created the Inter-Agency Council (IAC) in 2019 (PQ-4477, 2019). The IAC has been recently reestablished with wider responsibilities (PQ-436, 2022).

Chaired by the Deputy Prime Minister of the Republic of Uzbekistan and brining 19 agencies together, the IAC deliberates policy proposals, reviews progress, provides strategic guidance and serves as the decision-making authority for the advancement of green growth in Uzbekistan.

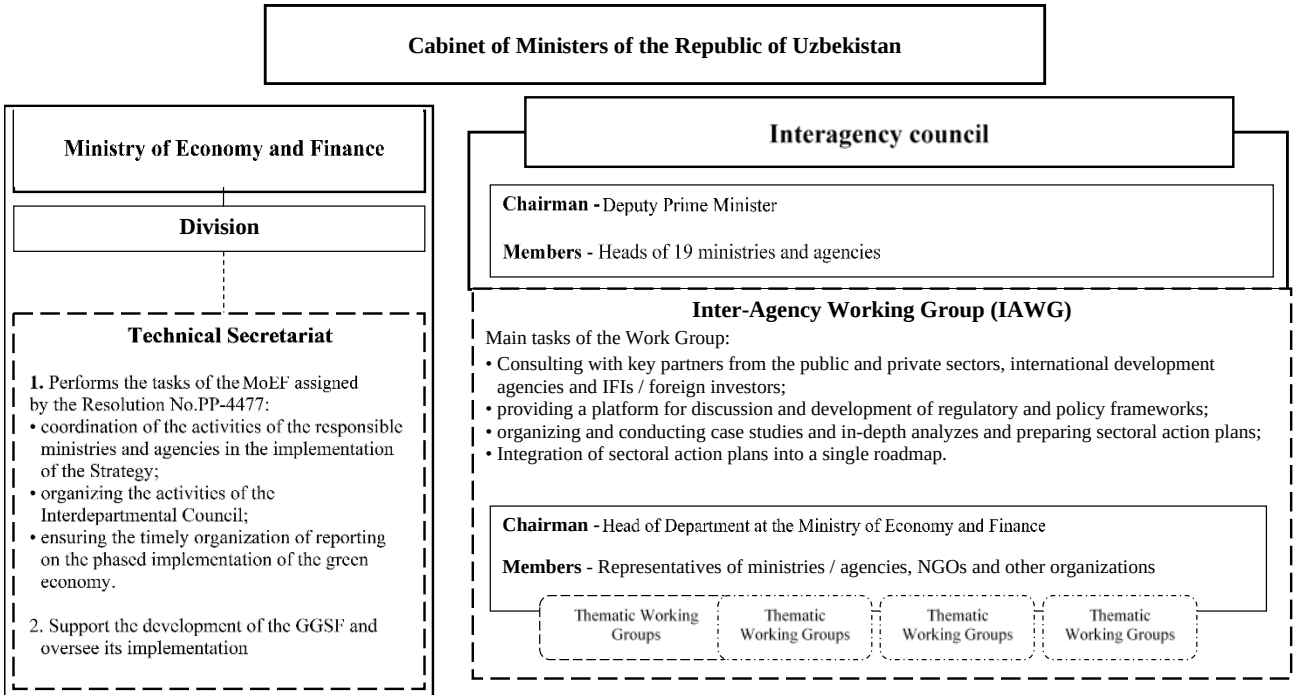
The objectives set out by the working regulation of the IAC are as follows:

- ensuring the implementation by government bodies and organizations, local executive authorities of the measures provided for in the Strategy for Green Economy Transition, the Green Growth Program and the Action Plan of their realization, as well as the implementation of systemic control for their timely implementation;
- quarterly hearing reports from the heads of government bodies and organizations on the implementation of planned measures to develop the "green" economy;
- on the basis of continuous monitoring, the adoption of measures to improve the activities of responsible organizations to increase the effectiveness of measures taken within the framework of the Strategy for Green Economy Transition and the Green Growth Program.

To support and follow-through on the decision of the Council, the Government of Uzbekistan could create an Inter-agency working group (IAWG) to serve as a platform for technical discussion, cross-sector analysis and development of new polices. The IAWG would be composed of relevant heads of departments and chaired by the Department for a Green Economy of the MoEF. Organized in

dedicated sub-groups, the IAWG would pool resources and knowledge – bringing in external expertise (e.g., academics, think tanks, civil society representatives) as needed.

Figure 2.1: Green Economy Transition and Green Growth Institutional Framework



To coordinate the IAWG and act as the permanent secretariat of the IAC, a Technical Secretariat has been created in the Department of Green Economy Development at the Ministry of Economy and Finance (PQ-436, 2022). The Technical Secretariat is ultimately responsible for coordination the implementation of the Strategy for Green Economy Transition and the Green Growth Program and monitoring their progress – notably by preparing an annual implementation report to be submitted to the IAC.

Nowadays, Uzbekistan is planning to adopt the Climate Change Strategy, considering the establishment of an Inter-agency Commission for the Coordination of Climate Change Actions. The commission will be chaired by the Prime Minister of the Republic of Uzbekistan and will comprise around 20 government ministers and agencies from different sectors of economy. Furthermore, the commission's tasks will be:

- ensure the implementation of measures aimed on developing a green and innovative economy in sectors and regions of the economy, climate change mitigation and adaptation in close cooperation with the public and the media;
- review of new projects in the field of climate change and making decisions on their implementation, as well as, if necessary, the Action Plan, including the introduction of changes and adding's to regional action plans based on prepared and agreed project documents.

Due to the fact that there is no high-level climate change coordinating body in general, as well as the IAC does not have the authority to decide on climate finance, it is necessary to finalize the creation of the Inter-Agency Commission for the Coordination of Climate Change Actions chaired by the Prime Minister of the Republic of Uzbekistan. Also, it is necessary to specifically regulate its mandates (i.e. climate financing mandates) and activities to strengthen the coordination mechanism for intersectoral adaptation planning and implementation of adaptation measures and actions at

different levels, as well as to ensure effective cooperation with other coordinating bodies on various issues of climate change.

2.2.2. State Bodies Responsible for Policy Development and Implementation in the Field of Climate Change

Ministry of Ecology, Environmental Protection and Climate Change

The Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan oversees policy development and implementation in the field of Climate Change, Ecology and Environmental Protection (Biodiversity, Waste/Solid Waste Management), and forestation. The working body of the MEEPCC that focuses on the climate change agenda is the Hydrometeorological Service Agency.

From a CC perspective, the MEEPCC is responsible for (i) coordination of work on climate change, ecology and environmental protection, forestation, ensuring interagency cooperation in the development and implementation of a unified policy in these spheres; (ii) prevention of offences in the field of environmental protection and forestation, rational use of natural resources and waste management; (iii) monitoring compliance with legislation in the field of waste management, implementation of measures included in the Roadmap of the Strategy for solid waste management; (iv) reducing the negative impact on the environment of hazardous waste; (v) reducing the volume of emissions of pollutants into the air from stationary and mobile sources; (vi) improvement of the system of ecological monitoring of the natural environment, and a climate monitoring system, including forecasts, data exchange and improvement of the environmental pollution monitoring system; (vii) making recommendations concerning adaptation measures and strategies.

The MEEPCC is the operational and political focal point of the GEF and is responsible for the allocation of GEF grant funds. Moreover, the MEEPCC is responsible for prevention of violation of environmental legislation, waste management and rational use of natural resources. It works in close cooperation with the Global Green Growth Institute (GGGI). The MEEPCC is the authorized national body to work with the UNFCCC Green Climate Fund.

Hydrometeorological Service Agency under the Ministry of Ecology, Environmental Protection and Climate Change

The Hydrometeorological Service Agency (Uzhydromet) is a state body designated to ensure that the Ministry of Ecology, Environmental Protection and Climate Change discharges its responsibilities regarding the coordination of activities related to climate change and achieve the goals and objectives of UNFCCC and the Paris Agreement. Uzhydromet is the national focal point for the UNFCCC and is responsible for fulfilling the country's commitments under the UNFCCC and the Paris Agreement. The General Director of the Uzhydromet is the Focal Point to UNFCCC and the national designated authority of the Adaptation Fund. Uzhydromet is supported by an inter-agency working group, representing key ministries, which has the mandate to provide technical guidance on setting sectoral targets and adaptation planning on climate change. Furthermore, the working group participates in preparing the NDC.

Uzhydromet develops reporting documents for the UNFCCC and is responsible for the development and improvement of the state system of hydrometeorological observations, formation and maintenance of the state hydrometeorological data fund, the state fund of data on environmental pollution, state accounting of surface waters and carrying out research work to improve short-term and long-term weather forecasts, river water content, and climate change.

From a CC perspective, Uzhydromet is responsible for (i) weather forecasting and climate, extreme weather events, hydro-meteorological and agro-meteorological monitoring; (ii) preparation of National Communications and Biennial Reports under the UNFCCC; (iii) estimation of emissions and preparation of an inventory of greenhouse gases; (iv) preparation and updating of the NDC; (v) preparation of the National Adaptation Plans; (vi) carrying out scientific research of CC processes, assessing the impact of their consequences on the natural environment, sectors of the economy and the population.

Implementation of climate change tasks is undertaken by the "Climate Change Monitoring Unit" (7 staff members) in the Uzhydromet. Research and analytical works are supported by the Hydrometeorological Research Institute under Uzhydromet.

Ministry of Economy and Finance

The Ministry of Economy and Finance (MoEF) is the state body in charge of policy development and implementation in the field of economic development, tax policy, budget preparation and execution in coordination with line ministries and all government institutions.

From a CC policy perspective, the MoEF is the authorized body (i) for the coordination of activities to promote the green economy and implement the green growth principles, reduction of GHG emissions in the sectors of economy as the working body of the IAC; (ii) to coordinate the implementation of activities under the Sustainable Development Support Mechanism in accordance with Article 6 of the Paris Agreement.

The MoEF is responsible for (i) reducing the carbon intensity of GDP; (ii) ensuring that environmental aspects are taken into account in all sectors of the economy; (iii) coordinating and implementing projects on the reduction of greenhouse gas emissions in the national economy sectors; (iv) the development of financial mechanisms to support the green economy, mobilizing financial resources through climate finance, and providing information on climate finance to Uzhydromet under the UNFCCC.

The MoEF participates as the executive body responsible for the regulation, coordination of implementation and management of greenhouse gas trade at the international and national levels (Emissions Trading System - ETS, Joint Credit Mechanism - JCM, etc.) as well as for monitoring and reporting during the implementation of projects in this area.

The MoEF being a working body of the IAC, coordinates the activities of ministries and departments responsible for the implementation of measures in this direction. Since 2021, a Department of Green Economy Development (12 staff members) was formed within the Ministry structure to develop and implement state policy in the field of green economy transition and green growth. Among other functions, the Department is responsible for the development of state policy, programs, strategies, draft legal acts, guidelines on green growth, and facilitation of the process of their implementation; as well as for the development of draft principles and procedures for the greenhouse gas reduction in economic sectors.

2.2.3. Government Agencies Responsible for Regulating and Managing Assets in Specific Areas Related to Climate Change

Ministry of Energy

The Ministry of Energy is the government body in charge of policy development and implementation in the energy sector.

From a CC policy perspective, the Ministry is responsible for carrying out state policy in the field of (i) energy-saving and reducing the energy intensity of the economy; (ii) stimulating the introduction of

advanced resource and energy- saving technologies in the productive sectors of the economy and in the household sector; (iii) developing renewable energy sources; (iv) expanding the production and use of motor fuel with improved environmental characteristics; and (v) ensuring access to a modern, inexpensive and reliable energy supply.

The Ministry is the authorized body on the development of "green" energy, and in particular the large-scale introduction of renewable energy sources and hydrogen energy, as well as increasing energy efficiency and reducing the energy intensity of manufactured products.

The Ministry is the working body of the Republican Commission on Energy Efficiency and Development of Renewable Energy Sources, as well as the national coordinating body of the Republic of Uzbekistan in the International Renewable Energy Agency (IRENA). Extra-budgetary Intersectoral Energy Saving Fund under the Ministry of Energy was created under the Ministry.

Ministry of Investment, Industry and Trade

The Ministry of Investment, Industry and Trade oversees the ensuring coordination of the development and effective implementation of state development programs, investment programs and projects. From a CC policy perspective, the Ministry is responsible for (i) modernizing the infrastructure of industrial enterprises using clean and environmentally friendly technologies and industrial processes; (ii) attraction of foreign investments, as well as loans and grants, from international financial institutions, foreign government financial organizations and other foreign donors for the implementation of the activities specified in the Strategy of the Republic of Uzbekistan for the transition to a "green" economy; (iii) mobilizing financial resources through climate finance.

Ministry of Agriculture

The Ministry of Agriculture oversees policy the implementation of a unified state policy in the field of agriculture and food security. From a CC policy perspective, the Ministry is responsible for carrying out state policy in the field of (i) increasing yield and average productivity of production of basic types of food agricultural products; (ii) achieving a neutral balance of land degradation; (iii) introduction of modern resource-saving agricultural technologies; (iv) reducing the negative impact of the agro-technical complex on the environment.

Ministry of Water Resources

The Ministry of Water Resources is responsible for the introduction of integrated water resource management principles in selected basins and the transformation of administrative water management organizations to hydrographic basin irrigation system authorities. The Ministry is also working on the development and implementation of projects for the introduction of climate-resilient and water-saving technologies. From a CC policy perspective, the Ministry is responsible for (i) improving water use efficiency; (ii) improving the methods for monitoring reclamation lands.

Ministry of Construction, Housing and Communal Services

The Ministry of Construction, Housing and Communal Services is the state body in charge of policy development and implementation in the field of Construction, Housing and Communal Services (Residential Heating and Waste Management, Wastewater Treatment). It coordinates with the Joint-Stock Company named “Uzpromstroymateriali” which works on building materials production in the country.

From a CC policy perspective, the Ministry is responsible for (i) the development of a methodology for assessing the energy efficiency of buildings and structures; (ii) the implementation of energy-efficient and energy-saving innovative projects and solutions in construction; (iii) the introduction of resource and energy-saving technologies and equipment into the system of housing and communal

services, including equipping housing and communal services with modern metering and control devices; (iv) introduction of decentralized heat supply systems for multi-apartment housing stock, social and other facilities; (v) introduction of energy-efficient technologies for heat energy generation, including renewable energy sources; (vi) improving the efficiency of wastewater treatment.

Ministry of Transport

The Ministry of Transport is the state body in charge of policy development and implementation in the field of Transport. From a CC policy perspective, the Ministry is responsible for (i) revising the standards for air emissions from road transport, taking into account international standards (including the transition to environmentally friendly fuel in accordance with Euro-4 and higher standards); (ii) expansion of production and use of vehicles with improved characteristics of energy efficiency and environmental friendliness in accordance with Euro-4 and higher standards, electric vehicles, cars with hybrid engines and gas-fueled; (iii) gradual transfer of public transport to natural gas fuel and electric traction; (iv) promotion of cycling in large cities and towns of the country.

State Forestry Agency under the Ministry of Ecology, Environmental Protection and Climate Change

The State Committee of Forestry is a government body that implements a unified state policy in the field of creating, breeding, restoring and protecting forests, their rational use, as well as conducting forest hunting, organizing and conducting activities of nature reserves, national natural parks and other protected natural areas included in the Committee's mandate. From a CC policy perspective, the Committee is responsible for the development and implementation of measures to prevent desertification, reforestation, protective afforestation and afforestation of the dried bottom of the Aral Sea.

Ministry of Emergency Situations

The Ministry of Emergency Situations is a government body in the field of prevention and elimination of natural and man-made emergencies, civil protection, hydrometeorology, seismic observations, safe operation of ships, and protection of life and health of citizens in water objects. From a CC policy perspective, the Ministry is the state body in charge of policy development and implementation in the area of Disaster Risk Management.

Ministry of Health

The Ministry of Health is a government body that develops and implements the state policy in healthcare, legal regulation, insurance medicine, circulation of medicines and medical products, sanitary and epidemiological welfare of the population, conducting medical examinations, and organizing medical and pharmaceutical education. From a CC policy perspective, the Ministry is the state body in charge of policy development and implementation in the area of public health.

2.2.4. State Institutions Carrying out Climate Change Observations, Expert Assessment, and Inspection Control

Hydrometeorological Service Agency under the Ministry of Ecology, Environmental Protection and Climate Change

Hydro-meteorological observations in Uzbekistan are carried out by Uzhydromet.

Uzhydromet is responsible for the development and improvement of the state system of hydrometeorological observations, formation and maintenance of the state hydrometeorological data fund, the state fund of data on environmental pollution, state accounting of surface waters and

carrying out research work to improve short-term and long-term weather forecasts, river water content, and climate change.

Uzhydromet carries out monitoring of the water regime of hydrological objects in the basins of the Amudarya and Syrdarya rivers and their components. It also conducts hydrometeorological and agrometeorological observations throughout the territory of the Republic of Uzbekistan. In the zone of responsibility of Uzhydromet there are stations with long periods of observation.

Uzhydromet is an integral – member of the World Meteorological Organization (WMO), the main purpose of which is to observe the weather and climate, to cooperate in the collection and exchange of data on meteorological, hydrological, and other observations of the state of the environment.

Since 1967, Tashkent has been one of 29 regional meteorological centers that collect meteorological information and prepares and distribute weather maps and forecasts in the States of Central Asia, the Middle East and the Asian part of Russia. This is the area of responsibility of Uzhydromet in the World Weather Watch (WWW) system.

The network united under the Uzhydromet includes more than 400 stations of environment observation. Meteorological, hydrological and agrometeorological observations are carried out on the territory of the republic since 1921. The ecological observations of the conditions of water bodies, air and soil have been carried out since 1972.

The State Ecological Expertise Center under the Ministry of Ecology, Environmental Protection and Climate Change

The State Ecological Expertise Center is responsible for state ecological expertise, and assigned the following functions (VMQ-541, 2020):

- organization and conduct of state ecological expertise;
- development and approval of normative-technical and instructional-methodical documents on state and public environmental expertise;
- attracting experts and specialists, including foreign and international experts, to carry out state environmental expertise;
- sending requests to banks and other credit organizations about stopping (terminating) financing, granting loans and other financial operations for objects that have not received a positive conclusion on the state ecological expertise;
- monitoring and controlling the implementation of conclusions on state ecological expertise.

The State Ecological Expertise Center and its 14 regional branches of the Ministry of Ecology, Environmental Protection and Climate Change conduct state ecological expertise. The objective of the units is to provide state ecological expertise, submit draft expert opinions to the Ministry of Ecology, Environmental Protection and Climate Change for approval, and, in the case of documents or activities having cross-border impact, to submit expert opinions to the Government for approval.

2.3. SUB-NATIONAL INSTITUTIONAL FRAMEWORK FOR CLIMATE CHANGE

The Republic of Uzbekistan consists of the Republic of Karakalpakstan, twelve regions (oblast) and Tashkent city, 170 districts (rayon) and 25 cities of regional (republican) subordination.

The system of public administration in Uzbekistan is comprised of two tiers, central and local. Local governments are subdivided into regional, district and city administrations. In addition, community self-governments also operate locally, although they are not part of the public administration system.

The local government consists of a local state administration (administrative body - khokimiyats) and an elected local council (legislative body – Kengashes (Councils) of people's deputies) at the regional (oblast) and district (rayon) levels. Representatives are elected for a period of 5 years. The local administration represents the executive and regulatory bodies of the state at the regional, district, or city/town levels and implements the policies of the President and Cabinet of Ministries in the provinces. All the heads of the local state administrations are appointed by the central government, subject to approval by the corresponding local councils. The President appoints regional (oblast level) governors, who in turn appoint district and city/town governors that come under regional subordination. Thus, the district and city governors are accountable to the regional governor, who in turn is accountable to the President and Cabinet of Ministries.

The tasks decentralized to local governments in Uzbekistan include environmental protection, prevention of natural and technological accidents, fire protection, public sanitation, public order and security, local economic and social development, culture, tourism, sports, maintenance of leisure facilities, communal services (e.g., water, gas, electricity, heat, waste management, sewage, engineering infrastructures), construction, maintenance and local road repair, public transport, employment and job creation support, and the development of small and medium enterprises.

Regional departments of Uzhydromet prepare and implement territorial hydrometeorological programs, including measures to adapt to climate change and develop social infrastructure. Regional departments of the Ministry of Ecology, Environmental Protection and Climate Change conduct ecological supervision and implement measures. In general, regional government administrations are not involved in facilitating national climate objectives or the preparation of National Communications or the NDC.

National strategies and policies are developed by central government bodies, considering the views of local government. Climate-related participatory decision-making and stakeholder input processes for managers and policy makers are insignificant, because of the lack of relevant technical capacity of organization structures within local governments to achieve climate change goals. Given that the lack of technical capacity is a major issue across government agencies, it is reasonable to say that this is an area that will require major investment and resources going forward.

In this regard, it is important to establish cooperation mechanisms between the regional governments and sectoral ministries to promote institutional development for climate change planning and the creation of climate change units or specialized teams at the departmental level. Moreover, the inclusion of local government representation on the Inter-Agency Council of the Cabinet of Ministers for managing national climate change and green transition actions could be considered.

2.4. CIVIL SOCIETY AND ACCOUNTABILITY INSTITUTIONS

2.4.1. Non-governmental organizations

The involvement of non-governmental organizations (NGO) in the process of development and implementation is becoming more active. Until 2018 the issues of climate change and ecology were mainly raised by the Environmental Movement of Uzbekistan, which was launched in 2008, and designed to consolidate the efforts of civil society in this direction. Subsequently, it became an Environmental Party, which made it possible to raise the environmental agenda to the level of political discussions.

During the last four years, a number of NGOs have become actively involved in this issue. The latest big event – a series of policy dialogues on green growth and climate change was held jointly by the

MoEF, the World Bank, and the Central Asia Regional Economic Program (CAREC) between August 2021 and February 2022. More than 700 stakeholders participated in the dialogues including policymakers, officials from more than 30 Uzbekistan ministries, agencies, and municipal authorities, as well as leading national and international experts, civil society, academia, development partners, and the public. As a result of this policy dialogue, a draft of an Action plan for Climate Change Strategy was developed.

The gradually increasing involvement of NGOs in terms of climate change has increased the activity of some NGOs. For instance, "Ecoforum" works to unite the efforts of civil society around a national nature conservation strategy. Their area of expertise includes integrated water and land resource management, ecotourism, and renewable energy. The organization also supports the development of an environmental journalists' network. "Khorezm Rural Advisory Support Service" is an independent NGO comprising practitioners, researchers, and other specialists who share common ideas and work together to improve rural livelihoods, alleviate poverty, and increase food security and environmental sustainability in rural Uzbekistan.

The nationwide movement "Yuksalish," which has branches in every region of Uzbekistan, aims to gather volunteers, diaspora, and NGOs to assist in the implementation of planned reforms and promote citizens' participation in governance. The heads of the Yuksalish movement in the central administration are selected among the deputies of the Oliy Majlis, local kengashes (local-level deputies), and khokims (mayors). Having members of Parliament on board, the movement plays a key role in citizens' engagement and public oversight policy making.

NGOs are mainly engaged in preparing various climate change studies and reports which are primarily focused on generating information on climate change impacts and raising public awareness of climate change. NGOs do not have the technical capacity to do financial assessments or estimates of climate change measures, and they are not directly involved in monitoring and reporting processes related to budget.

Due to the fact that these organizations usually work on a grant-basis provided by national and (more commonly) international organizations, a major barrier limiting NGOs' activities is the small number of funding sources for independent NGOs and the limited capacity of NGOs to raise funds for their work. However, the government finances local NGOs to undertake different social initiatives through its public fund grant competitions.

To strengthen the engagement of NGOs in the formulation, implementation, and monitoring of climate actions, it is considered expedient to create a permanent Climate Change NGOs Platform (led by civil society with the support of the government) as a representative body to promote civil society participation in policy planning, implementation and oversight.

2.4.2. Scientific Research Organizations

The Center for Economic Research and Reforms under the Administration of the President of the Republic of Uzbekistan conducts analytics and research to develop proposals on strategic directions for deepening socio-economic reforms, including improving management in economy, finance, entrepreneurship and the social spheres.

From the CC perspective, the Center considers climate change mitigation and adaptation issues in implementing its following tasks:

- providing, on a permanent basis, scientifically substantiated proposals and recommendations to local government authorities in the development of programs aimed at accelerating the processes of socio-economic development in the regions;

- developing proposals for the creation of new sustainable production chains in the sectors of the economy by studying the existing resource base on the ground;
- developing submissions to the competent authorities of evidence-based proposals through an in-depth analysis of international best practices for the development of cluster activities in the industry;
- presenting the business intelligence to local government bodies aimed at solving urgent problems using modern information technologies and an interdepartmental integrated database.

Scientific Research Hydrometeorological Institute works on the following issues:

- preparing scientific reference manuals and regulatory documents on the hydrometeorological and agrometeorological regime and the state of environmental pollution, necessary for various sectors of the national economy;
- assessing changes in water resources under possible long-term climate change;
- developing, and introducing into practice, methods of active influence on hydrometeorological phenomena and processes;
- studying glaciers, avalanches and snow cover in the mountains, as well as assessing the level of pollution of atmospheric air, surface water and soil in the territory;
- developing forecasts of changes in environmental pollution, analyzing the influence of various natural and anthropogenic factors on the state of the natural environment; and
- climatic research, development of new approaches to the study of climate and its changes, drought and desertification monitoring.

The Research Institute of Ecology and Environmental Protection under the Ministry of Ecology, Environmental Protection and Climate Change deals with the issues of processing and disposal of industrial and household (municipal) waste, the development of regulatory and methodological documentation in the environmental protection sphere. The activities of the institute are aimed at solving current and future tasks of the Ministry of Ecology, Environmental Protection and Climate Change in the natural resources protection sphere. Currently, developments in the purification of waste and natural waters from toxic substances, heavy metals and biogenic elements, and the purification of water, soil, and soil from oil products are its interests of greatest relevance.

Institute for Macroeconomic and Regional Researches is the research organization under the Cabinet of Ministers of the Republic of Uzbekistan. In the Institute a “Green Hub” has been established. The main mission of the “Green Hub” is to analyze the current situation and develop pathways to sustainable economic development based on the principles of “green” economy by uniting experts, research organizations, IFIs, and enterprises in this field. The objectives of the “Green Hub” are to create a network of experts, develop modern forecasting and analytical tools, raise awareness of the “green” economy, and the creation of a large database and research.

International Strategic Center for Agri-Food Development (ISCAD) under the Ministry of Agriculture is an authorized state institution for the implementation of projects and the implementation of research activities in the field of food and agriculture, financed by foreign investment and grants, as well as budgetary funds. ISCAD has been created to improve the system of reform research, strategic planning, and management in the food and agriculture sector. The role of ISCAD is to act as an analytical think-tank, strategic managing authority, sector monitoring mechanism, focal point, reform driver, and technical secretariat in order to ensure the coherence, coordination, effectiveness and

efficiency of agri-food strategy and policy implementation throughout the whole policy-making process.

Higher education institutions

Much attention in the country is paid to the development of environmental education, as one of the most important factors supporting sustainable development. The development of environmental education is carried out in accordance with the Concept "On the development environmental education, training and retraining of personnel, as well as the prospects for improving the system advanced training in the Republic of Uzbekistan" and "The concept of education for sustainable development in the Republic of Uzbekistan" (2011). As part of the implementation of these documents, textbooks for schools, colleges, lyceums and universities, training programs have been improved, including coverage of climate change issues, training and retraining of the teaching staff of educational institutions.

Some higher education institutions in Uzbekistan train specialists in environmental economics, biodiversity, ecology, and related areas and conduct research on the state of the environment, ecosystems and biodiversity loss, spatial and temporal changes, land use and land coverage, biodiversity assessment, and monitoring and conservation issues. These educational institutions include National University of Uzbekistan, Tashkent State Technical University named after Islam Karimov, Tashkent State University of Economics. The Ministry of Higher and Secondary Specialized Education works on the training of environmental specialists in a number of higher educational institutions. Every year, the country's universities graduate about 300 environmental specialists.

In 2005, the Ministry of Higher and Secondary Specialized Education, the Ministry of Public Education and the State Committee for Ecology created the Interdepartmental Coordinating Council for the Development of Continuous Environmental Education and Education for Sustainable Development. The Council coordinates UN strategies on education for sustainable development and integration into the education system of the Republic of Uzbekistan.

A training course "Climate Change and Climate Risk Management" has been developed for students of higher educational institutions in Uzbekistan. Within the framework of the UNDP project "Support to Uzbekistan in the Transition to the Path of Low-Carbon Development of the National Economy", an electronic "Course on Climate Change" was prepared for international climate negotiators, students and the general public.

At the same time, the problem of providing highly qualified personnel necessary for scientific research, training teachers and engineering staff on climate change has not yet been fully resolved.

2.5. DEVELOPMENT PARTNERS

United Nations Development Program (UNDP) in Uzbekistan has been operating since 1993 and is carried out in cooperation with the Government in finding solutions to national development challenges. UNDP assistance in Uzbekistan focuses on two broad, interrelated objectives: to support the Government in advancing economic and democratic reforms and to strengthen and facilitate civil society participation in development processes at the national and local levels. UNDP operates under three thematic areas: inclusive and sustainable growth; inclusive and democratic governance; environment and climate change.

In the field of providing assistance aimed at ensuring effective governance, UNDP in Uzbekistan pays special attention to the issues of inclusive and democratic governance and acts as a reliable counterpart for the Government to develop accountable, transparent and inclusive policy, to build gender-sensitive institutions, as well as to increase civil society engagement. The final outcome of all

these activities is expected to be a governance framework that satisfies the needs of all people and leaves no one behind. It helps national partners to build social capital and to open civic spaces, as well as to enter new social contracts that are based on the rule of law, effective governance, and human rights.

One of the key successes in this regard was the judicial reform in Uzbekistan aiming at making courts more transparent, open and sensitive to the needs of citizens. Issues related to inclusive and democratic governance are also addressed through assistance in streamlining the delivery of public services. Considerable resources have been used to replace legacy paper-based processes by digital ones; this allowed to accelerate and increase effectiveness of data search and service delivery, especially in rural areas of Uzbekistan and at makhalla (city block) levels. Increasingly more services become available for all citizens, especially for people living in remote areas of the country, domestic violence survivals, disabled people, and HIV-positive people.

In coordination with the Central Election Commission, Parliament of Uzbekistan and other development agencies, UNDP acts to strengthen electoral and parliamentary development, as well as to align key pillars of democracy, engagement, voicing and self-expression with international standards. Inclusive and Democratic Governance Unit cooperates with national partners on developing effective anticorruption mechanisms in the public and private sectors.

In the field of achieving inclusive and sustainable economic growth, UNDP Uzbekistan promotes new paths for understanding and addressing the poverty and inequality challenges, as well as ensures consistency in implementing the policy and using development financing mechanisms in line with the national SDGs. Activities aiming to support Government's efforts to scale-down the poverty cover all interconnected development areas, including creation of jobs, enhancement of human capital capacity and development of social resilience. Currently, there is ongoing assessment of effectiveness of implemented national reforms that aim to secure interests of the most vulnerable population groups in Uzbekistan. It is based primarily on participatory studies that are performed at the level of city blocks (makhallas). Findings and results of this study will serve as a basis for development of future social programs, such as proposed Integrated National Financing Framework that will be based on the new innovative sources of financing, such as Islamic financing (Green Sukuk), social bonds, crowdfunding, and risk financing.

As long as Uzbekistan continues its recovery from COVID-19 pandemic, Inclusive and Sustainable Growth Unit assists in development of the national policy for sustainable and green economy. The ultimate objective of this initiative is the creation of decent jobs and improvement of living conditions for all citizens of Uzbekistan. Special attention is paid to supporting new digital start-ups, especially those that are headed by women and operate in rural areas and regions with high poverty level and vulnerability to climate change.

In the field of environment and climate change action, UNDP supports Uzbekistan in implementation of its agenda on reducing greenhouse gas emissions and climate change adaptation, protection of natural spaces of Uzbekistan and better readiness to potential natural and human-caused disasters. The Unit operates in order to ensure that all development in Uzbekistan is sustainable and does not invoke unfavorable environmental impact.

UNDP helps Uzbekistan in developing specific, gender-sensitive climate change mitigation and adaptation plans for national healthcare, agriculture, water supply, emergency, and housing construction sectors. UNDP supports implementation of Uzbekistan’s Green Economy Transition Strategy until 2030, provides technical and financial assistance in order to facilitate reduction of carbon emissions in the country through improving energy efficiency and use of renewable energy sources, as well as supports agriculture that leads to increases in yields of agricultural crops and allows to avoid land degradation.

In accordance with the National Biodiversity Conservation Strategy for 2019-2028, it advocates for sustainable management of mountainous, wetland and desert ecosystems. It supports national efforts to improve ineffective agricultural farming techniques and to achieve an inclusive transition to the green economy in agri-food sector through climate-smart knowledge and innovation system in the agricultural sector of Uzbekistan.

UNDP provides support to national-level implementation of Sendai Framework for Disaster Risk Reduction 2015-2030 by supporting establishment of early warning systems for climate change-related hazards. It also supports development of the National Action Plan on Persistent Organic Pollutants (POPs) in order to identify priority measures for hazardous waste management.

Finally, UNDP works on system integration aiming to address environmental and social challenges that are faced by Aral Sea Region, using system engineering, data and intelligence, alternative financing, innovations, and comprehensive policy approach. For more than 20 years (2014-2024) UNDP has been implementing and continues to implement joint projects that foresee provision of USD 88 million to Uzbekistan.

Agence Française de Développement (AFD) was authorized to operate in the country back in 2011, under a mandate for "green and inclusive growth". It opened a regional office in Tashkent in 2015 and launched its first project in Uzbekistan in 2016. It allocates loans to the State, public institutions and private actors. AFD's Uzbekistan office is directly attached to the Eurasia regional office in Istanbul.

Signed in 2018 and then reinforced in 2019, a policy-based loan made in co-financing with the Asian Development Bank affirms AFD's support to the Uzbek government to initiate these economic and financial governance reforms and support it in its economic and social transformation over the long term. These reforms relate in particular to improving the publication of economic data, strengthening public finance management, modernizing banking supervision and the governance of public enterprises. French experts also come to share their know-how in the management of public finances, public contracts and public enterprises.

AFD supports the cities of Uzbekistan in the areas of waste and water. In particular, it supports the city of Samarkand in its ambition to modernize solid waste management, by strengthening local capacities and setting up new equipment for the collection, treatment and recovery of this waste.

AFD is also supporting an Uzbek hydropower development project, via a program to secure and modernize the Charvak dam, near Tashkent, and to extend hydroelectric facilities in the Andijan region, with associated technical assistance.

The growth trajectory of the Uzbek economy must take into account the issues of land management and protection of the country's natural resources. Aiming at developing the agricultural sector and rural areas, AFD works alongside the Ministry of Livestock and Uzbek institutions active in the livestock sector, such as commercial banks and producer associations. The objective is to promote the development of sustainable animal production chains, integrating small producers and mobilizing climate-beneficial investment instruments. AFD committed 990 million Euros to Uzbekistan since 2016 and has funded 10 projects.

World Bank (WB) Group's Board of Executive Directors discussed and endorsed the Uzbekistan Country Partnership Framework (CPF) for the period 2022-26. The CPF will guide the World Bank Group's work for the next five years supporting the Government of Uzbekistan's strategic priorities outlined in the National Development Strategy for 2022-26.

Uzbekistan joined the World Bank Group's institutions in 1992-1993, and the new CPF marks 30 years of partnership between the Group and Uzbekistan. Since 2017, this partnership has evolved into

strong cooperation, as reflected by the unprecedented level, diversity and dynamism of World Bank Group financing, knowledge products and technical assistance.

The World Bank and International Finance Corporation (IFC) have supported Uzbekistan's ambitious reforms to transform and modernize its economy, society and private sector, thereby contributing to the achievement of many important milestones for the country. Notable examples include the elimination of forced labor from the cotton harvest through reforming the agriculture sector and the launch of first large-scale, privately developed and operated renewable energy facility - the solar photovoltaic power plant in the country's Navoi region.

The new framework will support three strategic objectives to accelerate Uzbekistan's transition towards an inclusive and sustainable market economy: 1) increase inclusive private sector employment; 2) improve human capital; and 3) improve livelihoods and resilience through greener growth. The CPF will also pursue cross-cutting objectives that are indispensable for a successful transition and for Uzbekistan to achieve its 2030 ambitions: (i) closing gender disparities; and (ii) strengthening citizen participation and accountability for public services.

2.6. CONCLUSIONS AND RECOMMENDATIONS

The institutional framework for climate change in Uzbekistan includes a wide range of public administration, civil society and educational and research institutions. These are responsible for policy development, implementation, monitoring, control, research/education, public awareness and other activities in the field of climate change.

The Ministry of Ecology, Environmental Protection and Climate Change and Inter-Agency Council for Coordinating Measures for the Transition of the Republic of Uzbekistan to a "Green" Economy are the national authorities on cross-sectoral streamlining and coordination of climate change Issues. The Inter-Agency Council coordinates the implementation of the Strategy for Green Economy Transition and Green Growth Program, and the permanent secretariat of the IAC Technical Secretariat has been created in the Department of Green Economy Development at the Ministry of Economy and Finance.

The Ministry of Ecology, Environmental Protection and Climate Change, Ministry of Economy and Finance, Ministry of Energy, etc., have specific areas and components within their activities which are closely related to climate change mitigation and adaptation issues. This includes the development and implementation of state policy in areas such as renewable energy, industry, waste management, etc. These bodies receive funding and implement current and capital programs, using both budgetary resources and external loan and grant funding.

The Ministry of Ecology, Environmental Protection and Climate Change via its such working bodies as the Hydrometeorological Service Agency and the State Ecological Expertise Center carries out climate change observations and inspection control. Thus, the Uzhydromet carries out hydro-meteorological observation in Uzbekistan, while the State Ecological Expertise Center is a responsible state ecological expertise.

The tasks decentralized to local governments in Uzbekistan include environmental protection, communal services (e.g., water, gas, electricity, heat, waste management, sewage, engineering infrastructures), public transport and others. Regional departments of Uzhydromet prepare and implement territorial hydrometeorological programs, and regional departments of the Ministry of Ecology, Environmental Protection and Climate Change conduct ecological supervision and implement measures. However, regional government administrations are not involved in facilitating national climate objectives and implementation of National Communications and the NDC.

However, due to the fact that there is no high-level climate change coordinating body in general, as well as the IAC does not have the authority to decide on climate finance, it is necessary to finalize the creation of the Inter-agency Commission for the Coordination of Climate Change Actions chaired by the Prime Minister of the Republic of Uzbekistan. Also, it is necessary to specifically regulate its mandates (i.e. climate financing mandates) and activities to strengthen the coordination mechanism for intersectoral adaptation planning and implementation at different levels.

In addition, climate-related participatory decision-making and stakeholder input processes for managers and policy makers are insignificant, because of the lack of relevant technical capacity of organization structures within local governments to achieve climate change goals. In this regard, it is important to establish cooperation mechanisms between the regional governments and sectoral ministries to promote institutional development for climate change planning and the creation of climate change units or specialized teams at the departmental level.

Furthermore, while the scientific research institutes under sectoral ministries provide support in the development of plans with climate change adaptation and mitigation elements, and especially assist the government to develop country commitment reports under UNFCCC, their contributions are specific and only for certain issues.

Given these challenges, the creation of an independent advisory mechanism to evaluate and advise on the adequacy of climate change strategy and policy and their subsidiary instruments in Uzbekistan, as well as to monitor and assess progress in their implementation, would be beneficial. Strengthening the capacities of scientific research institutes and academia to cultivate local professionals, researchers, and experts on climate change issues would also help improve human capital within government agencies.

3.1. INTRODUCTION

The goal of the Climate Change Expenditure Assessment is to identify the main directions of climate change expenditures and to assess the size of climate change-related budget expenditures and their trends. This review covers the expenditures of the State budget of Uzbekistan for the period of 2020-2022.

3.2. DEFINING CLIMATE CHANGE-RELATED EXPENDITURES, THE PROCESS AND METHODOLOGY OF EXPENDITURE ASSESSMENT

The methodology of CC expenditure assessment required decisions on two issues: the classification of different types of climate expenditures and the weighting of climate expenditures to account for their climate relevance. This section describes the approach taken for each.

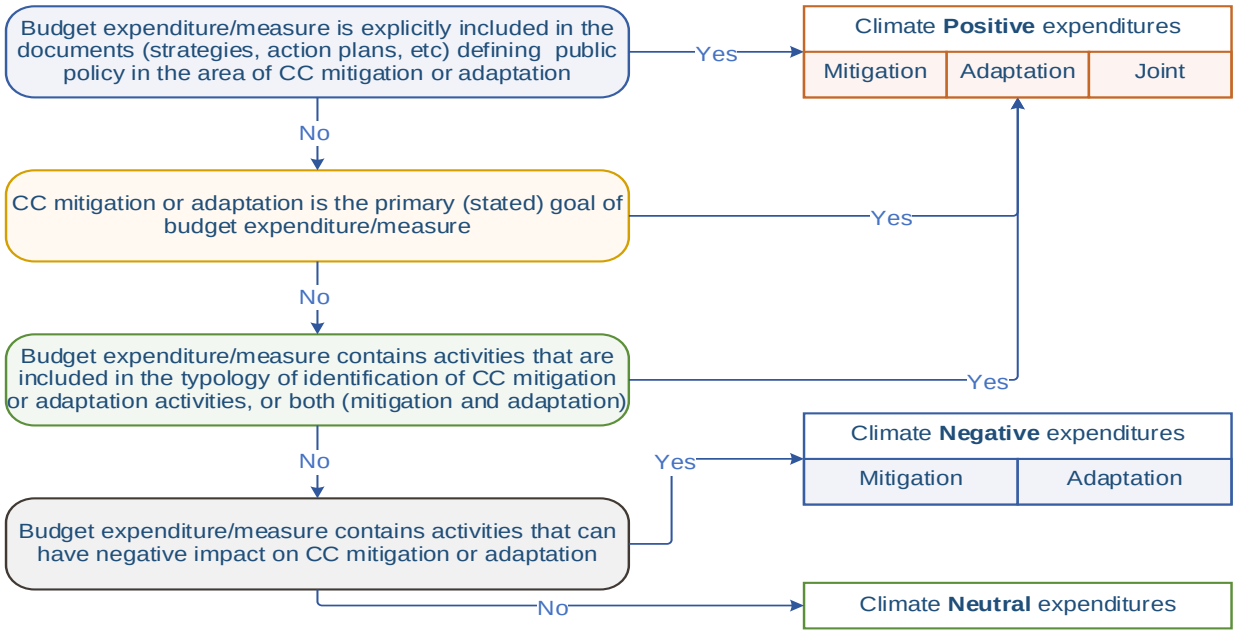
3.2.1. Classifying climate expenditures

To determine the relevance of budget expenditures to CC mitigation and adaptation, two interrelated concepts were taken into account:

- **The purpose of the expenditure** – considers whether the given expenditure is aimed at and implemented to mitigate CC or increase adaptation.
- **The impact of the expenditure** – takes into account the expected impacts on CC mitigation or adaptation enhancement as a result of the implementation of the expenditure, as well as the negative impacts on CC mitigation or adaptation, regardless of the stated objective for the expenditure.

All expenditures that met any of the above definitions were considered Climate expenditures. It was recognized that in addition to positive impacts, there are also expenditures that have negative impacts in terms of CC mitigation and adaptation. These Climate negative expenditures were also identified and classified in the expenditure review process. **Figure 3.1** illustrates how the expenditure's purpose and impact are combined to determine the allocation of spend to different categories of CC expenditures.

Figure 3.1. The process of identification of Climate expenditures



Climate expenditures were classified based on the following two criteria:

- **Nature of Climate expenditures** (Mitigation, Adaptation, Joint)
- **Climate relevance** (Positive, Negative, Neutral)

The process of identification and classification of Climate expenditures was guided by the typology of identification of Climate expenditures presented below, which was developed based on international experience from approaches such as the Multilateral Development Bank's climate finance tracking framework. The typology contains the classifications of activities related to CC and the qualifying criteria for each type of activity.

3.2.1.1. Mitigation Activities

3.2.1.1.1. Positive mitigation activities

The OECD defines CC mitigation activities as activities that 'contribute to the stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system by promoting efforts to reduce or limit GHG emissions or to enhance GHG sequestration.

To identify CC mitigation activities the Typology of CC mitigation activities was implemented which is based on the list of mitigation activities identified by the Multilateral Development Banks (MDBs) for the purposes of tracking their climate finance commitments. The MDB approach has the benefit of being one of the most comprehensive classifications, which has been tried and tested in low and middle-income country contexts. The approach identifies a range of activities across 11 sectors, with many of those activities having certain criteria that need to be satisfied. Annex 5 illustrates the core elements of this classification.

3.2.1.1.2. Negative mitigation activities

The identification of negative mitigation activities is more challenging than positive mitigation activities, as to date, there are no internationally accepted practices that one can build upon for its use. There is also a conceptual challenge: given the preponderance of GHG emissions within the global economy, almost any activity will be associated with some sort of GHG emissions and, in many of these cases, there will be few alternatives available to the government when setting its budget. A budget tagging exercise that tags all expenditures that lead to GHG emissions as climate-negative expenditures would not provide much useful information.

Given this, the negative mitigation activities were identified as those activities recognized by the national and international community as being particularly GHG-intensive and for which some lower-emissions alternatives are increasingly available. The list of activities includes:

- All activities associated with the coal value chain, including both extraction and consumption
- All activities associated with the manufacture and use of internal combustion engine road vehicles and the use of petrol, diesel, or other hydrocarbons for their propulsion
- All waste management activities that lead to waste in informal dumps, unsanitary landfill, or sanitary landfills without landfill gas capture
- Activities associated with the cattle and sheep value chain

- Subsidies to any form of fossil fuel energy production or consumption as well as subsidies to agricultural production (unless subsidies are targeted towards emission reduction activities).

In the Uzbekistan context, the activities that are related to the natural gas value chain were not considered climate negative on account of there being several use cases where natural gas is less emissions-intensive than the commonest technology. The same applies to activities that are related to road construction, as the emissions impact depends mainly on the technology of the vehicles that use the road.

3.2.1.2. Adaptation Activities

The OECD defines Climate change adaptation activities as *'activities that intend to reduce the vulnerability of human or natural systems to the impacts of climate change and climate-related risks, by maintaining or increasing adaptive capacity and resilience'*.

There are at least three challenges associated with adaptation activities, and associated expenditures, as well as their inverse.

First, adaptation is a context-specific activity. Depending on the climate risks that a country or people may face and its likely future socio-economic development, the same activity can either support climate adaptation (enhance climate resilience) or constitute 'maladaptation' (undermine climate resilience). For instance, the development of new water resources might either represent a way of making a population more resilient to a future dryer or could increase its dependence on water resources that will become less available in the future.

Second, there is a wide range of different ways in which adaptation can be enhanced (or reduced). One potentially helpful way of thinking about the different ways in which adaptation is to recognize that climate risk is a function of three constituent elements:

- Hazard: physical events that arise or are made more likely because of climate change,
- Exposure: the people and assets located in places where hazard events occur,
- Vulnerability: the extent to which human beings, their livelihoods and assets suffer adverse effects when impacted by a hazard.

The implication is that there are also three main ways in which adaptation can be undertaken:

- The likelihood or severity of hazard events can be reduced – for example, flood barriers might be constructed
- The exposure of people and assets can be altered – for example, land use planning can be directed away from flood plains or areas which are expected to suffer an increased risk of droughts
- The vulnerability of people and assets to climate hazards can be reduced, most notably through enhancing their adaptive capacity to cope with hazardous events. Sometimes the vulnerability reduction will be to a specific hazard i.e., roads will be made more resilient (less vulnerable) to drought conditions. Often, however, generic factors such as income and the presence of social support networks are key drivers of vulnerability.

It also follows that maladaptation (or negative adaptation activities) might arise if those activities increase the likelihood or severity of hazardous events, increase the number of people and assets exposed to hazards, or increase the vulnerability of people to hazardous events.

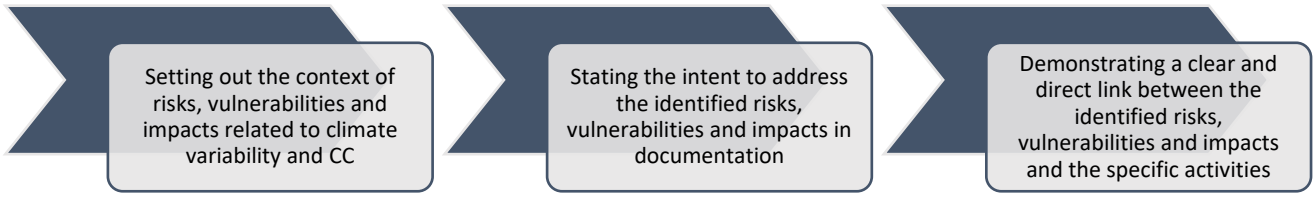
Third, and building from the second point, much general development is also likely to support a vulnerability reduction and hence might be argued to be an adaptation measure. For example, one

academic study suggests that universal education should be seen as the top priority for enhancing societies' adaptive capacity to future climate change (Lutz, et al., 2014). However, this is an activity that governments will support for many reasons; it is highly unlikely that in allocating budget to this activity they do so because of the climate adaptation impacts it has.

3.2.1.2.1. Positive adaptation activities

Given the mentioned challenges associated with adaptation activities, a three-step approach was implemented to identify adaptation activities, as followed by both the OECD and the MDBs:

Figure 3.2 A three-step approach to identifying CC adaptation activities



- Setting out the context of risks, vulnerabilities and impacts related to climate variability and CC: for an activity to be considered as one that contributes to adaptation to CC, the context of climate vulnerability should be set out in the associated documentation, clearly using a robust evidence base. This could take a variety of forms, including use of material from existing analyses and reports, or original, bespoke climate vulnerability assessment analysis carried out as part of the preparation of a project.
- Stating the intent to address the identified risks, vulnerabilities and impacts in the documentation: the documentation should set out how the activity intends to address the context and location-specific CC vulnerabilities, as set out in existing analyses, reports, or a climate vulnerability assessment.
- Demonstrating a clear and direct link between the identified risks, vulnerabilities and impacts and the specific activities: the activity should explicitly address risk and vulnerabilities under current and future CC as identified in the documentation.

In cases where the documentary evidence needed to apply the above-described approach was not available, the identification of adaptation activities largely relied on the list of 'typical' adaptation measures. These 'typical' adaptation measures generally consist of measures that are expected to reduce the intensity of hazards, reduce the extent to which people or assets are exposed to climate hazards, as well as activities that reduce vulnerability to specific climate hazards i.e. water efficiency measures to reduce vulnerability to droughts.

To accommodate the challenge that a lot of measures that generically reduce vulnerability are indistinguishable from good economic development, they were recognized as adaptation measures only in those cases where they are largely or exclusively targeted at groups that are known to be especially vulnerable to climate impacts, such as the rural poor or women.

An indicative list of these typical adaptation activities is provided in **Annex 6**. In all cases, where activity on this list was being undertaken, a check was undertaken to ensure that the activity will genuinely support climate adaptation in the country, given the climate risks that the country faces.

3.2.1.2.2. Negative adaptation activities

The identification of negative adaptation expenditures is probably the most challenging of all four categories. There are no international precedents that one can draw from and factors driving climate

risks are context specific. Moreover, the need to consider climate risks and adapt to them is a relatively new concept; it is plausible that a significant amount of budgetary expenditures made by the government fail to fully take account of future climate risks and, in so doing, could risk increasing future exposure or vulnerability to CC. However, identifying all such expenditures as negative adaptation expenditures are unlikely to be helpful.

In this regard, the negative adaptation activities were restricted to those that increase near-term water consumption. The risks associated with future drier conditions and a shortage of water resources are well-recognized in the country; activities associated with additional water consumption in the present will exacerbate these challenges.

3.2.1.3. Treatment of budget lines where climate relevance is uncertain

The application of the list of climate-relevant activities described in previous sections to the budget allocations yielded expenditures where it was not possible to determine whether the budget expenditure should be considered climate-relevant. This uncertainty typically was the result of one of two factors: (i) the budget line description was generic, covering a wide range of different activities/functions, and (ii) the budget line is more specific but does not reflect that the activity/function in question can either be undertaken in a climate-positive way or in a climate-neutral or even climate-negative way. In these cases, where the information related to the specific activities associated with some of these budget lines, was unable to help assess these expenditures, these line items were not identified as CC expenditures i.e., they were treated as **neutral expenditures**.

In all other cases, where the amount of climate-positive or negative expenditures within the budget line was 75% or more of the total amount of the specified budget line, the expenditures were classified as **climate positive** or **negative**.

Finally, it was recognized that some climate-positive activities simultaneously delivered mitigation and adaptation benefits including activities related to protecting natural ecosystems and biodiversity (especially forests). These activities were classified as **joint (both mitigation and adaptation)**.

3.2.2. Measuring Climate Expenditures

The Climate expenditure assessment did not account for the intensity of support for climate-relevant expenditures, that is to say, the expenditure assessment only distinguishes:

- whether the budget line is climate relevant or not;
- whether that relevance is positive or negative; and
- whether it relates to mitigation, adaptation, or affects both mitigation and adaptation.

In terms of expenditure weighting, the entire amount of specific budget item expenditure (budget line/measure) was identified and classified as either climate positive, negative, or neutral. Expenditure weights and cost allocations were not implemented.

3.3. OVERALL BUDGET EXPENDITURES AND THEIR TRENDS

Since 2017, Uzbekistan has embarked on a large-scale reform program that provides priority areas for modernizing the country and liberalizing all sectors of the economy. Key policy actions included liberalizing prices, trade tariffs and the exchange rate, opening up the economy to private initiative and international trade, implementing tax reforms, reducing the role of the state in economic activity, and initiating civil service reform (World Bank, 2019).

The main document regulating the priority areas of reforms in 2017-2021, was the Action Strategy for five priority areas of development of the Republic of Uzbekistan 2017-2021. The New Uzbekistan Development Strategy for 2022-2026 and "Uzbekistan – 2030" Strategy were approved in 2022 and 2023, respectively. The implementation of the approved Strategies provides for the adoption of the annual State Program for its implementation. The volume of budget allocations allocated to finance priority sectors, areas, and development programs are determined when forming the parameters of the State Budget of the Republic of Uzbekistan.

The crisis caused by COVID-19 significantly slowed down the GDP growth rate in 2020 (to 1.9%). In the context of a gradual recovery in economic activity, GDP growth in 2021 amounted to 7.4%, and in 2022 – 5.7%. However, during the period of 2020-2022, the total level of budget expenditures steadily increased both in nominal and real terms, reaching 28% of GDP in 2022 compared to 23.9% in 2020 (Table 3.1).

The increase in State budget expenditures over the period under review was due to additional expenditures related to measures to reduce the negative impact of coronavirus infection and stabilize the economic situation and social support for the population, as well as the continuation of structural reforms and adopted programs for the development of priority industries.

Table 3.1 Key indicators for 2020-2022: GDP, prices, budget

	2020	2021	2022
Gross Domestic Product (GDP) (billion UZS)	602,193.0	738,425.0	888,342.0
Consumer Price Index (CPI), year-on-year % change	11.1	10.0	12.3
Real GDP (in fixed prices of 2020) (billion UZS)	602,193.0	646,776.0	683,440.0
Real GDP (in fixed prices of 2020), year-on-year % change	1.9	7.4	5.7
State budget expenditure, total (billion UZS)	144,143.0	188,257.0	236,579.0
State budget expenditure, total (in fixed prices of 2020) (billion UZS)	144,143.0	171,174.0	191,550.0
State budget expenditure, year-on-year % change (in fixed prices of 2020)	-	18.8	11.9
State budget expenditure, total (in fixed prices of 2020) (% of Real GDP)	23.9	26.4	28.0

During 2020-2022, the ratio of current expenditures to expenditures on transactions with non-financial assets (capital expenditures) averaged 6.7:1, i.e. current expenditures were about 6.7 times higher than capital expenditures. In 2022 the share of capital expenditures within total expenditures *decreased* as compared to 2020, *decreasing* from 13.2% to 4.2%, as year-on-year capital expenditures *fell* by about 30%. However, throughout the period, current expenditures showed a steady *growth* trend (Table 3.2).

Table 3.2 The economic content of Republican budget expenditures for 2020-2022

	2020	2021	2022
Current expenditure (billion UZS)	71,767.4	89,890.0	107,037.0
Capital expenditure (billion UZS)	14,192.8	18,816.0	68,14.0
Republican budget expenditure, total (billion UZS)	107,122.8	133,166.0	161,877.0
Current expenditure (% of total expenditure)	67.0	67.5	66.1
Capital expenditure (% of total expenditure)	13.2	14.1	4.2
Current expenditure, year-on-year % change	-	125.3	119.1
Capital expenditure, year-on-year % change	-	132.6	36.2
Republican budget expenditure, year-on-year % change	-	124.3	121.6

3.4. TOTAL BUDGET EXPENDITURES RELATED TO CLIMATE CHANGE AND THEIR TRENDS

3.4.1. Climate expenditures

Issues related to climate change have a negative impact on the effectiveness of reforms carried out in Uzbekistan, in particular on economic growth and poverty reduction, as well as to ensure environmental and food security. Based on this, great attention is paid to reducing the impact of climate change and adaptation to it, accelerating measures for the transition to a "green" economy, and promoting a "green" and inclusive model of economic growth.

Several legislative acts have been approved, which regulate the transition of Uzbekistan to a "green" economy during the period 2019-2030, to stimulate “green” economic growth in the country, to encourage the rational use of natural resources, to attract “green” investments, and to mitigate the negative impact of environmental crises.

With increasing attention to the issues of further expansion of the use of renewable energy sources and resource conservation in all sectors of the economy, strengthening the resilience of the national economy to natural disasters and climate change, the expenditures of the State budget allocated for the implementation of approved measures are increasing.

Over the period under review, Climate-Positive budget expenditure increased in absolute number and demonstrated year-on-year percentage change growth. The share of Climate-Positive expenditure to total State budget expenditure/GDP fluctuated from 10.3/2.5% in 2020 to 11.1/3.0% in 2022 – amounting to 26,302.4 bln UZS in 2022 (Table 3.3).

Table 3.3 Climate-Positive budget expenditures in 2020-2022

	2020	2021	2022
State budget expenditure, total (billion UZS)	144,143.0	188,257.0	236,579.0
Climate Positive expenditure, total (billion UZS)	14,878.9	16,809.8	26,302.4
GDP (billion UZS)	602,193.0	738,425.0	888,342.0
Climate Positive expenditure (% of total budget expenditure)	10.3%	8.9%	11.1%
Climate Positive expenditure (% of GDP)	2.5%	2.3%	3.0%
State budget expenditure, total, year-on-year % change		130.6%	125.7%
Climate Positive expenditure, year-on-year % change		113.0%	156.5%

The sectoral distribution of climate expenditures was uneven: agriculture and forestry constituted the largest share of Climate-Positive expenditures (>40%), followed by transport and water supply (Table 3.4). The structure of Climate-Positive expenditures based on Functional classification reflects the implementation of the adopted Strategies and Development programs in the relevant industries:

- Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020-2030 and the Road map for its implementation adopted in October 2019. As one of the priority areas of its implementation was determined the improving the system for ensuring the rational use of natural resources and environmental protection, which provides for the rational use of land and water resources, the forest fund.
- Presidential decree “On measures to deeply reform the road service system of the Republic of Uzbekistan” adopted in December 2019. The document provides measures on the

introduction of new technologies and programs for the management of road assets that monitor the condition of roads, collect, and maintain the necessary statistical data.

- Concept for the development of the water sector of the Republic of Uzbekistan for 2020-2030 and the Road map for its implementation adopted in July 2020. One of the priority areas of its implementation was determined as a further expansion of the introduction of water-saving irrigation technologies in the cultivation of agricultural crops, their state stimulation, the attraction of foreign investments and grants in this area; as well as the improvement of the ameliorative state and ensuring the sustainability of irrigated lands, assisting in increasing land fertility, applying effective technologies to reduce the level and prevent soil salinization.

Within the **Agriculture sector,** the following expenditures were tagged as Climate Positive expenditures:

- Agriculture plant pest control service – which implements a unified policy for the use of plant protection products aimed at increasing crop yields and preserving crops through the use of highly effective, environmentally friendly and low-toxic plant protection products. Given that climate risks threaten agricultural production, including the livelihoods of many poor and vulnerable people, this was considered a climate-positive (adaptation) expenditure. 90% of total expenditures within this budget line constitute expenses on machines, equipment and machinery.
- LLC Agrochemical Station – which provides services for biological and chemical protection of plants, agrochemical services for land users, as well as conducting agrochemical studies of soils in farms, and analysis of the quality of feed and other agricultural products. This is considered a climate-positive expenditure for the same reason as the pest control service. Around 77% of total expenditures within this budget line constitute salary expenses of employees directly involved in the provision of agrochemical services.
- Allocation of subsidies to agricultural producers to acquire agricultural machinery and implementation of modern resource-saving technologies is considered to be a climate-positive expenditure on account of the support it provides to climate-vulnerable agricultural production and because it will help to reduce energy consumption and the use of other emissions-intensive agricultural inputs.
- Viticulture and Winery Development Agency under the Ministry of Agriculture of the Republic of Uzbekistan – which participate in the implementation of unified state policy in the field of combating land degradation processes, which is expected to worsen with the impacts of climate change. 100% of total expenditures within this budget line constitute transfers for improvement grape lands as well as the introduction of modern resource-saving technologies that will help reduce energy consumption and other emissions-intensive agricultural inputs.
- State Veterinary and Livestock Development Service. Around 50% of total expenditures within this budget line constitute salary expenses of employees directly involved in state veterinary supervision, and 35% - constitutes expenses for medicine, vaccines, and bacteriological preparations to diagnose and prevent animal diseases. These activities will become increasingly important as climate risks threaten livestock.
- Other expenditures within the Agriculture sector which were tagged as Climate Positive expenditures include expenditures of republican and regional diagnostic centers for animal diseases and food product safety, costs of prevention of highly dangerous infectious diseases of animals and other agricultural activities to support food product safety (which will become

more important with rising temperatures), as well as to support livestock in context of climate risks and targeted at climate vulnerable population.

Within the **Forestry sector,** the following expenditures were tagged as Climate Positive expenditures: maintenance costs of the central apparatus of the State Forestry Committee of the Republic of Uzbekistan, costs of maintaining national parks, Forestry Committee of the Republic of Karakalpakstan, maintenance costs of regional forestry departments. Overall, these activities are aimed to implement the unified state policy in the field of creation, breeding, restoration, conservation and protection of forests, their rational use, as well as forestry management, organization and conducting activities of nature reserves, national natural parks, and other protected natural areas. This will help to ensure that forests continue to play an important role in sequestering CO2 while effective forest management will also help to reduce the risk that climate change will threaten these habitats.

Within the **Transportation sector,** the following expenditures were tagged as Climate Positive expenditures: costs of design, construction, reconstruction and repair of streets and roads connecting the settlements, urban and rural areas, inter-farm rural highways, roads of villages and farms in the district. Overall, these activities are aimed to increase the adaptive capacity of climate-vulnerable groups.

Within the **Water supply sector,** the following expenditures were tagged as Climate-Positive expenditures: maintenance costs of water pipe and drain system, expenses of the Fund for the development of water supply and sewerage systems, financing of design, construction, reconstruction and modernization of drinking water supply and sewerage facilities, maintenance costs of the Drinking Water Control Inspectorate under the Ministry of Housing and Communal Services and its regional inspectorates, etc. Overall, these activities are aimed to ensure safe and reliable operation of drinking water supply and wastewater disposal systems, introduction of modern information and communication technologies and automated digitalization systems to support the introduction of resource-saving technologies, modernization of drinking water supply systems and wastewater disposal to ensure the quality expansion of water supply system. As well as resource-saving technologies helping to reduce GHGs, improving access to water and wastewater disposal is vital for increasing the adaptive capacity of climate-vulnerable populations in a changing climate.

Within the **General public services,** the following expenditures were tagged as Climate Positive expenditures: funds allocated to the “Obod Qishloq” and “Obod Mahalla” funds. Starting in 2018 the Obod mahalla and Obod qishlok programs are introduced, aimed to improve the infrastructure of settlements (villages and mahallas). The list of villages (mahallas) included in the programs is formed on the basis of established criteria, one of the main of which is the location in remote regions with difficult natural and climatic conditions. Overall, these expenditures include the construction and repair of drinking water supply facilities and sewerage systems, electricity and gas supply, internal roads and transport communication systems of settlements, modernization of heating networks, the adaptation of the canal-irrigation system for irrigation based on available water resources, modernization of the collector and drainage systems, lowering the level of ground waters, landscaping of the roadside area, creation of outdoor lighting systems to support for the introduction of resource-saving technologies. This will boost the climate resilience of these climate-vulnerable populations.

Table 3.4 Climate Positive expenditures by functional classification in 2020-2022 (UZS billion)

Functional Classification Sector	Functional Classification Group	2020	2021	2022
General public services	Legislative and executive bodies, public administration, financial and fiscal relations, foreign affairs	289.4	1,442.1	4,233.7
Economic affairs	Agriculture, forestry, fishery and hunting	6,402.7	8,212.8	13,618.0
	Transport	5,073.2	2,607.6	3,509.7
	Economic relations (not belonging to other groups)	0.3	9.5	153.5
Environmental protection	Environmental protection (not belonging to other groups)	242.3	317.8	0.9
Housing and community amenities	Water-supply	2,000.7	3,017.0	3,193.6
	Street lighting	155.4	174.2	212.8
	Housing and communal services not included in other categories	170.2	431.6	805.4
Social protection	Development costs of the coastal region	180.1	129.3	11.9
	Issues of social protection that do not belong to other categories	364.7	468.0	563.0
Total		14,878.9	16,809.8	26,302.4

3.4.2. Sources of funding for climate expenditures

Funds for the implementation of projects (programs) attracted through external sources (external loans and official grants from development partners) are not reflected in the State Budget revenues and expenditures and are not integrated into the national public financial management (PFM) systems.

The CPEIR covered only the expenditures of the State budget of Uzbekistan, therefore Climate expenditures cover only expenditures from internal sources. Expenditures of State Trusted Funds have also been excluded from the CPEIR.

3.4.3. Financial performance of climate change-related budget expenditures

Overall, during 2020-2022 the overall financial performance of budget measures related to climate change fluctuates from 101.8% in 2020 to 106.0% in 2021 and 99.4% in 2022 (Table 3.5).

The overall trend of the financial performance of climate change-related budget measures during 2020-2022 might not be truly representative and/ or clear due to the crisis of COVID-19. During the period under review, the approved State budget was revised several times during the corresponding fiscal year due to additional expenditures related to measures to reduce the negative impact of coronavirus infection and stabilize the economic situation and social support for the population, as well as the continuation of structural reforms and adopted programs for the development of priority industries.

Table 3.5 Financial performance of climate change-related budget measures during 2020-2022*

	2020	2021	2022
Budget financial performance (%)	101.8%	106.0%	99.4%

**Budget financial performance (%) of the budget is calculated as a ratio of the total CC-related budget expenditures actually incurred to the total CC-related budget expenditures originally approved by the Parliament.*

3.5. CLIMATE EXPENDITURES BY CLIMATE CHANGE NATURE

The analysis of Climate Positive expenditures by their nature shows that the largest group constitutes the expenditures on adaptation measures (> 95%). The share of mitigation and mixed (joint) impact measures is not significant (combined share is less than 5%) (Table 3.6).

Over the period under review, great attention was paid to such issues as:

- increase in the efficiency of water use in all sectors of the economy, the introduction of water-saving irrigation technologies;
- improvement of the ameliorative state and ensuring the sustainability of irrigated lands, assisting in improving land fertility, the use of effective technologies to reduce the level and prevent soil salinization, etc.

The issues of reducing pollution and emissions at the state level are regulated by the establishment of maximum allowable standards. Moreover, projects on the transition to green energy, i.e., the construction of solar and wind energy stations, are being implemented on the basis of Public-Private Partnerships (PPPs). These partly explain the reasons behind the significantly lower share of mitigation and mixed (joint) impact measures.

At the same time, the reduction of specific GHG emissions per unit of GDP by 35 percent from the 2010 level is determined as one of the priority areas of the Program for the transition to a "green" economy and ensuring "green" growth in the Republic of Uzbekistan until 2030. It has been established that the infrastructure for state regulation of greenhouse gas emissions in 2022-2026 is being gradually created, providing for:

- state registration of GHG emissions and maintenance of their state cadasters;
- formation and maintenance of the register of carbon units;
- setting targets for reducing GHG emissions by economic sectors;
- state support for activities to reduce GHG emissions.

As a result, in the future, we can expect a slight change in the current dynamics of different groups of Climate-Positive expenditures.

Table 3.6 Climate expenditures by climate change nature

	2020	2021	2022
Mitigation (billion UZS)	205.1	535.3	612.7
Adaptation (billion UZS)	14,264.8	15,966.3	25,414.8
Mixed (Joint) impact (billion UZS)	409.0	308.3	274.8
Climate change relevant measures, total (billion UZS)	14,878.9	16,809.8	26,302.4
Mitigation (%)	1.4%	3.2%	2.3%
Adaptation (%)	95.9%	95.0%	96.6%
Mixed (Joint) impact (%)	2.7%	1.8%	1.0%

3.6. CLIMATE NEGATIVE EXPENDITURES

Climate Negative expenditure amounted to 1,558.2 bln UZS in 2020, 1 308.7 bln UZS – in 2021, and 1 350.8 bln UZS in 2022. Over the period under review, the share of climate-negative budget expenditures to total State budget expenditure fluctuated from 1.1% in 2020 to 0.6% in 2022.

Most of Climate Negative expenditures occurred in the mining and processing industries and construction sectors of the economy.

Table 3.7 Climate Negative budget expenditures in 2020-2022

	2020	2021	2022
State budget expenditure, total (billion UZS)	144 143,0	188 257,0	236 579,0
Climate Negative expenditure, total (billion UZS)	1 319,1	1 049,6	1 006,0
GDP (billion UZS)	602 193,0	738 425,0	888 342,0
	,	,	,
Climate Negative expenditure (% of total budget expenditure)	0,9%	0,6%	0,4%
Climate Negative expenditure (% of GDP)	0,2%	0,1%	0,1%
State budget expenditure, total, year-on-year % change		130.6%	125.7%
Climate Negative expenditure, year-on-year % change		79,6%	95,8%

Within the **Economic affairs,** the following expenditures were tagged as Climate Negative expenditures: geology-exploration work. Overall, these activities are aimed to study and determine the location of underground resources (gold, gas, etc.) for extraction in the future. Overall, these activities are aimed to ensure the advancing development of the mineral resource base of the republic, as well as ensuring the growth of mineral reserves and the reproduction of the mineral resource base of economic sectors, taking into account the creation of new industrial capacities on the ground. Although some of these activities are linked to metal production that will be used in climate change mitigation technologies (copper, non-ferrous, rare earth and rare metals) and could be a positive expenditure, mainly related to the exploration of the mineral resource base such as building materials, hydrocarbons, chemical, ornamental stone, coal and shale.

Table 3.8 Climate Negative expenditures by functional classification in 2020-2022 (UZS billion)

Functional Classification Sector	Functional Classification Group	2020	2021	2022
Public order and safety	Rescue service	4.5	2.9	27.9
Economic affairs	Mining industry, processing industry and construction	1,314.6	1,046.7	978.1
Total		1 319,1	1 049,6	1 006,0

3.7. MAIN FINDINGS

- During 2020-2022, climate expenditures showed a steady upward trend both in absolute terms and as a percentage of total budget expenditures, increasing from 2.5% of total budget expenditures (2020) to 3.0% (2022). This tendency suggests that in the budget process climate change mitigation and adaptation are given more attention and priority.
- The sectoral distribution of climate expenditures is uneven: the agriculture (irrigation) and transport sectors together account for more than 65% of climate expenditures (2022).
- The expenditure analysis only covered the expenditure of the State budget. Funds for the implementation of projects (programs) attracted through external sources (external loans and official grants from DPs) have been excluded from the CPEIR as they are not reflected in State Budget revenues and expenditures. The extent of relevance of these expenditures to CC mitigation and adaptation is not revealed.

- The overall performance of budget measures related to climate change fluctuates from 101.8% in 2020 to 106.0% in 2021 and 99.4% in 2022 (preliminary). The overall trend during 2020-2022 might not be truly representative and/ or clear due to the crisis of COVID-19 and additional budget expenditures incurred.
- Adaptation measures accounted for about 95% of climate expenditures. The share of mitigation and mixed (joint) impact measures is not significant (combined share is less than 5%).
- The share of climate-negative budget expenditures to total State budget expenditure fluctuated from 1.1% in 2020 to 0.6% in 2022.

4.1. INTRODUCTION

The previous sections have revealed that there is an opportunity to strengthen Uzbekistan's climate change response (in terms of policies, institutions, and expenditures). One of the most important ways that this can be achieved is by integrating CC into PFM processes.

This chapter describes the level of integration of CC into national PFM systems. The analysis in the following sections reflects the results of Climate Change Budget Integration Index (CCBII) Assessment for Uzbekistan (UNDP, 2022).

4.2. THE LEVEL OF INTEGRATION OF CLIMATE CHANGE INTO THE NATIONAL PUBLIC FINANCIAL MANAGEMENT SYSTEMS IN UZBEKISTAN

Uzbekistan is currently taking its first steps in outlining a CC mitigation and adaptation finance framework and improving the link between the CC policies and the State Budget.

The first-ever CCBII assessment carried out in Uzbekistan assessed the level of integration of CC mitigation and adaptation policies and implementation practices into the country's PFM system. It can serve as a solid baseline for future progress evaluation in this regard.

The estimated index (14 out of 100) and the scores for almost all dimensions suggest that, despite important progress, CC policy in Uzbekistan, as a distinct policy direction, is not effectively facilitated by the PFM system. In particular, the lack of a comprehensive and costed CC policy framework hinders the effective integration of CC into the budgeting framework. In addition, the current PFM/budgeting systems in Uzbekistan are not yet sufficiently comprehensive to effectively integrate cross-cutting policy dimensions. Perhaps the most important limitations are the infant state of the introduction of Program Budgeting and the lack of a Program classification that can effectively link the budget appropriations to policy goals and targets. Instead, due to its cross-cutting nature, CC policy is largely diluted in various sector development policies and budget expenditures; it is not treated as a separate policy and expenditure direction in any of the budgeting phases and processes. The lack of adopted mechanisms and methodology in Uzbekistan for identifying, tagging, classifying and measuring CC-related budget expenditures further contributes to this challenge.

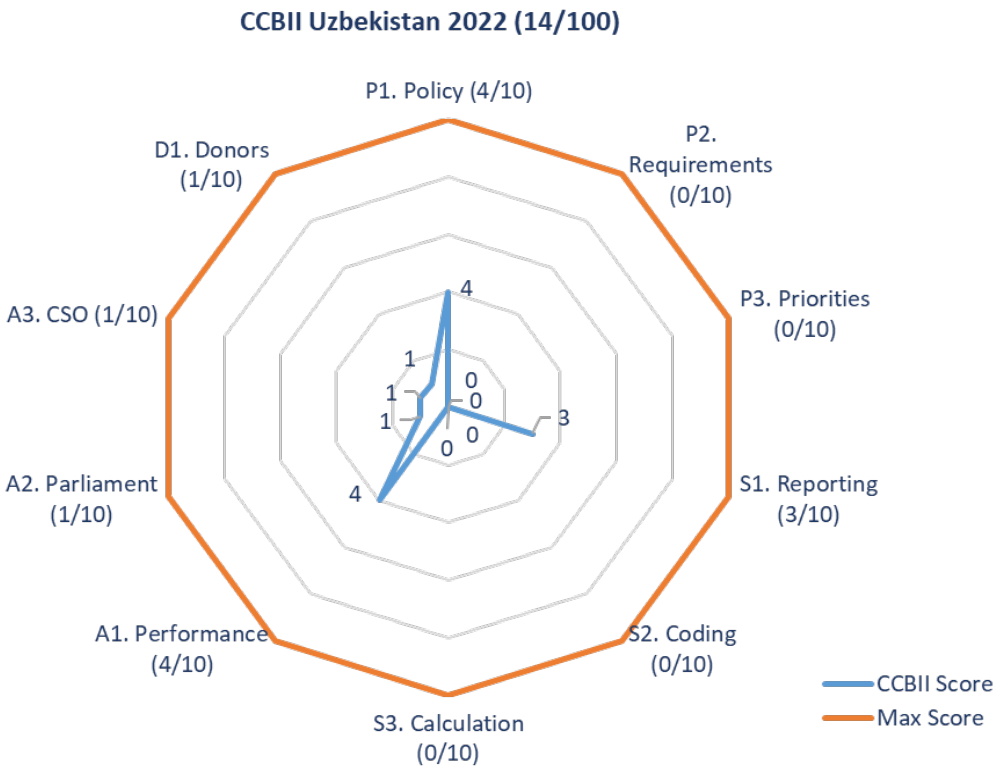
Despite the recent impressive measures to improve budget transparency and strengthen the role of the Parliament in budget scrutiny and parliamentary control, the role of Parliament and Civil Society in CC budget scrutiny is still limited. The Government does not publish or provide any systemized reports on CC budget expenditures to the Parliament – neither as part of the Budget reporting nor separately. No hearings or discussions are held at the Parliament specifically on CC budget expenditures and the capacity of the Parliament to effectively influence budget decision-making is minimal. The lack of program budgeting and budget performance reporting are among the main limitations in this regard.

Since 2018, public international finance has become a relatively more important source of development finance in Uzbekistan. However, the integration of public international finance into the national PFM systems is minimal. International public finance is neither reflected in State Budget nor integrated into the national PFM systems, and it is generally beyond Treasury oversight. If not addressed, this can potentially become a major limitation for the future CC Financing Framework in Uzbekistan.

The PFM reform measures currently being undertaken by the Government of Uzbekistan towards the introduction and rollout of Program Budgeting, budget performance reporting and SDG/CC budget

tagging will form a solid basis for further effective integration of CC policy into the PFM/budgeting systems in the country.

Figure 4.1 Climate Change Budget Integration Index (CCBII) 2022



4.3. CONCLUSIONS AND RECOMMENDATIONS

The assessment shows that the country needs improvements across all dimensions of the CCBII in order to establish an effective CC finance framework. Perhaps the most important measure in this regard would be the improvement of current weak links between policies and budgets by introducing policy-based budget programs with performance indicators and performance reporting. Without these in place, the effective integration of CC policies into the existing budget system will remain challenging. Therefore, the acceleration of the deepening and broadening of the currently ongoing Program Budgeting reforms and the introduction of policy-based budget programs as the main objects of budget appropriations are of great importance.

Another important measure is the development and implementation of mechanisms and a methodology for identifying, tagging, classifying and measuring CC-related budget expenditures in various stages of a budget cycle. This work is currently being taken forward in conjunction with UNDP.

International public finance is an important source of sustainable development finance. Further integration of this finance into the national budgets and PFM systems will improve fiscal consolidation and sustainability, and promote the credibility of national PFM systems, thus contributing to the country's attractiveness for development finance.

Below are some more specific measures that could help mainstream CC policy in the budget cycle.

	Recommended Actions
Policy/Strategic planning framework	• The development of high-level policy document(s) that will define the state policy in the area of CC mitigation and adaptation in Uzbekistan (i.e the National Adaptation Plan and CC mitigation strategy) is already underway. To establish a solid policy framework for CC mitigation and adaptation, and to maximize the linkages with budgetary processes it is recommended that these documents reflect the full scope of state policy in the sphere of CC adaptation and mitigation, including anticipated results (objectives, outcomes, main policy directions, outcome measurement indicators and time-bound targets). They should also identify the linkages between the implemented measures and climate-sensitive sectoral development policies. It is also important that these policies include cost estimates as well. • Establish a clear institutional responsibility for public policy (development, implementation and monitoring) in the field of CC mitigation and adaptation. Taking into account the current mandate and functional responsibilities of the Ministry of Ecology, Environmental Protection and Climate Change, one of the options could be entrusting the Ministry with those responsibilities. • Improve intersectoral coordination mechanisms for CC mitigation and adaptation policy and finance issues. In this regard, an Inter-Agency Council, established by the Government's Resolution (PQ-436, 2022), will be responsible for intersectoral coordination of CC mitigation and adaptation policy and financing issues, including CC public and international finance. It is recommended that the Council consists of members from the ministries and government agencies closely related to CC mitigation and adaptation policy implementation. It is also recommended that the representatives of relevant CSOs and research institutions participate in Council activities on a consultative basis. Also, a working group on CC finance can be established under the Council that will be responsible for CC finance issues, including coordination of CC budgeting and reporting. • Introduce requirements for development policies in climate-sensitive sectors (energy, agriculture, etc.) to identify/outline policy targets, measures and performance indicators within sectoral policies that are explicitly related to CC mitigation and adaptation policy. • Develop a comprehensive mapping of the entire CC policy framework (strategies, CC-related goals, objectives, outcomes, targets, policy measures, etc.), regularly update it and make it available to CC-related policy and budget decision-makers and CSOs.
CC budget tagging (CBT)	• Implementation of the roadmap towards the introduction of CBT that describes the stages and timetable of the full-scale CBT introduction. • Develop and adopt a country-tailored methodology/approaches for identifying, tagging, classifying and measuring CC-related budget expenditures. • Develop and adopt budget procedures (including stages, sequence of actions, main roleplayers, outputs, etc.) and develop document templates for CBT. • Consider the feasibility of automation of CBT processes and develop technical requirements for the integration of CBT into the budgeting software(s).
Budget programs and performance	• Continue Program Budgeting (PB) reforms by consistently deepening and broadening the scope of its implementation. Where possible, implement PB

indicators	primarily for sectors/agencies closely related to CC mitigation and adaptation. • To the extent possible, introduce policy-based budget programs with performance indicators as the main objects of budget appropriations. Define CC-related performance indicators for budget programs directly related to CC mitigation and adaptation. • Provide information on CC-related budget programs and expenditures (directions, magnitude and expected climate results) in budget documents. Ideally, it can be presented in Budget Message in the form of a separate annex.
Budget appraisal and expenditure priorities	• Establish standard criteria for project (including investment) appraisal, selection and prioritization. • Consider the impact of budget expenditures on CC as one of the main criteria for project appraisal and budget prioritization, especially for public investment projects and for projects in climate-sensitive sectors (agriculture, energy, forestry, water, etc.).
Budget discussions	• Conduct budget discussions on CC-related budget expenditures and results. These discussions should be carried out under the guidance of the state bodies responsible for CC mitigation and adaptation policy development and intersectoral coordination. • Encourage more active involvement of CSOs in the budget preparation process, by engaging CSOs in budget discussions at earlier stages of budget development (for example, when state bodies are designing their budget programs/projects and performance indicators). • Within the scope of budget scrutiny, conduct parliamentary discussions on CC-related policy measures, budget expenditures and results, actively involving CSOs. Those discussions should be focused on efficiency and effectiveness matters.
Budget reporting	• Develop and introduce budget performance reporting mechanisms and procedures as envisaged under the framework of PB reforms. Performance reports should be an integral part of budget execution reports and subject to audit and parliament scrutiny. • Define legislative provisions and develop mechanisms for reporting to the Parliament on CC policy measures and results.
Capacity development	• Provide capacity development support to parliament and government institutions on CC finance and budget scrutiny.
External audit	• Develop and adopt performance audit standards and regulations for the Chamber of Accounts. Gradually introduce a practice of budget performance auditing. Performance audits of CC-related programs/projects should also consider performance in the context of CC policy goals and results.

Annex #1 – The Main Regulatory and Legal Framework, Including Climate Change Mitigation and Adaptation Issues (2006 – 2022)

Title	Number - Date	Main Implementing Agency
Presidential Decrees and Resolutions		
On the National Strategy for Transition to Green Economy for the period 2019-2030	#PP-4477 04.10.2019	Ministry of Economy and Finance
On measures to improve the efficiency of reforms aimed to the transition of the Republic of Uzbekistan to a "green" economy by 2030	#PP-436 02.12.2022	Ministry of Economy and Finance
On the National Strategy for Environment Protection up to 2030	#UP-5863 30.10.2019	Ministry of Ecology, Environmental Protection and Climate Change
On approval of the Strategy for Agricultural Development of the republic of Uzbekistan for 2020-2030	#UP-5853 24.10.2019	Ministry of Agriculture
On measures for the implementation in 2020 of the tasks determined in the strategy for the development of agriculture of the republic of Uzbekistan for 2020-2030	#UP-4575 29.01.2020	Ministry of Agriculture and other sectoral ministries
Concept On measures for the effective use of land and water resources in agriculture	#UP-5742 18.06.2019	Ministry of Agriculture, Ministry of Water Resources
On approval of water sector development concept for 2020-2030 in republic of Uzbekistan	UP-6024 11.07.2020	Ministry of Water Resources and other sectoral ministries
On approval of the strategy for water resources management and development of the irrigation sector in the republic of Uzbekistan for 2021-2023	PP-5005 25.02.2021	Ministry of Water Resources and other sectoral ministries
On measures to improve water resources management and regulation of relationships between water consumers in the lower level	PP-145 01.03.2022	Ministry of Water Resources and other sectoral ministries
On the approval of the concept of the development of the forestry system of the republic of Uzbekistan until 2030	PP-4850 07.10.2020	State Forestry Agency under the Ministry of Ecology, Environmental Protection and Climate Change, and other sectoral ministries
On organization of activities of the state committee of the republic of Uzbekistan for forestry	PP-2966 11.05.2017	State Forestry Agency under the Ministry of Ecology, Environmental Protection and Climate Change, and other sectoral ministries
On additional measures to reduce the dependence of sectors of the economy on fuel and energy products by increasing the energy efficiency of the economy and utilizing available resources	PP-4779 10.07.2020	Ministry of Energy
On the establishment of the international innovative center of the Aral region under the president of the republic of Uzbekistan	PP-3975 17.10.2018	Presidential Administration and other relevant ministries
On accelerated measures to increase the energy efficiency of economic and social sectors, introducing energy saving technologies and developing renewable energy sources	PP-4422 23.08.2019	Ministry of Energy, Ministry of Economy and Finance, Innovative Development Agency

Title	Number - Date	Main Implementing Agency
On measures to further improve the activities of the center of the hydrometeorological service of the republic of Uzbekistan	PP – 4896 18.11.2020	Hydrometeorological Service Agency (Uzhydromet) under the Ministry of Ecology, Environmental Protection and Climate Change
On introducing innovative system for prevention and response to emergency situations as well as ensuring fire protection and safety	UP-5706 10.04.2019	Ministry of Emergencies
On measures to develop renewable and hydrogen energy in the republic of Uzbekistan	PP-5063 09.04.2021	Ministry of Energy, Ministry of Economy and Finance, National Research Institute for Renewable Energy under the Ministry of Energy
On the approval of the program for the development of husbandry and its sectors in the Republic of Uzbekistan for 2022-2026	PP-120 08.02.2022	State Committee for Veterinary and Livestock Development and other sectoral ministries
Government Resolutions		
On additional measures to accelerate the implementation of national goals and objectives in the field of sustainable development until 2030	PKM-83 12.06.2019	Ministry of Ecology, Environmental Protection and Climate Change
On approval of the strategy for conservation of biological diversity in the republic of Uzbekistan for the period 2019-2028	PKM-484 11.06.2019	Ministry of Ecology, Environmental Protection and Climate Change
On measures for the implementation of the "Sendai framework for disaster risk reduction for 2015-2030" in the republic of Uzbekistan	PKM-299 12.04.2019	Ministry of Emergency Situations and other sectoral ministries
On the approval of the regulation on the procedure for preparing and implementing investment projects within the framework of pure development mechanism of the Kyoto protocol	PKM-9 10.01.2007	Ministry of Economy and Finance and other sectoral ministries
On the approval of the regulations on the ministry of emergency situations of the republic of Uzbekistan, the center of hydrometeorological service under the ministry of emergency situations	PKM-606 14.08.2017	Ministry of Emergency Situations and other sectoral ministries
On the introduction of a system of voluntary environmental labeling of products in the republic of Uzbekistan	PKM-435 29.05.2019	Ministry of Ecology, Environmental Protection and Climate Change, Ministry of Health, UzStandard Agency
On the creation of a unified system for monitoring, information exchange and forecasting emergencies of natural, man-made and environmental character	PKM-1027 29.12.2017	Ministry of Emergency Situations and other sectoral ministries
On measures to further improve the forest management system	PKM-530 19.07.2017	State Forestry Agency under the Ministry of Ecology, Environmental Protection and Climate Change and other sectoral ministries
On approval the State Program on Prediction and Prevention of Emergency situations	PKM-71 03.04.2007	Ministry of Emergency Situations and other sectoral ministries
On adoption of Regulations for the Ministry of Emergency Situations of the Republic of Uzbekistan, Center of Hydrometeorological Services under the Ministry and State Inspectorate on Control and Supervision under the Ministry's responsibility	PKM-606 09.08.2017	Ministry of Emergency Situations and other sectoral ministries
On approval of the rules for carrying out energy surveys and examinations of consumers of fuel and energy resources	PKM-164 07.08.2006	Ministry of Energy and other sectoral ministries

Title	Number - Date	Main Implementing Agency
On measures for the development of renewable energy sources and attraction of private investments for the creation of photo-electric stations	PKM-633 08.08.2018	Ministry of Foreign Affairs, UzbekEnergo JSC
Law of the Republic of Uzbekistan on Chamber of accounts	ZRU 546, dd 01.07.2019	Chamber of Accounts
On measures to significantly improve the activity of the Chamber of accounts	PR 5147, dd. 10.08.2017	Chamber of Accounts
On measures for further improvement of the state finance control	PR 6300, dd. 27.08.2021	Chamber of Accounts

Annex #2 – Table of international climate-related Conventions and Agreements ratified\signed by Uzbekistan

#	Title	Date
1.	Convention on wetlands of international significance mainly as habitat of waterfowl	1971
2.	Convention on the prohibition of the development, production and stockpiling of bacteriological and toxin weapons and on their destruction	1972
3.	Convention concerning the Protection of the World Cultural and Natural Heritage	1972
4.	Convention of the World Meteorological Organizations	1972
5.	Convention on International Trade in Endangered Species of Wild Fauna and Flora	1973
6.	Convention on the prohibition of the military or any other hostile use of environmental modification techniques	1976
7.	Convention on the conservation of migratory species of wild animals	1979
8.	The Vienna convention for the protection of the ozone layer	1985
9.	The Montreal protocol on substances that deplete the ozone layer	1987
10.	The Basel convention on the control of transboundary movements of hazardous wastes and their disposal	1989
11.	London Amendment to the Montreal protocol on substances that deplete the ozone layer	1990
12.	Convention on the protection and use of transboundary watercourses and international lakes	1992
13.	The convention on biological diversity	1992
14.	United Nations Framework Convention on climate change	1993
15.	Convention to combat desertification in those countries experiencing serious drought and desertification	1994
16.	Convention on the law of non-navigational uses of international watercourses	1997
17.	The Kyoto protocol	1997
18.	The Paris Agreement on climate change	2017

Annex # 3 – Environmental departments of the universities in Uzbekistan

№	Title of Department / University
1.	Department of Agroecology and Introduction of Medicinal Plants, Karakalpak State University
2.	Department of Botany, Ecology and Teaching Methods, Nukus State Pedagogical Institute
3.	Department of Botany and Ecology, Karshi State University
4.	Department of Ecology and Botany, Andijan State University
5.	Research laboratories "Bioecology" of Karakalpak State University
6.	Department of "Environmental monitoring" of the National University of Uzbekistan named after Mirzo Ulugbek https://nuu.uz/ru/ekologik-monitoring-kafedrasi/ **Scientific topics of the department:** - Rational use of environmental resources and restoration of biological resources. - Improving the system of environmental protection and environmental monitoring. - Rational use of natural resources and development of waste-free and low-waste technologies in production, as well as technologies for processing waste from mining and processing enterprises.
7.	Department of "Ecology" of the National University of Uzbekistan named after Mirzo Ulugbek https://nuu.uz/ru/ekologiya-kafedrasi/ **Scientific topics of the department:** - Scientific substantiation of plant resistance to drought, industrial waste. - Study of the ecology of useful medicinal plants and the organization of plant communities in degraded areas. - Systematic analysis of the structural, functional and biological features of the ecological classification of plants in the Adyr and desert regions of Uzbekistan. - Study of the ecology of hydrobionts in water bodies of Uzbekistan. - Scientific work on sustainable nature management, urban ecology, sustainable development
8.	Department of Ecology and Environmental Protection Tashkent State Technical University https://tdtu.uz/fakultet-inzhenernyx-texnologij/kafedra-ekologiya-i-zashhita-okruzhayushhej-sreda/
9.	Department of "Ecology and Geography" Gulistan State University https://guldu.uz/ru/universitet/ tuzilma/kafedralar/ekologiya-va-geografiya-kafedrasi/
10.	Department of "Ecology and Water Resources Management" of the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers http://hm.tiiame.uz/ru/page/esrb
11.	Department of Ecology and Soil Science, Termez State University https://tersu.uz/struct/view/113
12.	Department of Physiology and Ecology, Jizzakh State Pedagogical University https://jdpu.uz/universitet/ fakultetlar/fiziologiya-va-ekologiya-kafedrasi/
13.	Department of Ecology and Life Safety, Urgench State University https://urdu.uz/ru/site/departmentview?id=50
14.	Department of "Environmental Law" Tashkent State Law University https://tsul.uz/ru/all-departments/15/%E2%80%9C Ekologiya%20huquqi%E2%80%9D%20kafedrasi
15.	Department of "Botany and Ecology" Karshi State University https://qarshidu.uz/ru/page/botanika-va-ekologiya-kafedrasi

Annex #4 – GHG emissions by inventory sector, mln tCO2-eq

Year	Energy	IPPU*	Agriculture	Waste	Total Emission	FOLU**	Netto Emission
1990	151,6	8,8	15,1	1,9	177,4	-14,1	163,3
2000	184,2	5,9	16,0	2,4	208,5	-6,4	202,1
2010	163,4	8,4	25,7	2,6	200,1	-12,9	187,1
2011	164,3	8,2	26,9	2,6	202,0	-13,3	188,6
2012	163,8	8,2	28,1	2,6	202,7	-12,9	189,8
2013	150,2	8,2	29,2	2,7	190,3	-11,3	179,0
2014	151,3	8,6	30,3	2,7	192,9	-13,0	179,8
2015	142,2	8,4	32,0	2,7	185,3	-12,2	173,1
2016	138,7	8,6	32,9	2,7	182,8	-10,5	172,3
2017	144,4	8,5	33,7	2,7	189,2	-8,6	180,6
Contribution							
1990	85.5%	5.5%	8.5%	1.1%	100.0%		
2013	78.9%	4.3%	15.3%	1.4%	100.0%		
2017	76.3%	4.5%	17.8%	1.4%	100.0%		

**IPPU - The Industrial Processes and Product Use*

***FOLU - Forestry and Other Land Use Sector*

Annex #5 – Indicative list of mitigation activities

Sector	Specific activity	Qualifying criteria
Energy	Generation of renewable energy for electricity, heating, mechanical energy or cooling	GHG emissions should be substantially lower than GHG emissions from fossil fuel generation. Excluding first generation liquid biofuels
	Joint use of renewable energy and fossil fuel energy for electricity, heating, mechanical energy or cooling	GHG emissions should be substantially lower than GHG emissions from fossil fuel generation Only that spending on renewable energy should be included
	Production, storage or use of low-carbon hydrogen	Hydrogen manufactured by electrolysis of water using very-low-carbon electricity or by steam reforming of natural gas with carbon capture and storage or utilization of captured CO2. Should result in substantial reduction in net GHGs
	Displacement of carbon intensive fuel with lower-carbon fuel e.g. coal to gas switching	Not relevant in relation to electricity generation If switching to a fossil fuel, then should not extent lifetime of plant
	Use of waste gas as fuel or feedstock	Should substantially reduce GHG emissions. Coalbed methane, associated gas from greenfield oil production and coal mine methane from greenfield gas production should be excluded
	Conversion from production of one source of energy generation to joint generation of electricity, heating, mechanical energy or cooling e.g. conversion to combined heat and power plants	Conversion should deliver substantial improvement in efficiency
	Energy efficiency improvements in energy production	Should deliver substantial improvement in efficiency
	Carbon capture and storage	CO2 storage must be permanent
	Energy storage and measures to improve network stability that allow more low-carbon energy	Does not apply to storage of fossil fuels
	New transmission or distribution infrastructure of electricity that increases the share of low carbon electricity delivered	Should be able to demonstrate infrastructure will lead to an increase in the share of low carbon electricity used
	New transmission or distribution infrastructure of heat or cooling energy	Heat or cooling energy should not be derived from fossil fuels
	Improvements in efficiency or reduction in technical losses from existing transmission and distribution of electricity, heat or gas	Should deliver substantial improvement in energy efficiency or net GHGs
	Commercial and collection loss reduction in distribution of electricity, heat or gas; or measures aimed at demand-side	Should increase effective prices paid by consumers

	management	
	Reduction in fugitive GHG emissions in transportation and storage infrastructure	
Mining and metal production	Mining of minerals and metal ores prevalently used in, or critical for, renewable energy, technologies that increase energy efficiency, etc.	If end-use known, should demonstrate that the end us is related to climate change mitigation. If end use is not known, should show that a global level, a substantial share of global use is for climate change mitigation
	Production of metals or alloys prevalently used in, or critical for, renewable energy, technologies that increase energy efficiency etc.	If end-use known, should demonstrate that the end us is related to climate change mitigation. If end use is not known, should show that a global level, a substantial share of global use is used for climate change mitigation
Manufacturing	Brownfield industrial energy efficiency improvements	Should substantially reduce net GHG emissions, carbon intensity (e.g., tCO2e/unit of outcome), or energy intensity (e.g. gigajoules/unit of outcome)
	Conversion from production of one source of energy generation to joint generation of electricity, heating, mechanical energy or cooling e.g. conversion to combined heat and power plants	Conversion should deliver substantial improvement in efficiency
	Highly efficient or low-carbon greenfield manufacturing facilities or greenfield supplementary equipment or production lines at an existing manufacturing facility	Should demonstrate a significantly lower carbon or energy intensity than a nationally-appropriate benchmark
	replacing equipment or processes based on fossil fuels with equipment or processes that use electricity	
	Carbon capture and storage	CO2 storage must be permanent
	Retrofit of industrial infrastructure to avoid or reduce GHG emissions	Should deliver substantial reduction in net GHGs
	Improvements to, or new/advanced, industrial processes that reduce consumption or reduce waste	Should deliver substantial reduction in net GHGs
	Energy storage or other solutions that allow integration of low-carbon energy or previously waste energy	Storage does not apply to storage of fossil fuels
	Production of components, equipment or infrastructure dedicated exclusively to utilization in the renewable energy, energy efficiency improvement, or other low-carbon technologies	
	Production of low-carbon hydrogen	Hydrogen manufactured by electrolysis of water using very-low-carbon electricity or by steam reforming of natural gas with carbon capture and storage or utilization of captured CO2. Should result in substantial reduction in net GHGs
	Use of waste gas as fuel of feedstock	Should substantially reduce GHG emissions. Coalbed methane, associated gas from greenfield oil production and coal mine

		methane from greenfield gas production should be excluded
Agriculture, forestry , land use and fisheries	Reduction in energy consumption in agricultural operations	Should deliver substantial reduction in net GHGs
	Increasing carbon stocks in soil or avoid loss of soil carbon through erosion control, including rangeland management	Should deliver substantial increase on above or below ground carbon stock
	Reduction in non-CO2 GHG emissions in agricultural practices or operations	Should deliver substantial reduction in net GHGs
	Reduction in methane or other GHG emissions from livestock	Should deliver substantial reduction in net GHG emissions or emissions intensity
	Forestry or agroforestry activities associated with sustainable forest management, avoided deforestation or avoided land degradation	Should deliver substantial increase on above or below ground carbon stock or substantial reduction in net GHG emissions or emissions intensity
	Reducing CO2 intensity in fisheries or aquaculture	Should deliver substantial reduction in net GHGs and not contribute to degeneration of native ecosystem
	Reducing food losses or waste or promoting lower carbon diets	Should deliver substantial reduction in net GHGs or emissions intensity
	Biomaterial production	Should deliver substantial reduction in net GHGs or emissions intensity and biomass should be derived from sustainable and socially accepted sources that don't compete with food supply
Water supply and wastewater	Improving energy efficiency of water supply systems including lower energy consumption, reduction of losses	Should deliver substantial improvement in energy efficiency or reduction in net GHGs
	Replacing tanker or other high emissions supply of water with piped supply system	Should deliver substantial reduction in net GHGs
	New water supply projects with high energy efficiency	Should make use of best available technology within the country or be zero-emissions (i.e. gravity supply)
	Improved operation and maintenance to reduce water losses, promote energy savings or meet or exceed wastewater treatment targets etc.	
	Reducing GHG emission through wastewater, fecal sludge or septage collection and treatment	Should deliver substantial reduction in net GHGs and remove BOD
	Improved energy efficiency or performance in existing wastewater treatment and management facilities	Should deliver substantial reduction in net GHGs
	Enhanced collection of wastewater, fecal sludge or septage	Should deliver substantial reduction in net GHGs
	Wastewater reuse	Should deliver substantial reduction in net GHGs

Solid waste management	Separate collection and transport of segregated waste	Should support recovery of materials for reuse or recycling
	Storage, bulking or transfer of segregated waste	Should support recovery of materials for reuse or recycling
	Repair and reconditioning of products to enable reuse	Should demonstrate that product would otherwise be discarded, will be put back to original use and will not compromise future recovery or recycling
	Material recovery from waste using mechanical processes or non-mechanical processes	Should be aimed at recovering secondary materials from waste in preparation for reuse or recycling and should deliver substantial reduction in net GHGs
	Anaerobic digestion of waste	Biowaste should be segregated at source and collected separately and biogas should be used productively. Digestate should not be incinerated. Measures should be taken to control methane leakages.
	Composting	compost produced shall be used as a natural fertilizer or soil conditioner where possible, and should not be incinerated
	Other types of recovery and valorization of bio-waste	Biowaste should be segregated at source and collected separately and processes should deliver substantial reduction in emissions
	Mechanical or biological treatment of mixed residual waste	Materials recovered should be suitable for recycling and should deliver substantial reduction in net GHGs. Biowaste to be landfilled should be subject to biological treatment to stabilize organic components
	Waste incineration	Should demonstrate a substantial reduction in net GHG emissions and use best available technologies (especially combined heat and power)
	Landfill gas capture as part of closure of old landfills or landfill cells	Captured landfill gas should be used productively or, if this is not economically viable, flared. Measures should be taken to control methane emissions from landfill.
	Landfill gas capture in new sanitary landfills or landfill cells	Should deliver substantial reduction in net GHGs. Captured landfill gas should be used productively or, if this is not economically viable, flared. Measures should be taken to control methane emissions from landfill.
	Improved energy efficiency in waste management facilities	Should deliver substantial reduction in net GHGs.
Transport	Urban and rural public transport	should deliver modal shift from higher carbon modes
	Non-motorized transport and bike-sharing schemes	
	Inter-urban rail travel for freight or passengers	Should deliver modal shift from higher carbon modes, activities dedicated to transport of fossil fuels excluded
	Bus or coach public transport	Should deliver modal shift from higher carbon modes
	Water transport for freight or passengers	Should deliver modal shift from higher carbon modes, activities dedicated to transport of fossil fuels excluded

	Passenger or freight fleets, or associated infrastructure, with zero or low-direct emissions	Excludes transportation of fossil fuels
	Transport operations using biofuels or synthetic fuels	Should deliver reduction in life cycle GHGs. Activities involving use of 1st generation biofuels excluded.
	Transport demand management policy and intelligent transport systems	Should be associated with decrease in overall travel demand to switch to more efficient modes
	Use of waste gas as transport fuel	Should deliver substantial reduction in net GHGs
	Efficient air traffic management	Should deliver substantial reduction in net GHGs
	Efficient airport system operations or onsite renewable energy generation	Should deliver substantial reduction in net GHGs
Buildings, public installations and end use energy efficiency	Measures to reduce energy consumption, resource consumption or CO2 emissions, or increase carbon sinks, in new and/or existing buildings and grounds	Should deliver substantial reduction in energy consumption, resource consumption or CO2 emissions. Where relevant, should meet green building certification requirements
	Measures to reduce energy consumption, resource consumption or CO2 emissions, or increase carbon sinks, in public areas or installations	Should deliver substantial reduction in energy consumption, resource consumption or CO2 emissions.
	Improvements in energy efficiency or reduction in emissions from existing appliances and equipment	Should deliver substantial reduction in energy consumption, resource consumption or CO2 emissions
	Replacement of appliances and equipment (e.g., lighting) that leads to a reduction in emissions	Should deliver substantial reduction in energy consumption, resource consumption or CO2 emissions. Should use best available technology.
ICT technologies	Energy efficiency improvement of renewable energy deployment in existing data centers	Should deliver substantial reductions in net GHGs or emissions intensity
	New data centers that meet international standards for energy efficiency and largely supplied by on-site renewable energy	
	Telecom networks with high energy efficiency	Should demonstrate a substantial reduction in net GHG or that energy efficiency performance is significantly better than market standards
Research, development and innovation	Research on or development of renewable energy, energy efficiency improvement, low-carbon technologies, or other technologies instrumental to achieving full decarbonization	Activities that support low-carbon technologies but also directly support exploration, extraction, processing or transportation of fossil fuels, or fossil fuel power generation (with the exception of technologies for carbon capture and storage), shall not be eligible
Cross-sectoral	Activities focused on reducing energy or material use across a supply chain or implement circular economy systems	Should deliver substantial reduction in net GHGs
	Demand-side management	Should demonstrate how activity will result in reduction in demand for energy or resources

	Electronic service delivery	Either achieves a large-scale transformation of service delivery or operations, leading to a substantial reduction in net GHG emissions or is a first of a kind activity
	Financing to support closure of fossil fuel extraction, processing and transport including support for affected workers	Should be focused on closure well before end of economic life and support for affected workers should be explicitly linked to early closure
	Transport, use or storage of CO2	Should deliver or facilitate substantial reduction in net GHGs, utilization should exclude support for production of fossil fuels
	Cross-sectoral policy action for emission reduction and/or energy or resource use efficiency standards, fiscal incentives for low-carbon technologies, carbon pricing, urban densification.	Policy action should be towards activities that ll lead to an increase in carbon sinks or a substantial reduction in net GHG emissions
	GHG monitoring	Should lead to an improvement in gathering data and information on GHG emissions
	Energy audits	Should be specific focus on reducing energy consumption or GHG emissions
	Education, training, capacity building or awareness-raising focused on climate change mitigation	N/A
	Communication of climate action or decarbonization plans	N/A

Annex #6 – Indicative list of adaptation activities

Sector	Typical adaptation activities
Agriculture	• Distribution and use of heat and drought-resistant crops/seeds • Improving climate/weather information for agriculturalists • Water efficient irrigation • Supporting sustainable agriculture and regional development in areas with climate vulnerable populations
Forestry	• Afforestation (to reduce flood risks) • Restoration/protection of forest areas to reduce soil erosion • Sustainable forest management to reduce soil erosion • Conservation forestry (forestry intended to protect habitat or species)
Other biodiversity	• Protection or restoration of wetlands • Preservation of water resources • Measure to reduce/prevent soil erosion
Energy	• Climate proofing energy infrastructure • Improving the performance/resource efficiency of hydroelectric power plants • Improving energy service provision for climate vulnerable households
Water and wastewater	• Activities to enhance water conservation and water storage • Activities to improve the quality and quantity of drinking water that are particularly targeted at those expected to be climate vulnerable • Activities associated with water and sanitation services and infrastructure that reduce the likelihood or severity of flooding • Wastewater management schemes that improve ground or surface water protection • Wastewater recycling schemes
Transport	• Climate proofing transport infrastructure • Improved road (and other transport) access to climate vulnerable populations
Industry	• Retrofitting industrial facilities to reduce vulnerability to climate risks • Switching to less water consuming production technologies
Education	• Measures that increase climate and environmental awareness in curricula
Health	• Measures that help to respond to health risks that will become more prevalent as a result of climate change, such as heat stress • Strengthening food safety regulations linked to microbiological quality

Other social infrastructure	• Basic service provision and actions to enhance food security of climate vulnerable populations
Finance	• Insurance activities linked to climate risks
Tourism	• Ecotourism (to help maintain resilience of natural ecosystems and diversify rural livelihoods)
Flood protection	• Flood protection measures e.g. dikes, restoring flood plains
Monitoring and disaster prevention, preparedness and response	• Meteorological and hydrological observation and forecasting, impact and vulnerability assessments • Developing emergency prevention and preparedness measures and risk reduction strategies • Early recovery and reconstruction following climate-related disasters • Social protection measures linked to climate disasters
Policy & public awareness	• Development of adaptation strategies, plans and policies • Public awareness related to climate change, the causes and impacts of climate change and the role of adaptation

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- The Presidential Resolution of the Republic of Uzbekistan PQ-4479 (2020) “On additional measures to reduce the dependence of sectors of the economy on fuel and energy products by increasing the energy efficiency of the economy and using available resources”
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- The Presidential Resolution of the Republic of Uzbekistan PQ-4845 (2020) “On measures to further improve the system for managing activities in the field of handling household and construction waste”
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- Ministry of Investments, Industry and Trade (www.mift.uz)
- Ministry of Agriculture (www.agro.uz)
- Ministry of Water Resources (www.water.gov.uz)
- Ministry of Ecology, Environmental Protection and Climate Change (www.uznature.uz)
- Hydrometeorological Center (www.meteo.uz)
- Legal Information system of Uzbekistan (www.lex.uz)
- Open Budget electronic platform (www.openbudget.uz)
- National Summary Data Page (NSDP)-Uzbekistan (www.nsdp.stat.uz)

Annex # 8 List of institutions and people met

Ministry of Economy and Finance of the Republic of Uzbekistan

- Mr. Sherzod Mukhamedov, Director of the Department of the State Budget
- Mr. Numon Djuraev, Deputy Director of the State Budget Department
- Mr. Shokhzod Islamov, Deputy Head of the Green Economy Development Department
- Mr. Alisher Alimbaev, Head of the PIU under the Ministry
- Mr. Shokhrukh Ishankulov, Head of Division, State Budget Department
- Ms. Aynur Bakaybaeva, Chief Economist, State Budget Department

Ministry of Ecology, Environmental Protection and Climate Change

- Mr. Jakhongir Talipov, Head of International Cooperation Department
- Mr. Vokhidjon Khayitbaev, Head of Division for Ecological Monitoring, Fight against Climate Change and Desertification

The Hydrometeorological Service Agency under the Ministry of Ecology, Environmental Protection and Climate Change (Uzhydromet)

- Mr. Bahriddin Nishonov, First Deputy Director of NIGMI

UNDP

- Mr. Fayzulla Sallahudinnov, Project Manager, UNDP CO/UZ
- Ms. Viktoriya Anoshkina, Research Coordinator, UNDP CO/UZ