



# UZBEKISTAN CLIMATE ADAPTATION AND RESILIENCE ASSESSMENT

# Uzbekistan Climate Adaptation and Resilience Assessment

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# Acronyms

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<b>ALMPs</b>	Active Labor Market Policies
<b>DRM</b>	Disaster Risk Management
<b>ECA</b>	Europe and Central Asia
<b>ECI</b>	Economic Complexity Index
<b>ESC</b>	Employment Support Centers
<b>ESD</b>	Education for Sustainable Development
<b>HBS</b>	Household Budget Survey
<b>GDP</b>	Gross Domestic Product
<b>GHG</b>	Greenhouse Gas
<b>GSCHS</b>	Government System of Prevention and Activities in Emergency Situations
<b>GSS</b>	General Support Services
<b>HCI</b>	Human Capital Investment
<b>ICT</b>	Information and Communication Technology
<b>IWRM</b>	Integrated Water Resources Management
<b>L2CU</b>	Listening to the Citizens of Uzbekistan
<b>LIFA</b>	Low-Income Family Allowance
<b>LMICs</b>	Lower-Middle-Income countries
<b>MACs</b>	Maximum Allowable Concentrations
<b>MELR</b>	Ministry of Employment and Labor Relations
<b>MES</b>	Ministry of Emergency Situations
<b>MTEF</b>	Medium-Term Expenditure Framework
<b>NBSAP</b>	National Biodiversity Strategy and Action Plan
<b>NDC</b>	National Determined Contribution
<b>NGO</b>	Non-Governmental Organization
<b>NSSD</b>	National Strategy for Sustainable Development
<b>OECD</b>	Organization for Economic Cooperation and Development
<b>OOP</b>	Out of Pocket
<b>PAs</b>	Protected Areas
<b>PPPs</b>	Public-Private Partnerships
<b>R&amp;D</b>	Research and Development
<b>RBMPs</b>	River Basin Management Plans
<b>RISE</b>	Regulatory Indicators for Sustainable Energy
<b>SEA</b>	Strategic Environmental Assessment
<b>SME</b>	Small and Medium-Sized Enterprises
<b>SOE</b>	State-Owned Enterprise
<b>SP</b>	Social Protection
<b>SR</b>	Social Registry
<b>STI</b>	Science, Technology, And Innovation
<b>SVR</b>	Social and Vocational Rehabilitation
<b>UMIC</b>	Upper-Middle-Income Countries
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>TNC</b>	Third National Communication
<b>WSS</b>	Water Supply and Sanitation



# Abstract

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This report is part of the support package for Uzbekistan to realize an Inclusive Green Growth Transition. The recent Presidential Decree No. PP-436 02.12.2022 “On measures aimed at increasing the effectiveness of reforms with the goal of transition of the Republic of Uzbekistan to a ‘green’ economy until 2030” shows the country’s resolve to achieve sustainable growth. This report uses the adaptation principles to perform an economy-wide assessment of Uzbekistan’s adaptation and resilience. The report aims to identify key gaps and propose critical actions and policy recommendations that will facilitate the transition towards a ‘green’ economy by 2030. The report analyzes the foundation for inclusive economic growth, existing mechanisms to facilitate the adaptation of people and firms, and policies and actions to adapt land use and protect critical public assets and services. It also explores how the system helps firms and people manage residual risks and natural disasters and investigates how financial and macro-fiscal issues are managed. Lastly, this report explores Uzbekistan’s current prioritization, implementation, and progress monitoring system of adaptation and resilience.

# Executive Summary

**Uzbekistan's geographic and socio-economic configuration makes it very vulnerable to climate change.** Uzbekistan is the most populous country in Central Asia. Landlocked and covering about 450,000 km<sup>2</sup>, it is dominated by large deserts. The country's topographic and climatic profile causes its growing population to suffer from the impacts of climate change. By 2040, Uzbekistan is expected to be the 29<sup>th</sup> most water-stressed country in the world.<sup>1</sup> The country is equally prone to earthquakes, droughts, and floods, which affect about 1.4 million people yearly and cause the economy to lose about 5 percent of GDP.<sup>2</sup> Poorer households are disproportionately affected by climate impacts as their livelihood depends on sensitive sectors—such as agriculture, which suffers from climate change risk and price volatility.

**Uzbekistan is undergoing reforms to transition from a state-planned economy to a market economy.** Since 2016, Uzbekistan has embarked on various reforms to move towards a low-carbon economy with greater private-sector participation. This transition requires incorporating climate change considerations into development plans, thus the need for a comprehensive evaluation of the country's adaptation and resilience capacity.

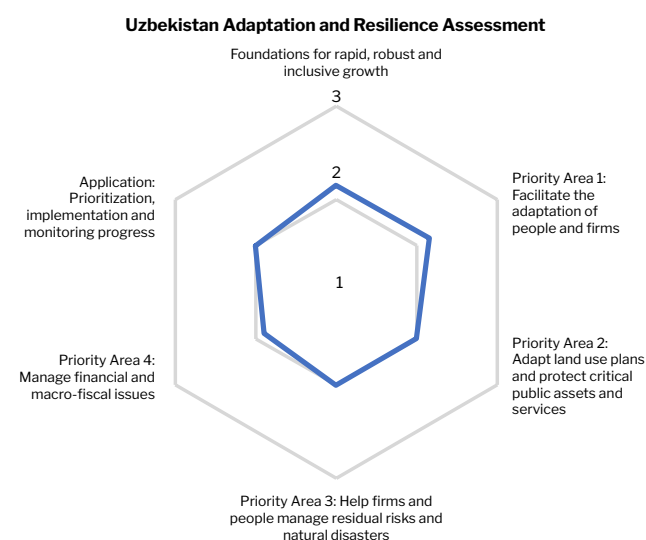
**These reforms have also coincided with increased economic growth, characterized by high dependence on natural resources and high intensity of carbon emissions.** The sustainability of economic growth can be jeopardized by the fluctuation of prices and availability of natural resources. Uzbekistan's overall economic stability is low due to its over-dependence on natural resources. Climate change can pose further challenges to natural resources.

**To adequately support Uzbekistan in realizing an inclusive and resilient green-growth transition, a whole-of-economy adaptation and resilience assessment was carried out; this report summarizes its findings.** The assessment provides an economy-wide evaluation of progress and gaps in adaptation and resilience (Figure ES-1). The overall assessment shows the country is emerging for most indicators, as initial steps have been taken as part of reforms and actions towards a market economy and green transition. The assessment also proposes key recommendations for filling existing gaps in order to enhance inclusive, resilient green-growth transition.

**Significant progress has been made to ensure economic growth even in the presence of multiple risks facing the country.** However, Uzbekistan needs to do more to ensure that its economic growth is inclusive, which is the key to advancing on a resilient path. This includes ensuring increased access to finance (account ownership at a financial institution or with a mobile money-service provider) for the bottom 40 percent, access to safe sanitation, universal health care, information and communication technology (ICT), and social protections.

**Progress has been made in helping firms and people adapt by providing climate and disaster risk information and facilitating access to resilience solutions through trade policies.** However, investments in research and development are low, and communication of disaster and climate risk is not readily available to the general public nor tailored for adequate adaptation planning.

**FIGURE ES-1: >> Overview of Uzbekistan's adaptation and resilience preparedness**



Sources: Based on a combination of quantitative data provided by the government of Uzbekistan review, World Bank CCIA report, Uzbekistan TNC, WDI (2021), WGI (2021), UNECE (2020) Environmental Performance Reviews: Uzbekistan, and expert interviews.

**A traffic light rating system was applied to 150 qualitative and quantitative indicators to comprehensively assess Uzbekistan's adaptation and**

<sup>1</sup> <https://www.wri.org/insights/ranking-worlds-most-water-stressed-countries-2040>.

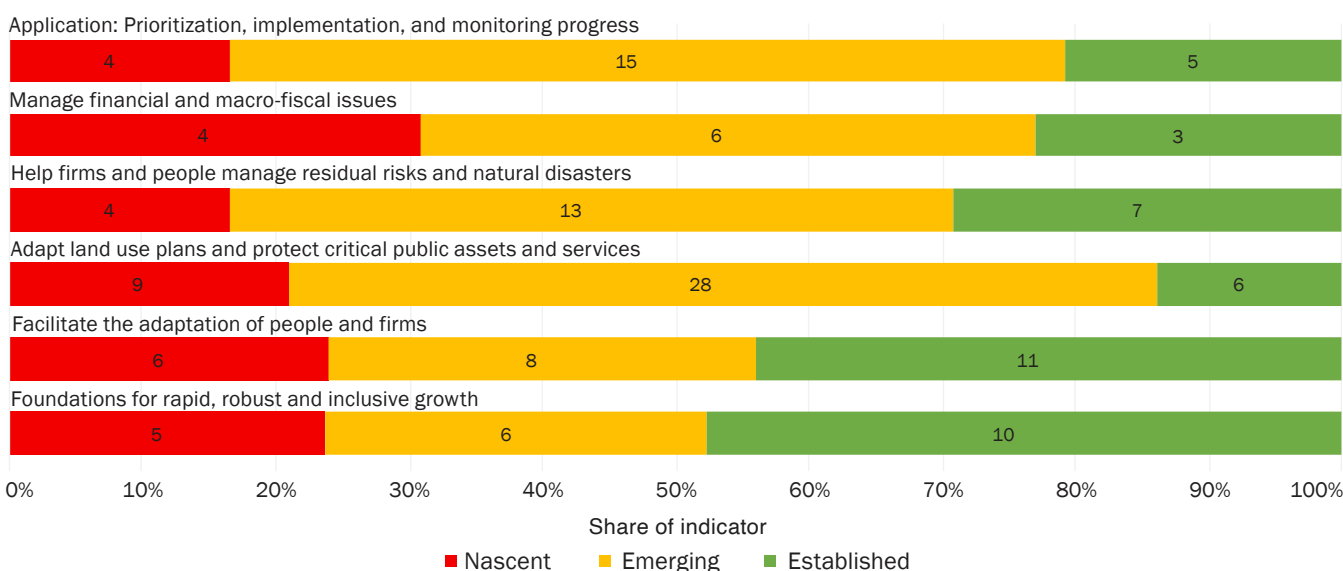
<sup>2</sup> <https://www.gfdrr.org/en/publication/disaster-risk-profile-uzbekistan>.

**resilience capacity, gaps, and progress in six priority areas (Figure ES-2).** The assessment employed the conceptual framework of Adaptation Principles (Hallegatte, Rentschler, and Rozenberg 2020), which is an effective framework for designing national climate adaptation and resilience policies and strategies. The assessment and rating of qualitative indicators stem

from reviewing policy documents, published reports, and consultation with government officials. Quantitative indicators were rated using a benchmarking approach against a set of peer countries. Upper-middle-income countries were chosen as the peer group for Uzbekistan because the country aspires to be upper-middle-income by 2030.

**FIGURE ES-2: >>**

**Summary scores, adaptation and resilience assessment of Uzbekistan**



Sources: Based on World Bank CCA report,<sup>3</sup> [Uzbekistan TNC](#), [UNECE Environmental Performance Reviews: Uzbekistan](#), and expert interviews.

Note: The number in each bar shows the number of indicators per category (established/emerging/nascent).

**To adapt land use plans and protect public assets and services, progress has been made in increasing the resilience of the agricultural sector, but significant gaps exist in other critical systems.** Gaps exist around revising land use plans and urban plans to make risk-informed decisions, ensuring the resilience of forest and natural ecosystems, and increasing the resilience of water infrastructure and water resource management.

**Significant progress has been made in saving lives and money through hydrometeorology (hydromet), early warning, and emergency management systems to help people and firms manage residual risks and natural disasters.** Yet, significant gaps exist in helping firms design business continuity plans and financial preparedness, developing the insurance sector, building on public-private partnerships, and providing firms and people with adequate instruments for risk management.

**Uzbekistan is implementing a strategy to manage contingent liabilities by combining different instruments for managing financial and macro-fiscal issues.** Nonetheless, they do not adequately communicate and mitigate disaster and climate risk exposure in the

financial sector and pension systems nor adequately anticipate and plan for long-term macroeconomic impacts.

**Adaptation and resilience prioritization, implementation, and progress monitoring are ongoing in different sectors.** Yet, no overarching climate policy, adaptation, and resilience plan at the national level reflect sectoral and decentralized priorities and actions. Cross-sectoral coordination of adaptation and resilience actions is ineffective, funding for adaptation and resilience is limited, and there is no centralized system for tracking progress on adaptation and resilience over time with progress review for improvement.

**Uzbekistan understands the need for adaptation and resilience as part of its growth strategy; this is evident from the country’s policy actions and initiatives to enhance adaptation and resilience.** Table 1 summarizes a list of recommendations per the Adaptation Principle for Uzbekistan in the short-, medium- and long-term to improve its adaptation and resilience and facilitate its transition to a green economy.

<sup>3</sup> World Bank 2022a. Uzbekistan Climate Change Institutional Assessment. Internal document.

TABLE 1: >>

**Adaptation and Resilience principles and proposed actions to fill gaps**

Adaptation and Resilience principles	Proposed actions
<p><b>Adaptation Principle 1:</b> Lay the foundations for adaptation through rapid, robust, and inclusive development.</p>	<p><b>Short- to mid-term</b></p> <ul style="list-style-type: none"> <li>• Prioritize stability of macroeconomic fundamentals such as inflation, external debt, and current account balance to enhance financial stability for adequate adaptation and resilience preparedness.</li> <li>• Accelerate action on improving good governance, especially on the following aspects—the rule of law, voice and accountability, and political stability—to facilitate implementation and social inclusion for socio-economic and environmental resilience.</li> </ul> <p><b>Long-term</b></p> <ul style="list-style-type: none"> <li>• Accelerate investment in human capital development and create training programs to install new skill sets required for a market economy to help the population adapt to green transition.</li> <li>• Invest in extending universal health coverage to predominantly rural parts of the country to reduce the population’s vulnerability to climate risks.</li> </ul>
<p><b>Adaptation Principle 2:</b> Facilitate the adaptation of people and firms.</p>	<p><b>Short- to mid-term</b></p> <ul style="list-style-type: none"> <li>• Develop and implement a package of incentives to investors targeting new sectors, with regulated environmental safeguards incorporated into company environmental safeguards systems, enabling green investments that also improve the way of living.</li> <li>• Facilitate access to finance to the poorest 40% of the population because they are the most vulnerable and often depend on climate-sensitive sectors (agriculture).</li> </ul> <p><b>Long-term</b></p> <ul style="list-style-type: none"> <li>• Increase investment in R&amp;D, develop strategies for integrating research outcomes into policy, and create an enabling environment for foreign research think tanks and innovation hubs to develop evidence-based research and technology for climate change adaptation and resilience.</li> </ul>
<p><b>Adaptation Principle 3:</b> Adapt land use plans and protect critical public assets.</p>	<p><b>Short- to mid-term</b></p> <ul style="list-style-type: none"> <li>• Develop a framework for institutional coordination and define mandates for leveraging sustainable land-use plans and to protect critical assets.</li> <li>• Develop incentives to attract the private sector to invest in innovative water-saving technologies because Uzbekistan’s water productivity is among the lowest in the world.</li> <li>• Expand agricultural extension services and build capacity for farmers by promoting organic agriculture.</li> <li>• Adopt the strategic environmental assessment (SEA) tool to evaluate the environmental impacts of future sectoral strategic documents and ensure climate-smart development and private sector investment.</li> </ul> <p><b>Long-term</b></p> <ul style="list-style-type: none"> <li>• Enhance stakeholder involvement in land-use planning and define linkages between land-use planning and water management for efficient water management and land restoration.</li> <li>• Expand the scope of biodiversity hotspots and develop nationwide animal and plant biodiversity data. Biodiversity preservation is an essential element in adapting to climate change.</li> </ul>

Adaptation and Resilience principles	Proposed actions
<p><b>Adaptation Principle 4:</b> Help firms and people manage residual risks and natural disasters.</p>	<p><b>Short- to mid-term</b></p> <ul style="list-style-type: none"> <li>• Scale-up non-life insurance coverage of the vulnerable population segment—it currently is low, and should be promoted for greater resilience; promoting registration of a larger population in the social registry can also support adaptation and resilience efforts.</li> <li>• Build private sector capacity and institutionalize its business continuity planning to further support private investments in adaptation.</li> <li>• Build sub-national capacity on disaster risk management response to emergencies and enhance and decentralize information sharing.</li> <li>• Modernize early warning systems and increase data available to the public to better communicate climate risks.</li> </ul> <p><b>Long-term</b></p> <ul style="list-style-type: none"> <li>• Increase the number of qualified planners and develop sustainable financing mechanisms for implementing urban plans.</li> </ul>
<p><b>Adaptation Principle 5:</b> Manage financial and macro-fiscal issues.</p>	<p><b>Short- to mid-term</b></p> <ul style="list-style-type: none"> <li>• Aggregate disaster impact analysis at the national level (ascertaining the severity and frequency of events) to adequately prioritize disaster financing at the national and local levels.</li> <li>• Employ contingent credits, risk transfer, and planning based on severity, rehabilitation, and reconstruction needs to prevent needing to hold large reserves for disaster risk management.</li> <li>• Enhance allocative and implementation efficiency of agricultural public expenditure and programs.</li> </ul> <p><b>Long-term</b></p> <ul style="list-style-type: none"> <li>• Implement policy reforms so that large firms and banks can identify, quantify and communicate their exposure to climate risk and hazards for better adaptation and resilience preparedness, thus preventing economic crisis in case of disaster.</li> </ul>
<p><b>Adaptation Principle 6:</b> Application, prioritization, implementation, and monitoring progress</p>	<p><b>Short- to mid-term</b></p> <ul style="list-style-type: none"> <li>• Build the capacity of different ministerial agencies and subnational units to monitor adaptation and resilience initiatives and integrate research into policy.</li> <li>• Develop, monitor and track a national adaptation fund that captures Adaptation and resilience efforts across sectors to contribute to the financial gap and coordinate with development partners to achieve climate commitments.</li> <li>• Develop a cross-sectoral implementation, monitoring, evaluation, and coordination mechanism that reduces overlaps and maximizes the impacts of adaptation and resilience efforts.</li> </ul> <p><b>Long-term</b></p> <ul style="list-style-type: none"> <li>• Develop an overarching climate policy that anchors different sectoral policies and actions in adaptation, mitigation, and resilience building.</li> </ul>

Source: Original to this publication.

# 1 Introduction

**Uzbekistan is expected to face severe stress from climate change, with average temperatures anticipated to increase further this century.** Uzbekistan is dominated by vast desert plains, including desert areas in the far west formed by the drying of the Aral Sea. The country has an arid climate, is expected to be severely stressed by further temperature rises, and has already experienced significant changes in temperature and rainfall.<sup>4</sup> After a 2.9°C temperature increase between 1950 and 2020, the average temperature is projected to increase another 1.21°C to 1.94°C this century. In a pessimistic climate scenario, the highest temperature increases are expected to occur in the northwestern Aral Sea region and the southeastern provinces, which is worrisome as these areas pose the risk of melting glaciers, exacerbating drinking water shortages, and threatening landslides. Precipitation changes are less certain, but with a higher frequency of heavy downpours comes increased flood risk. Climate warming is also likely to shift the timelines of spring frosts, with potential adverse impacts on the agriculture sector<sup>5</sup>. Droughts are predicted to become more frequent due to reduced river runoff, specifically from the Amu Darya and Syr Darya Rivers that feed the surrounding fertile valleys, including the Ferghana valley.<sup>6</sup> Those rivers also significantly contribute to water availability and storage in the Aral Sea. Furthermore, prolonged drought, in turn, is projected to worsen the potential for forest fires and shortened growing seasons.<sup>7</sup>

**The increasing climate changes adversely impact the economy and the population's most vulnerable segments.** Without support to adapt to climate change and reduce disaster risks, Uzbekistan's poor and marginalized communities will likely be the ones most affected, with projected impacts on agricultural yields likely to disproportionately affect their living standards.

While Uzbekistan has significantly improved nutrition and food security over the past decade, projected climate changes and the country's dependence on irrigated agriculture could threaten food security. Households spend a relatively high proportion of their income on food—in 2016, 47.3 percent of their income on average—leaving poorer groups more exposed to rising food prices.<sup>8</sup> At the household and business levels, risk transfer instruments are limited in Uzbekistan. For example, only 10 percent of households are covered by catastrophe risk insurance. While this is a significant number for a voluntary insurance market without any government enforcement mechanisms, it means the remaining uninsured homeowners will require financial support from the government in the case of a major disaster.

**A high dependence on natural resources and focus on emission-intensive sectors put the country at risk of price fluctuations and additional climate risk.**

Uzbekistan is the most greenhouse gas (GHG) intensive economy in Europe and Central Asia (ECA) and the 5<sup>th</sup> most intensive globally.<sup>9</sup> Energy is the most intensive GHG emission sector; fossil fuels dominate Uzbekistan's energy composition, and natural gas accounts for 83 percent of energy consumption. Figure 1 shows that the share of natural capital is high in carbon-emitting sectors. In contrast, carbon-absorbing natural capital, such as forest and forest ecosystem services, are lower than the ECA average. Figure 2 further shows that contributions per capita of fossil fuel and minerals fluctuate due to changes to market prices, thus exposing the country to exogenous shocks. The economy's high dependence on these sectors puts the economy at risk because market price fluctuations significantly affect government revenue, trade, and budget balance, putting the country's overall macro-fiscal situation at risk.

<sup>4</sup> For instance, southeast areas of Uzbekistan, including the largest cities of Tashkent and Samarkand, received nearly 10 times more rainfall (800–900 mm per year) than western areas (100 mm per year).

<sup>5</sup> Climate Risk Country Profile: Uzbekistan (2021): The World Bank Group and the Asian Development Bank. <https://www.adb.org/publications/climate-risk-country-profile-uzbekistan>.

<sup>6</sup> Uzbekistan–VulnerabilityClimateChangeKnowledgePortal <https://climateknowledgeportal.worldbank.org/country/uzbekistan/vulnerability#:~:text=Impacts%20from%20climate%20change%20make,Darya%20and%20Syr%20Darya%20Rivers>.

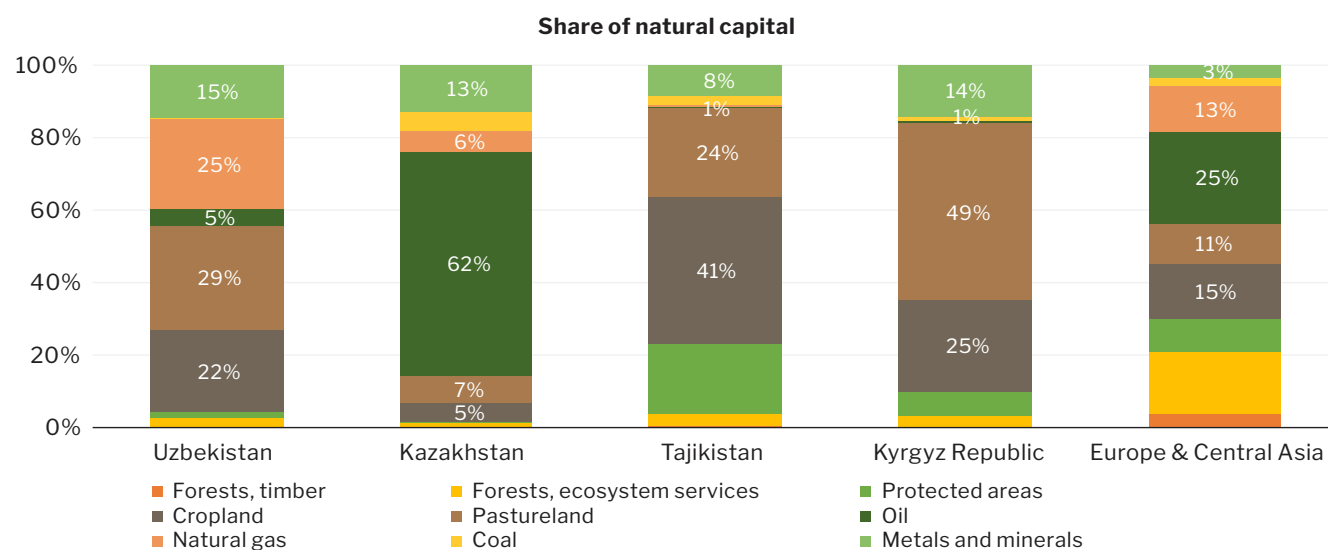
<sup>7</sup> Climate Risk Country Profile: Uzbekistan 2021.

<sup>8</sup> Ministry of Economic Development and Poverty Reduction of the Republic of Uzbekistan, The World Bank, and The Regional Environmental Center for Central Asia, 2022. Green Growth and Climate Change in Uzbekistan Policy Dialogue Series: A Compendium of Proceedings. The World Bank: Washington DC.

<sup>9</sup> Ministry of Economic Development and Poverty Reduction of the Republic of Uzbekistan, The World Bank, and the United Nations. Development Programme, 2022. Uzbekistan: Choosing an Innovative and Green Future. Note. © World Bank.

**FIGURE 1: >>**

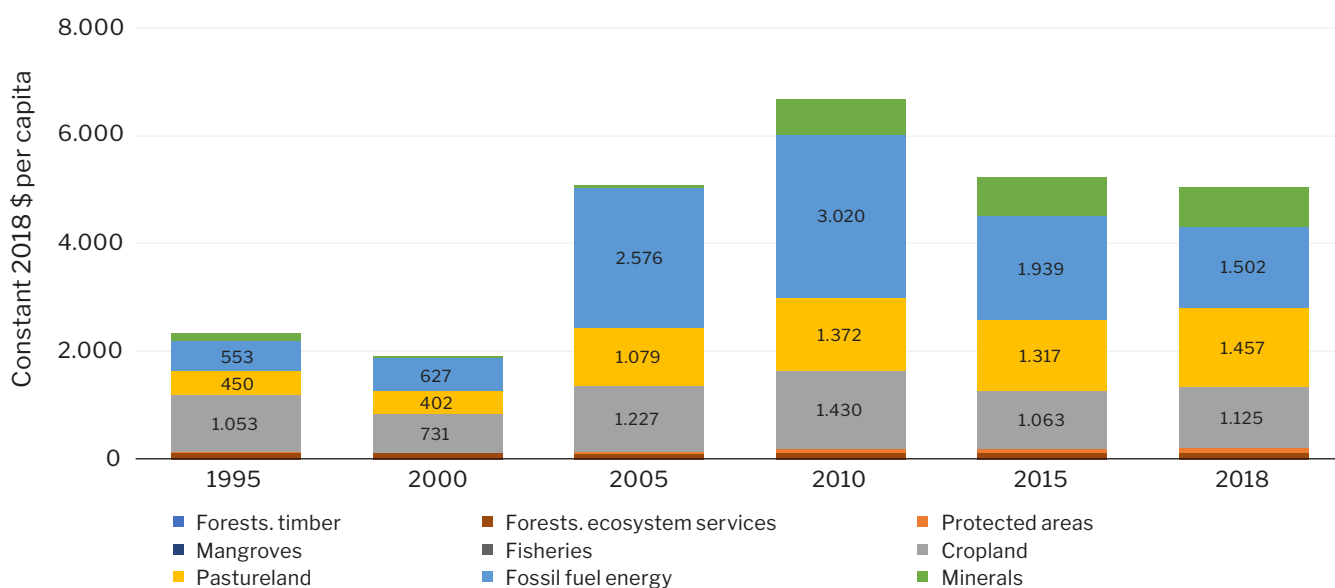
**Share of natural capital in Uzbekistan relative to peer countries**



Source: [World Bank 2021a. The Changing Wealth of Nations 2021: Managing Assets for the Future.](#)

**FIGURE 2: >>**

**Natural capital, per capita, Uzbekistan**



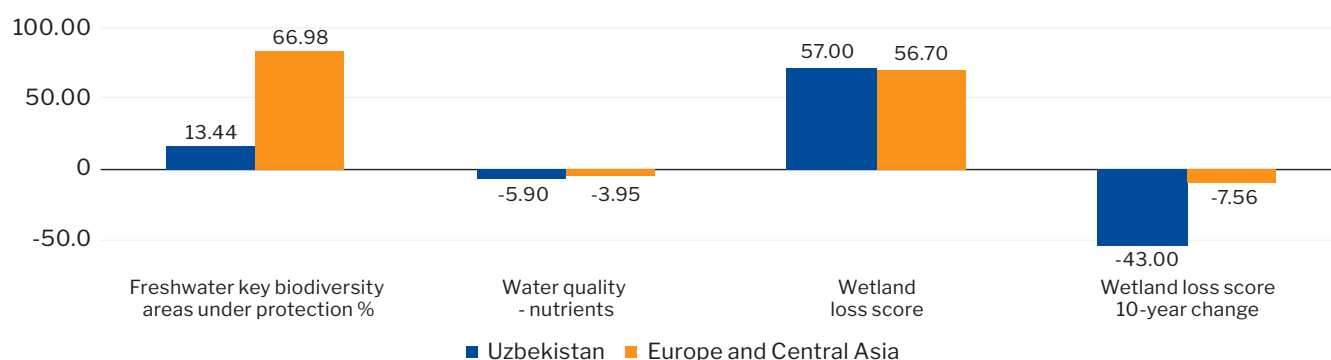
Source: [World Bank. 2021a. The Changing Wealth of Nations 2021: Managing Assets for the Future.](#)

**Climate change further worsens the country’s water situation, increasing Uzbekistan’s already high water stress and water quality issues.** Uzbekistan is one of the most water-stressed countries in the world; key indicators (Figure 3) of the water sector compared to the peer country group in ECA show the country has only 13.44 percent of freshwater key biodiversity areas compared to 66.98 percent in ECA. The country also has lower water quality (-5.90) compared to the ECA average (-3.95). Over the last ten years, the wetland loss score for Uzbekistan has been more than five times the ECA average. Climate projections show that flows of the Amu

Darya and Syr Darya rivers will decrease by 5 percent and 15 percent by 2050, with increased frequency of dry and low-water years and predicted flow losses of up to 25 percent. Meanwhile, heat stress will increase the water demand. Thus, the total annual amount of water scarcity will increase to 7 billion cubic meters by 2030 and 15 billion cubic meters by 2050. Consequences of this scenario would include reduced agricultural and livestock production, which could threaten food security across the country and which, in turn, could have far-reaching social impacts, including increased migration.

FIGURE 3: >>

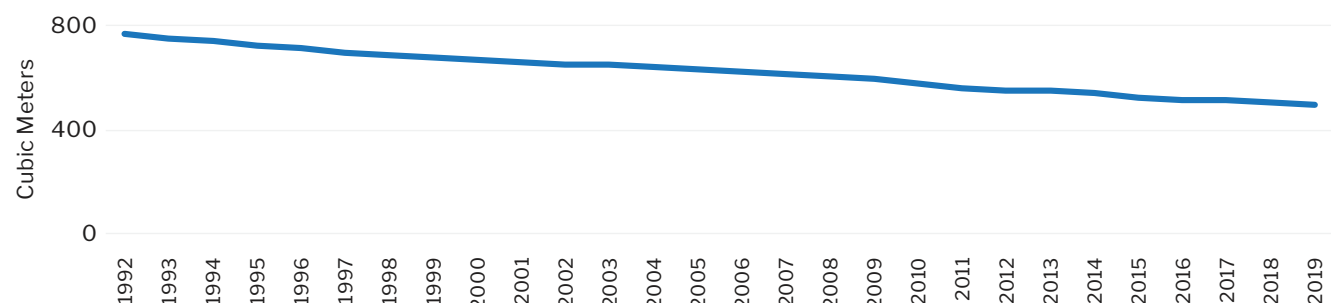
Key water indicators, Uzbekistan and Europe and Central Asian countries



Source: Wolf et al. 2022: Environmental Performance Index.

FIGURE 4: >>

Evolution of renewable internal freshwater resources, per capita (m<sup>3</sup>), Uzbekistan



Source: World Bank Development Indicators 2022.

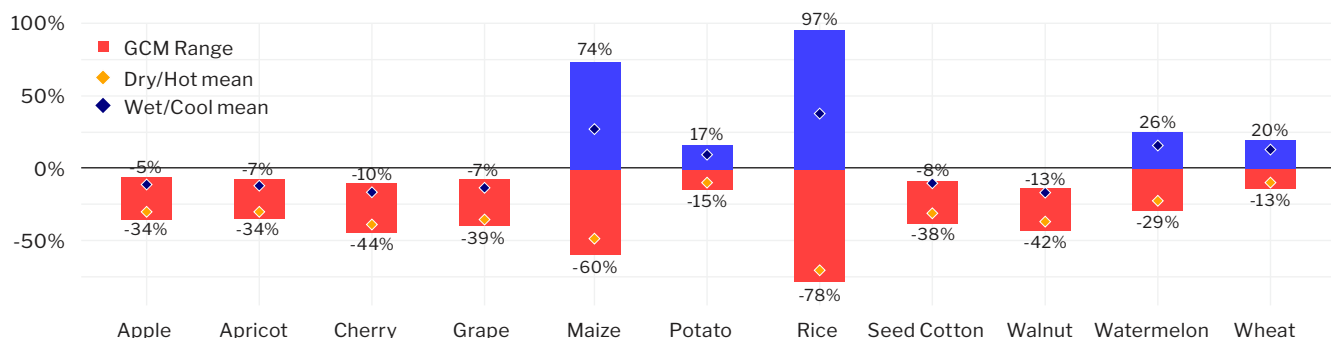
Climate change and its resulting water stress affect the productivity of rainfed crops differently.

By 2050, climate change is anticipated to have both positive and negative production shocks on most crops (Figure 5). Certain crops, such as maize, potatoes, rice, watermelons, and wheat, could see positive impacts. Among high-production crops such as wheat, the wet/warm and dry/hot mean are expected to result in a +17 and -12 percent shock, respectively. For cotton, the

second most important crop, shocks are expected to be negative, between -8 and -35 percent for the Wet/Warm mean and Dry/Hot, respectively. Across General Circulation Models (GCMs), most crops are generally expected to experience a worst-case negative production shock that ranges from -13 percent to 77 percent. Other high-revenue fruit crops, such as apples, cherries, or apricots, are expected to experience largely adverse effects.<sup>10</sup>

FIGURE 5: >>

Rainfed Crop Production Shock, 2041–2050



Source: Industrial Economics Incorporated 2023 “Estimating the Economic Damages of Climate Change in Uzbekistan.”

<sup>10</sup> Industrial Economics Incorporated 2023 “Estimating the Economic Damages of Climate Change in Uzbekistan.” Internal working document.

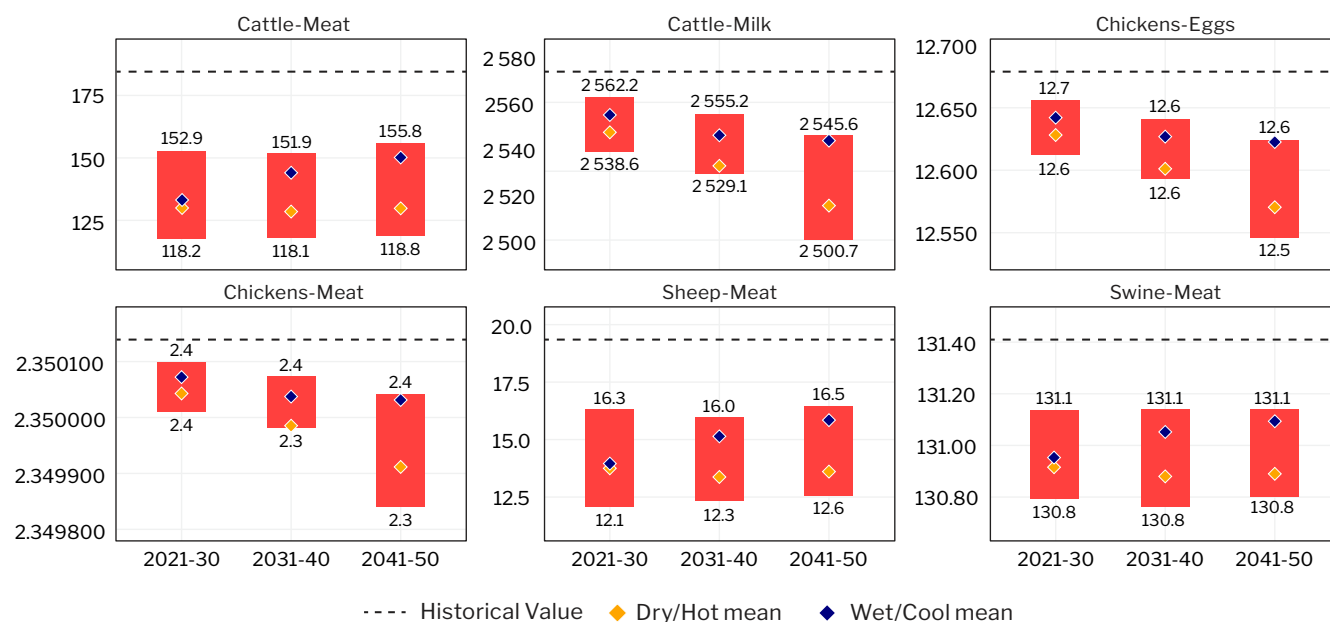


**Climate change also adversely impacts the country’s livestock productivity: The impacts of climate change on livestock vary by animal and product.**

Figure 6 presents Uzbekistan’s productivity shocks to meat (cattle, sheep, chickens, and swine), milk (cattle), and eggs. The bar indicates the range of values across General Circulation Models (GCMs), while the diamonds show the mean results under Wet/Warm and Dry/Hot scenarios. Overall, by mid-century, all products will be negatively affected by climate change, with a Dry/

Hot scenario producing higher losses than a Wet/Warm scenario. This is primarily due to the high vulnerability of all products to increases in temperatures. Cattle, which is the country’s main herd in terms of revenue, may experience significant impacts in both meat and milk production, with meat dropping from about 180 to about 130 kg/head (-30 percent). Milk would drop from 2,575 to 2,515 kg per head (-2 percent) by the 2040s under a Hot/Dry scenario. Sheep meat is also heavily impacted, in the same order of magnitude as cattle.

**FIGURE 6: >>**  
**Change in livestock productivity due to climate change compared to historical values (in kg/animal/year)**



Source: Industrial Economics Incorporated 2023 “Estimating the Economic Damages of Climate Change in Uzbekistan.”

**Uzbekistan is highly exposed to natural disasters, with climate change further exacerbating the risk.**

Uzbekistan is ranked 83 out of 182 in the ND-gain index<sup>11</sup> for 2020, up from 96 out of 181 in 2019; however, the country still falls among the first 20 drought-prone countries with high probabilities for both wildfires and river and urban floods (see Figure 7). Think Hazard (2022) also rates earthquakes, landslides, and water scarcity probability to be generally high. Figure 6 also shows that the severity varies within different parts of the country. These risks are exacerbated by increasing climate change. Between 1950 and 2013, the average temperature increased by 0.27°C per decade. Uzbekistan’s levels of flood and drought risks are higher than the global average. The country also registers an above-average lack of coping capacity; thus, coping and adaptation potentials could be bolstered with the right actions.

**The agricultural sector’s exposure is high because of**

**its contribution to GDP and employment and because it is climate-sensitive.**

This is reflected in the country’s macroeconomic stability, characterized by increasing national debts and a negative external balance. Exposure of the population, particularly of low-income households, to natural disasters is high, while exposure of transport networks to natural hazards, coupled with low food productivity and climate change, further exacerbates Uzbekistan’s high climate risk profile.

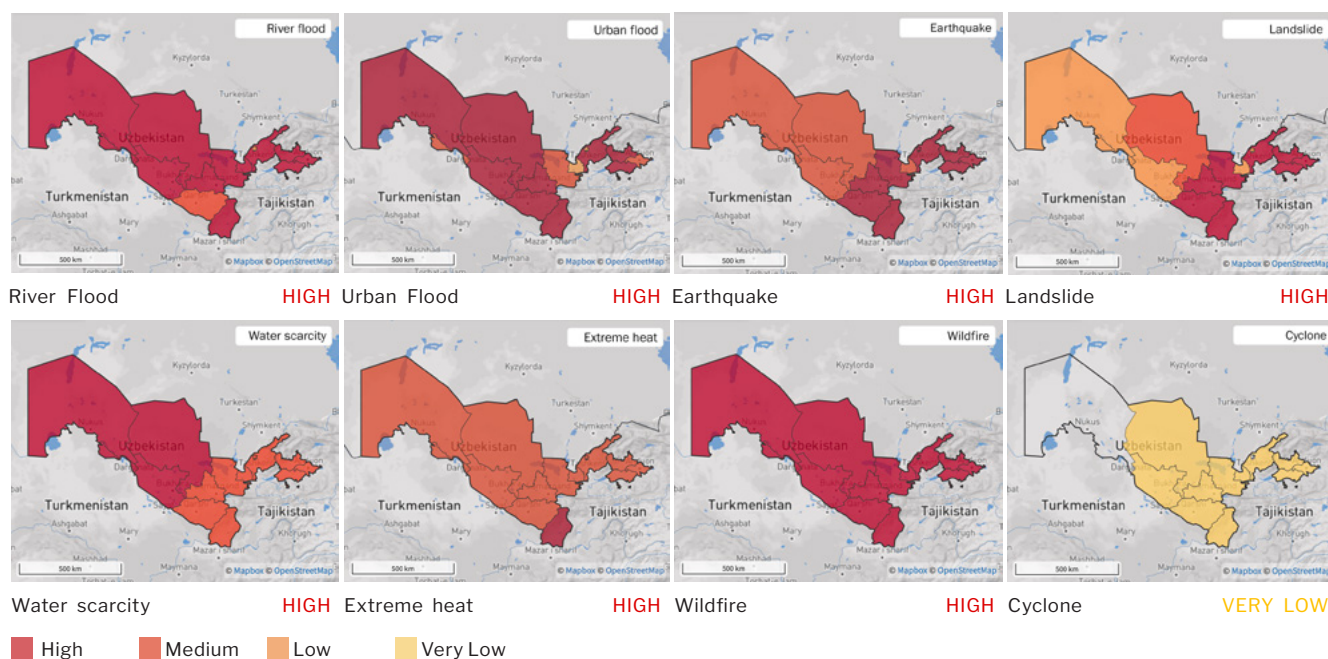
**In addition to the sector climate adaptation challenges already mentioned, these impacts further cut across different sectors and are interlinked.**

A summary of the impacts across sectors shows the relationship between them. Increasing temperatures reduce water availability, which affects agricultural productivity and threatens potential hydropower energy generation. Table 2 summarizes the main climate change adaptation impact pathways across the nexus of different sectors.

<sup>11</sup> The Notre Dame-Global Adaptation Index (ND-GAIN) Country Index is a free, open-source tool that assesses a country’s current vulnerability to climate disruptions.

**FIGURE 7: >>**

**Probability of natural shocks in Uzbekistan**



Flood	Tropical Cyclone	Drought	Vulnerability	Lack Of Coping Capacity	Overall Inform Risk Level	Rank
(0-10)	(0-10)	(0-10)	(0-10)	(0-10)	(0-10)	(1-191)
6.3 [4.5]	0.0 [1.7]	6.6 [3.2]	1.9 [3.6]	3.9 [4.5]	3.1 [3.8]	112

Sources: [Think Hazard 2022](#) and [INFORM Index 2022](#).

Note: In the sub-categories of risk (e.g., “flood”), higher scores represent greater risks. Conversely, the most at-risk country is ranked 1st. Global average scores are shown in brackets.

**TABLE 2: >>**

**Summary sector nexus and climate change adaptation impact pathways**

Sector nexus	Climate change adaptation impacts pathways
Water-Energy-Food Nexus	<ul style="list-style-type: none"> <li>Water scarcity impacts agriculture, affecting food production and security.</li> <li>Energy demand increases due to water pumping, treatment, and distribution, contributing to GHG emissions.</li> <li>Agriculture requires water and energy inputs for irrigation, while energy production relies on water resources.</li> </ul>
Water-Health Nexus	<ul style="list-style-type: none"> <li>Water scarcity and changing water quality affect access to clean drinking water, increasing health risks.</li> <li>Water-related diseases, such as waterborne illnesses and vector-borne diseases, impact public health.</li> <li>Climate change-induced extreme weather events can contaminate water sources, compromising health.</li> </ul>
Infrastructure-Urban Areas-Health Nexus	<ul style="list-style-type: none"> <li>Inadequate urban planning and infrastructure increase vulnerability to climate-related hazards, affecting public health.</li> <li>Urban heat island effect in densely populated areas exacerbates heat stress and heat-related illnesses.</li> <li>Climate-related disasters can damage critical infrastructure, disrupting essential services and healthcare facilities.</li> </ul>
Biodiversity-Ecosystems-Climate Nexus	<ul style="list-style-type: none"> <li>Climate change affects biodiversity and ecosystems, leading to ecological imbalances and loss of ecosystem services.</li> <li>Changes in ecosystems impact water availability, pollination, soil fertility, and carbon sequestration.</li> <li>Biodiversity loss and habitat degradation reduce resilience and adaptive capacity to climate change impacts.</li> </ul>

Sector nexus	Climate change adaptation impacts pathways
Disaster Risk Reduction-Infrastructure-Communities Nexus	<ul style="list-style-type: none"> <li>Inadequate infrastructure planning and design increase vulnerability to climate-related disasters.</li> <li>Climate-related disasters damage critical infrastructure, affecting communities and their livelihoods.</li> <li>Strengthening disaster risk reduction measures enhances community resilience, protects infrastructure, and reduces human and economic losses.</li> </ul>
Water-Agriculture-Infrastructure Nexus	<ul style="list-style-type: none"> <li>Water scarcity affects irrigation for agriculture, impacting crop yields and agricultural productivity.</li> <li>Inefficient irrigation practices and infrastructure lead to water wastage and reduce water availability for other sectors.</li> <li>Climate-resilient agricultural practices and efficient water management contribute to sustainable water use and protect infrastructure.</li> </ul>

Source: Original to this publication.

**Uzbekistan still lacks key sector-specific sustainability indicators critical for meeting SDG goals.** Air pollution is a growing problem. The annual costs of the damage to health from ambient PM<sub>2.5</sub> pollution have reached 6.5 percent of GDP.<sup>12</sup> Air pollution in Uzbekistan is primarily caused by residential heating, transport, industry, power generation, agriculture, dust, land degradation, and

desertification.<sup>13</sup> The Aral Sea's ecological disaster is attributed to intensive resource use and poor land-use practices. Uzbekistan has room to improve environmental sustainability, but its land degradation rate is above the upper-middle-income countries' (UMIC) average. The per capita rate of solid waste management is low, and the population is exposed to harmful air pollution.

**TABLE 3: >> Uzbekistan's critical environmental sustainability indicators**

Indicator	Key sources and main issues	UZB	Benchmark	
Air pollution: PM <sub>2.5</sub>	Percentage of the population exposed to PM <sub>2.5</sub> above the World Health Organization (WHO) guideline (25 ug/m <sup>3</sup> ), defined as the portion of a country's population living in places where mean annual concentrations of PM <sub>2.5</sub> are greater than 25 ug/m <sup>3</sup>	72.2 <sup>14</sup>	56.6	UMIC
Municipal waste	Waste generation rates (kg per capita per day) <sup>15</sup>	0.4	1.18	ECA
Water scarcity and quality	Water quality, nutrients, salts, chemicals (SDG 6.3.2)	-5.9	-2.8	UMIC
	Mortality rate attributable to inadequate water supply, sanitation, and hygiene (per 100,000) <sup>16</sup>	0.4	2.6	UMIC
Land	Land degradation (degraded land as % of total land area) <sup>17</sup>	29.0	20.4	LIC
			21.2	UMIC
Natural hazards and disaster risks	Population exposure from disasters (% of total population exposed)	0.7	1.3	UMIC
	Population exposure from dry shocks (% of total population exposed)	14.4	14.9	LIC
			16.8	UMIC
	Fugitive emissions (tCO <sub>2</sub> e per million dollar GDP)	1,054	42	ECA
Electricity	CO <sub>2</sub> emissions in electricity (tCO <sub>2</sub> e per million dollar GDP)	1,050	114	ECA

Source: World Bank 2022a. Uzbekistan Climate Change Institutional Assessment.

Note: ECA = Europe and Central Asia countries; UZB = Uzbekistan.

<sup>12</sup> World Bank 2022b. The Global Health Cost of PM<sub>2.5</sub> Air Pollution: A Case for Action Beyond 2021. International Development in Focus © Washington, DC: World Bank. <https://openknowledge.worldbank.org/entities/publication/c96ee144-4a4b-5164-ad79-74c051179eee>.

<sup>13</sup> [https://unece.org/DAM/env/epr/epr\\_studies/ECE.CEP.188.Eng.pdf](https://unece.org/DAM/env/epr/epr_studies/ECE.CEP.188.Eng.pdf).

<sup>14</sup> World Bank, Open Data portal, indicator: PM<sub>2.5</sub> pollution, population exposed to levels exceeding WHO Interim Target-2 value (percentage of total).

<sup>15</sup> Kaza, Silpa; L. Yao, P. Bhada-Tata, F. Van Woerden. 2018. What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Urban Development. © Washington, DC: World Bank. <http://hdl.handle.net/10986/30317>. Uzbekistan data are reported for 2012.

<sup>16</sup> Institute for Health Metrics and Evaluation (IHME), Global Burden of Disease. 2019. <https://www.healthdata.org/research-analysis/gbd>.

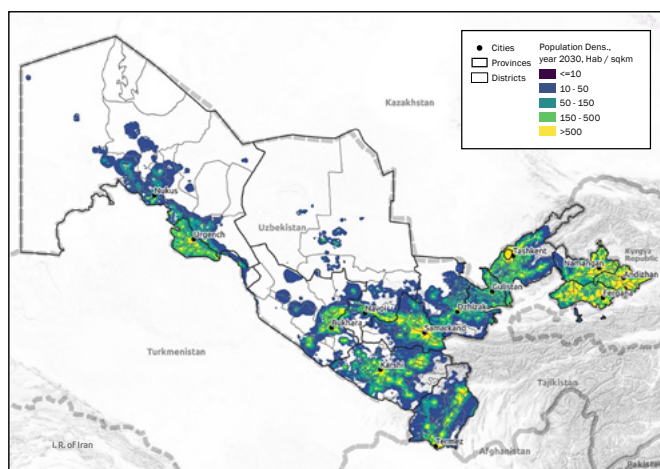
<sup>17</sup> UN SDG Database. SDG 15.3.1- Proportion of land that is degraded over total land area.

**Climate change adaptation is essential for Uzbekistan because a large part of the country’s population lives in a high climate risk zone.** A large proportion of the population in rural and urban areas—more than a fifth of Uzbekistan’s projected population by 2030 (8 million people)—will live in very high climate-risk areas. The most at-risk population densities reside in the Ferghana Valley, Khorezm, Bukhara, and Surkhandarya Valley areas. People living in these high-risk areas, especially those in the lower Amu Darya basin and facing water stress and land degradation, are likely to face pressure

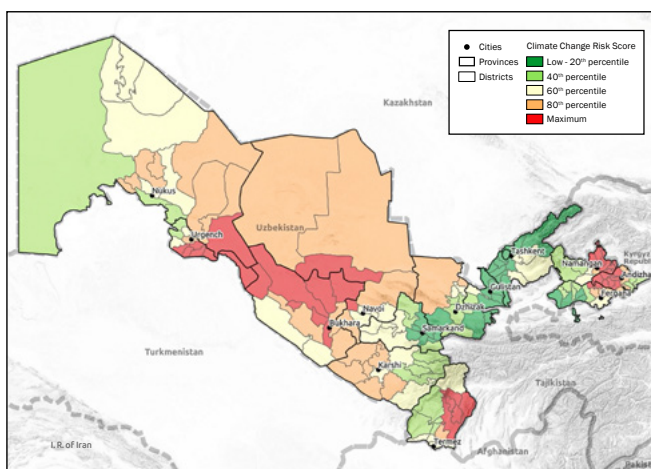
and higher migration in the future due to drought, water stress, and other factors. The smaller irrigated arable lands in southern Uzbekistan along the Amu Darya River are also thought to be hotspots of climate migration for similar reasons. Estimates of the migration size may vary, but it is clear that a systematic approach is needed to support alternative livelihoods and/or facilitate migration to other areas.<sup>18</sup> Figure 8 shows Uzbekistan’s population density and climate risk scores associated with high population densities.

**FIGURE 8: >>**  
**Population density and climate risks in Uzbekistan**

Population density (people per sq.km. in 2030)<sup>19</sup>



Climate change risk scores (percentile)<sup>20</sup>



Source: World Bank 2023. “Tackling Climate Change and Land Degradation Risks: Opportunities for Landscape Restoration to Scale up Climate Resilience and Adaptation.”

**With Uzbekistan’s high vulnerability to natural disasters, there is an increasing need for financial and fiscal systems that ensure the resilience of people, firms, and assets.** Disasters slow down businesses and thus the government’s ability to raise funds for disaster risk management. With the fiscal constraints and reduced capacities of businesses and households to recover, it is increasingly important to focus on financial protection that addresses potential disaster impacts and makes an effort to close the protection gap. This is because such a gap will likely affect disaster recovery, increase impacts on citizens’ well-being and the economy, and can result in adverse fiscal outcomes from growing expenditures, decreasing revenues, and impacts on government assets. It is, therefore, critical to understand the macro-fiscal environment, constraints, and gaps for adaptation and resilience preparedness.

**Cognizant of these risks, the government of Uzbekistan, with support from multilateral development partners, is making significant strides in reforms and development activities for inclusive and resilient growth.** The country is actively enacting reforms to accelerate towards a market economy and striving towards a low-carbon economy. In 2021, Uzbekistan submitted a revised nationally determined contribution (NDC), increasing its carbon reduction targets, and in November 2022, issued a presidential decree on green economy transition.<sup>21</sup> Both underscore the government’s ambitious goal of economy-wide sustainable development. Other policy documents adopted in the past five years include the “Concept of Environmental Protection Until 2030” and the “Strategy for the Transition of the Republic to a Green Economy for 2019–2030.” The country has also developed

<sup>18</sup> World Bank. 2021b. Groundswell. Acting on Internal Climate Migration. Part II. Washington, DC: World Bank. <https://openknowledge.worldbank.org/entities/publication/2c9150df-52c3-58ed-9075-d78ea56c3267>.

<sup>19</sup> Population data projected to 2030, used in this analysis of climate risk mapping and the mapping of potential beneficiaries of sustainable agricultural practices and as an indicator of pressure on natural resources in chapter 4 of this report (i.e. in the calculation of Population Risk Score for the year 2030).

<sup>20</sup> The aggregate climate change risk score is a unitless, multi-criteria district risk score. Higher values correspond with higher risk from potential climate change impacts. The score averages four indicators: anomalies in the standardized precipitation evapotranspiration index anomalies, maximum 1-day rainfall depth, average annual rainfall depth, and the growing season length anomaly.

<sup>21</sup> <https://lex.uz/ru/pdfs/6303233>.

medium-term strategies in water, energy, agriculture, environment, and other economic sectors through 2030. Adaptation measures and decarbonization indicators are reflected in the sectoral strategies on the transition to a green economy, with water and agricultural development and the introduction of renewable energy technologies through 2030. These include the reduction of carbon emissions to 10 percent by 2030 from the 2010 level, as indicated in the “Strategy for the Transition of the Republic to a Green Economy for 2019-2030” and NDC.

**While climate concerns are being considered, adaptation and resilience are the more vital aspects of current policies governing the transition to a market economy.** They also define long-term development priorities in the country, yet solid knowledge of the current state of adaptation and resilience capacity,

coupled with guiding policies, continues to need improvement. The main area for improvement of the sectoral documents is generic messaging on climate change issues without concrete measures and targets or clearly defined enforcement mechanisms. Adaptation and resilience remain a significant part of Uzbekistan’s climate agenda; however, an economy-wide understanding of adaptation and resilience capacity has been lacking. This study seeks to identify gaps in adaptation and resilience efforts across different sectors and will also suggest possible options to fill these gaps. This study uses the adaptation principles developed by Hallegatte, Rentschler, and Rozenberg (2020), a design-effective national climate and disaster adaptation and resilience framework that permits identifying gaps and proposing adaptation and resilience actions.

## 2 The Adaptation Principles Approach

**This report provides a whole-of-economy assessment of Uzbekistan’s adaptation and resilience preparedness and identifies priority gaps for action.** The assessment builds on the conceptual framework proposed by Hallegatte et al. (2020). It is a flexible guidance framework which allows for designing effective national climate and disaster adaptation and resilience policies and strategies. It aims to help central ministries that oversee the broader economic system—for example, ministries of finance or economy—address adaptation and resilience challenges. The approach is not meant to provide detailed sectoral assessments or roadmaps; instead, it focuses on concrete macroeconomic-level actions that reflect universal principles for effective climate change adaptation. If prioritized according to a country’s objectives, needs, and risks, such actions can help reduce and manage climate and disaster risks and accelerate development and poverty reduction.

**The assessment reviews Uzbekistan’s performance against a series of priority actions organized around six adaptation principles that become priority areas for action.** These principles are centered around actors and responsibilities within governments, grouping actions under “foundations” for rapid and inclusive development, which offers protection against shocks, and include five priority areas to build resilience and adapt to shocks (Figure 9). The assessment permits central governments to have a general overview of their adaptation and resilience situation and focuses on critical macroeconomic actions that reflect global principles for effective climate change adaptation. It does not dwell on strategies at the sector level. This framework is designed to support government actions for building adaptation and resilience; thus, it will be prioritized based on country objectives, risks, and needs. Aligning these strategies to manage climate-related risks adequately can accelerate poverty reduction efforts and development.

**FIGURE 9: >>**  
**The adaptation principles framework**

1. Foundations: Rapid, robust, and inclusive development			
Policies to reduce poverty and ensure that high-vulnerable populations have the necessary financial, technical, and institutional resources to adapt.			
2. Facilitate the adaptation of people and firms.	3. Adapt land use plans and protect critical public assets and services.	4. Help firms and people manage residual risks and natural disasters.	5. Manage fiscal and macro-fiscal issues.
Information, policy, and regulatory environment, households and businesses need to adapt.	Actions to protect and strengthen the resilience of critical infrastructure, natural resources, and public investments to climate impacts.	Actions to ensure people and firms can cope with and rapidly recover from disasters without devastating long-term consequences.	Actions to protect macroeconomic stability, public finances and debt sustainability, and the broader financial sector from climate impacts.
6. Application: Prioritization, implementation, and monitoring progress			
Actions to establish a whole-of-economy approach to mainstreaming adaptation in decision-making and actions to ensure the continuous and iterative monitoring, evaluation, learning, and adjustment of interventions.			

Source: Hallegatte et al. 2020.

**The adaptation principles and indicators are tailored to reflect the country’s specific climate change risks and vulnerabilities.** Under each principle of Figure 9, several indicators are used to capture and monitor progress toward implementing actions. A total of 150 indicators were selected to monitor progress

based on Uzbekistan’s six principles and development priorities (See Appendix 1 for detailed scores). Strategic documents such as the revised NDC submitted in 2021 and the “Strategy for the Transition of the Republic to a Green Economy for 2019–2030” are essential documents that guided the choice of indicators. Five

to seven indicators capture key aspects of adaptation and resilience attributes for each priority action to ensure a balanced evaluation. The indicator selection builds from the suggested indicators in The Adaptation Principles (Hallegatte et al. 2020), and recent resilience assessments carried out in other countries using the same approach. The framework was further tailored to include priority actions for the country’s specific climate change risks and vulnerabilities, water management, agriculture, urban resilience, health protection, infrastructure resilience, ecosystem conservation,

biodiversity, community engagement, capacity building, data, and information.

**Data was extracted from three key sources and cross-checked for robustness (see Table 4).** Sources included: (i) global publicly available data—such as the World Development Indicators, the World Governance Indicators, and country data statistics—all used for quantitative benchmarking; (ii) policy documents, reports, websites, and consultations with the government, World Bank, and others; (iii) a qualitative assessment based on expert judgment (see Table 1).

**TABLE 4: >>**  
**Criteria for selecting benchmark countries and country groups for Uzbekistan**

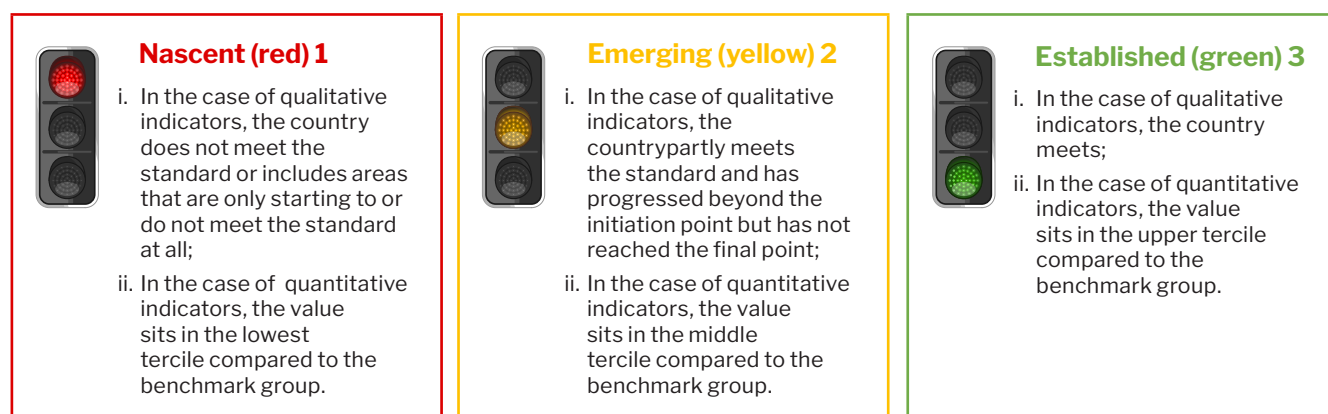
Code	Description	Number of Indicators
I	Quantitative benchmarking assessment supported by global data or statistics (e.g. World Development Indicators, World Governance Indicators data, etc.) or country data statistics	44
II	Qualitative assessment based on a review of policy documents and reports, websites, and literature from different sources, including government, World Bank, and OECD, among others	74
III	Qualitative assessment based on technical/country expert judgement	32
	<b>Total number of indicators</b>	<b>150</b>

Source: Original to this publication.

**This report’s traffic light system (TLS) assesses and rates Uzbekistan’s progress in each adaptation and resilience preparedness indicator.** The TLS (Figure 10) rates progress against each indicator based on available data and information, with indicators then aggregated to provide a scorecard with a rating for each priority action and adaptation principle (Appendix B). Specifically, scores of 1, 2, or 3 are assigned to each category, with average ratings of 1–1.67 for nascent (red), 1.68–2.33 for

emerging (yellow), and 2.34–3 for established (blue). Using an equal weight for each indicator, the rating scores are aggregated for each underlying indicator to provide an average score for each priority action. This system offers a simple way to identify gaps and areas for improvement, prioritize actions, facilitate target setting, and monitor progress across key aspects of adaptation and resilience. See Appendix C for detailed descriptions of the indicators, sources, and rating criteria.

**FIGURE 10: >>**  
**Traffic light rating system for adaptation and resilience assessment for Uzbekistan**



Source: Original to this publication.

**Upper-middle-income (UMIC) countries were chosen as benchmarks to reflect Uzbekistan’s ambition to be UMIC and show gaps that need filling to meet this objective.** The indicator ratings are intended to serve as a starting point for discussion and highlight gaps in Uzbekistan’s adaptation and resilience compared to aspiring countries. Within the framework of this study, UMIC is considered aspiring because the government of Uzbekistan seeks to be a UMIC by 2030. The rating of the different quantitative indicators will be based on UMIC values, allowing the country to see adaptation gaps that need filling to achieve this objective. This is also done to align the report with other long-term development objectives of the Uzbekistan government. To understand the current context, values for indicators related to the ECA countries, excluding high-income countries, are used. The indicators and ratings can be modified based on additional country-level information. The next sections provide the assessment’s key findings and recommendations.

**Based on the results obtained in each priority action, a series of gaps and proposed actions are developed for each adaptation principle aimed at informing policy, strategy, and investment-related decision-making for strengthening adaptation and resilience within short (2022–2030), medium (2030–2040) and long-term (2040–2050) time horizons.** Given potential relationships and dependencies between priority actions within the adaptation principles—for example, where one action is the basis of or reinforces another action—each recommendation is linked to the main priority action it supports while also highlighting links with other priority actions that may lead to synergistic impacts on adaptation and resilience. Detailed sector-specific analysis of each proposed action’s potential effects and cost-benefits, coupled with stakeholder dialogue, is required to further phrase policy recommendations.

## 2.1 Key findings and recommendations

*This principle seeks to explore “Policies to reduce poverty and catalyze robust economic development is most effective for reducing vulnerability to climate change. Poverty and the lack of access to basic services—including critical infrastructure, financial services, health care, and social protection—are strong predictors of vulnerability to climate change. No targeted adaptation strategy can be successful without eradicating extreme poverty and ensuring high-vulnerability populations have the financial, technical, and institutional resources they need to adapt.”—The Adaptation Principles.<sup>23</sup>*

### 2.1.1 Lay the foundations for adaptation through rapid, robust, and inclusive development.

**This section reviews the progress toward achieving increased economic productivity and growth while keeping buffers for shocks and ensuring that economic growth is an inclusive foundation for resilience in**

**A number of caveats and limitations should be considered when interpreting the assessment results.** First, while the assessment aims to capture the critical elements of adaptation and resilience from an economy-wide perspective based on an adaptation principles framework, it does not provide a complete list of actions a country may consider or take. Detailed industry assessments and roadmaps are needed to further guide adaptation actions in priority sectors and complement this work. Second, the assessment uses a range of indicators to cover all adaptation principles and priority actions. Although every effort has been made to include indicators suitable for assessment purposes based on previous applications of the principles of adaptation and in consultation with national and specialized experts, the results remain closely related to the selection of indicators, the availability of data, and expert judgment. Third, although the assessment uses the most current data available, uncertainties remain regarding information sources that can quickly become outdated and must be updated based on ongoing research, and emerging initiatives can produce up-to-date or more complete data, information, and insights that may be available through iterations and consultations. This is particularly relevant for climate change data based on global sources and modelling efforts, such as the “Climate Change Knowledge Portal” (CCKP).<sup>22</sup> These may not capture the gravity of the data weaknesses of Uzbekistan-specific risks and future extremes as indicated in local assessments. Fourth, the assessment must be viewed in the context of other global risks that could exacerbate existing vulnerabilities when combined with the impacts of climate change. Given these caveats and limitations, the results should not be construed as an absolute and accurate assessment of Uzbekistan’s adaptation and resilience readiness. Rather, it is intended to serve as a starting point for identifying priority areas of action that can be considered in national climate change-related strategies and plans.

**Uzbekistan.** The assessment includes 21 indicators corresponding to two priority actions.

**The overall results indicate emerging progress toward achieving this adaptation principle, with both priority actions also emerging.** Assessment of the foundations for adaptation through rapid, robust, and inclusive

<sup>22</sup> <https://climateknowledgeportal.worldbank.org/#:-:text=In%20an%20effort%20to%20serve,to%20climate%20change%20and%20development>.

<sup>23</sup> Hallegatte, S., J. Rentschler, and J. Rozenberg. 2020. Adaptation Principles: A Guide for Designing Strategies for Climate Change Adaptation and Resilience <https://openknowledge.worldbank.org/entities/publication/2dc19238-096a-5907-89c2-d4b99e6cb4d3>.

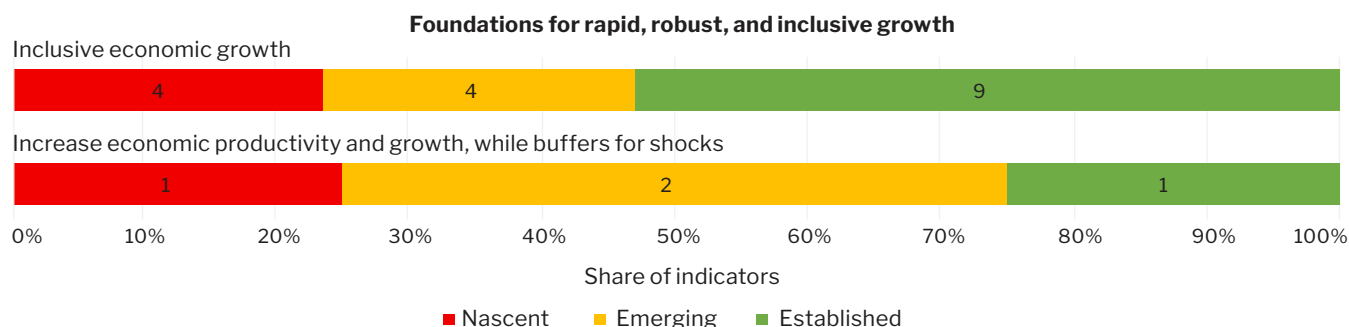


development for Uzbekistan (Figure 11) reveals that the country enjoyed sustained economic growth despite external shocks such as the COVID-19 pandemic and the recent Russia-Ukraine war. However, its overall macroeconomic stability is lower than that of its peers. Also, although there has been economic growth, this

growth has not been inclusive; access to ICT, universal health coverage, and safe sanitation are far below the standards of UMIC countries. The following paragraphs highlight key messages on the evaluation and ensuing options to enhance inclusive economic growth.

FIGURE 11: >>

**Results lay the foundations for adaptation through rapid, robust, and inclusive development**



Source: Based on WDI,<sup>24</sup> WGI,<sup>25</sup> IMF WEO,<sup>26</sup> UNDP.<sup>27</sup>

Note: The number in each bar shows the number of indicators per category (established/emerging/nascent). Countries are rated using a benchmark approach: countries in red (high risk) are in the upper tercile; those in yellow (medium risk) are in the middle tercile; and those in green (low risk) are in the lowest tercile, UMIC are used as benchmark countries for Uzbekistan since it aspires to attain that by 2030.

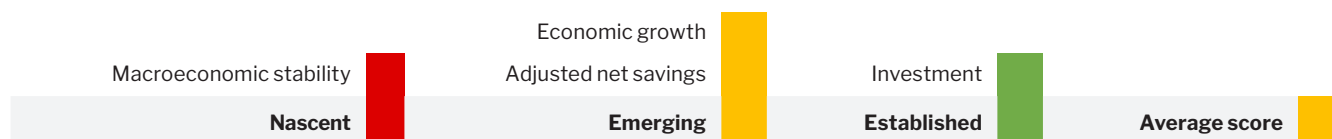
**2.1.2 Priority Action 1.1: Increase economic productivity and growth while keeping buffers for shocks**

Uzbekistan enjoyed stable pre-pandemic growth of 6.6 percent and recovered to pre-pandemic rates with a growth rate of 5.7 percent in 2022; however, the pandemic and current inflation rates underscore the potential for external shocks to affect national adaptation and resilience-building capacity.<sup>28</sup> The country’s macroeconomic instability puts the sustainability of its

current growth at risk. Uzbekistan’s macroeconomic stability<sup>29</sup> indexes are currently lower than that of other ECA countries, indicating the instability in the country’s macroeconomic fundamentals. Inflation levels remain high at 13.8 percent in 2022,<sup>30</sup> reflecting a broad-based increase in general price levels; this was expected to continue at that rate until the end of 2022. Just like Peru, Uzbekistan was evaluated to be emerging on both inclusive economic growth and increased economic productivity and growth (Figure 12).

FIGURE 12: >>

**Overview of progress on indicators for Priority Action 1.1 (Increase economic productivity and growth while keeping buffers for shocks)**



Source: Based on World Development Indicators 2021.<sup>31</sup>

<sup>24</sup> The World Bank. World Development Indicators.

<sup>25</sup> The World Bank. Worldwide Governance Indicators ([www.govindicators.org](http://www.govindicators.org)).

<sup>26</sup> International Monetary Fund. 2022a. World Economic Outlook: Countering the Cost-of-Living Crisis. Washington, DC. October.

<sup>27</sup> Human Development Index.<sup>27</sup> <http://hdr.undp.org/en/composite/HDI>.

<sup>28</sup> Ministry of Economic Development and Poverty Reduction of the Republic of Uzbekistan, The World Bank, and the United Nations Development Programme, 2022. Uzbekistan: Choosing an Innovative and Green Future. Note. © World Bank.

<sup>29</sup> Composite index of inflation, fiscal deficit-to-GDP, external debt-to-GDP and current account deficit-to-GDP, using averages over 2015-2019 for each variable. After normalizing each variable between 0 and 1 using all countries in the world as reference groups, all variables are added up. The higher the index, the lower a country’s macroeconomic stability.

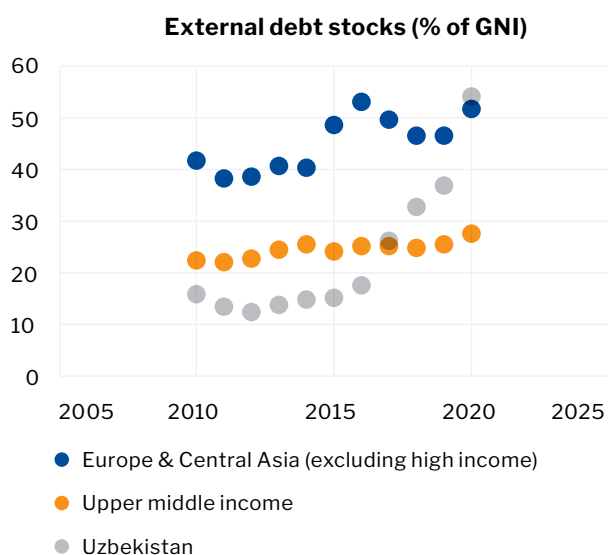
<sup>30</sup> <https://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG?locations=UZ>.

<sup>31</sup> Ratings are based on quantitative indicators extracted from WDI and compared to UMICs.

**The COVID-19 pandemic increased government expenditure on vaccines and imports, thus resulting in a fiscal GDP deficit of 6.1 percent.**<sup>32</sup> This also led to an increase in external debt to 55.7 percent<sup>33</sup> in 2022, which is close to the 60 percent ceiling set by the government. The country's external debt has increased steadily over the past 10 years and has gone above the average for ECA and upper-middle-income countries.

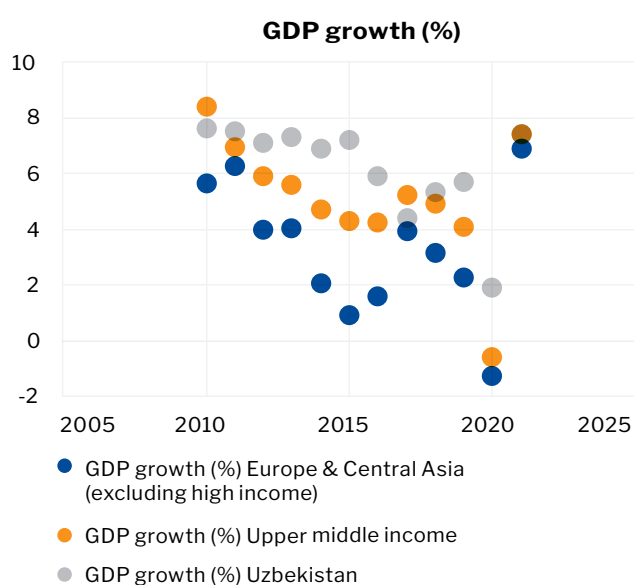
The country's adjusted net savings, like its GDP growth, were growing steadily before the pandemic, fluctuating with a stable increase between 2016-2017, with rates increasing from 14 percent in 2016 to a maximum of 17.7 percent in 2019, which then reduced to 12.8 percent in 2020. This can be attributed to the COVID-19 pandemic that created an emergency surge in government expenditures.

**FIGURE 13: >>**  
**External debt stock (2009-2020)**



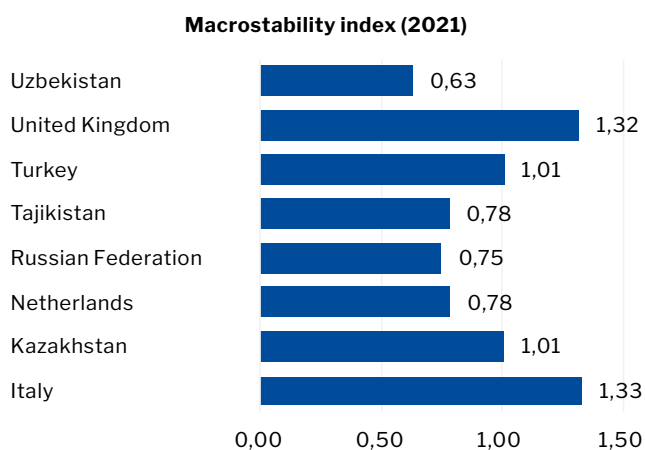
Source: World Development Indicators 2021

**FIGURE 14: >>**  
**GDP growth (%) (2009-2020)**



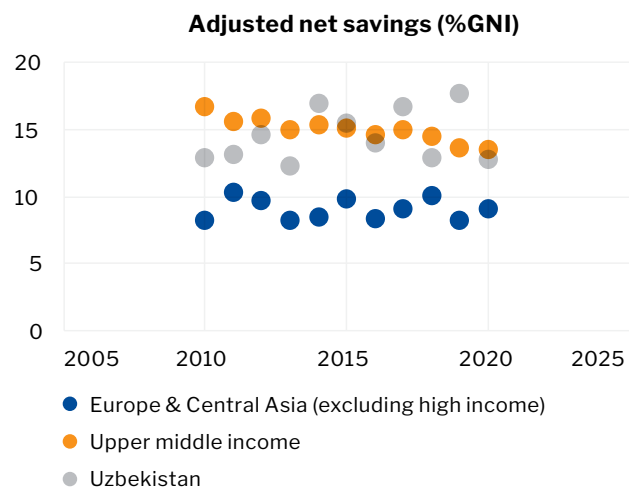
Source: World Development Indicators 2021

**FIGURE 15: >>**  
**GDP growth (%) (2009-2020)**



Source: World Development Indicators 2021

**FIGURE 16: >>**  
**Adjusted net savings (% GNI)**



Source: World Development Indicators 2021

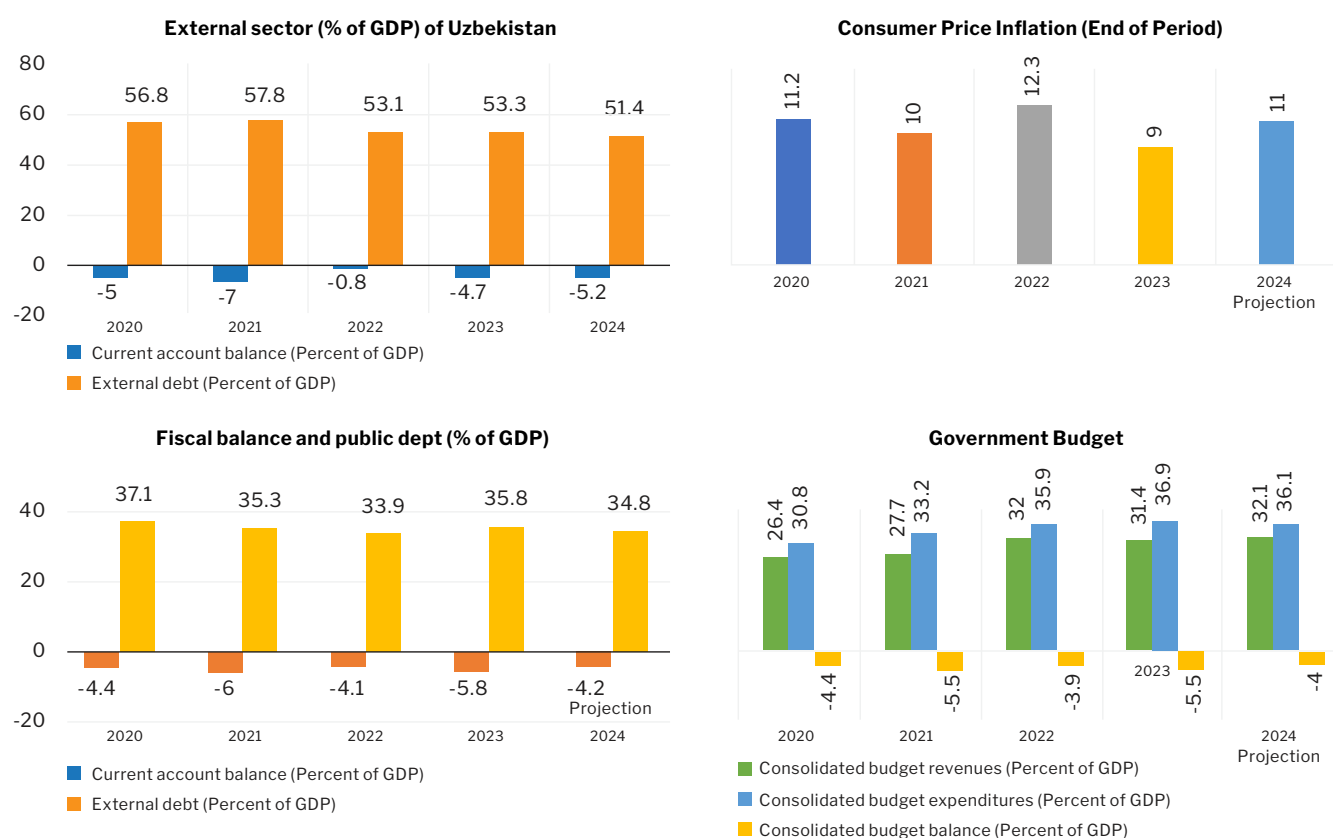
<sup>32</sup> <https://www.imf.org/en/News/Articles/2022/11/15/pr22385-imf-staff-concludes-visit-to-uzbekistan>.

<sup>33</sup> <https://www.imf.org/en/News/Articles/2022/06/22/pr22206-imf-executive-board-concludes-2022-article-iv-consultation-with-the-republic-of-uzbekistan>.

**Macro-financial stability and structural reforms are crucial for sustaining economic growth in a challenging global context.** In 2022, the economy experienced a surge in migrants and remittances, leading to a 5.7 percent real GDP growth.<sup>34</sup> Even though since then, remittances have fallen, fiscal expansion and high wage and export growth are expected to sustain this growth at 5.7 percent in 2023. Strong imports and declining remittances will contribute to a higher external current account deficit. International reserves are expected to remain ample, and the 12-month inflation rate has declined by over 3 percentage points to 9 percent by end-2023, thanks to a high real policy rate, a value-added tax rate cut, and lower international food and energy prices. Flexible exchange rates, large international

reserves, and long maturities of foreign debt currencies mitigate external stability risks. Uzbekistan's external balance sheet provides substantial reserves to protect the country from external shocks. However, the rapid expansion of foreign loans by the government, state-owned enterprises (SOEs), and state banks is increasing medium-term risks (Figure 17). As a commodity exporter, Uzbekistan may experience shocks related to a drop in its main exports. These risks are partially mitigated by the fact that the price of gold tends to provide a hedge against falling prices of other commodities. This effect is amplified because about half of the international reserves are in gold. As the price of gold rises during a global recession, reserve revaluations provide additional resilience to shocks.

**FIGURE 17: >>**  
**Fiscal deficit, public debt, and inflation in Uzbekistan<sup>35</sup>**



Source: IMF 2023.

### 2.1.3 Priority Action 1.2: Ensure that economic growth is inclusive

**Progress has been made to ensure that economic growth is inclusive; however, significant improvement is required to enhance access to safe sanitation, universal coverage, ICT, and social protection coverage (SP).** Of the 17 indicators that

capture inclusive economic growth in Uzbekistan, the country is established for nine and emerging and nascent for four, respectively. Figure 18 shows an overview of Uzbekistan on these key indicators.

<sup>34</sup> <https://www.imf.org/en/News/Articles/2022/11/15/pr22385-imf-staff-concludes-visit-to-uzbekistan>.

<sup>35</sup> <https://www.adb.org/publications/key-indicators-asia-and-pacific-2022>.

FIGURE 18: >>

Overview of indicators for inclusive economic growth



Source: Based on World Development Indicators 2021.

**Major reforms have been recently adopted to modernize the social protection delivery system, expand the coverage of poverty-targeted social assistance, and vocational skills training, which proved to be key in supporting vulnerable groups during the COVID-19 pandemic, and improving the adequacy of social benefits.** Uzbekistan has already a comprehensive social protection system in place that includes social assistance, social insurance, labor market interventions, and social care services, although there is still scope to improve the system’s inclusiveness, efficiency, and quality. Progress has been made in several areas during the past five years: the coverage of means-tested low-income family allowances (LIFA)<sup>36</sup> more than tripled from 0.4 million families in 2017 to 2.2 million in 2023 (around 26 percent of households)<sup>37</sup> in part also in response to the COVID-19 pandemic. The provision of short-term vocational skill training was enhanced and expanded, increasing its coverage from 20,000 unemployed in 2018 to 110,000 in 2022 (MEPR).<sup>38</sup> The transparency of operational procedures and accountability of the LIFA improved through the nationwide implementation of an electronic on-demand Social Registry (SR)<sup>39</sup> and the increased digitalization of payment and eligibility verification processes. The SR mostly serves the LIFA and, since 2023, it has served as a beneficiary registry for the maternity benefits introduced in 2022. As of the end of 2023, the SR is interconnected with 16 administrative databases and includes data for 36 percent of the population. Finally, the benefit amounts of social pensions have

been increased to be above the poverty line,<sup>40</sup> while the benefit amounts of LIFA have been defined on a per child basis (with a higher amount for children aged zero to two and decreasing amounts for subsequent children).

**However, the expansion of the LIFA coverage came with inefficiencies due to the fragmented provision of social protection benefits and services (sometimes resulting in duplications) and outdated targeting rules.** The provision of social protection benefits and services (LIFA, non-contributory social pensions, social services, and locally managed benefits) is very fragmented in Uzbekistan, sometimes resulting in duplications, higher burden for applicants to enroll in different programs with different application and assessment processes, hence leading to inefficiencies for both beneficiaries and program administrators. Social work for the integrated assessment of vulnerabilities and integrated referral to services is nascent; a draft law is under preparation. Finally, while LIFA is one of the poverty targeted programs with the largest coverage of the poorest quintile (38 percent)<sup>41</sup> in ECA—in part because its total coverage of 21 percent of people is twice as large as the average last-resort social assistance program in other comparator ECA countries, which on average covers 10 percent of the population—there is scope to improve its efficiency by improving targeting rules. Based on the 2022 Household Budget Survey (HBS), less than half (38 percent) of the total LIFA budget went to people in the poorest quintile, compared to 67 percent of the Targeted Social Assistance budget in Georgia, 59 percent

<sup>36</sup> The LIFA program aims at supporting vulnerable households through monthly cash benefits over a period of 12 months renewable after assessment. It is the largest social benefits system in the country.

<sup>37</sup> And 21 percent of people based on HBS 2022.

<sup>38</sup> Including graduates from both the regional monocenter and the district-level vocational training centers.

<sup>39</sup> The SR was piloted in Syrdarya in 2019 and rolled out nationally in 2020. The SR provides for the management of the application, eligibility verification, and beneficiary selection processes automatically leveraging the inter-operability with other relevant government databases (State Tax Committee, cadaster, civil registry, the Ministry of Employment and Poverty Reduction (MEPR), the Ministry of Health (MOH), and the Ministry of Higher Education (MHE) systems, among others).

<sup>40</sup> A new poverty line equal to 498,000 UZS (Uzbekistan som) per person per month was developed by the State Statistics Committee following a basic-needs approach as recommended and supported by the World Bank.

<sup>41</sup> Based on 2022 HBS. This compares with the 37 percent of people in the poorest quintile receiving the Family Benefit Program in Armenia, 34 percent of people in the poorest quintile receiving the Targeted Social Assistance in Georgia in 2021, and 20 percent of people in the poorest quintile receiving Ndima Economike in Albania based on World Bank Speed /ASPIRE database and country teams’ estimates based on the same methodology. Quintiles refer to adult equalized consumption net of all social assistance transfers.

of the Family Benefit Program budget in Armenia, and 53 percent of Ndhime Economike budget in Albania. Between 2021 and 2023, almost 90 percent of the total beneficiaries had to apply between 2 and 4 times to be eligible, which indicates inefficiencies in the system.

**Social and vocational rehabilitation (SVR) and activation services in Uzbekistan are nearly nonexistent.** The country's 12 regional rehabilitation centers provide only medical and occupational therapy, with few involving non-specialized psychologists. Employment Support Centers provide job search assistance, intermediation, and job matching services to registered unemployed individuals, but lack the capacity to provide tailored, individualized activation services for vulnerable groups. Persons with disabilities and hard-to-hire groups require more intensive support to prepare, search, and maintain suitable job opportunities. State agencies and NGOs provide limited specialized services, such as supported employment. The private employment agency market is emerging, but few providers focus on hard-to-place individuals. Additionally, four specialized vocational education and training (VET) residential schools host about 1,500 secondary students with disabilities. However, these schools offer few courses for professions not matching occupational demand and based on outdated curricula. Graduates from these schools have poor labor market prospects. In 2019, of 346,000 people of working age and with a disability certificate, only 5 percent were employed.<sup>42</sup>

**The new Unified Social Protection Platform can be enhanced for adaptation by defining specific climate events and indicators that trigger social protection response.** This system aims to integrate existing social protection databases, beneficiary registries, and other modules, including medical and social assessments for individuals with disabilities, assistive tools and devices administration, social service application, e-case management, child protection, gender-based violence survivors, complaint mechanism management, and financial and administrative management of social protection services. The platform is expected to: enable a more human-centric approach, support social case management by social workers, reduce duplications, and provide services based on the needs of poor or vulnerable families. The platform's 'adaptation' potential can be better utilized by defining specific climate events and indicators triggering social protection response and integrating with other disaster risk management information systems.

**Strong (mandatory) insurance programs for individuals, businesses, and the self-employed in high-risk areas will help to protect against the loss of property and livelihoods.** Convenient and comprehensive salary support can mitigate the impacts of disasters through various means. Predefined response components and operational strategies of social security programs should be implemented during and after climate-related disasters. Social annuities can be planned to advance recovery efforts using the Pension Fund's electronic database and cash dispensing capabilities. The social protection frameworks can be used to create more versatility among individuals through long-term risk relief. Solid protection programs for people, businesses, and the self-employed in high-risk areas can help protect against property and job loss. Compelling arrangements of these programs can accelerate recovery from and resilience to disasters.

**Uzbekistan has progressed over the past decade in improving the quality and access of internet connectivity.** With the "Digital Uzbekistan 2030 Strategy,"<sup>43</sup> the government has set challenging targets, including deploying more than 220,000 km of fiber-optic cables across the country by 2025. By the end of 2021, Uzbekistan had deployed 122,000 km of cable and increased its international internet bandwidth to 3200 Gbps (93 kbps per person).<sup>44</sup> Uzbekistan's fixed broadband household penetration reached 25 percent as of December 2022 (up from 9.6 percent in 2016).<sup>45</sup> The telecom market has experienced continuing price decreases for international internet access (around \$2.7/Mbps in September 2022 compared to \$91.5 in 2016), in retail prices for the data-only mobile-broadband basket (\$1.42 in 2021 compared to \$30 in 2016). Uzbekistan was among four new countries that met the UN's two percent affordability target.<sup>46</sup> Most 35,000 social facilities (schools, preschools, healthcare facilities, and mahalla citizens' assemblies) have been connected to high-speed internet. In November 2021, the government updated key targets for telecom infrastructure development.<sup>47</sup> Specifically, it set the target of raising the capacity of the international data transmission channel by 3.5 times and building an extra 150,000 km of national fiber-optic lines by 2023. The eventual aim is reaching all settlements, 80 percent of which should be able to connect to fixed broadband, with 100 percent of settlements having mobile broadband connectivity by 2024. With this in mind, the government introduced further incentives for telecom operators (e.g., tax, customs), especially for those deploying infrastructure in rural areas, and also made efforts to simplify the issuance of permits.

<sup>42</sup> Of those working, only 7 percent were in full-time employment, compared to 31 percent among persons without disabilities. United Nations Uzbekistan. 2019. "Situation Analysis on Children and Adults with Disabilities in Uzbekistan." Tashkent: United Nations.

<sup>43</sup> Presidential decree of the Republic of Uzbekistan "About approval of Strategy "Digital Uzbekistan-2030" and measures for its effective realization" <https://cis-legislation.com/document.fwx?rgn=130974>.

<sup>44</sup> <https://mitc.uz/ru/news/4272>.

<sup>45</sup> TeleGeography data, December 2022.

<sup>46</sup> In 2018, the UN Broadband Commission for Sustainable Development set its updated affordability target: to bring prices for entry-level broadband services below 2% of monthly GNI per capita by 2025.

<sup>47</sup> <https://lex.uz/uz/docs/5735282>.

**Despite this progress, Uzbekistan's internet adoption remains low, with internet connectivity insufficiently diversified due to its reliance on terrestrial transit bandwidth and dependence on neighboring countries.**

Internet adoption also remains low in part due to market constraints affecting affordability. Uzbekistan's fixed broadband household penetration was more than triple the average for countries with a similar GDP per capita. Compared to its Central Asia neighbors, Uzbekistan is behind Kazakhstan (37 percent), narrowly surpasses the Kyrgyz Republic and Turkmenistan (20.2 percent and 20.8 percent, respectively), and far outpaces Tajikistan (5.5 percent).<sup>48</sup> Uzbekistan is considered one of the lower-level mobile penetration countries in the ECA region after Tajikistan (80.2 percent).<sup>48</sup> In January 2023, Uzbekistan ranked 122nd (out of 138) globally for mobile broadband speed and number 92 (of 179) for fixed broadband speed.<sup>49</sup>

**While there has been notable progress in key health outcomes, room remains for improvement.**

Life expectancy at birth increased from 66.5 years in 1990 to 71.6 years in 2018, while neonatal mortality dropped from 30.9 deaths per 1,000 live births to 9.9 the same year. Despite these improvements, there are still considerable gaps in health outcomes compared to many well-performing health systems in the ECA region. For example, life expectancy remains below the ECA regional average, and the neonatal mortality rate is nine times that reported in Estonia and 3.5 times the rate in Poland. Multiple reasons may explain why Uzbekistan is behind other ECA countries in health outcomes and existing challenges, including (i) low and inefficient public health financing, (ii) poor quality of care as a result of outdated clinical practices and human resource planning and distribution; and (iii) lack of strong stewardship and governance to effectively harness a rapid private sector growth towards health system goals.

**Uzbekistan's health sector faces challenges in increasing public spending, improving financial protections for private health spending, improving service quality, and increasing efficiency.**

Key issues include low public health spending efficiency, high government spending on wages, lack of hospital financing mechanisms, large out-of-pocket expenditures to private sector providers, a fragmented hospital network, lack of access to health services for lower-income populations, and lack of medicine coverage. Unmet needs are high, particularly among poorer communities, with malnutrition still prevalent (10.8 percent in 2017). Mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases between ages 30 and 70 was 25.3 percent in 2019, twice the average for OECD

countries and above the rates for both lower-middle-income and upper-middle-income countries.

**Good governance should be promoted as the country transitions towards a market economy and develops strategies for inclusive development with increased capacity for adaptation and resilience.**

Uzbekistan records lower scores (-1.05) for all indicators of the World Governance Index compared to ECA (0.55) and upper-middle-income countries (-0.15). This places Uzbekistan in the bottom tercile of its peers for the following dimensions of good governance: voice and accountability, political stability and absence of violence, government, regulatory quality, the rule of law, and control of corruption. Enhancing sound governance principles—particularly the rule of law, voice and accountability, and political stability—will go a long way toward facilitating the transition and improve the economy's adaptation and resilience to shocks.

**Although progress has been made to improve human capital in Uzbekistan, the current policy changes and reforms to transition the country to a market economy with a vibrant private sector in the context of climate change will require higher levels of human capital investment (HCI).**

Levels of HCI in Uzbekistan by 2020 were 62 percent,<sup>50</sup> lower than the average for ECA countries. The average HCI score for girls is higher than that for boys. However, Uzbekistan registers higher human development index scores for males than females; the same phenomenon is reflected among ECA countries. Uzbekistan is improving in human development, but scores for males (0.744) and females (0.700) remain lower than those of Central Asia countries, where scores are 0.810 and 0.778 for males and females, respectively.<sup>51</sup> However, Uzbekistan's gender development index is high (0.94), falling just under the ECA average (0.96).

**The government of Uzbekistan has made rapid progress on its path toward social and economic transformation.**

On September 5, 2017, the official exchange rate depreciated by 50 percent and existing surrender requirements on exports were abolished. There have also been important steps to reduce the state's large presence in the economy by liberalizing prices, removing trading controls and utility subsidies, and opening the economy to greater foreign and domestic private sector participation in job growth and investment. Further reforms are expected to be undertaken in the near future, including those related to the restructuring of the SOEs.

**However, attention must be paid to assisting groups adversely affected by the short- and medium-term reforms.**

During the transition process, some population

<sup>48</sup> TeleGeography data December 2022.

<sup>49</sup> Speedtest Global Index January 2023. <https://www.speedtest.net/global-index>.

<sup>50</sup> <https://thedocs.worldbank.org/en/doc/64e578cbeaa522631f08f0cafba8960e-0140062023/related/HCI-AM23-UZB.pdf>

<sup>51</sup> <https://hdr.undp.org/gender-development-index#/indicies/GDI>.

groups are being adversely affected. While the reform agenda is very popular (98 percent of citizens support the reform agenda and are optimistic about the future, according to the L2CU survey 2024). International experience with relatively similar reforms shows the poor and those close to the poverty line are less resilient to price changes and may be affected by lower purchasing

capacity (because of reforms like price liberalization, exchange rate liberalization, utility tariff increases, and removal of subsidies). While recent initial measures related to rising electricity and gas tariffs or removing subsidies for bread and flour have had a manageable impact on poor households,<sup>52</sup> it is urgent to implement mitigation measures that will support further reforms.

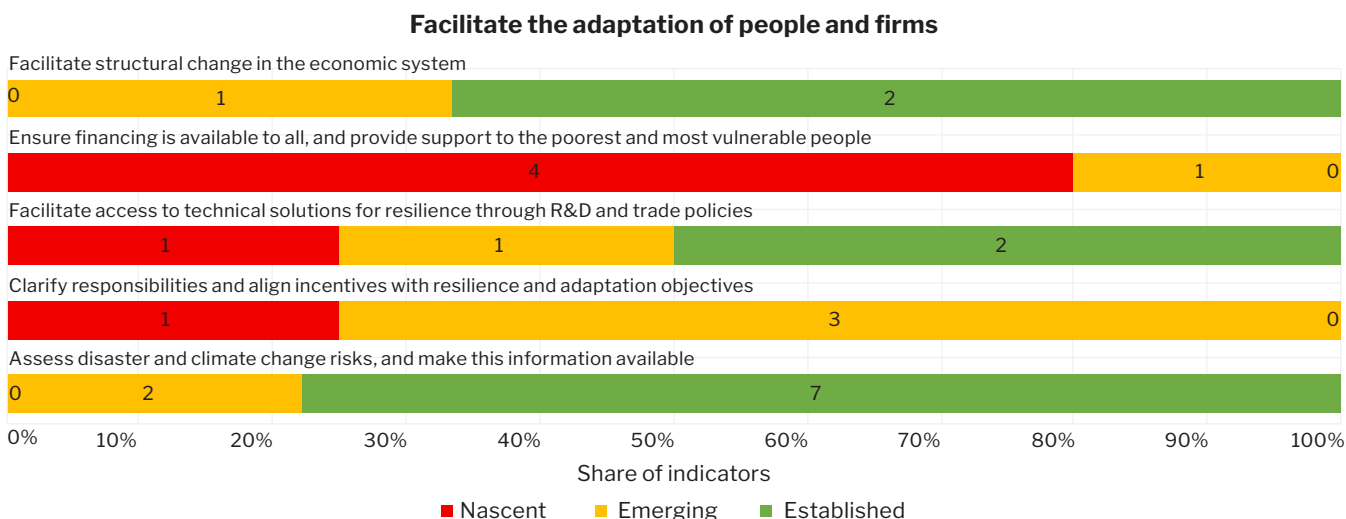
## 2.2 Facilitate the adaptation of people and firms

*“Private actors—households and firms—have an incentive to increase their resilience and adapt to climate change. However, they face a range of obstacles, from the lack of information and behavioral biases to imperfect markets and financial constraints. Governments need to minimize these obstacles to maximize the economy’s adaptive capacity and prevent (as much as possible and desirable) climate change impacts and natural disasters.” — The Adaptation Principles.*

**This section assesses progress in creating an environment that enables people and businesses to adapt in Uzbekistan.** Evaluation includes 24 indicators

corresponding to five priority actions. The results (Figure 19) show initial progress towards achieving this adaptation principle and three priority actions.

**FIGURE 19: >>**  
**Overview of adaptation and resilience assessment of people and firms**



Sources: Based on Uzbekistan TNC, Uzbekistan Center for Hydrometeorological Services (Uzhydromet), WB climate change portal, UNDP, WDI, WB Enterprise Survey, UNHCR.

Note: The number in each bar shows the number of indicators per category (established/emerging/nascent).

**Assessment of Uzbekistan’s overall progress in facilitating the adaptation of people and firms shows that significant gaps exist in ensuring financing is available to all and in providing support to the poorest and most vulnerable people.** Figure 19 shows that gaps are also significant in the country’s ability to clarify responsibilities and align incentives with resilience and adaptation objectives. Progress has been made in facilitating structural change in the economy and the country’s ability to assess disasters and climate change risk; however, challenges remain in the country’s ability to make this information readily available to all. Details of

these findings and options for enhancing the adaptation of people and firms are summarized below.

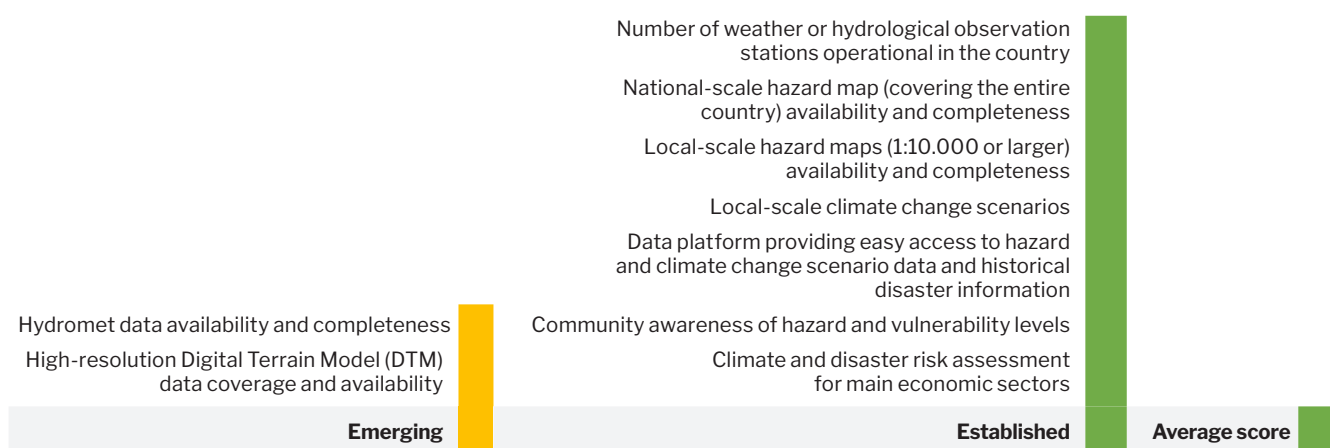
### 2.2.1 Priority Action 2.1: Assess climate and disaster risks and make this information available.

**The overall assessment for Priority Action 2.1 shows that the country is established for seven of the nine indicators (see Figure 20) and emerging for the availability and completeness of hydromet data and the availability and coverage of high-resolution digital terrain model data.** The key gaps identified are summarized below.

<sup>52</sup> World Bank 2018a. “Tariff and Subsidy Reform: Assessing Impacts from Selected Elements of the Roadmap for Uzbekistan.” Presentation.

FIGURE 20: >>

**Benchmark scores for Priority Action 2.1: Assess climate and disaster risks and make this information available**



Sources: Original to this publication based on data from Uzbekistan TNC, Uzbekistan Hydromet, WB climate change portal, UNDP, WDI, WB Enterprise Survey, and UNHCR.

**Although tremendous efforts have been made by the Uzbekistan Center for Hydrometeorology Services (Uzhydromet) to ensure data availability, significant challenges remain.** Some Uzhydromet challenges include inefficient data collection channels for real-time monitoring, risk assessment, mapping, and forecasting impacts based on population, asset, and infrastructure distributions. The surface monitoring device is manually operated and not suitable for relaying real-time observations of precipitation, temperature, snowfall, river flow, and dam levels. Coverage of eastern alpine areas is limited.<sup>53</sup> Advanced remote sensing technologies and methods for monitoring and assessing risks beyond current observation sites are not widely used. Another obstacle is the capacity of national institutions to use and apply complex risk models and assessment tools. Technical support has helped overcome some obstacles, such as investments in automatic weather stations (AWS), but remains lacking due to a dearth of public funds to upgrade equipment.

**Uzhydromet’s centralized generation and dissemination of hydrometeorological data hinders access to other ministries and limits creative use.** The effectiveness of a multi-disaster early warning and prediction system depends on Uzhydromet’s ability to transform hydrometeorological information into hazard-related information and the ability of the Ministry of Emergency Situations (MES) to coordinate the dissemination and cross-sectoral early warning and multi-hazard forecasting responses using national and regional communication channels. Also, the lack of site-specific hazard and forecast information hinders MES’s proactive approach to damage and loss prevention/

reduction compared to post-disaster response processes. While work with Karakalpakstan communities has focused on hydrological constraints and earthquakes, there has been limited interaction with them on interpreting and responding to climate-related hazard warnings in eastern areas.

**Challenges in managing transboundary hazards and employment of GIS technology adversely affect the MES’s ability to provide adequate disaster information.** Despite 80 percent of floods and landslides occurring outside the country, Uzbekistan faces insufficient information on transboundary hazards and risks. Legal and institutional arrangements exist for disaster data sharing and warnings between neighboring Central Asia countries. However, Uzhydromet faces capacity limitations in remote sensing, GIS technology, and data-specific hazard modeling and treatment tools. Additionally, Uzhydromet participates in the Regional Climate Outlook Forum, but has infrequent national and local climate outlook forums.

**There is a need to build capacity for air quality management in manpower and financing for adequate implementation of Article 6 of the Law on Atmospheric Air Protection.** Uzhydromet monitors and forecasts weather and climate and operates air quality monitoring stations across the country; however, these stations are not automatic and only conduct observations three times a day using the aspiration method. Increasing manpower is needed for air quality management, and there is a need to increase the number of automatic observation and analysis centers. Currently, sanitary norms and regulations have been outlined for maximum allowable concentrations (MACs) of 485 pollutants;

<sup>53</sup> <https://www.greenclimate.fund/document/enhancing-multi-hazard-early-warning-system-increase-resilience-uzbekistan-communities>.



however, the country lacks the capacity to monitor all of these pollutants, so it will be important to prioritize them to a reasonable number/capacity for monitoring and application of the law on atmospheric air protection.

**High-resolution Digital Terrain Model (DTM) data is only available for some sectors; it does not cover the national territory and is not readily available for public use.** Government agencies have developed high-resolution DTM data for agricultural lands/irrigation/drainage networks in Ferghana and Samarkand regions and some cities. This data is mainly available for official use and not to the general public. Also, other public and private organizations have DTM data for different regions that are accessible only to government officials or through paid access.

**2.2.2 Priority Action 2.2: Clarify responsibilities and align incentives with resilience and adaptation objectives.**

**Overall, Uzbekistan is actively working on clarifying responsibilities and aligning incentives with resilience and adaptation objectives; Figure 21 shows that the country still lags behind in integrating adaptation and mitigation risk measures in sustainability risk reporting by private firms.** The country has made progress in assigning institutional responsibilities for disaster risk management and climate change, residual risk target levels, and instituting private sector climate change action plans; however, gaps still need to be filled to ensure clarity around responsibilities within the public sector institutions and private sector organizations.

**FIGURE 21: >>**

**Benchmark Priority Action 1.2: Clarify responsibilities and align incentives with resilience and adaptation objectives**



Sources: Author compilation from Uzbekistan TNC, Uzbekistan Hydromet, WB climate change portal, UNDP, WDI, WB, World Bank Enterprise Survey.

**Disaster risk management responsibilities have been assigned; however, climate change aspects are assigned to different sectors.** Due to the absence of a national climate change policy, the national-level climate governance system is unclear. Climate change is incorporated into sectoral legislation and strategic documents, but Uzbekistan lacks legislation specifically addressing the issue. The 2019 “Concept on Environmental Protection until 2030” outlines long-term goals and priorities for environmental protection. Opportunities for further development include climate change, low carbon development, environmental compliance, forest protection, soil protection, and environmental noise. Local authorities have adopted a few strategic environmental protection documents, indicating potential for further development. Also, residual risk levels are identified for selected hazards such as floods and earthquakes; however, the documents on residual risk levels are not always published.

**Environmental safeguards are not systematically**

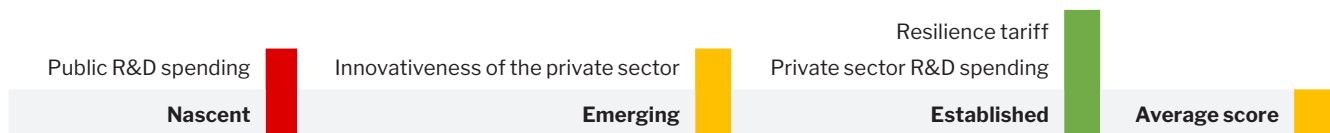
**included in private sector climate action plans; small and medium enterprises do not integrate adaptation measures.** Policy documents on industrial sector development lack environmental protection measures, compromising the sector’s contribution to community welfare. Water pollution from chemical, petroleum, manufacturing, and metal industries is a major concern, with many companies lacking wastewater treatment plants or pretreatment. Industrial wastewater is often discharged into rivers or municipal sewage systems. While leading companies are working on upgrading to reduce air emissions, technological progress for small and medium enterprises (SMEs) remains lagging.

**2.2.3 Priority Action 2.3: Facilitate access to technical solutions for resilience through R&D and trade policies.**

**This priority action indicates that Uzbekistan significantly lags behind (Figure 22) in public spending on research and development (R&D); the innovativeness of the private sector also partially meets the standard.**

FIGURE 22: >>

**Summary Priority Action 2.3: Facilitate access to technical solutions for resilience through R&D and trade policies**



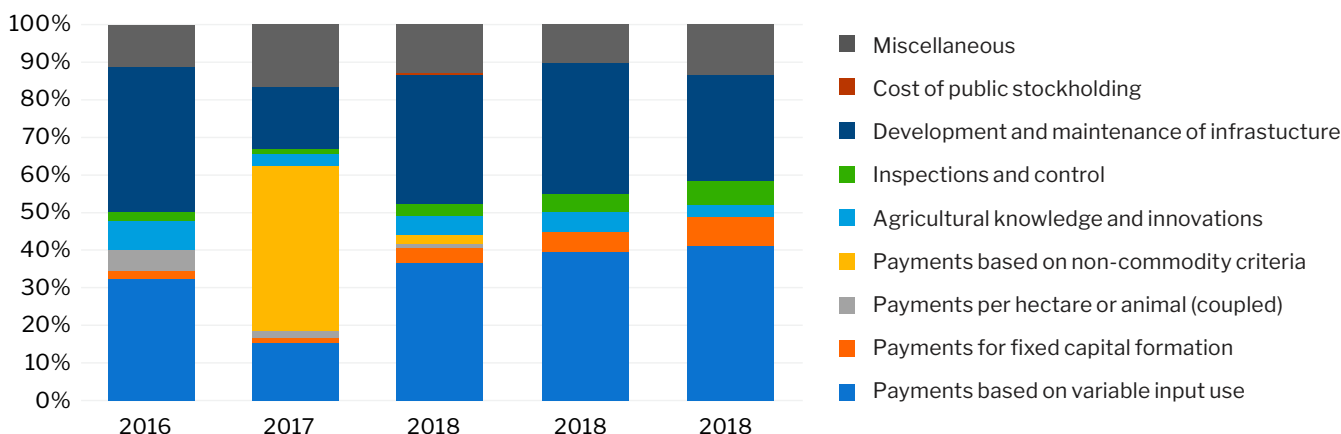
Sources: Original to this publication based on data from Uzbekistan TNC, Uzbekistan Hydromet, WB climate change portal, UNDP, WDI, and WB enterprise Survey.

**More investment in R&D related to the environment for science-informed decision-making is needed to enhance the resilience of people and firms.** Public expenditure on R&D has been fluctuating and is relatively low compared to UMIC; thus, more research is required to provide evidence for adaptation and resilience action. The government has set an ambitious target following the approval of the “Strategy for Innovative Development of the Republic of Uzbekistan for 2019–2021”<sup>54</sup> adopted in September 2018. The strategy sets ambitious goals for

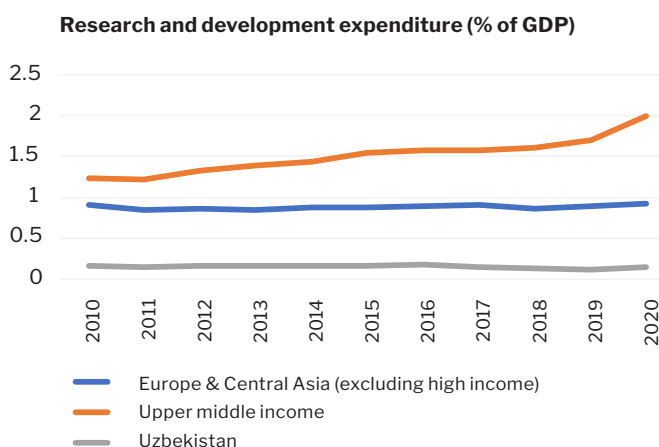
the enhancement of science, technology, and innovation (STI) to place the country among the top 50 economies in the Global Innovation Index by 2030. To achieve this objective, an intermediate target was set to quadruple the government expenditure on R&D from the current 0.2 percent of GDP to 0.8 percent of GDP by 2021; however, this target has not been met. Current levels of innovation by the private sector are low (23 percent of firms), thus making it difficult for firms to adapt to a changing climate; incentives for firm innovations should be prioritized.

FIGURE 23: >>

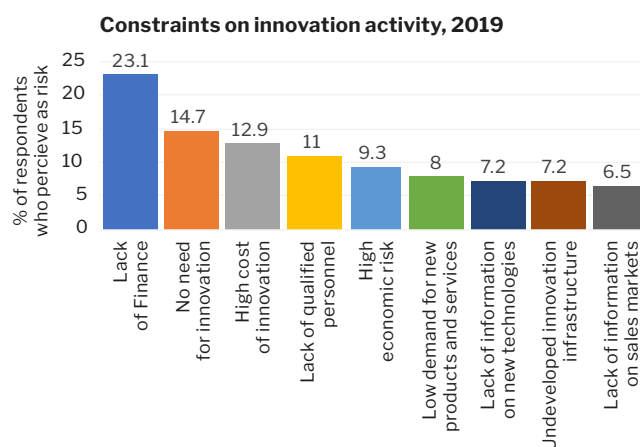
**Uzbekistan: aggregated functional composition of agricultural public expenditure**



Source: Izvorski et al. 2019. Uzbekistan Public Expenditure Review.



Source: World Bank 2021.



Source: World Bank 2021.

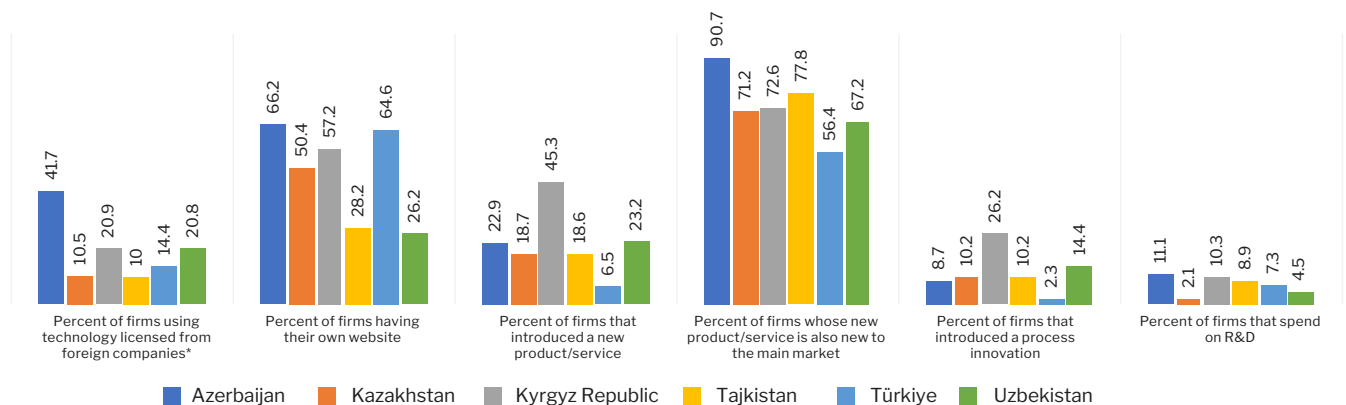
<sup>54</sup> <https://lex.uz/docs/3913186>.

**Accelerating investments and creating an enabling investment climate for R&D is critical to improving scientific excellence.** Strengthening the links between education, science, and industry and placing the universities among the top 1,000 universities in international rankings remain key objectives for the country. Uzbekistan has placed innovation at the heart of its economic development strategy. Nevertheless, domestic R&D expenditures corresponded to 0.2 percent of GDP in 2017 compared with a global average of 1.7 percent in 2014 and an Organization for Economic Cooperation and Development (OECD) average of 2.37 percent in 2017, deferring Uzbekistan’s progress on Target 9.5 of the 2030 Agenda. Figure 23 shows aggregated public expenditure in the agricultural sector. Although this sector is very vulnerable to climate change, only a small proportion of

agricultural expenditure is dedicated to generating and innovating agricultural knowledge.

**Lack of finance remains the major obstacle to innovation by firms in Uzbekistan.** Figure 23 shows that firms in Uzbekistan mention lack of finance as a major obstacle to innovation. Figure 24 confirms this by noting that only 4.5 percent of firms spend on research and development. This makes it difficult for firms to develop innovative climate-smart technologies to help them adapt to climate change. It is also difficult to adopt innovative technologies easily within the local economy due to poor access to finance. Therefore, privatizing the banking sector and promoting credit facilities to firms and small businesses are critical to enhancing innovation and climate change adaptation.

**FIGURE 24: >>**  
**Enterprise innovation indicators for Uzbekistan and other countries**



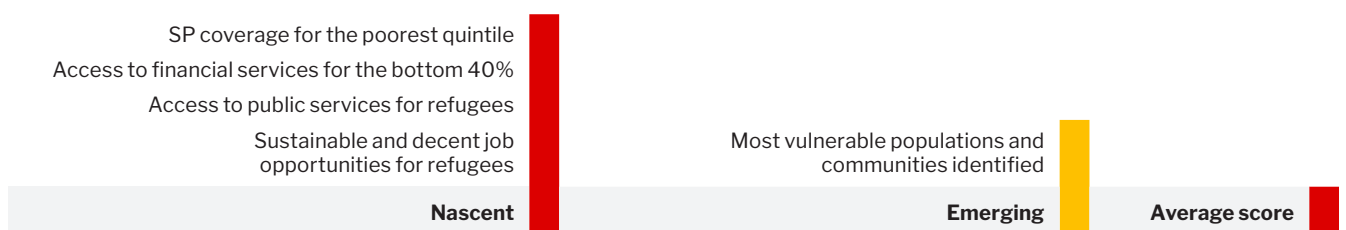
Source: World Bank Enterprise Survey 2021.

**2.2.4 Priority Action 1.4: Ensure financing is available to all and provide support to the poorest and most vulnerable people**

**The benchmark for this priority action (Figure 25) indicates that Uzbekistan still has a lot to do in enhancing social protection coverage for the poorest quintile access to financial services for the bottom 40 percent.**

Also, providing public services to refugees and integrating refugees through sustainable and decent jobs. Efforts have been made to identify the most vulnerable populations and communities, but gaps still exist.

**FIGURE 25: >>**  
**Priority Action 1.4: Ensure financing is available to all and provide support to the poorest and most vulnerable people**

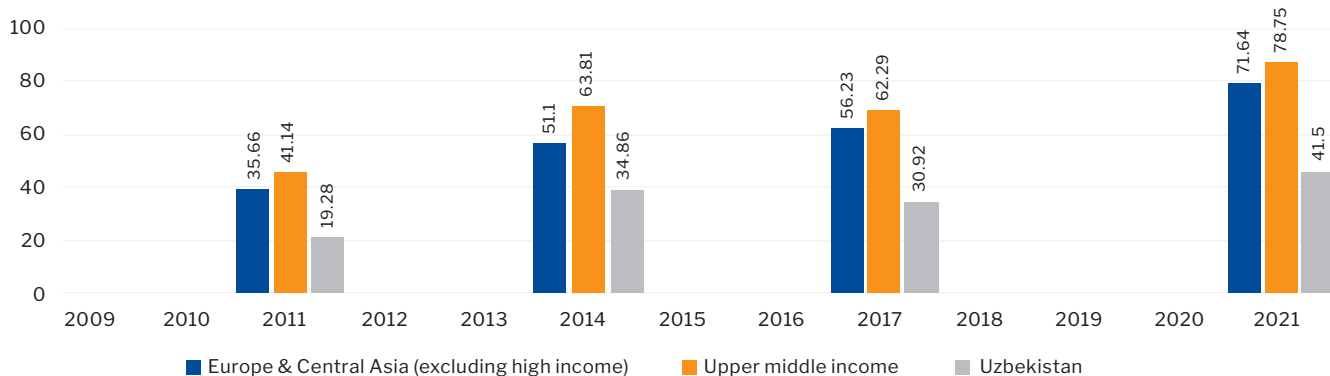


Sources: Original to this publication based on data from Uzbekistan TNC, Uzbekistan Hydromet, WB Climate Change Portal, UNDP, WDI, and WB Enterprise Survey.

**Although efforts to improve access to financing for all, including providing support to the poorest and most vulnerable people, have been made, significant gaps remain.** Access to finance by the bottom 40 percent increased in Uzbekistan between 2011 and 2021, however, relative to its peers, it is still low (41.5 percent) and could be improved for better adoption of adaptation options (Figure 26). As of 2021, access to financial services by the bottom 40 percent was relatively low (41.5 percent); enhancing access to finance to this segment of the population is critical in the promotion of the resilience of people because many low-income families live in rural areas and rely directly and indirectly on irrigated agriculture. These families are prone to bear

the burden of climate change as they have fewer and more vulnerable assets and are less able to adapt and recover after climate shocks. Uzbekistan has a relatively well-articulated and inclusive SP system composed of social assistance, social insurance, social care services, and labor market interventions. The coverage across all contingencies and population groups must be improved to protect all households in need. Also, the current SP system is managed by different ministries through different programs, with little coordination between them resulting in high lapses and expenditures; the development of a comprehensive SP strategy and consolidated SP functions under one dedicated entity will significantly improve the current situation.

**FIGURE 26: >>**  
**Account ownership at a financial institution or with a mobile money-service provider, poorest 40% (% of population ages 15+)**



Source: WDI 2022.

**It is crucial to link SP and disaster risk management to build adaptive, responsive social protection.** This involves developing a framework for systems that can scale up and down quickly, requiring specific instruments, institutional arrangements, and government leadership. Adaptive instruments usually comprise three types, namely, (i) adaptive programs (both in program design, delivery mechanisms: flexibility to scale up and down to better respond to disasters), (ii) adaptive finance to ensure that SP programs can quickly respond to disasters and (iii) adaptive information.<sup>55</sup> Adaptive information enhances understanding of risks and vulnerabilities, enabling interventions to be tailored to different types and scales. For example, information on household compositions, risks, vulnerabilities, early warning information, and pre-positioned risk financing based on pre-defined triggers can support the development and provision of rapid responses appropriate to the disaster impact.<sup>56</sup> IT

systems enable faster safety net expansion and timely responses, while flexibility in SP elements enables tailored adjustments during shocks. It is crucial to implement mechanisms for uninterrupted enrollment and delivery of benefits and services in case of disasters, ensuring the provision of social protection benefits to the population.

### 2.2.5 Priority Action 1.5: Facilitate structural change in the economic system

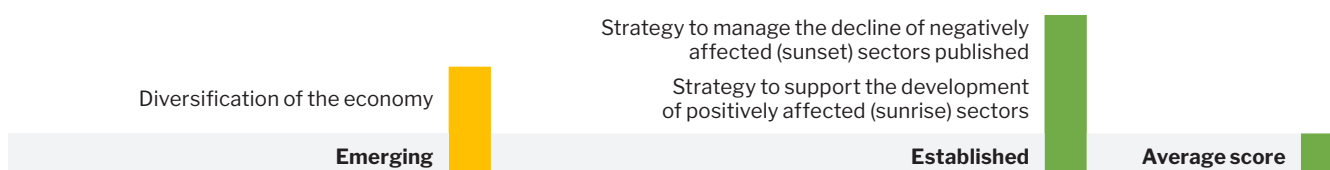
**In recent years, the government of Uzbekistan has made significant efforts in clearly defining its strategy towards structural transformation; the country has indicated its intentions to develop new sectors and pathways to manage the transition to a green economy.** However, efforts to diversify the economy remain below those of benchmark countries; this justifies the rating of this indicator as emerging, as shown in Figure 27.

<sup>55</sup> Grosh 2019. Presentation on Strengthening Social Protection for Disaster Resilience in Latin America and the Caribbean.

<sup>56</sup> World Bank. 2018b. The State of Social Safety Nets 2018. Washington, DC: World Bank.

FIGURE 27: >>

**Summary Priority Action 1.5: Facilitate structural change in the economic system**



Sources: Original to this publication based on data from Uzbekistan TNC, Uzbekistan Hydromet, WB Climate Change Portal, UNDP, WDI, and WB Enterprise Survey.

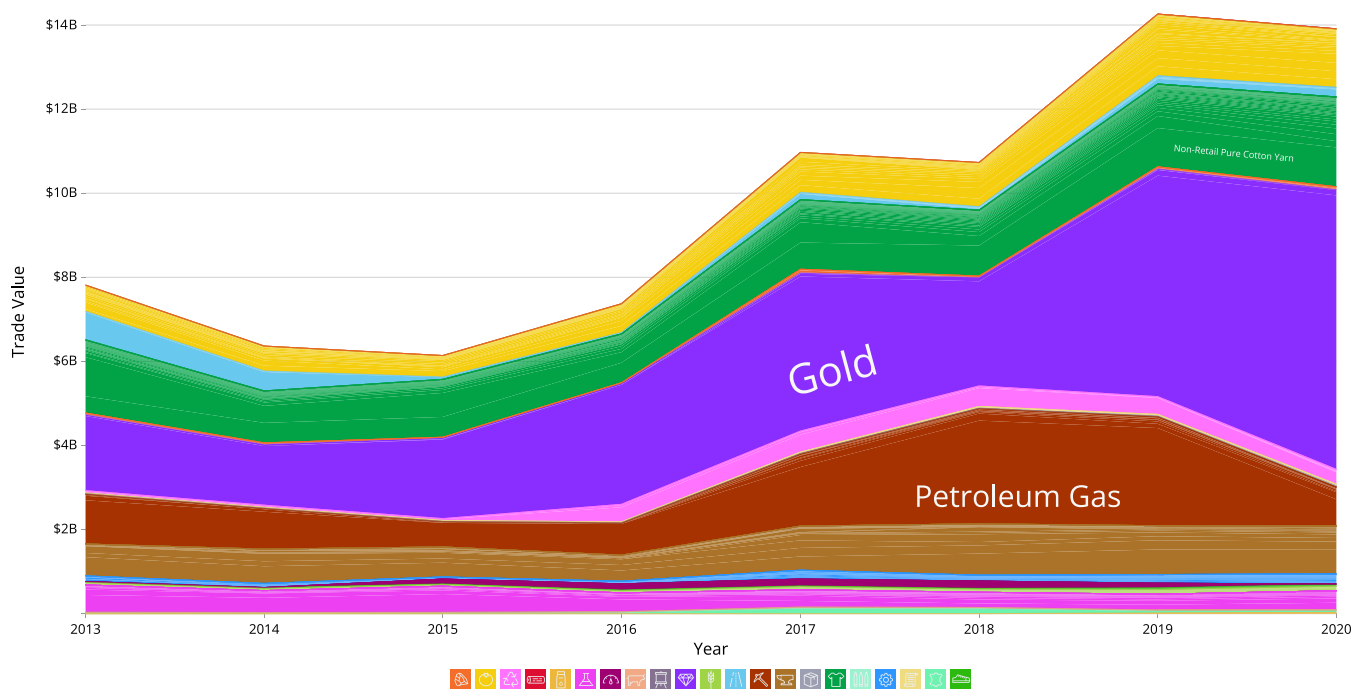
**Accelerate economy-wide diversification efforts while ensuring sustainable systems are in place.**

Over the last 25 years, Uzbekistan’s economic complexity index (ECI) has increased by only 9 points, showing how low diversification has been; however, there has been a good dynamic over the last 10 years with a 7-point increase contrary to the 2-point change between 1995 and 2000. Figure 28 shows the dominance of natural resources as the main exports; diversification to other products reduces the economy’s exposure to shocks. Current reforms towards a market economy should also provide incentives for the development of other sectors and acceleration of manufacturing and industry while at the same time enhancing the efficiency and competitiveness of current dominant sectors. This

can be done by Uzbekistan by improving the business climate, streamlining regulations, and improving access to finance. The government can offer targeted export promotion programs, such as trade missions and matchmaking events. Trade facilitation can be achieved by simplifying customs procedures and reducing trade costs. Uzbekistan can also focus on high-value exports by investing in research and development, and adding value to existing exports through processing or manufacturing. Current policy reforms for the development of the industrial sector do not capture environmental safeguards. This potentially reduces the sector’s contribution to the well-being of the local communities and increases the risk to the ambitious plan of a low-carbon economy.<sup>57</sup>

FIGURE 28: >>

**Uzbekistan export composition**



Source: OEC 2021.

<sup>57</sup> [https://unece.org/DAM/env/epr/epr\\_studies/Synopsis/ECE.CEP.188\\_Uzbekistan\\_Eng\\_Synopsiss.pdf](https://unece.org/DAM/env/epr/epr_studies/Synopsis/ECE.CEP.188_Uzbekistan_Eng_Synopsiss.pdf).

## 2.3 Adapt urban and land use plans and protect critical public assets and services

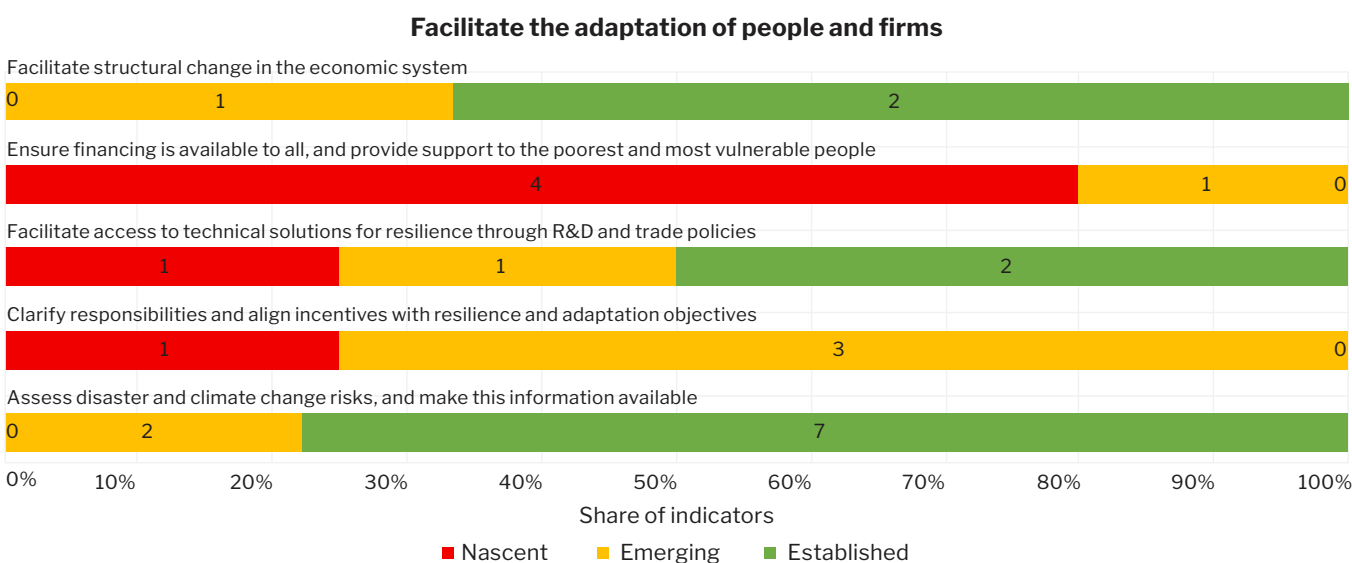
“Beyond direct support to households and businesses, governments have a transformative role to play in ensuring their country, their economy and their citizens can adapt to climate change. This is particularly the case to ensure the adaptation of important public assets and infrastructure systems such as power systems, roads, water, and sanitation, and essential services such as health care, education, safety, and security. Urban and land use plans also influence massive private investments in housing and productive assets, so these must adapt to evolving long-term climate risks to avoid locking people into high-risk areas.”—The Adaptation Principles.

**This section examines progress in adapting critical public assets and services in Uzbekistan.** The assessment contains 43 indicators corresponding to 8 priority actions. Overall results suggest progress is being made, but because of this adaptive principle, more emphasis should be placed on system design and implementation. Assessment of Uzbekistan’s capacity to adapt land use plans and protect critical public infrastructure reveals that initiatives are ongoing for most of the indicators; however, very few are up to the standard for upper-middle-income countries. Significant gaps exist in ensuring the resilience of the forest sector and other natural ecosystems, the

resilience of the water infrastructure and water management, and the resilience of the agricultural sector. Gaps also exist in the country’s ability to revise land-use and urban plans for risk-informed decision-making, in designing and implementing a government-wide strategy to increase the resilience of infrastructure and public assets. Figure 29 summarizes findings from the capacity of Uzbekistan to adapt land-use plans and protect critical assets. It shows that the capacity in this area still does not meet the country’s required standards. Propositions on these dimensions and others listed in Figure 29 are highlighted in the text below.

FIGURE 29: >>

### Overview of adaptation and resilience assessment for adapting land use plans and protecting critical public assets



Sources: Original to this publication based on data from the World Bank, UNDP, WDI, Uzbekistan TNC, WHO, and expert interviews.

Note: The number in each bar shows the number of indicators per category (established/emerging/nascent).

### 2.3.1 Priority Action 3.1: Identify critical public assets and services

**Uzbekistan has done well in identifying its critical infrastructures and services; however, the inventory of these critical infrastructures is at the district levels and in ministries; national coordination is lacking.**

Also, the logistics performance index of the country is relatively low compared to benchmark countries; however, in terms of the energy architecture performance index, the country is much further behind.

FIGURE 30: >>

**Summary Priority Action 3.1: Identify critical public assets and services**



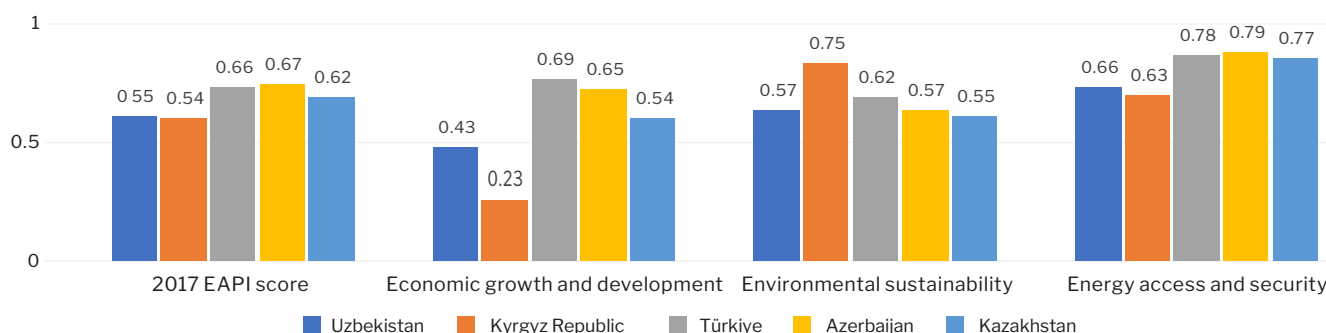
Sources: Original to this publication based on data from World Bank, UNDP, WDI, Uzbekistan TNC, WHO, UNICEF, and expert interviews.

**The energy sector still suffers from many inefficiencies and infrastructure issues in Uzbekistan and requires investments in its modernization.** Uzbekistan’s outdated transmission and distribution system results in 18 percent transmission losses and 14 percent distribution losses. This mismatch between power supply and demand, particularly during winter months, leads to power outages lasting two to six hours a day, affecting economic activity and social services. The thermal power plants built in the 1960s and 1970s are inefficient due to steam turbine technology, with an average weight efficiency of

only 33 percent. Figure 31 supports this by highlighting Uzbekistan’s low energy architecture performance index relative to other Central Asian countries. The deficiencies require modernization and development programs for efficient generation capacity and improved transmission and distribution systems. In 2015, the Presidential Decree adopted the “Program of Measures to Ensure Structural Reform, Modernization and Diversification of Production for the Period 2015–2019,” focusing on modernizing existing plants and creating more diversified ones like Integrated Solar Combined Cycle Power Plants (ISCCs).

FIGURE 31: >>

**The Energy Architecture Performance Index 2017, sustainability**



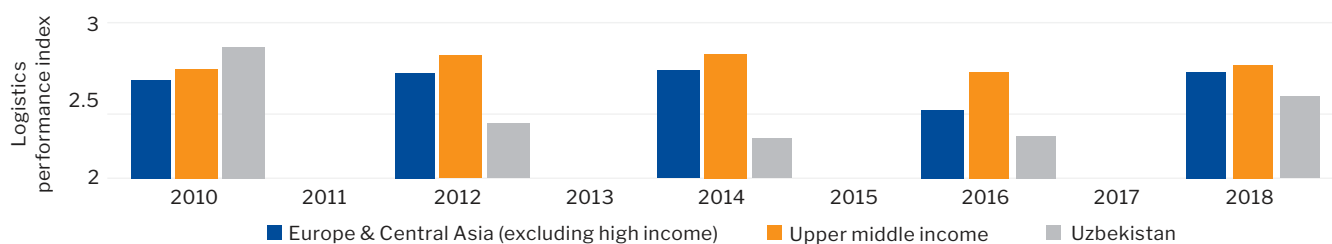
Source: [Global Energy Architecture Performance Index Report 2017](#).

**Modernization and more investments are required to improve Uzbekistan’s logistics performance, and innovations are critical to ensure resilience to disasters and climate change.** Government policies have emphasized the importance of building a transportation network to meet economic and transportation needs across all regions. Communications and structural reforms in passenger, cargo, and air transport have been ensured, promoting effective integration into global transport spaces. Figure 32 shows that Uzbekistan still lags behind upper middle-income countries and does not fully harness the opportunities presented to the country due to its strategic position connecting Asia and Europe. However, the country needs to address serious problems affecting its transportation systems, such

as improving transport policies, increasing passenger and freight traffic quality and quantity, reducing costs, increasing traffic through Uzbekistan, and improving transport and logistics services. Institutional changes are needed to create competitive markets and make transport safer, greener, and more innovative. Uzbekistan can enhance its logistics performance by improve marketing, integrate government and private agencies, simplify transit processes, increase coordination, improve customs administration efficiency through training and full digitalization, attract investors, reconstruct infrastructure, and reduce transportation and monopoly power. These actions can lead to faster delivery times, reduced costs, and increased global competitiveness.

FIGURE 32: >>

The Logistics Performance Index 2017



Source: World Bank, LPI 2023.

**Uzbekistan’s logistics performance<sup>58</sup> in 2023 improved on its bureaucracy, border inefficiencies, and limited logistics infrastructure, yet is still lower than that of upper-middle-income countries.** This illustrates that there is room for improvement in the country’s

logistics performance index. Exporters cited persistent bureaucratic tariffs and border delays as significant obstacles, making Uzbekistan’s logistical performance inferior to its competitors.

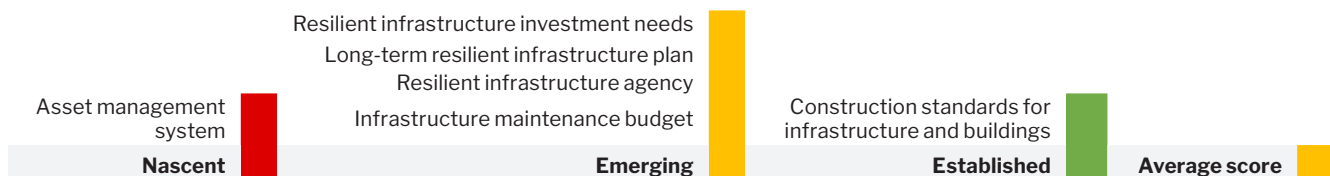
**2.3.2 Priority Action 3.2: Design and implement a government-wide strategy to increase the resilience of infrastructure systems and public assets**

**Strengthening public asset management and maintenance is crucial for a smooth transition to resilient infrastructure.** Administrative budgets and effective enforcement mechanisms are needed to prevent deferred maintenance, premature decline, and costly interventions.

Uzbekistan will adopt a proactive approach to infrastructure maintenance, maintaining an inventory of critical infrastructure, vulnerabilities, and evidence-based plans. An asset management system must be developed to ensure a comprehensive approach to infrastructure resilience.

FIGURE 33: >>

**Priority Action 3.2: Design and implement a government-wide strategy to increase the resilience of infrastructure systems and public assets**



Sources: Original to this publication based on data from the World Bank, UNDP, WDI, Uzbekistan TNC, WHO, and expert interviews.

**Although efforts have been made to improve infrastructure and make it more resilient, more still must be done.** Uzbekistan faces significant infrastructure challenges to maintain network performance, with a deferred maintenance backlog of \$1 billion annually. To meet the anticipated freight traffic through Uzbekistan, the road infrastructure capacity needs to increase 486 percent by 2030 and 1,365 percent by 2050. Road transport is expected to increase by 50 percent by 2050, while rail traffic is expected to increase by 2030 but decline by 2050. The energy sector faces inefficiencies, costing the economy about \$1.5 billion annually. Poorly performing infrastructure puts a heavy strain on the economy. Between 2000 and 2018, energy projects accounted for more than 64 percent of Uzbekistan’s total investment, with manufacturing and transport accounting for 23 percent and 13 percent, respectively. Water and sanitation

account for 4 percent of planned and under-construction capital projects, while the upstream oil and gas industry accounts for almost half (45 percent). Oil and gas pipelines account for 9 percent of the investment, while power transmission and distribution projects account for 6 percent. The industrial sector is dominated by manufacturing, accounting for more than 98 percent of projects, and mining and quarrying for just 1 percent.

**2.3.3 Priority Action 2.3: Revise land use plans and urban plans to make them risk-informed**

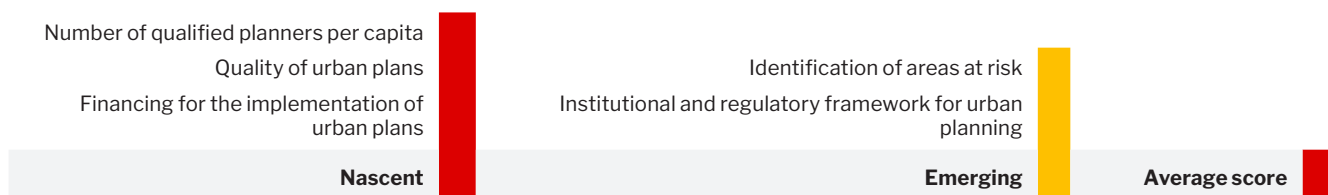
**Overall, the use of land use planning and urban planning still have significant gaps, and the number of qualified planners, quality of urban plans, and available financing for implementation of urban plans remain a major issues.** Figure 34 shows the ratings for this priority action; overall, Uzbekistan is nascent on this priority action.

<sup>58</sup> <https://lpi.worldbank.org/international/scorecard/column/C/UZB/2023/I+UMC+2023>



FIGURE 34: >>

**Summary Priority Action 2.3: Revise land use plans and urban plans to make them risk-informed**



Sources: Original to this publication based on data from the World Bank, UNDP, WDI, Uzbekistan TNC, WHO, and expert interviews.

**Coordinated strategic planning and investment, particularly in secondary cities, are required for sustainable urban planning in Uzbekistan.** The government’s goal of achieving a 60 percent urbanization rate in Uzbekistan by 2030 is unlikely to be reached if current trends are not maintained. The plan aims to promote an integrated system of regional clusters and city networks, strengthen economic diversification, and increase competitiveness among Tashkent and secondary cities. It also focuses on tackling urban sprawl by fostering compact development and on promoting a green buffer and environmentally sensitive areas. Smart growth is encouraged through urban rezoning, compact development, and an enforced Urban Growth Boundary. Inclusive zoning is mandatory, and the plan supports public transportation systems. The plan also focuses on building a network of green and blue infrastructure, adopting a “City Garden Approach” to regenerate urban areas and enrich ecosystem services, well-being, and human health. The plan also includes establishing a network of green spaces based on city area and population size, providing policies for new flat surfaces on government buildings and private dwellings, and using windbreak buffer areas to improve building microclimate. Strategic coordination between national and subnational governments in implementing these approaches is required.

**Urban plans are outdated and do not adequately integrate disaster risk management guidelines for resilient infrastructures.** Insufficient building codes in Uzbekistan hinder urban density growth. The ShNK<sup>59</sup> and SanPiN<sup>60</sup> regulations contain outdated standards for residential and commercial areas, limiting compaction. These documents include minimum Floor Area Ratio (FAR) requirements for residential buildings, reserving land for playgrounds, minimum building separation distances for sunlight exposure, free ventilation, privacy screens, emergency vehicle accessibility, and increasing spacing between high-rise buildings in seismic zones. These regulations and guidelines were based on outdated construction and ventilation techniques, making it difficult for modern urban centers, including those in seismic zones like Japan,

to match current density levels with these building codes.

**Current urban plans still reflect the urbanization spirit of the former Soviet Union.** Urbanization plans need to be revised to meet current challenges and development objectives. The Soviet Union’s high-rise housing plans were based on the actions of the state, and policymakers failed to recognize the benefits of urban densification, particularly in urban centers. Despite the drive to update general plans initiated by Decree of the Cabinet of Ministers No 3, dated January 5, 2016, and Decree of the President of the Republic of Uzbekistan No. VII-2595, dated April 26, 2000, there are still cities, like Mulgan in the Kashkadarya region, with general plans dating back to the 1980s. Planners defined the number of new high-rise developments, leading to high-rise residential areas emerging in green areas on the outskirts of cities. This can be seen as land misallocation without price signals or incentives. Although some are being replaced, general plans are still dominant in new city planning documents, which further limits compression options.

**Although progress has been made in Uzbekistan’s urban planning, systemic reforms are required to ensure sustainable urban development financing.** Urban infrastructure development is a significant issue due to an inefficient national financing system, cost recovery, and management. Government agencies set utility rates below the break-even point, leading to insufficient revenues and collection inefficiencies. This system results in systematic deficits and under-spending on maintenance and modernization, causing further losses to utilities through leaks and outages. Investment in urban infrastructure is urgent. Sustainable solutions to these problems require more systematic reform of care management and cost recovery.

**Centralized planning and poor institutional coordination with regulatory gaps make implementation of urban plans challenging.** The complex and resource-intensive formulation process hinders local governments from expanding their planning capacity, resulting in weak or inadequate urban spatial planning at the local

<sup>59</sup> In Uzbekistan, ShNK stands for Urban Development Regulations. KMK stands for Building Regulations Available at: <https://mc.uz/gradostroitelnye-normy/> (in Russian and Uzbek).

<sup>60</sup> SanPiN is a set of sanitary rules and norms in Uzbekistan.

level. Lack of participatory involvement in urban planning often disconnects it from the needs of the public and private sectors, resulting in decoupled urban planning and regulation. These disconnects leave room for unplanned growth and conflicts with rapidly changing economic needs, making unplanned rural development inevitable. Factors such as lack of transparency in land allocation and numerous illegal decisions at the local level further exacerbate this issue. Data collection and analysis are also crucial for evidence-based urban planning decisions. Additionally, capacity building can be provided to local government officials to improve their planning and implementation skills, such as participatory planning, project management, and financial planning.

**Linkages between land use planning and water management in the policy framework must be clearly defined.** For efficient use and management of ground and surface water, focusing on cost recovery and

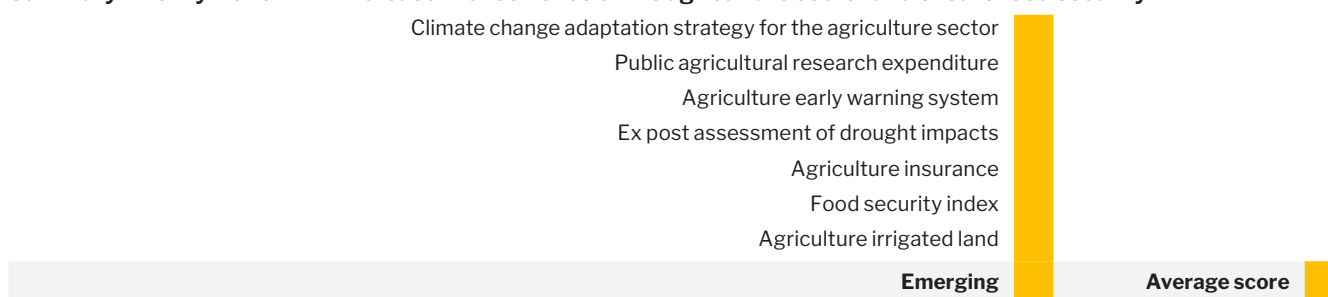
economic instruments coupled with adequate land use planning with water management principles is necessary. This can further be promoted by accelerating work on developing river basin management plans (RBMPs). This will equally require the adoption of the principles of integrated water resources management (IWRM) and greater stakeholder involvement for better coordination of activities and data harmonization.

### 2.3.4 Priority Action 2.4: Increase the resilience of the agriculture sector and ensure food security

**All the indicators for this priority action (Figure 35) show that Uzbekistan has started different initiatives to enhance the adaptation and resilience of the agricultural sector and ensure food security.** However, significant gaps still remain before the country can meet the standard of its benchmark countries. Some of these gaps are discussed below.

FIGURE 35: >>

#### Summary Priority Action 2.4: Increase the resilience of the agriculture sector and ensure food security



Sources: Original to this publication based on data from World Bank, UNDP, WDI, Uzbekistan TNC, WHO, UNICEF, and expert interviews.

**Although tremendous efforts have been made to increase the agriculture sector’s resilience and ensure food security, institutional coordination and definition of mandates are required to ensure that current commitments remain adequate.** The country has medium-term strategies in place for the water, energy, agriculture, environment, and economy sectors until 2030. Adaptation and decarbonization indicators are highlighted in the sectoral plans to transition to a green economy, water and agricultural development, and introduce renewable energy technologies until 2030. However, the resilience of this sector and its ability to ensure food security is threatened by a lack of clearly defined institutional mandates, functional capabilities, and coordination mechanisms between climate change actors and stakeholders. Poor monitoring and evaluation of the effectiveness of adopted legislation, strategies, plans, and policies do not permit adequate tracking of progress toward enhancing the resilience of the agricultural sector and food security.

**The recent law on organic agriculture and good agricultural practices significantly boost Uzbekistan’s**

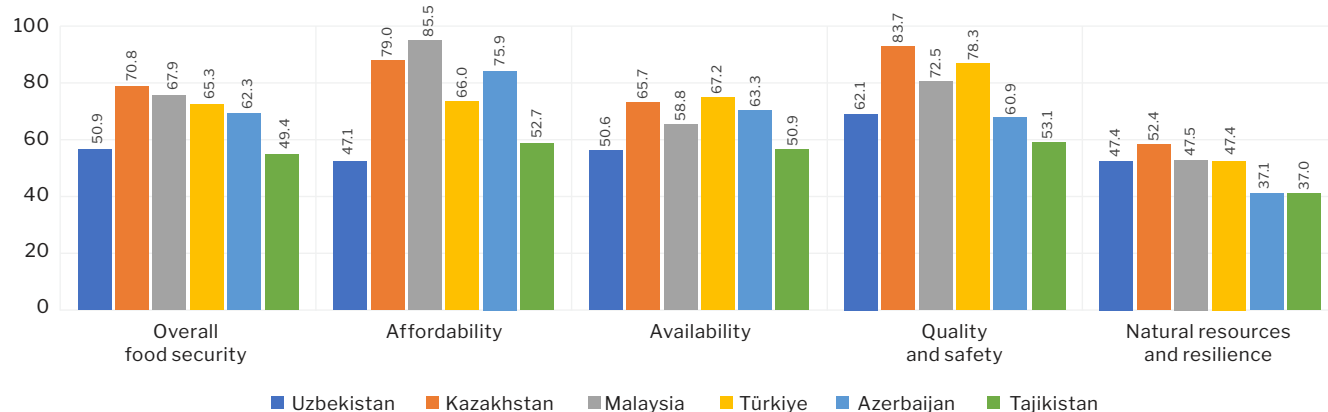
**adaptation and resilience; systematically providing agricultural extension services is critical to filling current capacity gaps.** The law on organic agriculture and good agricultural practices, coupled with Presidential Decree No. 6159, dated February 3, 2021, “On further improvement of the knowledge and innovation system,” as well as the provision of modern agricultural services, offer key directions for modernization of the agricultural sector. Considering the large number of farmers who depend on agriculture and need these skills, expanding agricultural extension services, facilitation of knowledge generation institutions and cooperation are required to meet the adaptation needs. Also, regulations on genetically modified organisms should be defined by the law.

**Food security in Uzbekistan can be improved through policies aimed at enhancing food productivity and availability.** Uzbekistan has demonstrated a commitment overall to tackling issues related to food security through political reforms, agricultural changes, and social safety net activities. To maintain sustainable and long-term food security in the nation, additional efforts are needed to boost agricultural output, provide

access to a variety of nutrient-dense foods, and build the system's resilience. The key to continuing growth in this area will be sustaining investment in agricultural, rural development, and social welfare initiatives. Figure

36 indicates that Uzbekistan is still behind its peers with regard to the overall food security index and its sub-indicators. Therefore, additional efforts are required to enhance food affordability, availability, quality, and safety.

**FIGURE 36: >>**  
**Uzbekistan's food security index relative to selected countries**



Source: WDI 2022.

**Important reforms are underway in the agricultural sector, but they need to be accelerated with a focus on attracting private-sector investments.** Uzbekistan's agricultural sector has undergone significant reforms since 2017, focusing on improving administrative systems, strengthening legal frameworks, and fostering cooperation between companies. These reforms aim to improve the use and sustainable management of land, water, and agricultural resources, introduce resource-saving technologies, and introduce market relations to attract investment. The most recent institutional changes aim to strengthen agricultural producers' production capacity, support reform and transformation, and promote market relations for increased investment. A recent assessment concluded that the changes are useful but incomplete<sup>61</sup>. For example, price restrictions are crucial to strengthening markets reducing the need for subsidies, and the private sector improved almost immediately. But fiscal consolidation will take even longer. Efforts to support corporate privatization, restructuring, and investment frameworks that create opportunities for new private enterprises are further delayed. Continued liberalizing efforts could create further avenues for farmer-led coordination and rural prosperity.

**Irrigation infrastructure is extensive, but overall water efficiency and farm-wide water efficiency can be improved.** Uzbekistan's irrigation network is extensive, but has outdated infrastructure, and public investment in modernization is limited. Overall system efficiency and on-farm water use are difficult

to estimate, but most reports indicate that they are well below optimal. The pump infrastructure is relatively old and less energy-efficient than newer versions. Farmers believe there is no direct cost to water supply; instead, general property taxes cover water costs and are not tied to input use, and water user associations are well established. Thus, there is little incentive to use water-saving technology.

**Crop insurance coverage is low, and complex procedures constrain extensive coverage of agricultural insurance.** Uzbekistan has 32 organizations in the insurance market, including three brokers, one professional insurance agency, and 28 insurance companies. The State Joint Stock Insurance Company was established in 1997 to create favorable conditions for agricultural producers and support the effective development of insurance services in rural areas. Uzagrosurta, Agroinvest, and Haluk Sugurta are the only three insurance companies offering drought insurance in Uzbekistan. Insurance companies now play an increasingly important role in insuring their customers against natural disasters. In 2019, Uzagrosurta collected about \$27.8 million in agricultural insurance premiums and paid around \$10.7 million to cover policyholder losses due to damage from natural catastrophes. However, only 30 percent of crops are covered by insurance against hazards such as drought, high winds, and hail. Existing crop insurance policies are coverage-based and require a lengthy validation process before payments can begin. Farmers must follow the Ministry of Agriculture's

<sup>61</sup> Zorya, S., S. Babaev, A. Guitchounts, M. Ruiz, L. Mayra, P. Vats. Policy Dialogue on Agriculture Modernization in Uzbekistan: Cotton Pricing After 2020 Cotton Sector Reform. (English). Washington, D.C.: World Bank Group.

strict agronomic and agrotechnical recommendations, which can lead to arbitrary interpretations and a lack of transparency. Financing agricultural production is considered high-risk, so most banks mandate crop insurance to protect against natural disasters. Guaranteed insurance is the most important condition for a farmer to obtain a loan, promoting financial stability and increasing investment. Agricultural projects are attracted by systematically monitoring crop conditions, stopping financing when there is a threat of crop failure, and ensuring the efficiency of funds spent on agricultural production.

**Innovative insurance approaches coupled with collaboration between insurance companies and Uzhydromet are required to reduce existing insurance risks.** Several recommendations can be made to support agricultural insurance development in the country, including smart insurance services, civil liability insurance, a state mechanism supporting insurance premiums, and digital insurance approaches. Index-based insurance could offer new opportunities by reducing transaction costs and making payment activation processes transparent. However, close cooperation between Uzhydromet, research institutes, and insurance companies is needed for a well-functioning system. Additionally, opening the insurance market to new entrants and increasing the privatization of public insurers can stimulate consumer-oriented and need-based agricultural insurance approaches. Crop insurance systems can be developed based on Earth observation data and agro-meteorological information, supported by integrating this model into national special agricultural products.

**Enhancing the agricultural early warning system (EWS) will require more collaboration between agriculture**

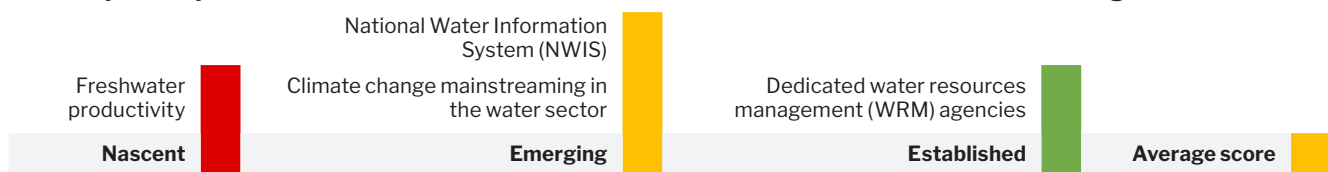
**research and Uzhydromet and further investments in the automation of stations.** The National Disaster Risk Reduction Monitoring Center, operated by MoES and Uzhydromet, aims to provide early warning and recommend measures to reduce disaster impact. Key early warning information comes from Uzhydromet for weather-related hazards, State Quarantine Inspectors for diseases and pests, and the Ministry of Agriculture for crop forecasts. However, no comprehensive EWS currently guides water allocation, crop and pasture planning, and management. Tailor-made forecasting products are unavailable, and most observation stations are operated manually. Other problems include inadequate linkages between research, education, farmers, and stakeholders; weak infrastructure development; and insufficient early warning experts to respond to outbreaks. To strengthen the existing EWS, it is recommended to undertake regular disaster risk assessments of plant and animal diseases, pest outbreaks, frost, and earthquakes; raise community awareness; and organize capacity-development activities in EWS, particularly in price/market information systems.

**2.3.5 Priority Action 2.5: Increase the resilience of water infrastructure and water resources management**

**The government of Uzbekistan did well in establishing dedicated water resources management agencies and has made progress in setting up the national water information system and mainstreaming climate change in the water sector; however, gaps still remain.** The country’s freshwater and overall water productivity (Figure 37) remain low. The ratings of the four indicators for this priority action are summarized below.

FIGURE 37: >>

**Summary Priority Action 2.5: Increase resilience of water infrastructure and water resources management**



Sources: Original to this publication based on data from the World Bank, UNDP, WDI, Uzbekistan TNC, WHO, and expert interviews.

**Uzbekistan is very water-stressed, coupled with high annual freshwater withdrawal rates, low productivity, and below-peer group access to safely managed drinking water resources.** Uzbekistan is more than six times more water stressed than the average of ECA countries and more than four times water stressed than UMIC (Table 5). Uzbekistan also suffers from significantly higher freshwater withdrawal rates, 60 times higher than ECA and upper-middle-income

countries (UMIC). This high withdrawal rate is also due to freshwater productivity being significantly lower than in peer countries. UMIC and ECA countries have freshwater productivity that is more than 13 and 44 times higher than Uzbekistan, respectively. With these water challenges, only 58.8 percent of the population can access safely managed drinking water services compared to more than 75 percent of peer groups.

TABLE 5: >>

**Uzbekistan’s water situation**

Indicator	UMIC	ECA (excluding high-income)	Uzbekistan
Water stress	37.69	25.08	168.92
Annual freshwater withdrawals, total (% of internal resources)	5.91	5.88	360.46
Access to safely managed drinking water services (% of the population)	75.64	77.89	58.83
Freshwater productivity (% GDP)	55.94	17.50	1.26

Source: WDI 2021.

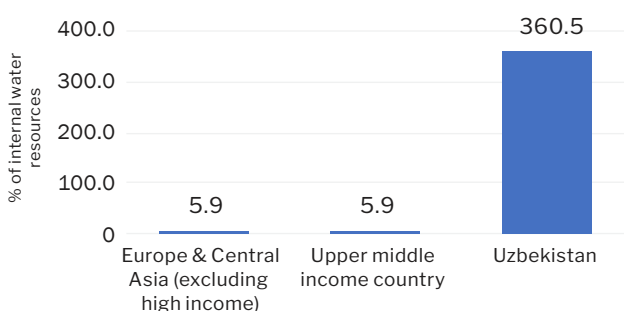
**Uzbekistan is highly water-stressed, and its water-use efficiency is relatively low compared to peer countries.**

Annual freshwater withdrawals (percent of internal resources) in Uzbekistan are 60 times higher than that of ECA countries, while water use efficiency in Uzbekistan is seven times higher than in ECA countries. The country’s high annual freshwater withdrawals are due to its relatively high water stress and high water demand (Figure

38). However, information showing relatively low water use efficiency shows the country could be doing more to maximize the use of its limited water resources (Figure 39). The global average water productivity is over \$15 per m<sup>3</sup>, with Uzbekistan having the lowest price<sup>62</sup> of \$0.6 per m<sup>3</sup>. Inefficient and unproductive water use is becoming a key constraint to economic growth, and Uzbekistan is among the 20 lowest countries in terms of water productivity.

FIGURE 38: >>

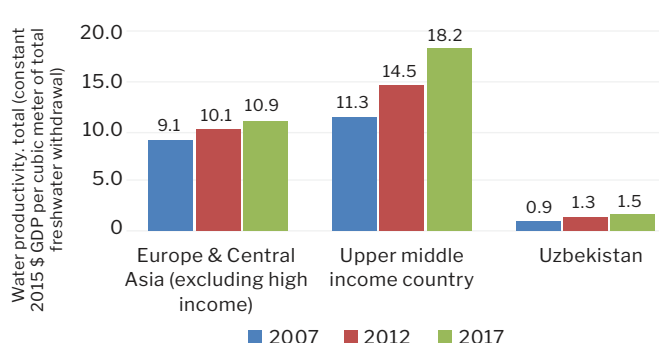
**Annual freshwater withdrawals**



Source: WDI 2022.

FIGURE 39: >>

**Water productivity**



**Current reforms and actions aimed at reducing water loss are in place; however, proper coordination between different actors and stakeholders with a centralized monitoring and evaluation system is critical for meeting objectives outlined in the sector strategy.**

Under the water-saving technology use scenario, appropriate irrigation water pricing and penalties for over-irrigating above a crop’s water requirement could be established, as well as a provision of subsidies for the purchase of water-saving technologies.

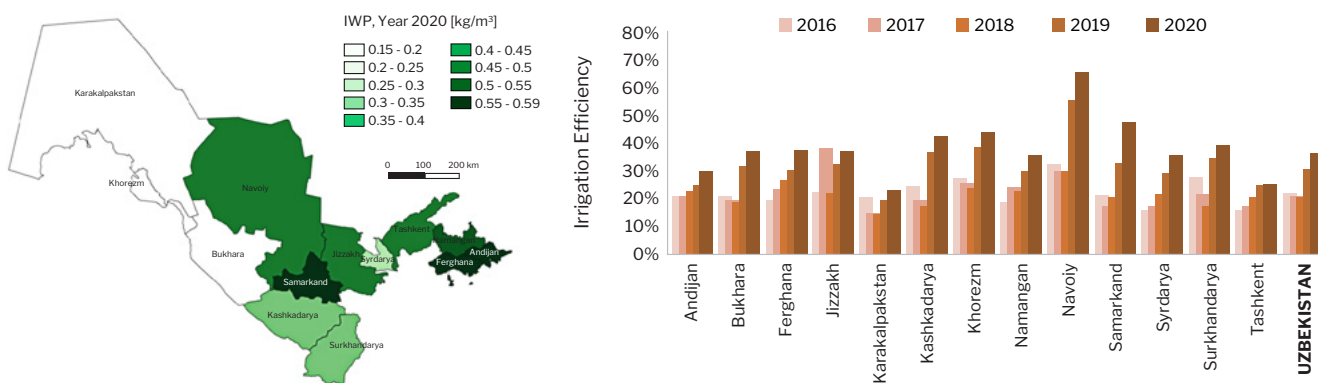
**Agriculture’s high reliance on irrigation is a risk to the economy due to drought and water shortages, and so necessitates more efficient water use for irrigation**

**and drainage.** Without adequate measures to improve water-use efficiency, crop yields are projected to decline by 10 percent by 2050. Modernization of irrigation infrastructure and water management practices can increase crop yields by 62 percent. Current irrigation efficiency is around 40 percent (See Figure 40), with only 2.6 million hectares irrigated in 2019. Factors preventing irrigation and drainage infrastructure use include infrastructure damage, lack of power, soil salinity, and underutilization due to competing uses. Uzbekistan’s investment in irrigation and drainage is lower than that of neighboring countries, with Kazakhstan’s average capital expenditure being four times higher between 2015 and 2019.

<sup>62</sup> World Bank 2022c: Towards a Prosperous and Inclusive Future: Uzbekistan, the Second Systematic Country Diagnostic <https://documents1.worldbank.org/curated/en/933471650320792872/pdf/Toward-a-Prosperous-and-Inclusive-Future-The-Second-Systematic-Country-Diagnostic-for-Uzbekistan.pdf>.

**FIGURE 40: >>**

**Irrigation water productivity by oblast, 2020**



Source: World Bank analysis of irrigation performance based on remote sensing.

**The Water Sector Development Concept of Uzbekistan for 2020–2030 underscores the use of ICT and smart water; however, institutional collaboration is required to coordinate actions to enhance water use efficiency between different ministries.** The reorganization of ministries<sup>63</sup> in January 2023 gives the Ministry of Water Management the duty to ensure water-use efficiency and implement the water sector development concept for 2020–2030.<sup>64</sup> This strategy emphasizes a water information system characterized by the use of ICT and smart-water technologies. Close institutional collaboration between Uzhydromet, the Ministry of Natural Resources, and other sectors is required to ensure sustainable management of water resources. However, institutional frameworks for these collaborations are not well defined and are necessary for Uzbekistan to implement the Water Sector Development Concept of Uzbekistan effectively for 2020–2030.

**Water management practices monitoring systems coupled with improved dams and reservoirs are required to enhance water use efficiency and productivity.** Improving water management methods and monitoring systems is crucial for addressing water scarcity hazards. This includes tracking crop water footprints, implementing water-efficient technologies like drip irrigation, and implementing digitization and water accounting systems to monitor water consumption and provide dynamic feedback for irrigation and drainage system adaptation. Dams and reservoir storage are crucial for drought and flood resistance in Uzbekistan, with 55 reservoirs containing 20.0 billion m<sup>3</sup>. Investment in sedimentation and dam safety is needed to ensure electricity production and agricultural water supply. The Aral Sea basin offers significant potential for water storage and hydroelectric infrastructure, benefiting all countries through increased energy output and better control of

seasonal water availability. However, transboundary allocation concerns and a lack of regional collaboration hinder infrastructure development and operations coordination. Since 2017, the government has focused on improving healthcare personnel’s competencies and working conditions. In 2020, a financial incentive plan was implemented to promote English proficiency among medical graduates, addressing the shortage of indigenous materials and increasing access to medical literature. A new program was also launched to attract and retain foreign-trained academics at medical schools.

**Poor and unequal access to and the quality of water supply and sanitation (WSS) services remain a significant challenge in Uzbekistan and require significant investment and capacity building in managing water resources.** WSS infrastructure, built during the Soviet era, is in poor condition and requires extensive rehabilitation. Sewage infrastructure, built in the 1970s and 1980s, is deteriorating and in poor condition, causing pollution of surface water resources. In 2016, a centralized sewerage system served 3.7 million people (12 percent), with only 5 percent of the population connected. Rural sanitation is poorly documented and relies on self-built, on-site systems. These infrastructure issues and institutional capacity constraints have led to stagnation in water service quality, particularly in rural areas and district towns. Large-scale investments in modern water and sanitation equipment are crucial for building resilience and extending outreach to rural areas.

**Water supply, sanitation, and access to safely managed water are considerably lower (70.73 percent)<sup>65</sup> in rural parts of the country.** Outdated and oversized pumps lead to high operational costs, and power outages are often cited as causes of intermittent services. Intermittent

<sup>63</sup> <https://kun.uz/en/news/2023/01/26/list-of-ministries-and-state-agencies-updated>.

<sup>64</sup> <https://aral.uz/en/blog/2020/07/23/decree-of-the-president-no-up-6024-on-approval-the-water-sector-development-concept-of-uzbekistan-for-2020-2030/>.

<sup>65</sup> WDI. 2022.

supply, in turn, leads to more common breakages and results in leaks. Water quality varies widely within the country; in Tashkent and other large cities, water quality is generally compliant with national standards. However, in several district towns, water quality has become an issue, with up to 30 percent of water quality samples not compliant, with the highest failure rates observed in Karakalpakstan. Coverage rates for piped water systems are much lower in rural villages, where existing systems reach around 52 percent of the population.<sup>66</sup> In rural areas and district towns, higher-than-average population growth rates exacerbate water supply access issues. Furthermore, continuity of service is a common and serious issue across the country, with many systems

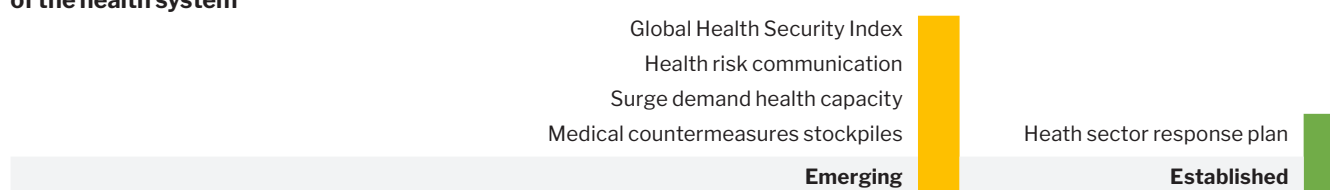
only able to supply water for less than 12 hours per day.

### 2.3.6 Priority Action 2.6: Design and implement a government-wide strategy to increase the resilience of the health system

**Since 2017, the government has made efforts to improve healthcare workers' capabilities and work conditions and, in 2020, implemented a financial incentive system to increase English proficiency among medical graduates.** This could improve Uzbekistan physicians' access to medical literature and address the scarcity of local medical materials. Additionally, the government has launched a new program to attract and retain foreign-trained professors at medical education institutes.

FIGURE 41: >>

#### Priority Action 2.6: Summary design and implement a government-wide strategy to increase the resilience of the health system



Source: Original to this publication based on data from World Bank, UNDP, WDI, Uzbekistan TNC, WHO, and expert interviews.

**Although efforts have been made to enhance the health resilience of households, high out-of-pocket (OOP) payments still put households in a very vulnerable position.** Uzbekistan has made significant improvements in health outcomes over the past 20 years, but still faces high burdens from non-communicable diseases and nutrition deficiencies. Health expenditure remained stable at around 5.2–5.6 percent of GDP in 2000–19, higher than the average for lower-middle-income countries and on par with ECA countries.<sup>67</sup> However, public health expenditure was just 2.3 percent of GDP in 2019, outperforming lower-middle-income countries but lower than in ECA and upper-middle-income countries. The main challenges for Uzbekistan's health sector include improving financial protection, efficiency of service delivery, and quality of services. The country has made little progress toward modernizing its health financing system, with no relevant and efficient financial protection system, line-item budgets, and 58 percent of total health spending being out-of-pocket by households. Policy options include modernizing financing systems, updating service delivery models, and strengthening the regulatory environment and management.

**The lack of private sector data in the health sector prevents data-driven decision-making to enhance the resilience of the health sector.** The government

lacks clear data on the private sector's performance, service quality, and volume of services. This is because the private sector is not part of the government's health information reporting system, so it does not report to it. The government-private-sector health information system is expected to report to the private sector, but there is no clear understanding of the private sector's role in the system. National regulations lack clear guidelines for private facilities to report on, including categories, reporting methods, and penalties. To ensure excellent care, comprehensive rules and regulations on the private sector's role in healthcare should be tightened.

**Clear rules by the health sector for influencing the access, quality, and efficiency of health services are lacking.** Ex-ante regulation is limited, with ex-post intervention as punishment. This stifles market development and denies the Ministry of Health (MoH) a mechanism to influence daily activities. The primary means for MoH influence is facility licensing. The licensing process is managed by a small MoH team at the national and regional levels, with 13 staff members. Licenses are granted based on simplified procedures, making them easily manipulated. Additionally, an ongoing moratorium on monitoring and inspections results in no effective government monitoring.

<sup>66</sup> <https://documents1.worldbank.org/curated/en/80211584324088462/pdf/Uzbekistan-Water-Services-and-Institutional-Support-Project.pdf>.

<sup>67</sup> World Bank. 2022. "Uzbekistan Public Expenditure Review. Better Value for Money in Human Capital and Water Infrastructure."

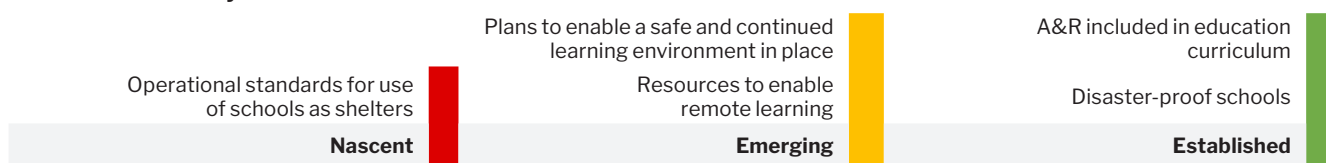
### 2.3.7 Priority Action 2.7: Design and implement a government-wide strategy to increase the resilience of the educational system

**Uzbekistan has made significant efforts to disaster-proof schools.** Since 2004, Uzbekistan’s National Education Development Program has focused on renovating and reconstructing structurally deficient primary and secondary school buildings for seismic safety. In 2011, the government established a new fund to maintain and develop these facilities. To ensure efficient maintenance, effective planning and execution processes are necessary for retrofits and repairs. Uzbekistan’s commitment to child safety and disaster

risk reduction is evident in its large-scale retrofitting and rebuilding projects, serving as a model for future school maintenance. The program’s success was largely due to collaboration among government agencies, schools, and local governments. Construction monitoring mechanisms ensured seismically safe designs, and the national government quickly completed the National Program for Education Development mandate. The government saw school seismic safety as an urgent project on the national policy agenda. Uzbekistan ensured steady funding for ongoing school maintenance, protecting gains made during its rehabilitation and reconstruction program. This ensures education and development for future generations.

FIGURE 42: >>

**Summary Priority Action 2.7: Design and implement a government wide strategy to increase the resilience of the educational system**



Source: Original to this publication based on data from World Bank, UNDP, WDI, Uzbekistan TNC, WHO, and expert interviews.

**“Concept on Environmental Protection until 2030” emphasizes continuous improvement of environmental education by incorporating sustainable development subjects across all education levels.** Environmental education is integrated into elementary school curricula for children in grades 5–11, covering conservation, respect for the environment, and climate change concerns. Topics covered include Botany, Zoology, Biology, Geography, Chemistry, Physics, and “Man and Human Health.” Students in the 11th grade take 20 hours of ecology instruction. Environmental concerns are addressed in history, literature, Russian, and foreign language classes. Climate change and human impact are also examined through extracurricular activities, excursions, and treks in the natural environment.

**Rural higher education institutions face challenges due to the digital gap, which has increased due to inadequate equipment, accessibility, and internet access.** This has led to a loss of learning materials and opportunities for students. Institutional autonomy is crucial for the gradual growth of digitization, enabling institutions to adapt quickly to rapidly changing conditions. National institutions must provide quality control in remote and online study procedures and adapt to rapidly changing conditions. To improve online learning quality, factors like institutional policies, digitization strategies, monitoring tools, course design, curriculum development, digital evaluation techniques, and data protection must be considered. These factors help ensure

the national concept for digital higher education and improve the overall online learning experience.

**Education for Sustainable Development (ESD) is not fully nationalized in the educational system.** Uzbekistan’s ESD was authorized in May 2019 to promote an environmental culture and ensure ongoing education. However, ESD is not fully implemented or incorporated into the educational system. Despite being endorsed in 2011, ESD is mostly implemented as project-based activities by NGOs and institutions. The complete nationalization of ESD has not yet been achieved, but it is crucial for achieving the 2030 Agenda for Sustainable Development’s goals and targets.

### 2.3.8 Priority Action 2.8: Ensure the resilience of forests and other natural ecosystems

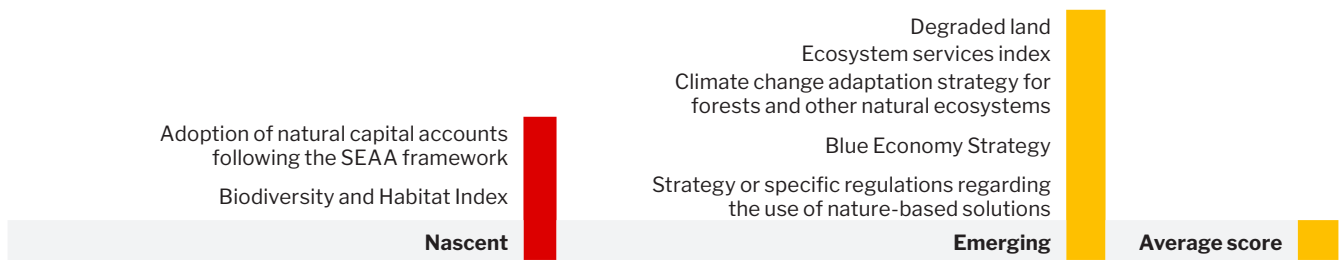
**Overall, Uzbekistan still lags behind in its adoption of natural capital accounts following the System of Environmental-Economic Accounting (SEEA) framework<sup>68</sup> and the biodiversity and habitat index.** Significant work is required to enhance the country’s resilience with respect to these two aspects. Actions are underway to reduce land degradation, improve ecosystem services, and implement climate change adaptation strategies for forests and other ecosystems and strategies for nature-based solutions. However, this progress still lags behind in some respects, which will be discussed below, the figure below shows that while a majority of indicators are emerging none is established.

<sup>68</sup> The System of Environmental-Economic Accounting (SEEA) is a framework that combines economic and environmental data. It provides a comprehensive view of the relationship between the economy and the environment.



FIGURE 43: >>

**Summary Priority Action 2.8: Ensure resilience of forests and other natural ecosystems**



Source: Original to this publication based on data from World Bank, UNDP, WDI, Uzbekistan TNC, WHO, and expert interviews.

**With ongoing policy reforms to integrate climate consideration in strategic development documents, adopting the strategic environmental assessment (SEA) tool to evaluate the environmental impacts of future sectoral strategic documents is essential.** Effective planning and management of land assets and services require a well-developed monitoring and accounting system. The SEA system was officially published in 2014 and is widely applied in developed countries to capture progress on the policy application. However, Uzbekistan is not yet using the strategic environmental assessment (SEA) tool to evaluate the environmental impacts of future sectoral strategic documents. Raising awareness of the SEA tool in the country and putting in place human and financial resources for applying this tool will significantly enhance policy coordination toward sustainable development objectives.

**Uzbekistan’s biodiversity is currently low, at 138/180.** Accelerating the development of biodiversity hotspots and data is, therefore, critical for building resilience. Figure 44 indicates that Uzbekistan lags behind UMIC in biodiversity and habitat index. In 2019, Uzbekistan adopted the National Biodiversity Strategy and Action Plan

(NBSAP) as a step forward in protecting biodiversity and implementing the country’s international commitments to biodiversity; however, only a few species of threatened fauna are covered, with no flora species included in conservation plans.<sup>69</sup> The 10-year change (Figure 45) shows that the country improved by 6.6 percent over the last 10 years, which is a positive step, but adequately adapting to climate change will require policy changes and coordinated efforts. Also, the lack of policies on wetlands coupled with data on biodiversity makes biodiversity conservation difficult. Monitoring biodiversity is conducted primarily in protected areas (PAs), especially legal ones. Since 2018, red-book species have been monitored outside of PAs; however, long-term research is complex because no current inventory has been done since 1987. Positive examples of ecological connectivity in local PAs exist, but Uzbekistan’s national PA system lacks the common meaning of ecological networks and ecological corridors, as these concepts are not included in the 2004 Law on Protected Natural Territories. Uzbekistan’s PA distribution varies significantly, with a lack of biological representativeness, excluding habitats for rare, endemic, and vulnerable species and not covering all major regions and ecosystems.

FIGURE 44: >>

**Biodiversity and habitat rank**

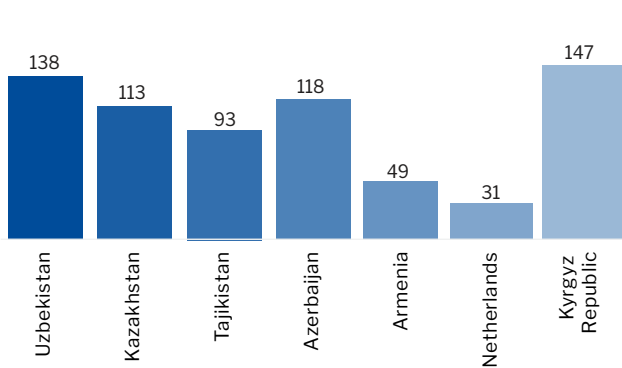
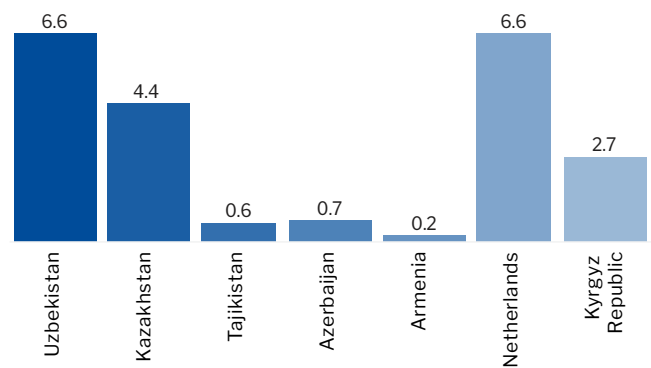


FIGURE 45: >>

**10-year change in biodiversity and habitat index**



Source: Yale Center for Environmental Law & Policy 2022.

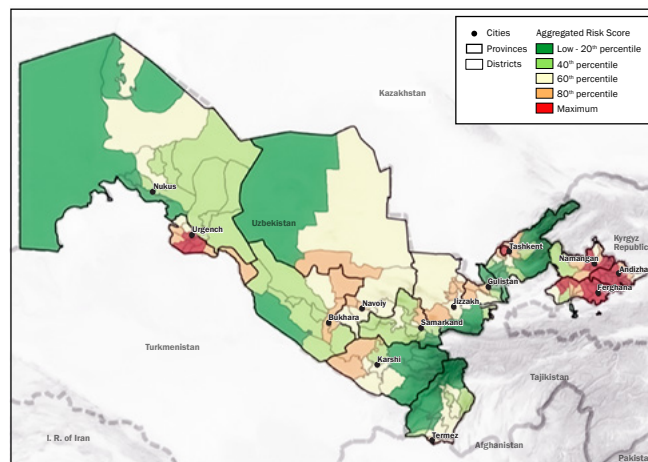
<sup>69</sup> [https://pdf.usaid.gov/pdf\\_docs/PNACN475.pdf](https://pdf.usaid.gov/pdf_docs/PNACN475.pdf).

**To effectively draft national policies, action plans for protecting ecosystems and species, management plans for PAs, and establishing hunting quotas, access to trustworthy, thorough, and current information on biodiversity is required.** As of 2019, Uzbekistan lacks an integrated biodiversity monitoring system, there hasn't been a forest inventory since 1987, and the national Red Book from 2009, which should list the top priorities for species conservation, is out-of-date and incompatible with the IUCN global assessment methodology and criteria. Furthermore, the integrated biodiversity monitoring system won't be able to fulfil its intended role as a policy support tool once it's in operation unless it's always given access to high-quality and consistently updated information collected from biodiversity monitoring. To fulfil its role as a policy support tool, the integrated biodiversity monitoring system must have regular access to high-quality, updated data from biodiversity monitoring, field inventory, and scientific research. Targets 15.1, 15.2, and 15.5 of the Sustainable Development Goals require trustworthy and current information on biodiversity.

**In Uzbekistan, the rates of land degradation and causes vary widely by biome and province.** Over the last 20 years, 33 percent of all agricultural landscapes have shown constant productivity decline. Ferghana Valley, Gulistan–Jizzakh corridor and north of Nukus, north Namangan, and around Tashkent are hotspots of degradation of agricultural landscapes. However, the most affected natural ecosystem in terms of the total area is the desert shrublands in the steppes north of Navoiy in Navoiy province, west of Aydar Lake in the center of the country. This arid ecosystem is losing an average of 17.5 kg of biomass per hectare yearly, totaling 350 kg of biomass per hectare in the last 20 years. Meanwhile, natural ecosystems with the greatest net loss (4.8 times higher than other biomes) of biomass are the Riparian Woodlands north of Nukus; in central Karakalpakstan, an average of 48 kg of biomass per hectare is lost every year, which has amounted to 960 kg of biomass per hectare lost over the past two decades.

**Different causes are likely responsible for the high levels of land degradation in these hotspots since they are in different and distant regions in the country.** In the intensive cropland hotspots (Ferghana Valley, Gulistan–Jizzakh corridor),<sup>70</sup> the causes could be a combination of water stress and soil degradation/salinity processes. In agricultural areas that surround densely inhabited areas, land use change due to urban sprawl might be the driving factor of a decrease in vegetation productivity and even replacing productive

**FIGURE 46: >>**  
**Composite map highlighting hotspots of risk from climate change, land degradation, natural hazards, and population pressures in Uzbekistan**



Source: World Bank. “Climate Adaptation in Uzbekistan: Landscape Restoration Opportunities” forthcoming.

land with other uses (Tashkent, Namangan, and around Ferghana), and in the western areas, a combination of water access limitations, desertification and dust storms might be responsible for the decline in vegetation productivity of croplands, and natural desert shrublands, and riparian/flooded vegetation.

**Strategic documents exist on the blue economy; however, coordination between different sectors is required.** Uzbekistan's water management aspirations require coordination between sectors and integrated water resource management (IWRM). Addressing long-term water availability, demand, land use, and economic growth policies is crucial. A cross-ministerial policy discussion with corporate, academia, civil society, and development partners can address policy coherence difficulties. Experts like the European Commission and OECD can facilitate similar platforms in Eastern Europe, the Caucasus, and Central Asia. National policy dialogues on IWRM often produce evidence-based policy packages for practical implementation. A national policy dialogue on IWRM in Uzbekistan could support the government's water sector objectives and strategic direction. This dialogue would provide an evidence foundation for policy choices and a platform for topic engagement. Coordinating data management is crucial for achieving this goal.

<sup>70</sup> Areas at high risk are likely to experience declining agricultural productivity, water availability issues, and heightened landslide risk that will impact more people.

## 2.4 Help firms and people manage residual risks and natural disasters

*“While effective risk mitigation can significantly reduce losses and damages, some natural shocks are too extreme and intense to be prevented. Governments must develop strategies to ensure that when disasters do occur, people and firms can cope without devastating long-term consequences and can recover quickly.”—The Adaptation Principles*

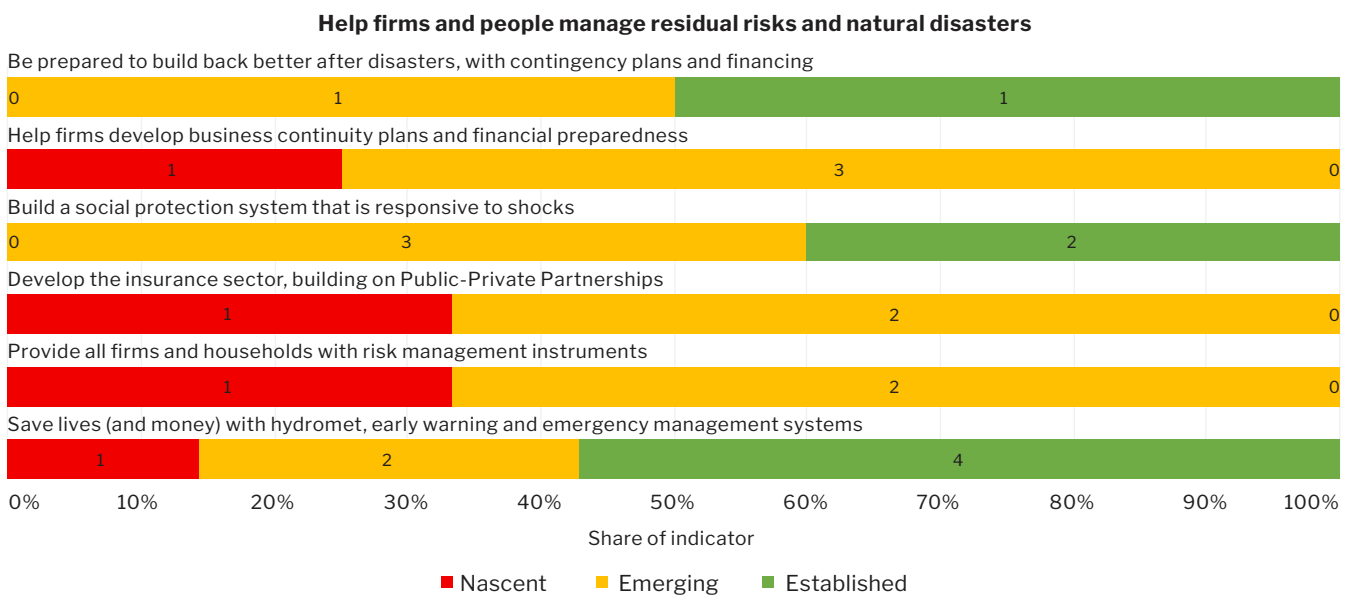
**This section examines the progress achieved in assisting individuals and organizations in managing lingering risks and natural catastrophes in Uzbekistan.**

Six of the 25 indicators in the evaluation relate to six prioritized activities. Despite the fact that the overall findings show some progress in implementing this

adaptation principle, more work has to be done to provide businesses and households with risk management tools. Businesses need support in developing business continuity plans and financial preparedness, the insurance sector needs to be further developed, and public-private partnerships need to be established.

**FIGURE 47:** >>

### Summary—help firms and people manage residual risks and natural disasters



Source: Original to this publication based on data from WDI, Uzbekistan TNC, UNICEF, WB Enterprise Survey, and expert interviews.

Notes: The number in each bar shows the number of indicators per category (established/emerging/nascent).

**Managing residual risks is an important component of the adaptation strategy that allows for providing resources to rebuild after natural disasters.**

This assessment reveals, as presented in Figure 47 that Uzbekistan needs to modernize early warning systems, increase data availability to the public, and scale up non-life insurance coverage of the vulnerable segment of the population. Promoting the registration of a larger segment of the population in the social registry will enhance the vulnerable population’s resilience to the impacts of climate change. The assessment also highlights low disaster risk management response to emergencies and decentralized information sharing. Also, the private sector’s capacity to develop and implement business continuity planning is low, and no institutional obligations exist. The number of qualified planners and

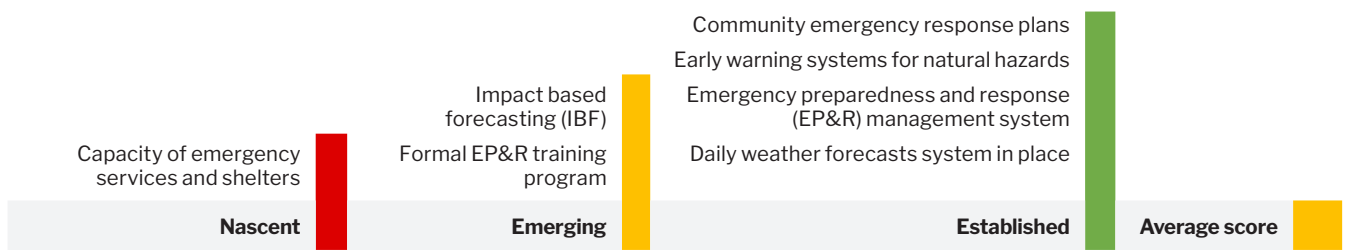
sustainable financing mechanisms for implementing urban plans is limited. Options to help firms and people manage residual risks and natural disasters have been summarized below.

#### 2.4.1 Priority Action 3.1: Save lives (and money) with hydromet, early warning, and emergency management systems

**Early warning and emergency management are critical in helping firms and people adapt to climate change, Uzhydromet has made tremendous progress in providing daily weather forecasts, early warning systems for natural hazards and community emergency response plans.** Gaps still exist in the capacity for emergency shelters (Figure 48), impact-based forecasting, and formal EP&R training programs.

FIGURE 48: >>

**Summary Priority Action 3.1: Save lives (and money) with hydromet, early warning, and emergency management systems**



Source: Original to this publication based on data from World Bank, UNDP, WDI, Uzbekistan TNC, WHO, UNICEF, WB Enterprise Survey, and expert interviews.

**The lack of site-specific forecasts and limited manpower undermines the effectiveness of the current impact-based forecasting system in helping firms and households adapt to climate change.** The Ministry of Emergency Situations (MES) requires regional offices to obtain central office clearance before responding to concerns, resulting in longer response times. The organization’s limited number of employees reduces its ability to guarantee comprehensive emergency response and preventative measures. Warnings and advisories are

not location-specific, do not indicate specific danger levels, and do not provide detailed information on possible repercussions. Unlike the current reactive method, MES struggles to adopt a proactive approach to preventing and mitigating damage and losses. This is due to the lack of site-specific predictions and risk information. While some work has been done with communities in Karakalpakstan to use hydrological drought forecasts and understand earthquakes, there is a lack of interaction regarding climate-related hazards in eastern regions.

**BOX 1.2: >>**

**Enhance environmental monitoring and access to information, public participation, and education on the environment so that households and firms have adequate instruments to adapt**

**Uzbekistan does not have an integrated environmental information system, and most analytical laboratories under ministries and agencies involved in environmental monitoring lack the capacity for water and soil pollution analysis.** Current environmental monitoring activities still operate according to a five-year program, and automation and digitalization of the system are not widely used. Automation and digitization, coupled with the introduction of PM<sub>10</sub> and PM<sub>2.5</sub> monitoring, will enhance the system. Although analytical laboratories are not accredited, regional laboratories under the Centre of Hydrometeorological Service (Uzhydromet) have the capacity to analyze air pollution but lack the capacity to analyze water and soil pollution samples. The establishment of an integrated environmental monitoring system and accreditation of laboratories is critical to enhancing environmental monitoring.

**Enhance the legal framework for public access to environmental information and make available environmental information accessible online to the general public.** Printed information containing environmental information is easily accessible within government agencies; however, public awareness and accessibility to this information is limited. Systematic digitalization and free access to environmental information guided by a legal framework will significantly provide instruments for firms and households to adequately employ adaptation options.

**Integrate education for sustainable development into the educational system and engage NGOs in environmental matters.** Uzbekistan adopted the concept of education for sustainable development in 2011; however, significant changes in the educational system have not yet been made. Education for sustainable development is currently championed by universities and NGOs; integrating these concepts at the lower levels and greater engagement of NGOs in environmental matters will significantly enhance the adaptive capacity of firms and households and permit the country to meet the 2030 agenda.

**2.4.2 Priority Action 3.2: Provide all firms and households with risk management instruments**

**Uzbekistan lacks a national residual risk management plan and social protection coverage, limiting family resilience to shocks.** The government has increased disaster insurance penetration but has not

set residual risk objectives, leaving households and businesses with speculative knowledge about protective measures for disasters and harsh weather.



Source: Original to this publication based on data from WDI, Uzbekistan TNC, WHO, UNICEF, WB Enterprise Survey, and expert interviews.

**Financial instruments exist but do not actually cover all segments of the population.** The insurance market has a large number of providers, but insurance penetration is low. Less than 20 percent of total premiums are paid by two businesses with majority government ownership among the 42 life and non-life insurance companies.<sup>71</sup> In 2020, the industry’s return on equity (RoE) and return on asset (RoA) were 9.7 percent and 4.8 percent, respectively. The product market is tiny, accounting for a small portion

of the financial system. The insurance penetration ratio was 0.52 percent in 2021. Important insurance products include property, credit risk, mandatory employer liability, mandatory motor, and mandatory employer liability insurance. The insurance industry is still in its infancy, with life insurance being only 10 percent of written premiums. In 2020, the Ministry of Economy and Finance Insurance Market Development Agency (IMDA) began regulating the sector, and a new plan is being developed.

### 2.4.3 Priority Action 3.3: Develop the insurance sector, building on public-private partnerships

**Domestic insurers offer insurance coverage for modest incomes (UZM 40,000 or less daily), but these products have limited adoption and are often less expensive, lower-quality replicas.**<sup>72</sup> The insurance industry faces gender disparity and lacks accessible gender-disaggregated data.<sup>73</sup> Insurance penetration in rural and regional areas is low, with Tashkent City having the highest penetration. Less than half of 24 businesses obtain risk accumulation data for catastrophe insurance

policies, despite 60 percent of earthquake policies being in high-risk locations. Only 9 companies collect data on insured amounts for homes and contents, and 11 collect it on insured catastrophe risks in areas and occupancy classes. Only one organization uses an automated approach to manage risk accumulations. Figure 49 shows significant gaps in building stock insurance and gaps in non-life insurance and private sector disaster risk insurance.

FIGURE 49: >>

#### Summary Priority Action 3.3: Develop the insurance sector, building on public-private partnerships



Source: Original to this publication based on data from WDI.

**Non-life insurance for the vulnerable should be scaled-up to cover a large segment of the poor; current levels are low and put these populations in a vulnerable situation.** Disaster insurance can reduce the fiscal impact of natural disasters, accelerate post-disaster recovery, and reduce the adverse economic effects on the population. Private insurers offer disaster insurance without local regulation but with a general local framework. Current insurance penetration levels are 10 percent of households;<sup>74</sup> although this is substantial for voluntary insurance, poor households will suffer in the event of disasters. Expanding insurance to cover all segments through a central national disaster insurance pool using public-private partnerships can greatly improve the situation. This can be complemented by improving the regulatory framework

at local levels, enhancing risk information systems, and adequate monitoring and reporting of catastrophe risk.

**The insurance industry could play a more significant role in climate risk management.** The government is responsible for most disaster-related losses, but the private insurance sector is not very active. The government, corporations, and people are limited in covering the expenses of calamities caused by climate change. Despite having numerous insurance providers, Less than 10 percent of residential dwellings are insured against natural perils, fire, lightning, explosion, and aircraft damage risks, with a 0.7 percent premiums to GDP ratio in 2022, compared to a global average of 7.0 percent and 3.7 percent for Emerging Asia.<sup>75</sup>

<sup>71</sup> The ADB, under its TA Grant approved in September 2021, will support the IMDA in divesting the government’s stake in state insurance companies.

<sup>72</sup> “Шавкат Мирзиёев — о бедности в Узбекистане” (“Shavkat Mirziyoyev – on poverty in Uzbekistan”), [Gazeta.uz](https://gazeta.uz).

<sup>73</sup> Insurance Market Development Agency, Показатели за I квартал 2022 года (Indicators for the first quarter of 2022) (Tashkent, 2022). Available at <https://imda.uz/ru/2022-1-kvartal/>.

<sup>74</sup> <https://documents1.worldbank.org/curated/en/617231591599422910/pdf/Disaster-Property-Insurance-in-Uzbekistan-Overview-and-Recommendations.pdf>.

<sup>75</sup> World Bank. 2023. Uzbekistan Country Climate and Development Report. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099111423124532881/p1790680f452f10ba0a34c06922a1df0003>.

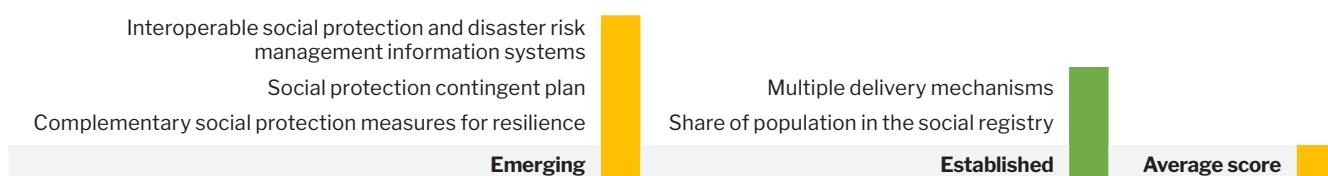
#### 2.4.4 Priority Action 3.4: Build a social protection system that is responsive to shocks

**The lack of aggregated information on social care services constraints the ability of the government to enhance its targeting of the most vulnerable.** The Government of Uzbekistan reinforced its commitment to social protection by establishing on June 1, 2023, Uzbekistan National Social Protection Agency to offer high-quality social services and assistance, in line with the country’s constitutional Article 1, defining it as a social state. Services provided by this agency target specific segments of the population, such as vulnerable children, elderly living alone, and domestic violence survivors. While spending information is collected on residential institutions for children without parents, those with disabilities, and the elderly living alone or with disabilities,

further disaggregation is not available. Shelters and rehabilitation centers for domestic violence survivors are not centrally collected. To efficiently allocate resources on SP, performance analysis, including targeting efficiency, should be regularly evaluated using national household budget surveys. Large inclusion and exclusion errors can undermine the effectiveness of SP programs in poverty reduction. To improve targeting, existing analytical work and policy notes should be used, such as easing mandatory requirements, improving agricultural income imputation, and adopting a hybrid method combining means<sup>76</sup> testing with a control instrument. In the short term, the performance of low-income family allowances can be assessed using household budget surveys 2021 data.

FIGURE 50: >>

#### Summary Priority Action 3.4: Build a social protection system that is responsive to shocks



Source: Original to this publication based on data from the World Bank, UNDP, WDI, and expert interviews.

#### A systemic response system of climate shock and social protection is required in Uzbekistan.

Uzbekistan’s social protection system, which covers 55 percent of the population, could benefit from more flexibility. With over 50 programs, most focus on societal dangers rather than crises. Public Works and the Low-Income Family Allowance are crucial for human capital development, promoting education, and sustainable labor market participation. However, the government reacts to crises with ad hoc support through case-by-case financing procedures, lacking automatic scaling up for climate-related shocks.

**Various strategies can be employed to mitigate the impacts of shocks, including implementing predefined reaction mechanisms and operational processes for social protection programs.** The Pension Fund’s computerized database and cash distribution capabilities can enhance reaction and recovery efforts for social pensions, enabling post-hazard assistance. SP systems can help individuals become more resilient by reducing risks over time. In high-risk locations, strong insurance schemes can prevent property loss for individuals, corporations, and the self-employed.

#### 2.4.5 Priority Action 3.5: Help firms develop business continuity plans and financial preparedness

**Overall, Uzbekistan is emerging in progress in helping firms develop business continuity plans and financial preparedness.** However, as shown in Figure 51, revenue lost due to outages remains a major problem, but progress has been made in helping firms with business continuity plans, enhancing access to finance for adaptation and generation of ownership.

**Revenue lost by enterprises remains high, making the business environment unfavorable for small businesses.** In Uzbekistan, a sizeable portion of power generating capacity is now outdated and has to be replaced. Nearly 40 percent of Uzbekistan’s available generating capacity has reached the end of its useful life.<sup>77</sup> This has worsened the dependability of the electrical supply, which has remained a major barrier to business performance in Uzbekistan. As a result, the percentage of income lost to power outages increased from 8.9 percent to 16 percent in 2015. As of 2013, Uzbekistan saw nearly six times as many power outages as the OECD (0.6 per month on average) or the Russian Federation (0.3 per month on average).<sup>78</sup>

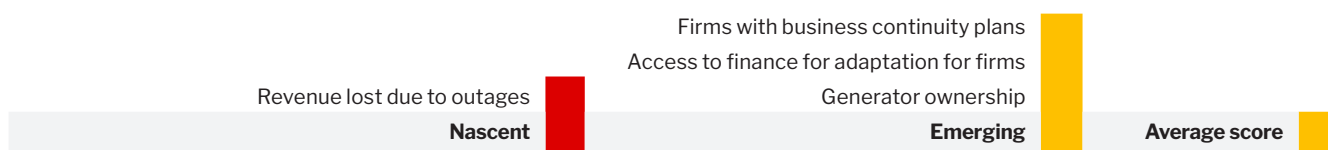
<sup>76</sup> A means test determines if a person or household is eligible to receive some sort of benefit or payment.

<sup>77</sup> World Bank 2016. Systematic Country Diagnostic for Uzbekistan Washington DC: World Bank. <https://openknowledge.worldbank.org/bitstream/handle/10986/24588/Uzbekistan000Sococountrydiagnostic.pdf?sequence=1&isAllowed=y>.

<sup>78</sup> World Bank 2019. World Development Indicators (database). <https://datacatalog.worldbank.org/dataset/world-development-indicators>.

FIGURE 51: >>

**Summary Priority Action 3.5: Help firms develop business continuity plans and financial preparedness**



Source: Original to this publication based on data from World Development Indicators, 2022

**Develop a capacity-building and financing framework to promote business continuity planning in the private sector.**

With the modernization of hydrometeorological services and current efforts to move towards a market economy with an increasing influence of the private sector, it is essential to provide capacity building and financing needs on service delivery and business continuity planning and assess national early warning and emergency response capacities. Also, integrating business continuity planning in emergencies as part of regulatory compliance by the private sector will improve firms' adaptive capacity and resilience.

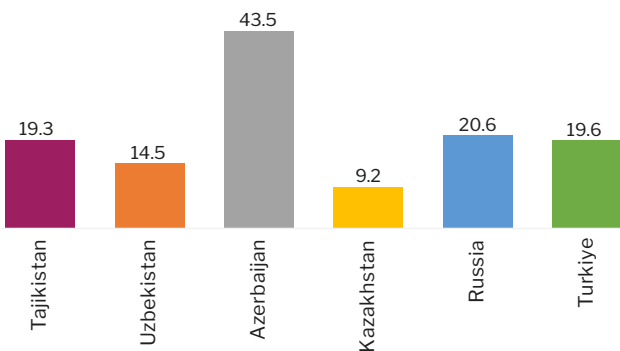
**A few firms in Uzbekistan own generators, while a large percentage suffer from revenue losses due to outages.**

Figures 52 and 53 below show that firms in Uzbekistan

do not take adaptation options by owning generators, which results in high losses to firms due to a lack of alternative energy sources. In the most recent Enterprise Survey conducted in Uzbekistan, firms ranked access to dependable energy as their third most significant limitation, behind tax rates and informal sector practices. Power fluctuations and frequent blackouts increase operating costs and have an impact on company activities. Making the switch to a new, environmentally friendly energy system will facilitate company operations in Uzbekistan. While eliminating energy subsidies would aid in overhauling service delivery, this is likely to take some time, along with better sector administration. Businesses may experience greater expenses and yet subpar service up to that point, necessitating cautious control on the part of electrical service providers.

FIGURE 52: >>

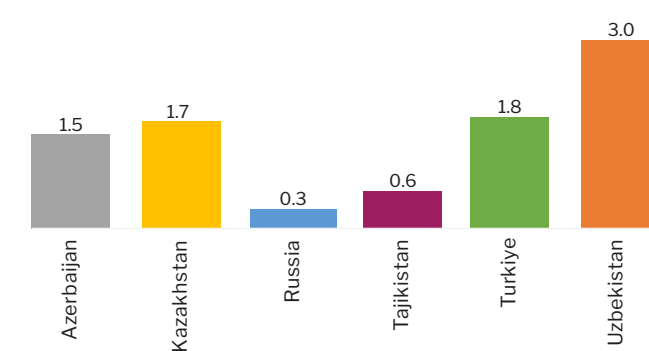
**Generator ownership (% firms)**



Source: WDI 2019.

FIGURE 53: >>

**Revenue losses due to outages (% firms)**



**2.4.6 Priority Action 3.6: Be prepared to build back better after disasters with contingency plans and financing**

**Enhancing financial resilience to disasters will ensure adequate money is available for fast and effective disaster response and recovery (Figure 54).** Governments bear a large portion of the expenses associated with disaster relief, such as those associated with the restoration of (public and occasionally private) assets, emergency response, welfare programs, support for small businesses, and fiscal transfers to subnational governments. Without adequate financial planning, disasters may have more severe effects, which could

harm the economy, the government's finances, and the population's welfare (especially for those most vulnerable).

**More investment is required in human resources and public policy related to public procurement.** The 2018 Law on Public Procurement aims to improve public procurement processes and comply with international norms, requiring it to preserve favorable environmental conditions. However, the government has not yet established an effective policy framework or allocated enough human resources for public procurement. Public procurement can contribute to the 2030 Agenda for Sustainable Development by achieving 'value for money' and advancing greening.

FIGURE 54: >>

**Priority Action 3.6: Be prepared to build back better after disasters with contingency plans and financing**



Source: Original to this publication based on data from World Bank, UNDP, WDI, and expert interviews.

## 2.5 Manage financial and macro fiscal issues

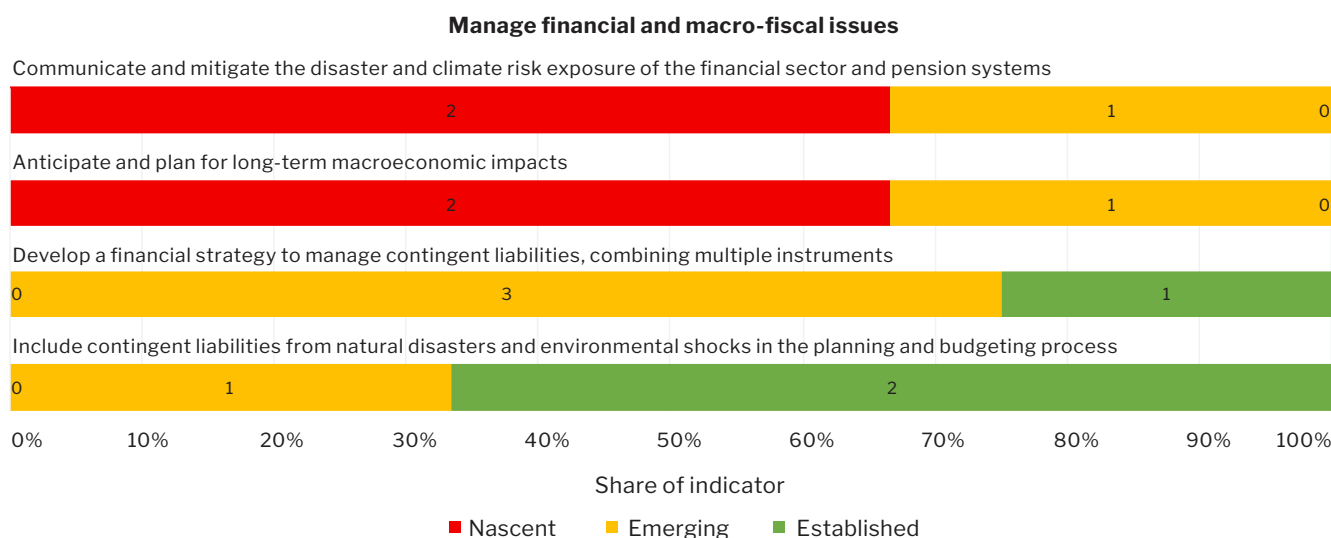
*“The impact of climate change on the economy will affect activity and tax revenues, and strong impacts on major sectors (especially exporting ones) can affect a country’s trade balance and capital flows. The combination of these factors may result in new risks for macroeconomic stability, public finances, debt sustainability, and the broader financial sector. Governments will need to manage these risks, considering the many channels involved. However, the macro-level impacts of climate change are extremely uncertain, and all quantified assessments should be considered as a partial approximation and used in a way that considers both this uncertainty and the possibility of surprises.”—The Adaptation Principles*

**This section reviews Uzbekistan’s management of climate change and catastrophes, focusing on priority activities.** Overall, managing financial and macro-fiscal risks is critical for adaptation and resilience. Figure 55 shows that there are no legal obligations for large firms and banks to identify, quantify, and communicate their exposure to climate risk and hazards. Uzbekistan does not sufficiently use financial risk management instruments such as contingent credits, risk transfer, and planning based on severity, rehabilitation, and

reconstruction needs to prevent the holding of large reserves for disaster risk management. The state’s ability to anticipate and plan for long-term economic impact remains below that of benchmark countries. The country still needs to improve in developing a financial strategy to manage contingent liabilities while effectively combining them with different instruments. Different pathways to help Uzbekistan improve these scores and achieve its objectives are highlighted below.

FIGURE 55: >>

**Adaptation and resilience assessment overview for managing financial and macro-fiscal issues**



Source: Original to this publication based on data from the World Bank, UNDP, WDI, and expert interviews.  
 Note: The number in each bar shows the number of indicators per category (established/emerging/nascent).

### 2.5.1 Priority Action 4.1: Include contingent liabilities from natural disasters and environmental shocks in the planning and budgeting process

**Climate risk is not yet fully integrated into fiscal policies and not fully considered by the private sector.** Uzbekistan has made efforts to enhance the

assessment of climate and disaster risks, and the government has centralized the management of emerging climate and disaster risks (Figure 56). This has resulted in low funding for climate and disaster risk. Integrating climate and disaster risks into fiscal policy permits improving market efficiency by

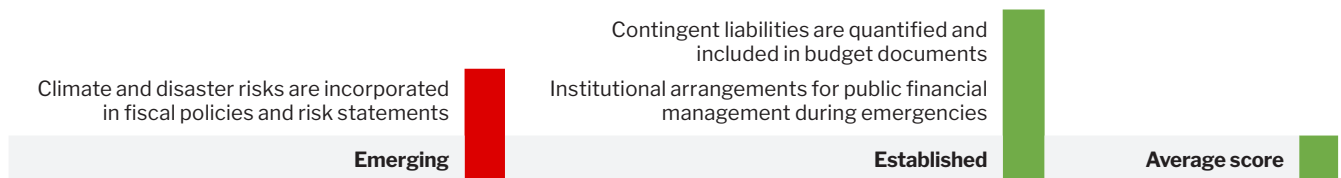


adjusting prices to reflect environmental costs. For example, replacing unfair taxation with upstream taxes on energy and fuels, covering unorganized sectors with minimal administration and compliance costs, increasing domestic resource mobilization and tax base, and reducing traffic congestion, GHG emissions, and pollution. However, Uzbekistan has tax policies

that facilitate imports of climate-smart equipment. Although these policies integrate climate and disaster risks, they do not adequately consider fiscal risks and potential long-term impacts. Private sector companies do not integrate climate and disaster risk in their statements, and taxation policies do not integrate climate and disaster risk.

FIGURE 56: >>

**Summary Priority Action 4.1: Include contingent liabilities from natural disasters and environmental shocks in the planning and budgeting process**



Sources: Original to this publication based on data from the World Bank, UNDP, WDI, and expert interviews.

**Over the past two years, Uzbekistan’s fiscal policy has improved significantly, with tax reform, better planning, accountability to the legislative body, increased transparency, and a strategy to reduce deficits until 2022.** However, risks of policy deviations, such as directed lending to SOEs and financing social programs, remain. While the privatization program and preferential lending reductions may partially mitigate these risks, policy deviations still exist.

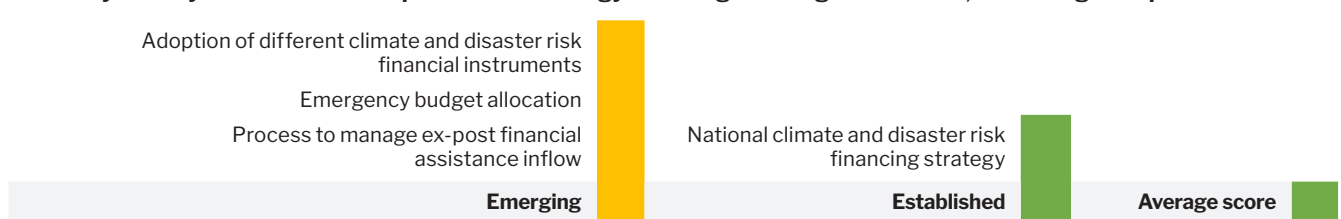
**in Uzbekistan.** These events can negatively impact people’s well-being and fiscal space, affecting individuals, businesses, public assets, and services. Increased spending on disaster assistance and recovery will result in lower tax income. Delayed climate change consequences, such as sea level rise, long-term health problems, and labor productivity, will also negatively impact public finances. Addressing these contingent liabilities in public policy is crucial to mitigating these risks. Although some estimates support this process, Uzbekistan has not assessed the fiscal risks of climate change and disasters nor included contingent liabilities in national budgets. These challenges justify the scores allocated in Figure 57.

**2.5.2 Priority Action 4.2: Develop a financial strategy to manage contingent liabilities, combining multiple instruments**

**Disasters and climate change pose significant risks and contingent liabilities to public finances**

FIGURE 57: >>

**Summary Priority Action 4.2: Develop a financial strategy to manage contingent liabilities, combining multiple instruments**



Sources: Original to this publication based on data from the World Bank, UNDP, WDI, and expert interviews.

**Although institutional arrangements exist for public financial management in emergencies, the measures of risk and financial resources remain unequal and limit appropriate action.** Several agencies assess disaster impact, but it is unclear whether such information is aggregated and analyzed further to be used for financial planning by the government. Consequently, it is difficult to understand what resources were adequate for different severities

and frequencies of natural disasters. Also, fiscal risks caused by natural disasters are not accounted for in the budget; this has implications for budgets for past disaster impacts. Therefore, enhancing the collection of disaster and accounting-related information for fiscal risks, including probable risks for significant disasters, disaster impact, and post-disaster expenditures, and accounting for fiscal risks in budget planning, is critical for adaptation preparedness.

**BOX 1.3: >>**

**Enhance allocative and implementation efficiency of agricultural public expenditure and programs**

**Improve agricultural sector coordination and integrate donor-financed projects in agricultural sector financial planning and implementation.** Agricultural public institutions are still fragmented and characterized by weak coordination, especially at the central and local levels. Using the Medium-Term Expenditure Framework (MTEF) for monitoring the implementation at the central level can enhance coordination, and the consolidation of efforts between local agricultural public institutions around regional Agricultural Knowledge and Innovations System (AKIS) can significantly enhance coordination. Uzbekistan has been receiving donor-financed agricultural expenditures which do not fall into agricultural financial planning; this leads to poor coordination and financial planning for the future. Integrating donor-financed agriculture expenditures into agricultural financial planning will enhance this planning and facilitate tracking and evaluation.

**Much of the agricultural expenditure is spent on high costs of electricity for irrigation.** Investment in modernizing irrigation systems and transitioning to cost-effective energy systems for irrigation is necessary. As part of the agricultural sector reforms, irrigation modernization is a priority action of the government; also, exploring options to reduce electricity expenditure, and accelerating current ongoing efforts is critical. This will also include supporting farmers in addressing constraints to maximize the benefits of drip irrigation and to explore opportunities for renewable energy use for irrigation and the operationalization of the solar energy roadmap for Uzbekistan 2030.

**Increase allocative efficiency of livestock support.** General support services (GSS) are critical in enhancing farmers' capacity and reducing carbon emissions. Increasing investments in GSS, such as animal nutrition, veterinary services, livestock breeding, and artificial insemination, can significantly increase output and allocative efficiency.

**Considering contingent credits, risk transfer, and planning for different situations is critical for Uzbekistan's adaptation and resilience readiness.**

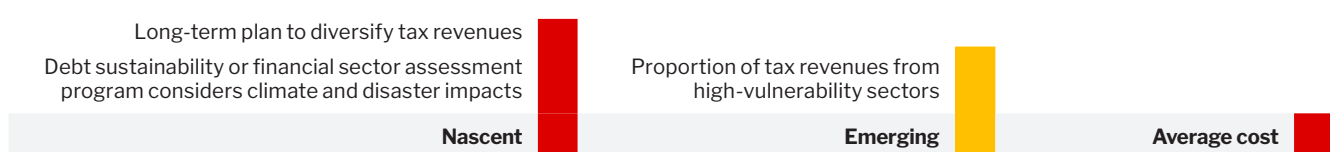
The government has adopted several instruments, including national and local funds, Government System of Prevention of and Activities in Emergency Situations (GSCHS) reserves, material reserves, and road funds. Other resources include the reserve fund of the Cabinet of Ministers. However, contingent credit lines providing alternatives to holding large amounts of money for disasters and enabling the government to access prearranged funds in case of disaster are not used in the country. This planning should also be done for different disaster needs depending on the severity of natural disasters for emergency response, rehabilitation/recovery, and reconstruction. Also, implementing risk transfer mechanisms as part of the overall strategy will allow for better financial risk management.

**2.5.3 Priority Action 4.3: Anticipate and plan for long-term macroeconomic impacts**

**State revenues are at risk due to the government's heavy reliance on industries sensitive to climate change.** These industries include agriculture, manufacturing, tourism, infrastructure, and services. Debt sustainability and financial sector evaluations are crucial for understanding the potential macroeconomic effects of climate change and improving macro-fiscal readiness. Increased debt to cover climate change costs can negatively impact foreign investment, interest rates, and credit scores. Analyzing climate change scenarios can help decision-makers plan and implement appropriate policies and regulatory and strategic actions to minimize long-term impacts on macroeconomic variables like GDP, debt levels, and trade balance. Figure 58 shows this, highlighting that Uzbekistan needs to improve long-term planning in diversifying tax revenues and debt sustainability of the financial sector.

**FIGURE 58: >>**

**Priority Action 4.3: Anticipate and plan for long-term macroeconomic impacts**



Source: Original to this publication based on data from World Bank, UNDP, WDI, and expert interviews.

**Diversifying the tax base away from climate and disaster-vulnerable sectors should be promoted for adaptation and disaster resilience.** Uzbekistan currently does not have an officially issued tax base enhancement strategy, including diversification of tax revenues away from climate and disaster-vulnerable sectors. The government is currently promoting options to diversify the economy and, thus, the tax base, including value chain intensification, industrial development, and services sector enhancement. Despite this, more than 50 percent of revenues come from 3-4 critical taxpayers from the extractives sector and large SOE monopolies. Additionally, many taxpayers depend on the agriculture sector (they provide inputs or process agricultural output), which is most vulnerable to climate change.

**Policy requirements for large firms and banks to identify, quantify, and communicate their exposure to climate risk and hazards are critical for adaptation and resilience preparedness.** There are currently no requirements for banks and large enterprises to assess their exposure to disasters and climate risks; also, a quantified exposure to hazards is absent as a requirement. This puts the whole economy at risk if there is a major disaster, and these banks and large enterprises are heavily affected. Therefore, a regulatory requirement for large firms and banks to identify and quantify climate change risks and hazards is critical for appropriate adaptation options and mitigation, thus ensuring the resilience of these firms and banks in case of a major disaster.

**Uzbekistan is making considerable efforts to incentivize the use of energy-saving technologies by applying tax credits and reduced import taxes.** In 2019, the country also started developing Uzbekistan's eco-labelling system. Other initiatives include liberalizing the process for citizens to become public environmental inspectors. The country also started developing institutional and legal frameworks for establishing public-private partnerships (PPPs) as

outlined in target 17.17 of the 2030 agenda. However, the country currently lacks experience in using PPPs, and there is a lack of data on enforcement and activities by public environmental inspectors.

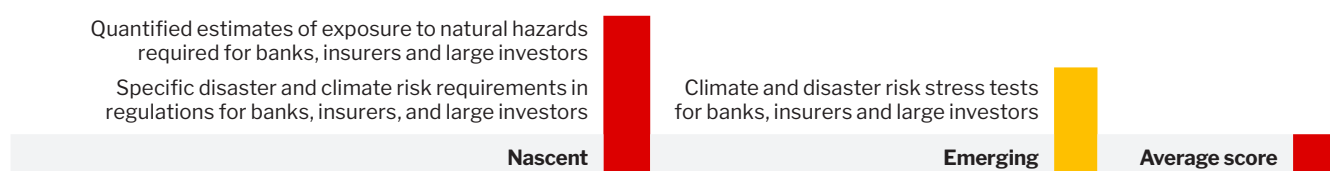
#### 2.5.4 Priority Action 4.4: Communicate and mitigate the disaster and climate risk exposure of the financial sector and pension systems

**To effectively communicate and mitigate the disaster and climate risk exposure of the financial sector, quantified estimates of exposure to natural hazards are required for banks, large firms and insurers (Figure 59).** Also, Uzbekistan is lagging behind in developing specific disaster and climate risk requirements in regulations for banks, insurers, and large investors.

**Uzbekistan doesn't have an officially issued tax base enhancement strategy, including diversification of tax revenues away from climate and disaster-vulnerable sectors.** Tax revenues / policy / administration planning have no more than a two-year horizon. Uzbekistan has taken actions to enhance its revenue basis, including value chain intensification, industrial development, and services sector enhancement. Despite this, more than 50 percent of revenues come from 3-4 key taxpayers from the extractives sector and large SOE monopolies. Additionally, many taxpayers depend on agriculture (they provide inputs or process agricultural output), the sector most vulnerable to climate change. We can differentiate debt sustainability for the public administration and financial sectors: i) For the public administration sector, ADB delivered technical assistance in installing Debt Management and Financial Analysis System (DMFAS-6 software) along with a locally developed Debt Management application. The Ministry of Economy and Finance regularly conducts stress tests and approves debt management strategies. However, the stress test does not include climate and disaster impact. The financial sector's debt sustainability assessment is based on climate and disaster risks.

FIGURE 59: >>

#### Summary Priority Action 4.4: Communicate and mitigate the disaster and climate risk exposure of the financial sector and pension systems



Source: Original to this publication based on data from World Bank, UNDP, WDI, Uzbekistan TNC, and expert interviews.

**Regulatory specification of disaster and climate risk requirements is required for banks, insurers and large investors by the government of Uzbekistan.** Despite a lack of legal obligations for banks, insurers, and investors to handle catastrophic risks, Uzbekistan's

financial system is improving its climate and environmental sustainability disclosure. Currently, no regulations require financial institutions to recognize, quantify, and disclose risks in their investment portfolios, and national regulatory bodies have not yet assessed the

sector’s exposure to climate change and natural disaster risks. The country needs to improve insurance oversight of catastrophe insurance markets and implement effective reporting of catastrophe risk accumulations. A survey shows that multiple businesses could go bankrupt in a catastrophic event. To ensure that the

supervisory authority understands insurers’ earthquake risk accumulations, it is crucial to mandate disclosures by Catastrophe Risk Evaluation and Standardizing Target Accumulations (CRESTA) zone and type of earthquake on a regular basis. This will help protect businesses and mortgage lenders from potential bankruptcies.

## 2.6 Priority Action 6: Application prioritization, implementation, and progress monitoring

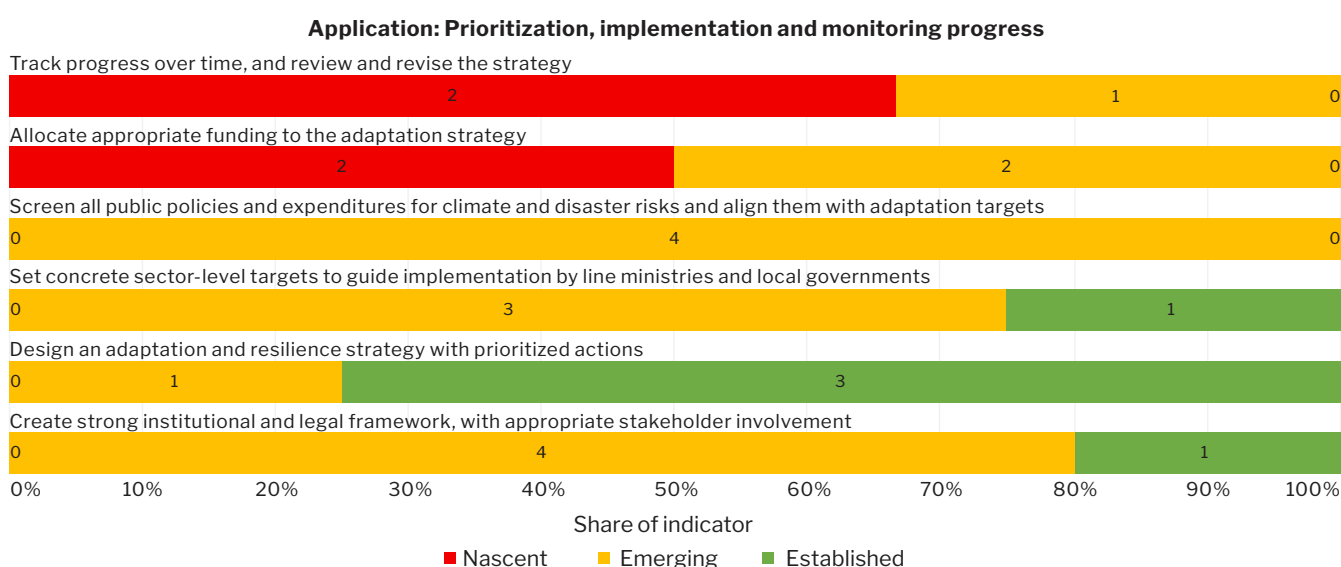
*“To effectively implement adaptation and resilience actions, governments must first establish the right institutional and legal framework for robust implementation (Action A.1 [6.1]) and then design a concrete multisectoral adaptation and resilience strategy that clearly identifies and prioritizes actions in line with available resources (Action A.2 [6.2]). A concrete set of intermediate targets and milestones is essential to implement the strategy in each sector (Action A.3 [6.3]). Governments should actively mainstream and integrate resilience in all public policies rather than limit their consideration of resilience to climate-related actions (Action A.4 [6.4]). With priority actions defined, they need to raise, allocate and track adequate financial resources to implement the strategy (Action A.5 [6.5]). Finally, once implementation is underway and new information and challenges emerge, they will need to make regular strategy adjustments and course corrections to strengthen the approach (Action A.6 [6.6]). Overall, the key to successful implementation is ensuring that all government departments adopt and mainstream the strategy in all their decisions and that governments continuously monitor and evaluate the impact of their decisions and actions so they can address any challenges and adjust their actions accordingly.” —The Adaptation Principles.*

**The process of adaptation and resilience requires adequate prioritization, implementation, and progress monitoring.** Figure 60 shows that Uzbekistan lacks an overarching climate policy that anchors different sectoral policies and actions in adaptation, mitigation, and resilience building. Cross-sectoral implementation, monitoring, evaluation, and coordination are required to reduce overlaps and maximize the impact as Uzbekistan starts implementing its green growth action plan to move towards a low-carbon economy. The assessment also highlights that Uzbekistan needs to enhance capacity building

in monitoring adaptation and resilience initiatives. Integrating research into policy should be bolstered to ensure compliance with the policy requirements. Also, there is no clear framework for developing, monitoring, and tracking a national adaptation fund that captures adaptation and resilience efforts across sectors to determine progress and financial gaps to help achieve climate commitments through subsequent coordination with development partners. Options for enhancing the application, prioritization, implementation, and monitoring of adaptation and resilience efforts are summarized below.

FIGURE 60: >>

### Adaptation and Resilience assessment for application: prioritization, implementation, and monitoring progress



Sources: Original to this publication based on World Bank CCIA Report, Uzbekistan TNC, [UNECE Environmental Performance Reviews: Uzbekistan](#), and expert interviews.

Note: The number in each bar shows the number of indicators per category (established/emerging/nascent).

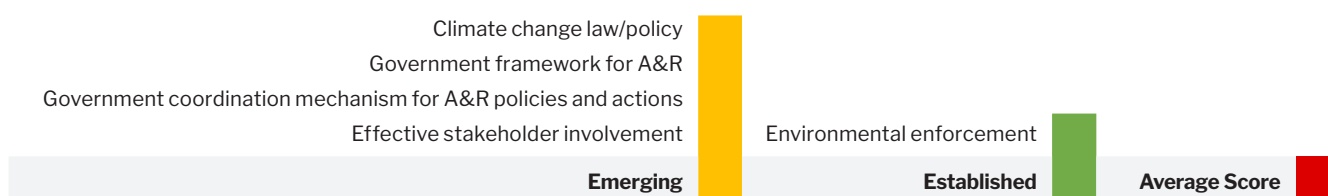
### 2.6.1 Priority Action 6.1: Create a strong institutional and legal framework with appropriate stakeholder involvement

The government of Uzbekistan understands the importance of considering climate change in its development ambitions and has made progress in creating institutional and legal frameworks that reflect this ambition (Figure 61). Also, stakeholder

involvement has been part of these policy reforms and engagement. However, although initiatives are ongoing, some gaps persist; some of these are shown on the ratings of indicators below and further explained in the paragraphs that follow.

FIGURE 61: >>

#### Summary Priority Action 6.1: Create a strong institutional and legal framework with appropriate stakeholder involvement



Sources: Original to this publication based on World Bank CCIA Report, Uzbekistan TNC, [UNECE Environmental Performance Reviews: Uzbekistan](#), expert interviews.

#### An overarching climate change policy framework is required to anchor sectoral policies and actions.

Sectoral policies and laws exist on water, efficient energy use, emissions, and forests; however, they have not been developed within an overarching climate change policy framework. Climate change is currently addressed to a degree in various policy documents, such as the “Water Saving and Rational Water Use in Irrigated Land Tenure Strategy,” the “National Strategy for Agriculture Development,” the “National Strategy for Adaptation of Public Health Care System to Climate Change,” and strategies for adaptation of forestry to climate change, including the Forest Code and National Forest Program. Yet climate-related participatory decision-making and stakeholder input processes for managers and policymakers are unclear, and there is no inter-ministerial platform for the discussion of adaptation issues.

being implemented and planned in national and sectoral plans, Uzbekistan has yet to develop a unique national program for adaptation to climate change. Therefore, Uzbekistan’s National Adaptation Plan (NAP) will need to be underpinned by the National Strategy for Sustainable Development (NSSD) and closely aligned with the development strategy. Most measures have a sectoral emphasis and are integrated with sector-specific economic development strategies. Different ministries and agencies focus on other aspects of climate change without a formal structure to incorporate climate change-related concerns into national development programs and policies. No single institution is responsible for coordinating adaptation measures or an Uzbekistan national adaptation strategy. Some environmental policies and programs cover a range of sectoral activities, though the policies and programs are fragmented and uncoordinated.

#### Uzbekistan is progressing in including adaptation and resilience strategies in ongoing policy reforms to move the country towards a market economy.

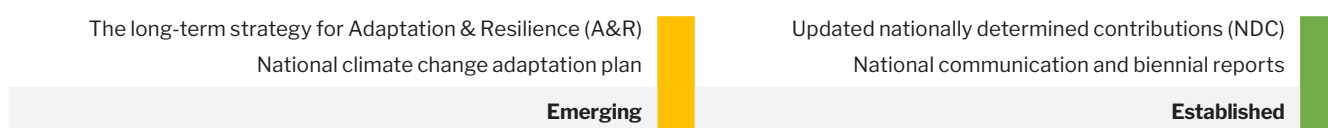
However, better cross-sectoral implementation, monitoring, evaluation, and coordination are needed. According to the country’s Third National Communication to the UNFCCC (TNC), although adaptation measures and actions are

### 2.6.2 Priority Action 6.2: Design an adaptation and resilience strategy with prioritized actions

Uzbekistan has made progress in establishing a robust climate governance framework, but improvements are needed (Figure 62). Legal instruments are needed to integrate adaptation and resilience into decision-making and operational planning across government agencies.

FIGURE 62: >>

#### Summary Priority Action 6.2: Design an adaptation and resilience strategy with prioritized actions



Source: Original to this publication based on World Bank CCIA Report, Uzbekistan TNC, [UNECE Environmental Performance Reviews: Uzbekistan](#), expert interviews.

**Long-term strategies for adaptation and resilience are not available for all sectors.** Medium-term sector strategies aim to meet climate-related targets in the water, energy, agriculture, and environment sectors. However, other sectors still require GHG limits, industry-specific energy efficiency targets, water use efficiency improvements, renewable energy capacity, forest cover, and waste service coverage. Enforcement mechanisms need to be established.

**Work on the national climate change adaptation plan needs to be accelerated so that national adaptation priorities are integrated across all sectors.** The governance of climate change impacts consists of a patchwork of presidential decrees, government resolutions, and sectoral strategies in the absence of a comprehensive law on the response to climate change. Climate change-related laws and decrees have been approved by the president, government agencies, and the Oliy Majlis (Senate and Legislative Chamber) in the range of 30 and 100, respectively. A NAP to support the NDC and a national climate change strategy are both in the works.

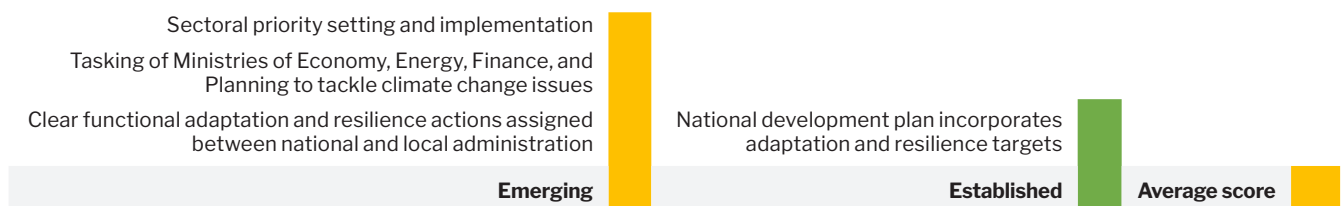
### 2.6.3 Priority Action 6.3: Set concrete sector-level targets to guide implementation by line ministries

**Uzbekistan is still developing sectoral adaptation and resilience implementation, with sectoral ministries leading planning, funding, and implementation in collaboration with local governments (Figure 63).** A strategy should set priorities and targets, with clear roles and responsibilities for targets. Parliamentary approval and oversight from central ministries can improve the strategy's authority, reaffirm national interest, and strengthen ownership and accountability among the actors involved.

**Important climate-related implementation, coordination, and regulatory responsibilities are under the purview of the Ministry of Economy and Finance.** The ministry is in charge of coordinating efforts to advance a green economy and put green growth principles into practice, which includes lowering GHG emissions, managing GHG trade at the international and national levels, and coordinating efforts to carry out Article 6 of the Paris Agreement. The ministry also creates financial systems and keeps track of how money is spent on programs and initiatives related to climate change.

FIGURE 63: >>

#### Summary Priority Action 6.3: Set concrete sector-level targets to guide implementation by line ministries



Source: Original to this publication based on Uzbekistan TNC, [UNECE Environmental Performance Reviews: Uzbekistan](#), and expert interviews.

**Although regulatory frameworks exist for setting sectoral priorities and implementation, capacities at local levels are low.** Uzbekistan's government structure remains centralized, and municipal governments have limited resources for local economic development initiatives. Their primary resources are land distribution and access to existing infrastructure networks. Despite recent changes, local governments still lack the power to manage their income and capital investments independently. To foster more territorially responsive climate action, it is crucial to clearly define the duties, responsibilities, and accountabilities of subnational administrations across territorial administration levels. Municipalities are increasingly critical to fostering local climate action through urban planning. Uzbekistan's over 9,000 *mahallas* aim to strengthen their role in service delivery, poverty reduction, and citizen engagement. Recent reforms have strengthened the human resource base, increased

resources for basic infrastructure, and introduced measures to enable *mahallas* to raise revenues and execute local development projects. Although the Law on Self-Government Bodies of Citizens allows *mahallas* to create commissions on ecology and environmental protection, these commissions do not function in practice.

**Subnational governance mechanisms can be strengthened by implementing territorial hydromet programs, climate adaptation actions, and social infrastructure development.** However, these governments are not directly involved in national climate objectives. Cross-sectoral methods across urban, rural, and peri-urban regions are necessary for climate policy implementation. Coordinating planning and funding with provisions for effective participation in territorial administration mechanisms is crucial for achieving climate action goals.

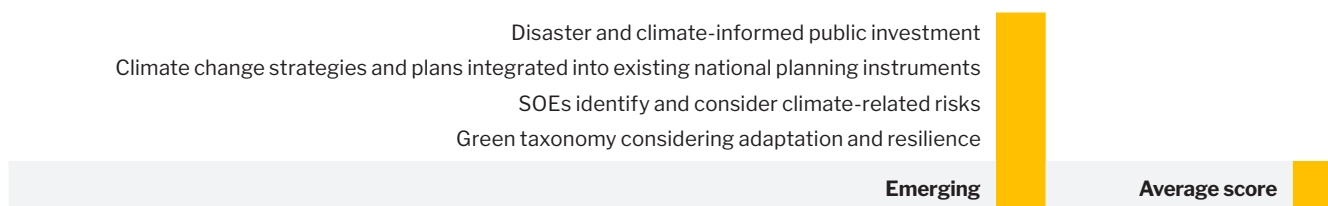
**2.6.4 Priority Action 6.4: Screen all public policies and expenditures for climate and disaster risks and align them with adaptation targets**

**Public investment cycles often overlook adaptation and resilience policy objectives.** To build resilience, cost-effective adaptation and risk reduction strategies must be integrated into public investment management across institutions and projects, addressing climate

change concerns. Incorporating climate change policy objectives into public financial management tools, investment cycles, and infrastructure governance in Uzbekistan requires no legislative or regulatory requirements. Green taxonomies and budgeting can help decompose green and nongreen investments. Figure 64 shows that Uzbekistan is emerging in all indicators for this priority action due to the gaps discussed below.

FIGURE 64: >>

**Summary Priority Action 6.4: Screen all public policies and expenditures for climate and disaster risks and align them with adaptation targets**



Source: Original to this publication based on Uzbekistan TNC, [UNECE Environmental Performance Reviews: Uzbekistan](#), and expert interviews.

**Disaster insurance in Uzbekistan is unlikely to provide significant funding for disaster response due to low uptake and per-capita usage.** The market’s product has flaws, potentially leading to underpricing. Insurance firms may go insolvent after a disaster due to the inability to buy appropriate reinsurance coverage. Due to increased coverage, the government may be ethically obligated to assist insurance firms in times of financial crisis. Agricultural insurance is also offered, but its usage is unknown. The government recognizes the importance of catastrophe insurance and is working on mandating property disaster insurance. Budget reallocation may be expensive due to market conditions and debt load. It may also involve removing funds from development initiatives, resulting in lost opportunities.

verification of impacts is crucial for financing a green transition. Uzbekistan should create a green taxonomy, establish sustainable reporting standards, and establish an independent impact verification sector to promote transparency and accountability for environmental impacts. These strategies will reassure financiers and investors about positive environmental impacts and prevent greenwashing and green bubbles.

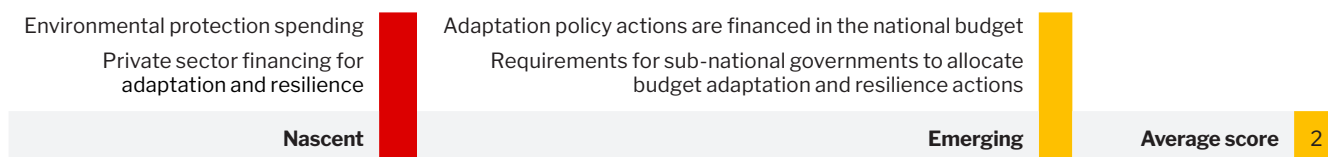
**A green taxonomy system that integrates climate change adaptation and resilience is required to reform fiscal policy.** Climate change adaptation action plans are essential in most nations. Public disclosure requirements on green and brown investments can increase transparency and accelerate green economic activity. A clear definition of green investments and independent

**2.6.5 Priority Action 6.5: Allocate appropriate funding to the adaptation strategy**

**Adaptation and resilience investments face challenges due to centralized funding for adaptation, risk reduction, and resilience development in environmental budgets (Figure 65).** Specialized jobs like monitoring and evaluation (M&E) require separate funding, while sectoral initiatives like infrastructure upgrades and social protection require that extra adaptation and resilience costs be included. Budget competition for other investments may prevent funds designated for adaptation and catastrophe resilience construction from being used widely.

FIGURE 65: >>

**Summary Priority Action 6.5: Allocate appropriate funding to the adaptation strategy**



Source: Original to this publication based on Uzbekistan TNC, [UNECE Environmental Performance Reviews: Uzbekistan](#), and expert interviews.

**There is no clear regulatory framework for private sector financing of adaptation and resilience.** While private sector funding for adaptation and resilience remains scarce, it is more common for mitigation measures, such as investments in clean, renewable energy. This is a result of obstacles like a lack of climate knowledge for decision-making, a lack of a regulatory framework and a green taxonomy to direct the private sector, and a lack of market and governmental incentives to represent the actual risks of climate change and catastrophes.

**Systemic mainstreaming of subnational adaptation and resilience priorities is not well aligned with national action plans.** Strategic planning is effective in Uzbekistan, with detailed timelines, execution roles, and funding sources laid out in strategic papers. The state budget provides funding for implementing these documents, with quantitative implementation indicators being increasingly used. However, there is limited information available to the public about the application of strategy

papers, and implementation reports are created but not published on public websites. The newly approved “Concept on Environmental Protection Until 2030” and policy papers on biodiversity and solid waste management are undergoing dynamic development at the national level. One challenge is ensuring proper consideration of subnational issues that are not adequately represented in policy documents, such as climate change, low carbon development, environmental compliance, forest protection, soil protection, and environmental noise.

**2.6.6 Priority Action 6.6: Track progress over time and review and revise the strategy**

**Uzbekistan has tools for monitoring and evaluating adaptation and resilience efforts at sectoral levels as part of different strategies to combat climate change; however, independent monitoring of adaptation and resilience progress, disaster-related expenditure tracking and review are absent, which explains the overall nascent rating as summarized in Figure 66.**

FIGURE 66: >>

Summary Priority Action 6.6: Track progress over time and review and revise the strategy



Source: Original to this publication based on Uzbekistan TNC, [UNECE Environmental Performance Reviews: Uzbekistan](#), and expert interviews.

**Capacity building on monitoring adaptation and resilience initiatives, integrating research into policy, and enhancing awareness of adaptation planning and implementation are required at all levels.** There is a need to strengthen climate-related monitoring systems for sectoral implementation activities. The limited connection between research results, policy formulation, and proposed actions to establish an evidence-based approach to address climate change challenges does not create an appropriate environment for innovation. Insufficient awareness about climate change impacts, adaptation, and linkages with existing programs and activities do not produce the required urgency for action. Also, a lack of understanding of current capacities and climate change adaptation needs in individual communities, industries, and territories makes adaptation and resilience initiatives challenging.

**Available data for different adaptation and resilience indicators do not permit a comprehensive independent monitoring of progress.** The SCEEP-coordinated Program of Environmental Monitoring in Uzbekistan focuses on air quality, surface water quality, soil pollution,

and radiation monitoring networks. However, a lack of automatic monitoring, data quality control, processing, and transfer results in insufficient continuous monitoring and timely data delivery. The 2019 Cabinet of Ministers Resolution No. 737 addresses these inadequacies to improve data gathering, sharing, and transfer practices. The absence of PM<sub>10</sub> and PM<sub>2.5</sub> monitoring in atmospheric air pollution is a significant issue, and measures under Resolution No. 737 aim to address this. Despite biodiversity monitoring being included in the five-year environmental monitoring programs since 2011, noise monitoring operations are excluded. Open access to environmental data concepts is not fully implemented in Uzbekistan, with few publicly available data and online resources. The operationalization of the national Sustainable Development Goals webpage and the definition of 206 national indicators faced challenges due to the limitations of data and internet resources.

**Uzbekistan is progressing in including adaptation and resilience strategies in ongoing policy reforms to move the country towards a market economy.** However, more excellent cross-sectoral implementation, monitoring,



evaluation, and coordination are required. According to the country's Third National Communication to the UNFCCC (TNC), although adaptation measures and actions are being implemented and planned in national and sectoral plans, a unique national program for adaptation to climate change in Uzbekistan has yet to be developed. Therefore, Uzbekistan's NAP must be underpinned by the NSSD and closely aligned with the development strategy. Most measures have a sectoral emphasis and are integrated with sector-specific

economic development strategies. Different ministries and agencies focus on other aspects of climate change without a formal structure to incorporate climate change-related concerns into national development programs and policies. A single institution in Uzbekistan is not responsible for either coordinating adaptation measures or a national adaptation strategy. Some environmental policies and programs cover a range of sectoral activities, though the policies and programs are fragmented and uncoordinated.

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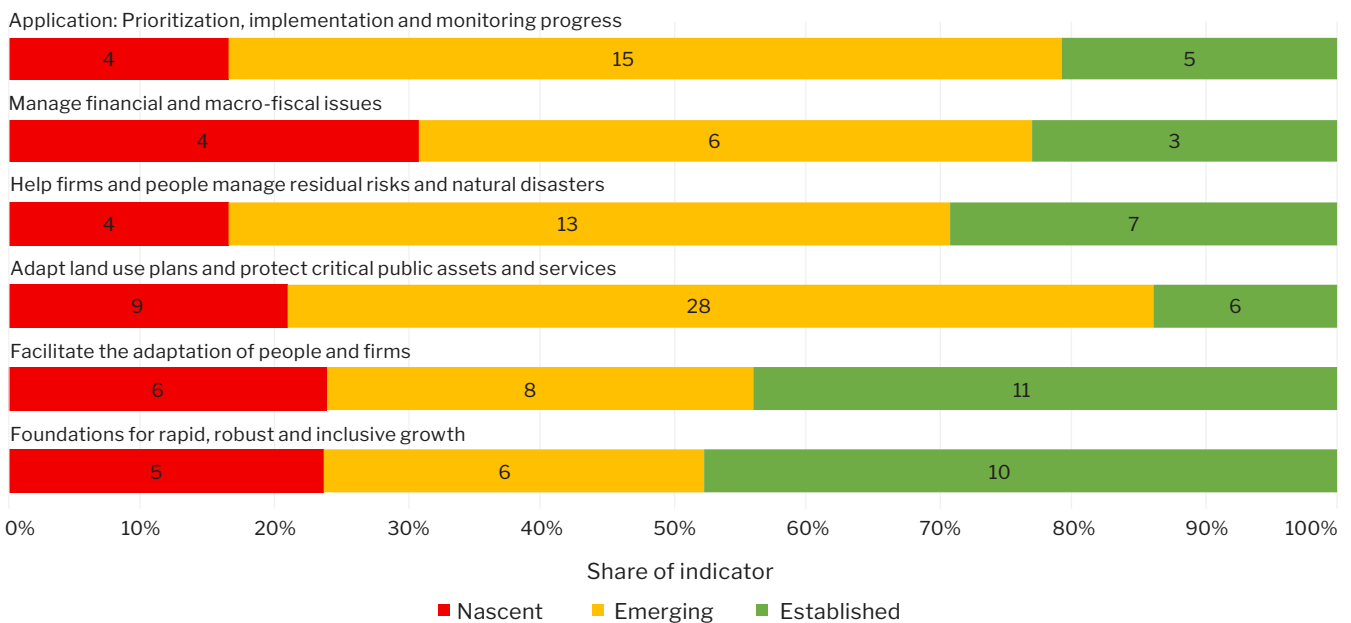
# 3 Conclusions and the Way Forward

As outlined in its vision to become a middle-income country by 2030, Uzbekistan recognizes the need for adaptation and resilience building by opting for a sustainable growth pathway. Over the last decade, the country has made considerable progress in introducing reforms towards a more sustainable future. A good example is the recent Presidential Resolution “On measures to improve the efficiency of reforms aimed at the transition of the Republic of Uzbekistan to a ‘green’ economy by 2030” (December 2, 2022, No. PP-436). This progress is reflected in the summary figure of the six principles used to assess the adaptation and resilience of Uzbekistan; as shown in figure 21, Uzbekistan is emerging on most of the indicators.

More than 45 percent of the scores for all indicators are emerging, thus suggesting actions are underway towards a more resilient economy. Figure 21, organized by priority area for adaptation, illustrates that Uzbekistan is progressing in some areas but lagging in helping to adapt land use plans and protect critical assets and services; 86 percent of the indicators for this principle are either nascent (21 percent) or emerging (65 percent). The country also lags in helping firms and people manage residual risks and natural disasters; 71 percent of indicators are either emerging or nascent. The assessment also shows that more than 75 percent of scores for managing financial and fiscal issues, application—prioritization, implementation and monitoring progress—are either emerging or nascent.

FIGURE 67: >>

### Summary scores: adaptation and resilience assessment Uzbekistan



Source: Original to this publication based on Uzbekistan TNC, [UNECE Environmental Performance Reviews: Uzbekistan](#), and expert interviews.  
 Note: The number in each bar shows the number of indicators per category (established/emerging/nascent).

**Coordinated actions for national adaptation and resilience funding, monitoring, and evaluation are absent and should be considered for proper action and prioritization.** As adaptation and resilience actions and strategies are lodged in different ministries, so is the flow of adaptation funding. A national coordination system or information platform must aggregate, monitor, and designate adaptation funding and activities to align with national priorities. As the country is developing its NAP,

including this in the planning is imperative. It will also permit the government to adequately estimate required funding for the adaptation and resilience needs and develop strategies for mobilizing funds based on national priorities as stipulated in various policy documents. A list of priority actions for Uzbekistan per priority area to improve its standing on adaptation readiness is summarized below.

## ✓ **Priority Area 1: Lay the foundations for adaptation through rapid, robust, and inclusive development >>**

- Prioritize stability of macroeconomic fundamentals such as inflation, external debt, and current account balance to enhance financial stability for adequate adaptation and resilience preparedness.
- Accelerate action on improving good governance, especially on the following aspects, the rule of law, voice and accountability, and political stability to facilitate implementation and inclusion for socio-economic and environmental resilience.
- Accelerate investment in human capital development and review training to match new skill sets required for a market economy to help the population adapt to green transition.
- Also, invest in extending universal health coverage to predominantly rural parts of the country to reduce the population's vulnerability to climate risks.

## ✓ **Priority Area 2: Facilitate adaptation of people and firms >>**

- Increase investment in R&D, develop strategies for integrating research outcomes into policy, and create an enabling environment for foreign research think tanks and innovation hubs to develop evidence-based research and technology for climate change adaptation and resilience.
- Increase access to finance by the poorest (bottom 40 percent)—this population segment is critical in improving financial resilience because they are the most vulnerable and often depend on climate-sensitive sectors (agriculture).
- Diversify the economy through special incentives to investors targeting new sectors, with regulated environmental safeguards incorporated into company environmental safeguard systems, enabling green investments that also improve the standard of living.

## ✓ **Priority Area 3: Adapt land use plans and protect critical public assets >>**

- Establish institutional coordination framework and define mandates to leverage current efforts to develop sustainable land-use plans and protect critical assets.
- Develop incentives to attract the private sector to invest in innovative water-saving technologies because water productivity in Uzbekistan is one of the lowest in the world.
- Establish and implement stakeholder involvement in the land-use planning framework and define linkages between land-use planning and water management for efficient water management and land restoration.
- Expand agricultural extension services and build the capacity of extension workers on organic agriculture and good agricultural practices. Significant expansion of agricultural extension services is required to bridge existing capacity gaps.
- Expand the scope of biodiversity hotspots and develop nationwide animal and plant biodiversity data. Biodiversity preservation is an important element in adapting to climate change.
- Adopt the strategic environmental assessment (SEA) tool to evaluate the environmental impacts of future sectoral strategic documents to ensure climate-smart development and private sector investment.

## ✓ **Priority Area 4: Help firms and people manage residual risks and natural disasters >>**

- Modernize early warning systems and increase data availability to the public to better communicate climate risks.
- Scale-up non-life insurance coverage of the vulnerable population is low in this segment and should be promoted for greater resilience; promote the registration of a larger population in the social registry to better support adaptation and resilience efforts.
- Build sub-national capacity on disaster risk management response to emergencies and enhance information sharing to decentralized units.
- Build the private sector's capacity and institutionalize business continuity planning for the private sector to further support private investments in adaptation.
- Increase the number of qualified planners and develop sustainable financing mechanisms for implementing urban plans.

## ✓ **Priority Area 5: Manage financial and macro-fiscal issues >>**

- Put policy reforms in place for large firms and banks to identify, quantify, and communicate their exposure to climate risk and hazards for better adaptation and resilience preparedness, which would prevent economic crisis in the event of a disaster.
- Aggregate disaster impact analysis at the national level to ascertain the severity and frequency for adequate prioritization of disaster financing at national and local levels.
- Employ contingent credits, risk transfer, and planning based on severity, rehabilitation, and reconstruction need to prevent the holding of large reserves for disaster risk management.

## ✓ **Priority Area 6: Application: prioritization, implementation, and monitoring progress >>**

- Develop an overarching climate policy that anchors different sectoral policies and actions in building adaptation, mitigation and resilience.
  - Develop and implement a strategy for cross-sectoral implementation, monitoring, evaluation and coordination of climate change adaptation and resilience to reduce overlaps and maximize impact.
  - Build government ministries and subnational organizations' capacity to monitor adaptation and resilience initiatives and integrate research into policy. This should be enhanced to ensure compliance with the policy requirements.
  - Develop, monitor, and track a national adaptation fund that captures adaptation and resilience efforts across sectors to contribute to the financial gap and coordinate with development partners to achieve climate commitments.
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# Appendix 1: Summary Scores

<b>Foundations for rapid, robust, and inclusive growth</b>	Nascent	Emerging	Established
Increase economic productivity and growth, while keeping buffers for shocks	1	2	1
Inclusive economic growth	4	4	9
<b>Priority area 1: Facilitate the adaptation of people and firms</b>	Nascent	Emerging	Established
Assess disaster and climate change risks, and make this information available	0	2	7
Clarify responsibilities and align incentives with resilience and adaptation objectives	1	3	0
Facilitate access to technical solutions for resilience through R&D and trade policies	1	1	2
Ensure financing is available to all, and provide support to the poorest and most vulnerable people	4	1	0
Facilitate structural change in the economic system	0	1	2
<b>Priority area 2: Adapt land use plans and protect critical public assets and services</b>	Nascent	Emerging	Established
Identify critical public assets and services	1	2	1
Design and implement a government-wide strategy to increase the resilience of infrastructure systems and public assets	1	4	1
Revise land use plans and urban plans to make them risk-informed	3	2	0
Increase resilience of the agriculture sector and ensure food security	0	7	0
Increase resilience of water infrastructure and water resources management	1	2	1
Design and implement a governmentwide strategy to increase the resilience of the health system	0	4	1
Design and implement a governmentwide strategy to increase the resilience of the education system	1	2	2
Ensure resilience of forests and other natural ecosystems	2	5	0
<b>Priority area 3: Help firms and people manage residual risks and natural disasters</b>	Nascent	Emerging	Established
Save lives (and money) with hydromet, early warning and emergency management systems	1	2	4
Provide all firms and households with risk management instruments	1	2	0
Develop the insurance sector, building on Public-Private Partnerships	1	2	0
Build a social protection system that is responsive to shocks	0	3	2
Help firms develop business continuity plans and financial preparedness	1	3	0
Be prepared to build back better after disasters, with contingency plans and financing	0	1	1
<b>Priority area 4: Manage financial and macro-fiscal issues</b>	Nascent	Emerging	Established
Include contingent liabilities from natural disasters and environmental shocks in the planning and budgeting process	0	1	2
Develop a financial strategy to manage contingent liabilities, combining multiple instruments	0	3	1
Anticipate and plan for long-term macroeconomic impacts	2	1	0
Communicate and mitigate the disaster and climate risk exposure of the financial sector and pension systems	2	1	0
<b>Application: Prioritization, implementation and monitoring progress</b>	Nascent	Emerging	Established
Create strong institutional and legal framework, with appropriate stakeholder involvement	0	4	1
Design an adaptation and resilience strategy with prioritized actions	0	1	3
Set concrete sector-level targets to guide implementation by line ministries and local governments	0	3	1
Screen all public policies and expenditures for climate and disaster risks and align them with adaptation targets	0	4	0
Allocate appropriate funding to the adaptation strategy	2	2	0
Track progress over time, and review and revise the strategy	2	1	0

## Appendix 2: Definition of Key Terms

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- ✓ **Adaptation principles:** A guide to effective climate change adaptation, containing hands-on guidance to the design, implementation and monitoring of national adaptation strategies.
- ✓ **Priority areas:** These are areas of action that ensure a broad, productive, and inclusive development pathway through implementation of an effective climate change adaptation strategy. They include: the adaptation of people and firms (Priority Area 1); land use plans, public assets and services (Priority Area 2); residual risk management (Priority Area 3); and macro fiscal, risk management (Priority Area 4).
- ✓ **Priority actions:** are common policy domains and cover key aspects of the enabling environment required for effective adaptation, these priority actions organized around six adaptation principles.
- ✓ **Adaptation:** is the process of adjusting to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.
- ✓ **Resilience:** is the capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation.
- ✓ **Socioeconomic resilience (SER):** is the capacity to mitigate the impact of disaster-related asset well-being losses, including people's ability to maintain consumption for the duration of recovery, their ability to save or borrow to rebuild their asset stock, and decreasing returns in consumption (a \$1 reduction in consumption affects poorer people more than richer ones).
- ✓ **Hazard:** is the potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources.
- ✓ **Risk:** is the potential for adverse consequences for human or ecological systems, recognizing the diversity of values and objectives associated with such systems.
- ✓ **Physical risks:** refer to the direct effects of a changing climate and include slow-onset hazards, such as increased temperature and changes in rainfall, and more sudden hazards, such as those caused by extreme weather events.
- ✓ **Transition risks:** are primarily driven by the global transition to a low-carbon future, such as shifts in technology, fuel availability, and changes in trade dynamics—for example, due to consumer preferences or tariffs on emissions-intensive goods.
- ✓ **Residual risk:** is the disaster risk that remains unmanaged, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained.
- ✓ **Vulnerability:** is the propensity or predisposition to be adversely affected, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

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