

Uzbekistan

Overview of Climate Change Activities

October 2013



This **Overview of Climate Change Activities in Uzbekistan*** is part of a series of country notes for five Central Asian countries that summarize climate portfolio in a number of sectors, namely agriculture, forestry and natural resources, water, health, energy, and transport. The note further provides a brief overview of Uzbekistan’s climate context in terms of observed impacts and historical trends as well as climate projections specific to sectors that are considered to be essential to the country’s economic development. Finally, the note assesses national policy and institutional context related to climate change as well as suggests potential ways forward that could help Uzbekistan mainstream climate considerations into development activities and planning and create public demand for climate actions.

**This note draws upon publicly available Web information and publications, including the World Bank Climate Change Knowledge Portal, and is intended to provide an overview of development partners’ climate portfolio over the past five years.*

Fact Sheet: Climate Change Exposure in Uzbekistan

- Projections suggest that the average temperature increase over the next 50 years is expected to be in the 2–3°C range.
- Overall precipitation in Uzbekistan is generally forecast to increase, although by only a small amount, which is not enough to substantially alter water availability in this largely arid country.
- Projections suggest that the water flow may potentially decrease by 2–5 percent in the Syrdarya River Basin and by 10–15 percent in the Amudarya River Basin by 2050, worsening the water scarcity situation.
- Climate change is likely to cause yield reductions of 20–50 percent by 2050 for nearly all crops under no adaptation option, thus threatening the food security and rural livelihoods in the country.
- Drier and hotter conditions may lead to a continued decline of desert forest productivity and a reduction of certain types of forest habitat in the mountainous zone.
- Increase in temperatures coupled with decrease in water supply across the country is expected to increase the proliferation of waterborne diseases as well as of various health issues caused by dust storms, desertification, heat stress, and extreme weather events.

Uzbekistan at a Glance**

Population (million): 29.78 (2012)
 GDP (current US\$ billion): 51.11 (2012)
 GDP per capita (current US\$) / GDP growth (%): 1,716 / 8.2 (2012)
 CO₂ emissions (kt): 104,443.5 (2010)
 CO₂ emissions (% of world CO₂ emissions): 0.31 (2010)

**Based on World Development Indicators, World Bank (<http://data.worldbank.org>)

Looking Ahead

Based on the review of national climate context, related challenges, and existing programs and policies, the following areas have been identified for urgent initial actions:

- **Improve** science-based understanding of the nature and magnitude of physical and biophysical climate change impacts under differing scenarios. This will be important in order to gain a better understanding of the timing and magnitude of incidence of several important indicators of climate change in the future, as well as the key vulnerabilities, development impact, and possible adaptation responses.
- **Estimate** cost of inaction as well as key actions across water resources, energy, agriculture, forestry, transport, and health sectors to provide compelling economic arguments and a broad-brush “road map” and the next steps for climate-smart actions.
- **Design** and implement climate-smart solutions across sectors at the national and subnational levels as well as for the regional-scale cooperation among countries in Central Asia and to emphasize the benefits of collaboration and institution building in the region.
- **Set up** a National Steering Committee on Climate Change. The committee would ensure the integration of low-carbon, climate-resilient considerations into development planning by providing overall guidance, political support, and leadership, ensuring adequate resource allocation and monitoring the results related to the national efforts to address and adapt to climate change.
- **Establish** (or use an existing mechanism) a Regional Central Asian Steering Committee on Climate Change, comprising high-level representatives from the five Central Asian countries. The committee’s main responsibilities would be to provide overall guidance, political support, and leadership and to serve as a platform for continuous coordination of regional efforts to address and adapt to climate change.

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I Climate Context: Understanding the Implications

Overview and Historical Trends

Uzbekistan is a landlocked country, strategically located in the heart of Central Asia and with a total area of 447.4 square kilometers. It is the only country bordering all other Central Asian countries, including Afghanistan. The majority of the terrain consists primarily of desert plains and about 20 percent of the country is covered in mountains and foothills (the eastern and northeastern parts). Its population of about 28.2 million (mid-2010), about half of whom live in urban areas, accounts for about 40 percent of Central Asia's total population.¹

For most of Uzbekistan's territory (deserts and steppes), the climate can be classified as arid continental, with long, hot summers, mild winters, and humid springs. High solar radiation coupled with the continental climate causes seasonal and day-to-night fluctuations in the air temperatures.² Warming rates observed in Uzbekistan since 1951 exceeded the average rates around the world more than twice, with particularly significant changes being observed in summer and fall for most of the country's territory. Warming rates in the mountainous regions have been somewhat lower.³ A comparison of two periods (1951–1980 and 1978–2007) has shown that the number of days with temperatures lower than -15°C in the northern and mountainous regions declined by 28–48 percent between the two periods. Similarly, the number of days with recorded temperatures lower than -20°C declined more than 1.5 times throughout the entire country.⁴

In Uzbekistan's deserts and steppes, the rainfall is modest, ranging between 100 and 200 millimeters per year. In such areas, precipitation mainly occurs during the cold period of the year (September–March), while the warm period (April–August) is extremely arid. In the foothills, on the other hand, precipitation ranges from 300 to 400 millimeters per year, increasing to about 600 to 800 millimeters per year on the west and southwest slopes of mountain ridges. Observed changes in precipitation regimes show an increase in the number of days with precipitation of more than 10 millimeters in plain and foothill

¹ World Bank, *Uzbekistan - Country Partnership Strategy for 2012–2015* (Washington, DC: World Bank, 2011).

<http://documents.worldbank.org/curated/en/2011/11/15470023/uzbekistan-country-partnership-strategy-2012-2015>.

² Second National Communication of the Republic of Uzbekistan to the United Nations Framework Convention on Climate Change (UNFCCC), 2008.

³ Ibid.

⁴ Ibid.

territories. At the same time, a relatively small (about 9 percent) increase in the number of days with precipitation of more than 20 millimeters was observed in mountainous areas.⁵

Climate Projections

Uzbekistan is significantly threatened by climate change, with serious risks already in evidence. Climate change is projected to further lead to higher temperatures, changes in precipitation regimes, and more severe and prolonged droughts with corresponding decreases in water availability. The summary of climate trends and projections for Uzbekistan are as follows:

- Trend in temperature increase in Uzbekistan is expected to continue and further accelerate in the near future, with similar temperature increases foreseen under the medium- and high-impact scenarios, and a somewhat lower increase projected under the low-impact scenario. Although the exact degree of warming that will occur is uncertain, the overall warming trend is clear. It is evident that average warming over the next 50 years for the medium scenario will be about 2–3°C, which is much greater than the increase of less than 1.5°C observed over the last 50 years. What is important to emphasize is that the impacts of increasing temperature are likely to be more severe than what the yearly averages suggest since, for instance, only in the piedmont zone, a temperature increase can be as much as 4–5°C in the period from June through August.⁶
- Precipitation changes are more uncertain than temperature changes. The medium-impact scenario indicates an increase in precipitation of about 48 millimeters per year in the desert and steppe zones, an increase of 42 millimeters per year in the piedmont zone, and a decrease of about 10 millimeters in the highlands zone.⁷ Despite the overall increase in precipitation at the national level, it is important to emphasize the seasonal variation in precipitation. Even though the overall precipitation in Uzbekistan is generally forecasted to increase, the decrease in precipitation could occur in the period from June through August in the desert and steppe zones, when precipitation is already at its lowest level. Such an estimate implies that these seasonal changes are likely to have more negative impacts on a number of sectors (most notably on crop production) than what would national-level projections suggest.⁸
- Despite an overall increase in precipitation, aridity is also expected to increase across the entire country, most notably in the western parts of Uzbekistan. In addition, the situation with water scarcity in Uzbekistan might significantly worsen due to the expected reduction of existing water resources (projections suggest that the water flow will potentially decrease by 2–5 percent in the Syrdarya River Basin and by 10–15 percent in the Amudarya River Basin by 2050). In addition to reduction in water resources, climate change will worsen current competition over water resources because the demand for irrigation water will increase due to increasing temperatures.

⁵ Second National Communication of the Republic of Uzbekistan to the UNFCCC.

⁶ William R. Sutton, Jitendra P. Srivastava, James E. Neumann, Peter Droogers, and Brent B. Boehlert, 2013. *Reducing the Vulnerability of Uzbekistan's Agricultural Systems to Climate Change: Impact Assessment and Adaptation Options*. World Bank Study (Washington, DC: World Bank, 2013).

⁷ Ibid.

⁸ Ibid.

When effects of water shortages are taken into account, climate change has a much greater negative impact on a number of sectors (especially agriculture, as almost all crops will face reductions of 10–25 percent in yields through 2050).⁹

II National Policy and Institutional Context for Addressing and Adapting to Climate Change

Policies

Uzbekistan currently does not have a focused and comprehensive climate change policy document that would provide a strategic framework for national climate change adaptation and mitigation actions. There are several environmental policies and programs that cover a range of adaptation activities in sectors such as water resources and agriculture, health, ecosystems, and others. Nevertheless, these policies and programs are fairly uncoordinated and fragmented, preventing their effective implementation. Uzbekistan's mitigation policies also lack an overarching strategy, but they are somewhat better synchronized, given the country's legal obligations under the United Nations Framework Convention on Climate Change (UNFCCC) related to setting up a national structure and legislation for the Convention's implementation.

Legal Base for Implementation of the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol in Uzbekistan

Uzbekistan signed the UNFCCC in 1993 as a non-Annex I Party and ratified the Kyoto Protocol in 1999. The government delegated responsibilities and obligations related to UNFCCC implementation in Uzbekistan to the Centre of Hydrometeorology under the Cabinet of Ministers.

The National Authority for Clean Development Mechanism (CDM) under the Kyoto Protocol in Uzbekistan was created at the Ministry of Economy and an Interdepartmental Council was formed. Legal acts on CDM-related projects development and approval of CDM on the national level were developed and endorsed.

Uzbekistan's First National Communication to the UNFCCC was presented at the 5th Conference of Parties in Bonn in 1999 and included greenhouse gas inventory data for 1990–94, materials for emission trends assessment, general description of available or stipulated mitigation measures, the country climate change vulnerability assessment, and general characteristics of the adaptation measures.

Source: Second National Communication of the Republic of Uzbekistan to the UNFCCC.

Furthermore, the analysis of the legislative base of Uzbekistan in the climate change domain demonstrates that the vast majority of measures outlined in the policy documents have not moved

⁹ Ibid.

beyond the planning phase.¹⁰ In addition, even if the secondary laws exist, they often have only a declarative character, and their implementation and enforcement is not ensured.

The **Second National Communication of Uzbekistan to the UNFCCC** (2008) is the primary policy document that assesses the impacts of climate change and outlines adaptation options to respond to projected future climate hazards. This document includes an assessment of climate change impacts as well as broad recommendations on potential adaptation and mitigation options for each sector, including agriculture, water resources, biodiversity, and ecosystems.¹¹ The Third National Communication to the UNFCCC is currently under preparation and is expected to serve as a basis for further formulation of climate actions in the country.

Another important legislative document governing climate change policies and actions is the **National Strategy on Sustainable Development** (1999). Some of the main social, economic, and environmental policy goals outlined in the strategy are

- Supporting the ecosystem integrity through efficient natural resource management;
- Mitigating the growing economic impacts on the natural environment;
- Placing environmental protection as an essential component of development process;
- Coordinating social and economic aspects of improving the quality of life;
- Leveraging international cooperation, taking into account that climate change impacts transcend national borders and require regional and global actions;¹² and
- Climate change policy context in Uzbekistan.

In addition to the above-mentioned documents and given the multisectoral nature of the issue, climate change has been addressed, to some extent, in various policy documents, such as **Water Saving and Rational Water Use in Irrigated Land Tenure Strategy; National Strategy on GHG Emissions Reduction; Uzhydromet: Climate Change and Its Impact on Hydrometeorological Processes, Agro-Climatic and Water Resources**, to name a few.

Snapshot of Selected Climate-Related Legislative Documents in Uzbekistan

- Resolution of the Cabinet of Ministers No. 142 dated 27.05.2013 – Action Plan of the Republic of Uzbekistan for Environmental Protection for the years 2013–2017.
- Resolution of the Cabinet of Ministers No. 183 dated 14.04.2007 – Improvement of the Hydro-meteorological Service of the Republic of Uzbekistan.
- Resolution of the Cabinet of Ministers No. 71 dated 03.01.2007 – Approving the State Program on Prediction and Prevention of Emergency situations.
- Resolution of the Cabinet of Ministers No. 9 dated 10.01.2007 – Approving the Order of Preparation and Implementation of Investment projects in the framework of the Clean Development Mechanism under the Kyoto Protocol.

¹⁰ World Bank, “Uzbekistan – Climate Change and Agriculture Country Note” (Washington, DC: World Bank, 2010). <http://siteresources.worldbank.org>.

¹¹ Ibid.

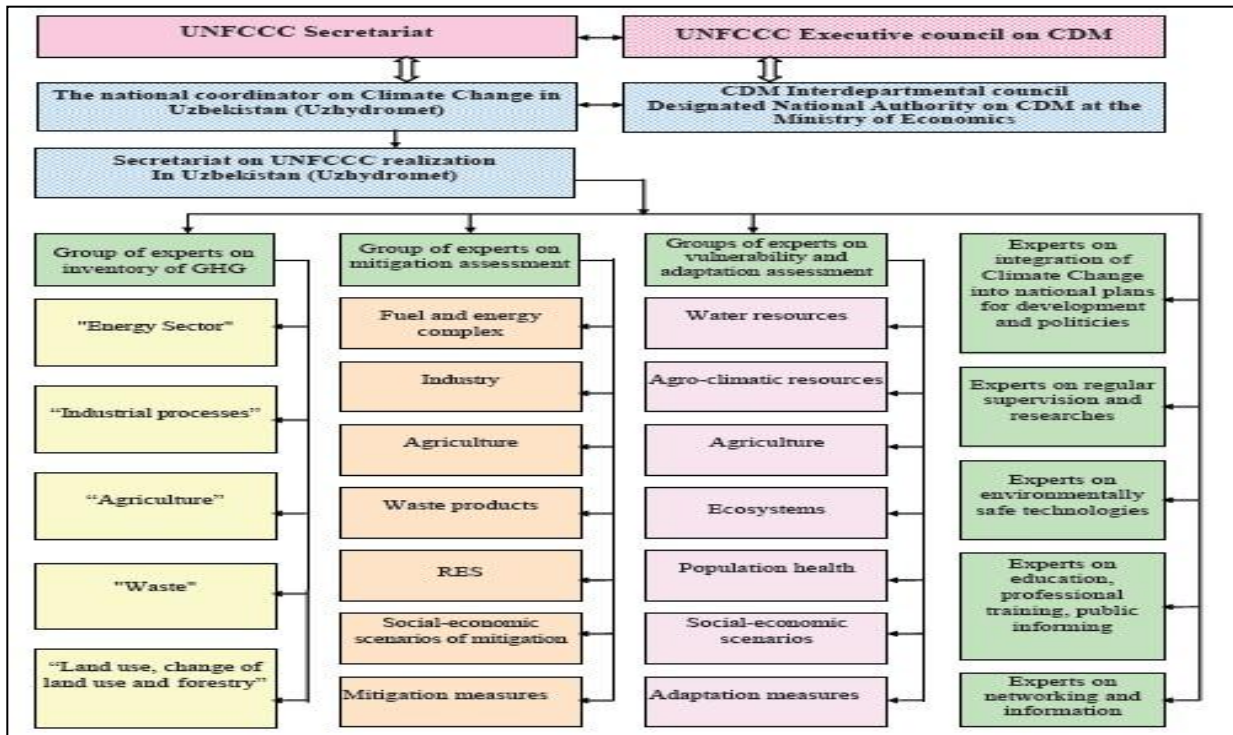
¹² Second National Communication of the Republic of Uzbekistan to the UNFCCC.

Institutions

The institutional framework for addressing climate change in Uzbekistan consists of a number of ministries and agencies, each focusing on different aspects of this complex and multisectoral issue and each operating under the Cabinet of Ministers, which is the principal executive body of the government. In the absence of a formal structure that would support coordination of the country's actions aimed at achieving low-carbon, climate-resilient development, an effective and efficient collaboration among the relevant institutions and stakeholders remains a challenge.¹³ By the same token, the institutional capacity and corresponding resources are quite limited, hindering the implementation of policies.

In terms of the institutional context related to climate change mitigation, the Interdepartmental Council of the Cabinet of Ministers has the overall responsibility of coordinating the country's national mitigation actions and those related to the UNFCCC commitments. Other important institutions in this regard are the Center of Hydrometeorology (Uzhydromet), Uzbekistan's designated national authority on CDM, which is housed at the Ministry of Economy, and a number of sectoral expert groups, such as those dealing with the GHG inventory, mitigation assessment, vulnerability and adaptation assessment, and integration of climate change considerations into national development policies and programs. See figure 1 for more information on the organizational structure of UNFCCC-related activities in Uzbekistan.

Figure 1: Organizational Structure of UNFCCC-Related Activities in Uzbekistan



Source: Second National Communication of the Republic of Uzbekistan to the UNFCCC, 2008.

Regarding the institutional framework related to adaptation to climate change in Uzbekistan, there is no overall coordinating entity that would ensure that adaptation policies and programs are undertaken in an effective and systematic way.¹⁴ As noted, the Cabinet of Ministers is the principal executive body of the government under which a number of ministries and agencies operate, including the aforementioned Uzhydromet, which (in addition to its responsibilities related to the UNFCCC implementation functions) is also responsible for weather forecasting, agro-meteorological monitoring and forecasting, climate research, and the operation and maintenance of weather stations across the country.¹⁵

There are a number of sectoral ministries that are responsible for adaptation and mitigation policy development and implementation. The Ministry of Agriculture and Water Resources is responsible for the formulation and promotion of policies and strategies related to the development of agriculture and water resources across Uzbekistan. The ministry is also responsible for matters related to the protection of animals and plants from pests and diseases; management and regulation of water resource availability and use; and the design, construction, and maintenance of water storage, delivery, and drainage infrastructure (for irrigation).¹⁶ The Ministry of Emergency Situations is, among others, responsible for the development and implementation of the state policy in terms of emergency situations prevention, as well as the establishment, administration and maintenance of the state system regarding prevention and disaster risk management. The Ministry of Public Health's main responsibility is the realization of state policy ensuring the preservation and improvement of health of the population, formation of conditions for growth of healthy generation, and development of preventive public health services. The State Committee for Nature Protection is the authority responsible for the protection of the environment and the use of natural resources within Uzbekistan. This committee leads the development and implementation of environmental protection policies; monitors environmental health, pollution, and other harmful substances; and promotes the adoption of clean technologies and waste recycling.¹⁷ Finally, the Cabinet of Ministers, under its jurisdiction, has a range of climate-related tasks, such as those related to the coordination of efforts related to environmental protection and realization of the major ecological programs of republican and international scale.¹⁸

III Overview of Development Partners' Engagement in Climate-Sensitive Sectors

National and local public authorities in Uzbekistan are mandated to follow strategic directives approved by the government of the Republic of Uzbekistan and, to the extent of their capacity, develop and implement activities and projects

Clean Development Mechanism (CDM) Portfolio in Uzbekistan

Since the ratification of the Kyoto Protocol in 1999, Uzbekistan has taken advantage of its project-based mechanisms, as demonstrated in a fairly robust CDM project portfolio compared to the other countries in Central Asia. As of December 1, 2012, the list of CDM projects approved by the Interagency Council included 65 projects, with the total volume of annual GHG emission reduction estimated to be over 14.8 million metric tons of CO₂ equivalent per year. Out of those, 14 projects were registered with the UNFCCC, while the majority of the remaining ones are at various project-design phases.

Source: Uzbekistan Designated National Authority (DNA) for CDM.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Second National Communication of the Republic of Uzbekistan to the UNFCCC.

¹⁸ The Government Portal of the Republic of Uzbekistan. <http://www.gov.uz>.

on climate change mitigation and adaptation.

International development partners have extensive portfolio of adaptation and mitigation projects in a number of climate-sensitive sectors. These, to some extent uncoordinated efforts, do not necessarily address all the challenges that the country is facing on its path to low-carbon, climate-resilient development. In this regard, an additional level of screening of climate portfolio, which will include the identification of gaps, outline future national and regional actions, and estimate the investment resources, is needed.

In the following sections, a brief overview of the development partners' major projects and activities is presented.¹⁹

Energy

Uzbekistan is an energy-rich country with significant deposits of natural gas (1.8 trillion cubic meters of proven natural gas reserves), coal (3 billion tons of coal reserves), and oil (590 million barrels of oil reserves). Natural gas (90.8 percent), fuel oil (5.3 percent), and coal (3.9 percent) are used for electricity and heat production with 48 billion kilowatt-hours of electric power and more than 10 million gigacalories of heat being produced annually.²⁰ The power sector, as such, accounts for a significant percentage of total CO₂ emissions in the country, with the emissions from the electricity and heat production accounting for approximately 35 percent of Uzbekistan's total CO₂ emissions from fuel combustion.²¹

The Second National Communication to the UNFCCC identified the impacts of rising temperatures on energy demand for heating and cooling. It is estimated that by 2030, rising temperatures could shorten the average duration of the heating season by 8–9 percent, as compared to the baseline seasonal lengths of 1971–2000. The duration of the cooling season would, however, become longer by 16 percent by 2030, which would in turn affect energy consumption through the increased use of air conditioning.²² The energy supply from hydropower will most likely also be affected by decreasing water availability. Finally, higher temperatures and extreme weather events, as well as natural disasters, could severely damage energy infrastructure in Uzbekistan.²³

The **World Bank Group** has an active portfolio in the energy sector of Uzbekistan. The World Bank's cooperation with Uzbekistan in the energy sector started in 2010 through the initiation of the Energy Efficiency Facility for Industrial Enterprises, which aims to improve the energy efficiency of industrial enterprises and establish mechanisms to finance energy efficiency projects. Other examples of Bank

¹⁹ The overview of development partners' climate portfolio in Uzbekistan is based on publicly available Web information and is not meant to be comprehensive. It is intended to provide an overview of the main climate-related activities that have been supported by the development partners over the past five years. For more information on the specific projects, refer to respective institutional websites.

²⁰ World Bank, "Climate Change Risk to Energy Sector in Uzbekistan" (Washington, DC: World Bank, 2010).

²¹ International Energy Agency, *CO₂ Emissions from Fuel Combustion*, 2012.

²² Second National Communication of the Republic of Uzbekistan to the UNFCCC.

²³ William R. Sutton, Jitendra P. Srivastava, and James E. Neumann, "Looking Beyond the Horizon: How Climate Change Impacts and Adaptation Responses Will Reshape Agriculture in Eastern Europe and Central Asia," *Directions in Development*, (Washington, DC: World Bank, 2013).

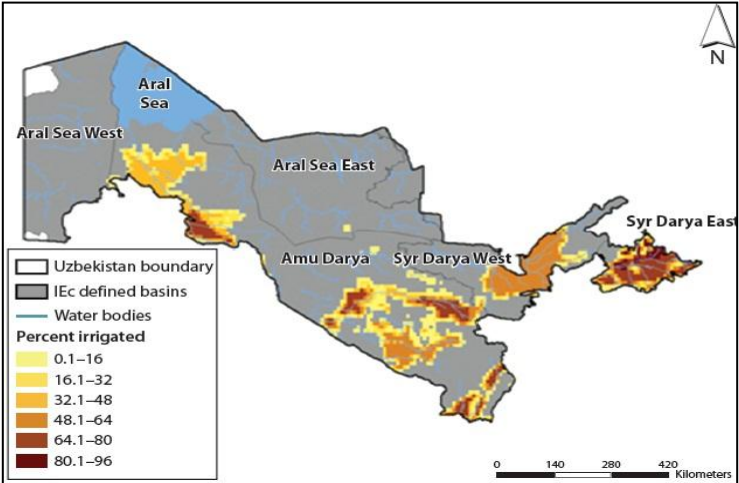
projects in the energy sector include the (a) Talimarjan Transmission Project, which aims to improve the reliability of electricity supply to residential and business consumers in southwestern Uzbekistan and strengthen the power transmission network (approved in 2011); and (b) Advanced Electricity Metering Project, which focuses on reducing commercial losses through improving the metering and billing infrastructure and commercial management systems of Uzbekenergo’s three regional power distribution companies: Tashkent City, Tashkent Oblast, and Syrdarya Oblast (approved in 2012).

Of other development partners, the **Asian Development Bank (ADB)**, in particular, has been active in terms of projects in the energy sector of Uzbekistan, leading 8 out of the 17 activities identified to date. Among others, they include the (a) Kandym Gas Field Development, with the main objective being development of gas fields, gas production and processing facilities, and associated facilities in the Kandym gas field; (b) Talimarjan Power Project, with the main objectives to improve energy security and facilitate regional energy trade by increasing energy efficiency and saving energy through clean power generation; and (c) Advanced Electricity Metering Project, targeting the distribution systems in Samarkand, Bukhara and Djizzakh provinces, which aims to introduce smart metering, therefore enabling the utility to remotely monitor and control power usage without sending reading personnel to the site, and the consumers to have access to power usage information more frequently. In addition to the ADB, the **Japanese International Cooperation Agency (JICA)** has supported the development of renewable energy. Supported by the **United Nations Development Programme (UNDP)**, Uzbekistan is also embracing a low-emission development path through improvements in renewable energy use, development of a low-emission development strategy, and mobilization of resources for such strategy implementation. For instance, one of the outcomes of such efforts, which are expected to be completed by 2015, was a design of the Nationally Appropriate Mitigation Action (NAMA) on energy-efficient lighting (use of compact fluorescent lamps in public and administrative buildings). If implemented, such NAMA could result in the saving of 3.127 million kilowatt-hours or 852 million cubic meters of natural gas (an equivalent of US\$52.334 million). Another example of an activity under the same program was establishing a standardized baseline for Uzbekistan’s energy sector, incorporating a national emission factor of CO₂, which was submitted for approval to the UNFCCC Secretariat.

Figure 2: Irrigated Areas in Uzbekistan

Agriculture

A large area of Uzbekistan’s land is used for agriculture, with natural pastures occupying 40 percent of the country, and rain-fed and irrigated cropland accounting for an additional 12 percent (See figure 2 for more detailed information on irrigation in Uzbekistan). Due to the arid climate, more than 85 percent of Uzbekistan’s cropland is irrigated. As noted above, climate change



Source: World Bank, 2013.

will likely lead to increases in temperature and changes in the precipitation regime, which will in turn increase water demand and decrease water availability. As such, under the no adaptation option, climate change is likely to cause yield reductions of 20–50 percent by 2050 for nearly all crops,²⁴ thus threatening the food security of the country. Furthermore, since the agriculture sector plays an important role in Uzbekistan’s economy, with the most important crops being cotton and wheat, climate change impacts on agricultural productivity will go beyond the food security concerns and have negative impacts on the economy as a whole. There are a number of climate change activities aimed at enhancing institutional and technical capacity to reduce the risks related with production, markets, prices, and policies and regulations. Special effort is required for drought, flood, and pest and soil salinity management in Uzbekistan. Furthermore, upgrading hydromet observations and water accounting information, improving and maintaining irrigation and drainage facilities network, developing early warning systems, improving agricultural water productivity and science-based extension services, and supporting climate-smart agriculture and resilient farming practices though agriculture conservation are considered important.

The **World Bank Group’s** 2012–15 Country Partnership Strategy for Uzbekistan acknowledges that the agriculture sector has the potential to bring higher growth and greater value added to the economy and announces support for selected value chains in agriculture and livestock by continuing to provide financing opportunities, with particular focus on non-cotton related activities.²⁵ In terms of the support to these goals, the World Bank is implementing a number of agriculture projects, such as Drainage, Irrigation and Wetlands Improvement Phase-I Project, a Rural Enterprise Support Phase-II Project, and a Ferghana Valley Water Resources Management Phase-I Project. Together, these projects aim to increase labor productivity, employment and incomes, the financial and environmental sustainability of agriculture, and the productivity of irrigated agriculture. In addition, a **Global Environment Facility** (GEF) grant was recently approved to support the Sustainable Agriculture and Climate Change Mitigation Project, with the objective to promote the introduction of renewable energy and energy-efficient technologies to agribusinesses and farms and to strengthen capacity for improving degraded irrigated land and water conservation in the project area. This grant will complement the ongoing second phase of the Rural Enterprise Support Project.

In addition to the World Bank Group, a range of international organizations, including the Asian Development Bank, the European Union (EU), and the Food and Agriculture Organization (FAO), are involved in supporting the agriculture sector in Uzbekistan. Of the above organizations, the **ADB** provides the largest share of development financing for the agricultural sector, supporting a number of projects, such as the Amu Zang Irrigation Rehabilitation Project (expected to be completed in 2013); the Uzbekistan Land Improvement Project; the Water Resource Management Sector Project, with an irrigation project in the Zarafshan Basin, to name a few. The **EU** is also supporting a wide array of activities, including the project Enhancing the Economic Independence and Living Conditions of Women and Small Family Farmers through the creation of a Women’s Farmers Social Enterprise. Finally, the **FAO**

²⁴ Ibid.

²⁵ World Bank, *Uzbekistan: Country Partnership Strategy for 2012–2015*. (Washington, DC: World Bank, 2011).
<http://documents.worldbank.org/curated/en/2011/11/15470023/uzbekistan-country-partnership-strategy-2012-2015>.

is implementing a wide range of technical assistance programs, including the regional support for the development of sustainable agriculture, efficient irrigation systems, product markets, and value chains.

Forestry

Forests resources occupy 8.17 million hectares of land, with desert forests accounting for 78 percent of the territory of Uzbekistan.²⁶ As a result of the generally arid climate, forest productivity in Uzbekistan is very low. Nevertheless, the forests are important with regards to the air quality and in terms of acting as a buffer against extreme events such as brushfires. The forests are a major source of non-wood forest products, including nuts, fruits, mushrooms and berries, herbal medicines, and tanning and dyeing agents. Anthropogenic factors combined with side effects of the drying up of the Aral Sea and a generally warmer and drier climate are responsible for progressive desertification across the country. Indicators of desertification include more open forest stands, reduction in ground vegetation cover, and lower soil productivity.²⁷ Drier and hotter conditions will lead to a continued decline of desert forest productivity and a reduction of certain types of forest habitat in the mountainous zone. In addition to a loss of habitat and ecological biodiversity, the reduction of forests and other vegetation decreases absorption of carbon dioxide, thus accelerating global warming.²⁸

Development partners are at the moment not particularly active in supporting the forestry sector in Uzbekistan. Among very few projects that are being implemented is the **United Nations Development Programme's** project Strengthening Sustainability of the National Protected Area System by Focusing on Strictly Protected Areas, with the objective to demonstrate new management approaches for expansion of the protected area system of Uzbekistan through building the management capacity of all nature reserves across the country.

Water

Uzbekistan is the primary consumer of water resources in the region, with irrigation accounting for approximately 90 percent of surface water withdrawal and its agricultural production almost entirely dependent upon irrigation for productivity. Increased evaporation coupled with warming temperatures will lead to water loss in zones that rely heavily on irrigation. It is expected that irrigation demand in Uzbekistan will on average increase by 5 percent by 2030, by 7–10 percent by 2050, and by 12–16 percent by 2080.²⁹ Ninety percent of water consumption in Uzbekistan is imported from neighboring countries, and expected decreases in river water resources will lead to worsening of water scarcity, which will be especially acute during years of low flow. Without an adequate water resources management policy, this reduction is expected to intensify the water supply situation in Uzbekistan, with the most acute consequences occurring in areas around the Aral Sea.³⁰

²⁶ Second National Communication of the Republic of Uzbekistan to the UNFCCC.

²⁷ Don Koo Lee and Michael Kleine, eds., *Keep Asia Green: Volume IV "West and Central Asia,"* (Vienna: International Union of Forest Research Organizations, 2009).

²⁸ Second National Communication of the Republic of Uzbekistan to the UNFCCC.

²⁹ Ibid.

³⁰ Ibid.

The **World Bank Group** has been implementing a number of projects in Uzbekistan’s water sector since the early 1990s, mainly through support to the Aral Sea Basin Programme, including the recently completed rural water supply and sanitation project for Khorezm oblast and the Republic of Karakalpakstan. The Bukhara and Samarkand Water Supply Project (BSWS) was recently completed, while the Bukhara and Samarkand Sewerage Project and the Syrdarya Water Supply Project have been under implementation since April 2010 and January 2012, respectively. Implementation of the BSWS project increased access to a reliable water supply to 98 percent of the population in the project areas. It also resulted in the replacement of 114.4 kilometers of water mains in Bukhara and 130.1 kilometers in Samarkand, and the development of new customer databases, billing, and accounting programs in Bukhara and Samarkand. Water quality has improved in the project areas, with less than 5 percent of tested water samples failing chlorine residual standards in Bukhara, and 0 percent failing in Samarkand. In addition, non-revenue water (water that has been produced and is “lost” before it reaches the customer, either by leakage or illegal siphoning) is 31.5 percent in Bukhara and 36.5 percent in Samarkand.

Other development partners have also been active in the water sector. The **Asian Development Bank** has a number of projects, including the Djizzakh and Surkhandarya Rural Water Supply and Sanitation Sector, a water resource management project in the Ferghana and Zarafshan Basins, and significant investments in assorted water supply and sanitation investment programs. The **United Nations Development Programme** also has a project, the Integrated Water Management and Water Efficiency Plan for Zarafshan River Basin, with the overall objectives to develop a National Integrated Water Resources Management and Water Use Efficiency Plan for Zarafshan River Basin of Uzbekistan, strengthen the legal and regulatory framework for the water sector, and support the integration of water management issues into relevant intersectoral policy frameworks. The **German Federal Enterprise for International Cooperation (GIZ)** is implementing a project on transboundary water management to optimize cooperation in the Central Asian water sector, and improve the lives of people in the region, including Uzbekistan.

Transport

The transport sector of Uzbekistan includes automobile, railway, and air transport. Motorized vehicles are the prevalent type of transport in Uzbekistan, accounting for 84.9 percent of passengers and cargo transportation in 2006. The number of motorized vehicles increased 2.5 times in the last 15 years. Because of its fairly low technological level, motorized transport is the next significant source of GHG emissions in Uzbekistan after the thermal and electric power sectors.³¹ As such, and because the increased use of vehicles is a main source of pollution in urban areas, improving energy efficiency measures in the transport sector would be a highly effective way to mitigate climate change.^{32 33}

Among all development partners, the **Asian Development Bank** provides the most significant transport-related financing, in particular through the CAREC Regional Road Project, which aims to develop

³¹ Second National Communication of the Republic of Uzbekistan to the UNFCCC.

³² Ibid.

³³ Environmental Performance Review of Uzbekistan, Second Review. United Nations Commission for Europe, 2010.

strategic international highways and improve road sustainability in Uzbekistan. This project alone will improve 131 kilometers of the A-380 highway and assist the government in strengthening operation and maintenance of the road network in Uzbekistan.

Health

In the past decade, the health care system in Uzbekistan experienced a transition from central planning and government finance to mixed public and out-of-pocket payments, with current health care costs accounting for 3.7 percent of Uzbekistan's gross domestic product (GDP).³⁴ Uzbekistan is already facing significant health-related challenges because of environment degradation, particularly in the Aral Sea Basin. It is estimated that nearly 30 percent of the population living in this area suffers from waterborne diseases. As noted above, climate change is projected to increase temperatures and decrease water supply across the country. In the absence of effective governance, related investments, and adaptive capacity, it is expected that there will be an increase in proliferation of waterborne diseases as well as in various health issues caused by dust storms, desertification, heat stress, and extreme weather events, creating a burden on the existing public health system, whose most vulnerable populations will be first affected.

The **World Bank Group** has an active portfolio in the health sector in Uzbekistan. Reforms in primary health care have been supported through two investment projects, Health I and Health II, which were implemented from 1998 to 2011. These projects improved the quality and cost-effectiveness of primary health care services, established 10-month doctor retraining courses on general practice and family medicine, and strengthened the capacity of the public health system. The Health III Project was initiated in 2012 and focuses on enhancing secondary health care services through a number of mechanisms: investing in diagnostic and treatment equipment in the hospitals at the district level, improving clinical service management of priority non-communicable diseases, and improving hospital financing. The World Bank is also preparing an Additional Financing (AF) to scale up the activities initiated under the Health III Project. The AF would ensure that all rayon (district) medical unions as well as selected city medical unions in line with the government's hospital reform program receive additional support. With funding support from the GEF Special Climate Change Fund (SCCF), Uzbekistan's Ministry of Health is piloting adaptation measures in Tashkent and Syrdarya provinces that will increase the adaptive capacity of the health care system in these provinces to cope with climate-sensitive diseases. The project aims to reduce negative impacts of climate change by equipping health care personnel and the wider population with essential tools and knowledge to prevent detrimental effects of climate on human health. It is expected to result in the following outcomes: establishment of an early warning system that provides reliable information on likely incidence of climate-sensitive health risks, enhanced skills and knowledge of health care personnel to cope with climate sensitive diseases, and implementation of action plans to address climate sensitive diseases in the two provinces.

A few other development partners are also involved in health-related activities in Uzbekistan. For example, the **Asian Development Bank** is implementing a number of programs supporting maternal and

³⁴ Sutton, Srivastava, and Neumann, "Looking Beyond the Horizon."

child health. The **European Union** is currently implementing the Program on Sustainable Community-Based Health Care in Andijan, which aims to strengthen local capacities to prevent waterborne illness and infectious diseases such as diarrhea, hepatitis, and typhoid among vulnerable rural communities. The EU also supports several programs related to maternal and child health services. Even though none of the health-related projects identified to date have actively incorporated climate considerations in their design, they certainly have climate co-benefits.

Disaster Risk Reduction

Uzbekistan faces a number of hydrometeorological hazards affecting the agricultural sector, the most frequent being seasonal floods and periods of drought. Threats from landslides, locust invasions, and avalanches have also been observed every so often, and have affected the lives and livelihood of Uzbekistan's population. According to Uzbekistan's Second National Communication to the UNFCCC, climate change is expected to lead to the increase in the frequency of extreme and hazardous hydrometeorological phenomena.³⁵ Uzbekistan is and will increasingly be particularly vulnerable to the following: droughts, extremely high temperatures, heavy precipitation, mudflows, floods, avalanches, and others. Looking forward, estimates also suggest increased glacier melting (glaciers in Central Asia are estimated to have shrunk by 25 percent and are expected to shrink by another 25 percent over the next 20 years), which will cause increased flooding in the short term and affect water availability in the long term.³⁶

Development partners are moderately active in the area of disaster risk management and reduction in Uzbekistan. One of the projects in this domain is the **United Nations Development Programme's** Central Asian Multi-Country Programme on Climate Risk Management, under which support and capacity development is provided to the Ministry of Emergency Situations and other relevant national stakeholders. The main objective of this project is to stimulate the reduction of the risk of occurrence of natural disasters related to climate change, as well as to ensure the integration of climate risk management in the development of key strategies and plans in the Republic of Uzbekistan.

IV Conclusions

Uzbekistan is significantly threatened by climate change, with serious risks already in evidence. The trend of temperature increase in Uzbekistan is expected to continue and further accelerate in the near future. Aridity is also expected to increase across the entire country, most notably in the western parts of Uzbekistan. In addition, the situation with water scarcity in Uzbekistan might significantly worsen due to expected reduction of existing water resources coupled with rising temperatures. Uzbekistan's vulnerability to climate change is expected to be further exacerbated by inefficient water use and aging infrastructure, a currently inconducive policy environment and institutional framework, limited enforcement of laws and regulations, and environmental pollution.

³⁵ Second National Communication of the Republic of Uzbekistan to the UNFCCC.

³⁶ Estimates on glacier melting trends are taken from the draft Third National Communication to the UNFCCC.

Currently, the climate change lens is not being used when shaping the overall development agenda in Uzbekistan, nor are the climate considerations adequately reflected in the national development policies and strategies. There are several national development and environmental policies and programs related to climate change adaptation and mitigation in a number of sectors, such as water resources, agriculture, energy, health, ecosystems, and others. Yet, Uzbekistan does not currently have a focused and comprehensive climate change policy document that would provide a strategic framework for national climate change adaptation and mitigation actions.

In addition, each sectoral ministry and agency's mandate related to adaptation and mitigation measures is somewhat fragmented and indistinct, resulting in the lack of effective and efficient coordination that would support low-carbon, climate-resilient development. By the same token, the institutional capacity and corresponding resources are quite limited, ultimately impeding the implementation efforts.

Looking Ahead

Uzbekistan, in collaboration with international development partners, is implementing several adaptation and mitigation projects in a number of climate-sensitive sectors. These, to some extent piecemeal efforts, do not necessarily address all the challenges that the country is facing on its path to low-carbon, climate-resilient development. In this regard, an additional level of screening of climate portfolio, which will include the identification of gaps, outlining future national and regional actions, and estimating the investment resources, is needed.

Based on the review of national climate context, related challenges, and existing programs and policies, several areas have been identified for urgent initial actions that could help Uzbekistan mainstream climate considerations into the development activities and planning as well as create public demand for climate actions.

Improving Science-Based Understanding of Climate Change Impacts

In order to initiate and strengthen an evidence-based dialogue on climate action among key stakeholders, further science-based analysis of the nature and magnitude of physical and biophysical climate change impacts under different scenarios is needed. Such analysis will provide a better understanding of the timing and magnitude of incidence of several important indicators of climate change in the future, as well as identify the key vulnerabilities, development impacts, and possible adaptation responses. Finally, the scientific analysis will also serve as a basis for further identification of development responses at the national and regional levels as well as for institution building, priority setting, implementation, and results monitoring.

Estimating Cost of Inaction

The analysis of climate change impacts and associated economic costs across water, energy, agriculture, forestry, transport, and health sectors is necessary in order to provide compelling economic arguments in favor of climate action. Furthermore, such analysis is needed in order to inform the national and regional planning on appropriate policy responses that are likely to reduce GHG emissions as well as

strengthen local adaptive capacity needed to improve climate resilience. Finally, the economic analysis of cost of inaction is also needed to form a basis for a broad-brush “road map” and the next steps for climate-smart actions.

Designing and Implementing Climate-Smart Solutions

Meeting the challenges of climate change offers numerous “no regrets” sectoral, climate-conscious strategies that can enhance climate resilience while generating immediate development benefits. An identification and effective implementation of climate-smart solutions (such as those related to improved disaster risk management, hydromet services, climate risk assessments, water resource management, climate resilient agriculture, performance of water utilities and energy systems, and others) also have significant global co-benefits, such as contributing to global efforts to reduce GHG emissions. Finally, such solutions form a necessary basis for enhanced regional collaboration and a foundation for national and regional institution building.

A Case for National Coordination Mechanism on Climate Change

Even though the emerging climate change impacts in Uzbekistan are well recognized and the country, with support from development partners, is implementing a number of activities aimed at reducing vulnerability and mitigating climate change impacts, these issues do not yet receive the priority they need within the existing policy and institutional contexts. In order to integrate and effectively implement low-carbon, climate-resilient considerations into development planning, national coalition building efforts and cross-sectoral participation among relevant stakeholders would need to be strengthened and scaled up. Such efforts would, in turn, improve the country’s institution readiness and associated capacity.

To support and facilitate such process, there is a need to establish a **National Steering Committee on Climate Change**. Given the cross-sectoral nature of this issue, the international experience has indicated that such a committee would best function if chaired by the Ministry of Finance and comprising high-level representatives from concerned line ministries and agencies. The main responsibilities of the committee would be to ensure the integration of low-carbon, climate-resilient considerations into development planning by providing overall guidance, political support, and leadership, ensuring adequate resource allocation and monitoring the results related to the national efforts to address and adapt to climate change.

In order to ensure its operationalization, the committee would need to be supported by a **technical working group** that would comply with its strategic guidance and execute its decisions. The technical working group would be empowered by the committee’s decisions, comprise technical staff from the line ministries and agencies, and ensure the implementation of policies and actions on the ground.

A Case for Regional Coordination Mechanism on Climate Change

Climate change poses a common challenge to all countries in Central Asia, making regional and international collaboration essential to achieving low-carbon, climate-resilient growth in each of them.

Despite a number of important national-level adaptation and mitigation actions that Uzbekistan is undertaking, the country will be better equipped to address climate change impacts within a framework for scaled-up regional collaboration on climate-related data sharing, disaster risk management system and crisis responses, development of climate-resilient infrastructure, technology transfer, and others. As a result, regional programs would be leveraged for effective implementation of national actions.

In order to enable such processes, a **Regional Central Asian Steering Committee on Climate Change** would need to be established. The committee would comprise high-level representatives from the five Central Asian countries and international development partners as its members. The committee's main responsibilities would be to provide overall guidance, political support, and leadership and to serve as a vehicle for continuous coordination of regional efforts to address and adapt to climate change.

In order for the broad policy directions to be implemented, such regional committee would need to be supported by a **Regional Central Asian Secretariat on Climate Change**, which would be jointly established by the five Central Asian countries and international development partners. The secretariat would be headquartered in a given Central Asian country (to be determined by the countries themselves) and function either as an independent institution or within an existing regional institution. It would serve as a facilitation unit and support governance bodies of the committee, carry out regional communication and resource mobilization efforts, help establish or host regional centers of excellence, as well as work with the national level committees.

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Notes
