GREEN GROWTH STRATEGIC FRAMEWORK

UZBEKISTAN

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I. Transition to green growth in Uzbekistan: situation analysis

1.1. Development context and urgency to take action

Over the last two decades, while Uzbekistan has experienced robust and relatively high economic growth, it was maintained by a centrally planned and investment-led economic strategy largely financed by natural resource rents. The country's real GDP growth per person has averaged about 7 percent per year up to 2016, 5 percent thereafter up to 2020, and 1.6 percent growth in 2020 despite being hit hard by the COVID-19 pandemic. The recovery has been strong since, with growth bouncing back to 7.4 percent in 2021 and expected to converge to the pre-crisis rate of 5 percent in the medium term. Over the past decade, a large state-led investment program aimed at infrastructure development, diversification, and industrialization of the economy, generated a nearly five-fold increase in the economy's capital stock. The government also ran budget surpluses for most of that period, and gross international reserves have consistently exceeded 50 percent of GDP. Despite this progress, employment has increased only moderately and total factor productivity has declined.

The poverty has fallen consistently, however, the speed of the poverty reduction has fallen over years. The poverty rate[1] in Uzbekistan fell from nearly 28 percent in 2000 to 11 percent in 2019, while non-monetary measures of wellbeing such as prosperity, health and happiness (measured through leisure time, income distribution, self-sufficiency, equity, social cohesion, etc.) have steadily improved over the past decade. Life expectancy rose by more than 2 years between 2009 to 2018. The proportion of households served by safely managed drinking water rose from 67 percent to 87 percent between 2000 and 2019, and according to official statistics, access to basic sanitation facilities has been universal for more than a decade. The World Bank estimates suggest that the most extreme forms of poverty had been nearly eradicated by 2018. Though extreme poverty is now rare, progress on more ambitious standards of wellbeing has been slow over the past decade, especially for a country of Uzbekistan's national income level and growth record. That said, although the most basic needs are often met, economic growth has steadily lost its effectiveness in reducing poverty.

There has been also very little shift in employment from the less productive sectors to the more productive ones, such as, for instance, from agriculture to services and manufacturing. While total agricultural output often still rises due to productivity growth, the agricultural share of GDP falls as other sectors expand even faster. For instance, the agricultural share in value added in GDP fell by as much as 50 to 80 percent in most transition counties following the breakup of the Soviet Union. But Uzbekistan has remained an exception to these trends. Government policy has ensured that agriculture's share in GDP has remained dominant, falling only marginally from about a third at independence to a quarter of GDP in 2019[2]. Unemployment also continues to remain high[3], while most work is informal. In 2020, official statistics estimated unemployment at 10.5 percent of the active labour force, while another 34 percent of working-age people were inactive (i.e., not working or looking for work). Both measures are partially the result of a limited number of jobs available and strong seasonality in economic activity.

Strong progress on reforms has been seen in Uzbekistan since 2017, which slowed down amidst Covid-19 pandemic, yet more results should be forthcoming. The *2017–2021 Development Strategy* was ambitious, targeting for a rapid transition to a market-based economy and shared prosperity. The Strategy followed by a *Reform Roadmap in 2018* outlining the government's economic reform priorities for 2019-2021, including environmental sustainability among the five key pillars. Overall, the first phase of reforms[4] resulted in creation of new firms and jobs, increase of horticultural exports, higher levels of tourism arrivals, and decline of poverty. In 2019, Foreign direct investment (FDI) nearly doubled and flowed to an unprecedentedly diverse range of economic sectors. While the impact of various reforms

[1] Using the official national definition of the low-income population
[2] World Bank (2021d)
[3] http://ijeais.org/wp-content/uploads/2021/2/IJAAFMR210206.pdf
[4] Development strategy (UP-60)

has been slowed since 2020, more measurable results are expected provided the country can navigate a green transition out of the pandemic.

It is becoming clear that a growth model that disregards the environment and climate constraints is no longer sustainable. In Uzbekistan, economic growth has heavily relied on natural resources to a scale that is now putting at risk long-term growth prospects and social achievements. A greener economy will allow Uzbekistan to capture the dynamics among transformative technological advances, preserve natural capital, and generate the full health benefits of cleaner air and a safer climate.

Some steps have been taken by the Government to advance the green economy agenda, but the green growth would require involvement of economy-wide changes. The Government made first steps towards the sustainable green growth when the 2019-2030 Strategy for the Transition to a Green Economy[5] and the Climate Change Strategy were approved. The *Green Transition Strategy* sets out targets to improve energy efficiency in core economic sectors; diversify energy supply toward renewable energy sources; adapting to the consequences of climate change; increase efficient use of natural resources, and to develop financing mechanisms. The targets foreseen by 2030 are reduction of emissions of greenhouse gas per unit of GDP by 10 percent of the 2010 level; a twofold increase of energy efficiency indicators and a decrease in the carbon intensity of GDP; further development of renewable energy sources, with coverage of more than 25 percent of the total volume of electricity generation; increase of the energy efficiency of industrial enterprises by at least 20 percent; development of electrical vehicles; introduction of drip irrigation technology into an area up to 1 million hectares and increasing the crops yield cultivated on them by 20-40 per cent; achieving a neutral balance in the degradation of land; increasing the average productivity of the production of the main types of agricultural food products by 20-25 percent. The *Climate Change Strategy* outlines measures to: (1) mitigate the impact of economy sectors on climate change; (2) adapt to climate change; (3) advance climate monitoring; and (4) build capacity in the area of greenhouse gas control.

The Government is currently in the process of updating the 2019-2030 Strategy for the Transition to a Green Economy, extending it to 2050, and many of the actions are yet to be formulated. The priority areas of the strategy, which are being discussed cover the following, *inter alia*: (i) improvement of energy efficiency in the basic sectors of the economy; (ii) diversification of energy consumption and development of the use of renewable energy sources; (iii) adaptation and mitigation of the effects of climate change, increase in the efficiency of natural resources and preservation of natural ecosystems; (iv) development of financial and non-financial support mechanisms for the green economy. An *Inter-Agency Council* led by the Minister of Economic Development and Poverty Reduction is the overarching body responsible for the implementation of the *2019-2030 Green Economy Transition Strategy*[6]. The Council is aimed to provide strategic guidance and serve as decision making authority for the advancement of Green Growth in Uzbekistan. Overall, as the green growth involves economy-wide changes, it calls for strong policy coordination and an institutional and regulatory framework that cuts across sectors. Strong political commitment is key to managing sectoral trade-offs and sustaining action over successive governments. It must be supported by objective technical advice, adequate data and analytics, knowledgeable staff in government, catalysing finance, engaging the private sector, and a low-emission development strategy. Many of the actions and measures of how the country's long-term goals will be achieved are still being formulated.

The Nationally Determined Contribution (NDC) submitted by the Uzbekistan's Government in October 2021 commits to an ambitious target to cut GHG emissions per unit of GDP by 35 percent by 2030 (base year 2010)[7]. This more than tripled the previous target foreseen in the Presidential Resolution. The NDC follows the Government's plans to increase the share of renewable energy sources to 25 percent of total power generation, double the energy-efficiency indicator relative to the level of 2018, halve the energy intensity of GDP, and decrease industrial consumption of natural resources. These developments recognize the country's large renewable energy potential for diversifying the energy mix and emphasizing the need for clean energy transition. Several indicators to monitor the progress of

[5] Resolution of the President of the Republic of Uzbekistan PP-4477, April 10, 2019.
[6] As foreseen in the Resolution No PP-4477
[7] The emissions intensity (and energy intensity) of Uzbekistan's economy is very high compared to other countries

these targets are included in the country's National Development Goals, *the Green Economy Strategy*, *the Climate Change Strategy*, *the National Biodiversity Strategy*, and *the Concept for the Development of the Electric Power Industry*. These broad aims, however, still need to be evaluated in terms of the costs involved, priorities between options, how financing will be mobilized and how any social impacts will be addressed.

Achievement of the sustainable green growth is tightly aligned with Sustainable Development Goals (SDG) implementation to the national development policy framework, however, the implementation mechanisms are not clear. Uzbekistan reinforced its commitment to align SDGs to national strategies and programs through the adoption of the *2030 Agenda for Sustainable Development* in 2018. The *2030 Agenda* also requires developing SDG baselines and target values that reflect national aspirations to 2030. It also assumes gradually integrating the SDG targets and indicators into central, sectoral, and regional strategies, as well as into annual legal, budgetary, and reporting processes and indicators[8]. Improving information quality on SDG indicators could significantly contribute to assessment of challenges in implementation of sustainable growth strategies yet the actions and measures are yet to be identified.

Some progress towards SDGs has been achieved yet challenges and barriers remain. For instance, improvements in the business climate, stimulation of entrepreneurship and formal employment will be required to achieve decent work and economic growth. Efficient investments in human capital are necessary to enable Uzbekistan green growth and advance the productive, innovative, inclusive, and stable society. Thus, the country has prioritized human development and enhanced quality of education. But, while performing well in the enrolment to primary and completion of secondary education, the enrolment in higher education is lagging behind, reaching only 12.6 percent. Further investments in human capital, as quality of education and training, can ensure employment opportunities in the period of transformation in key economic sectors as, for instance, agriculture employs about 27 percent of Uzbekistan's labour force.[9] Overall, a sustainable transformation to market-led agriculture can drive Uzbekistan's structural transformation. Increasing efficiency in water use in agriculture and energy and resource use in industry could advance Uzbekistan achievement of SDGs on clean water and sanitation and affordable clean energy but will require investment and promotion of innovation to these sectors. Improving an obsolete infrastructure can contribute to increasing opportunities for decent work and advance sustainable cities and communities. In particular, this can be visible in the electricity sector, where electricity losses (20 percent of net generation) and frequent power outages undermine economic activities and the well-being of citizens across the country.

Financing needs for these SDG investments are substantial and, in many cases, far greater than the fiscal space available to the government to finance those needs. Financing advancement of SDG requires large-scale increases in public and private investments and measures to ensure the budgets need to be fully aligned with achieving the SDG. With more than half of the urban population living in informal settlements, ensuring transformation of the energy sector, reducing carbon emissions, water, and air pollution, developing renewable energy sources can forward achievement of SDGs but will require significant investments. Performance budgeting, spending monitoring and review, Public Private Partnerships (PPPs) are all powerful tools that must all be mobilized by the government to achieve the goals.

Green transition will require a shift to sustainable growth, an increase in labour productivity, growth in jobs and a decrease in poverty. Uzbekistan has made some progress in sustainability and resilience indicators yet more remains to be done to realize the country's potential for going much greener. There will be a need for structural changes in carbon-intensive sectors, such as construction, mining, transport, and energy sectors, while also a greater focus on sectors with lower carbon-intensity and higher potential of generating "green" jobs: forestry, forest-related services, education, healthcare, and finance services.

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[8] Izvorski et al. (2021)

[9] Listening to the Citizens of Uzbekistan (2019). A collaborative effort led by the WB in cooperation with the authorities, non-governmental organizations, United Nations International Children's Emergency Fund, the European Union (EU), and the U.S. Agency for International Development (USAID). https://www.worldbank.org/en/country/uzbekistan/brief/l2cu#2

There are also potential impacts on people and economy given the geopolitical challenges in the region, which make it even more important for a shift to the sustainable green growth. Expected significant increase in basic food price could lead to a potential agricultural expansion. There might be additional pressure on forests and landscapes. The impact on food security is also likely to be high in both, the short- and long-term. Potential increase in subsistence farming and grazing could further reinforce land degradation and increase emissions from agricultural land use, due to anticipated fall in remittances and the return of previously migrant workers with no job opportunities.

1.2. Risks

By the end of this century, the average temperatures in Uzbekistan are expected to rise significantly above global averages. Average temperatures could rise by as much as 4.8°C above the 1986-2005 baseline by the 2090s[10] (Figure 1). The increase in average temperatures by the 2090s is expected to be strongest in the Fergana valley. Average summer temperatures rising even more - as high as 6°C with daily temperatures regularly exceeding the 35°C. Most of Uzbekistan is arid desert and as summer temperatures reach hazardous levels, they likely to have significant socio-economic impacts on the country with very significant risks to human health, hydrological resources, and ecosystems. Climate change will therefore further exacerbate the current economic growth model risks.

Earthquake, flood, and drought risks are the main natural hazards in Uzbekistan, yet the institutional strengths to combat increased risks is relatively low[11]. Severe weather events are expected to increase in frequency in the country. Lack of coping capacity (see Table 1) is indicating only a modest ability of the government to cope with natural hazards in terms of formal, organized activities, as well as low preparedness of the existing infrastructure. The country will be facing desertification and water scarcity exacerbated by climate change.

Table 1. Select Countries and Indicators from the INFORM 2022 Index for Risk Management[12]

Country	Inform Risk	Hazards and Exposure	Earthquake	Flood	Drought	Vulnerability	Lack of coping capacity
	(0-10)	(0-10)	(0-10)	(0-10)	(0-10)	(0-10)	(0-10)
Kazakhstan	1.8	2.3	6.5	6	5	0.7	3.6
Kyrgyzstan	3.3	3.7	8.6	5.6	6	2.3	4.3
Tajikistan	4.4	5	9.3	5.4	7.6	3.4	5
Uzbekistan	3.1	3.9	8.1	6.3	6.6	2	3.9

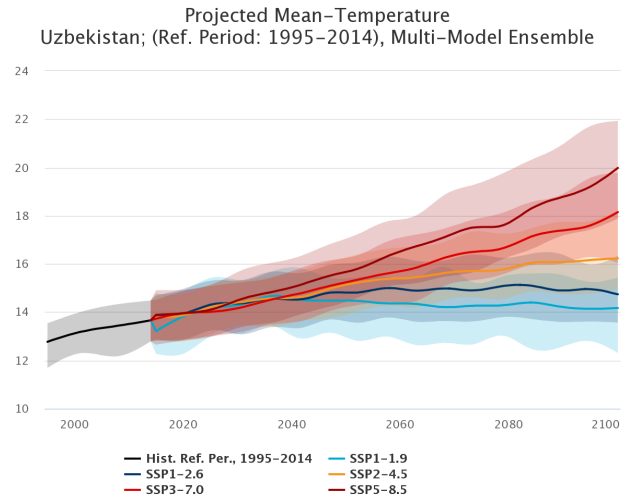
Source: European Commission (2022). INFORM Index for Risk Management.

In Uzbekistan, natural hazard events such as droughts (dry shocks) can cause significant welfare losses. Underlying risk factors (see Table 1) intensify impact and exposure of population and infrastructure to severe weather events. The country ranks in the top 20 in the world in terms of its exposure to drought[13]. More importantly, the country is more susceptible to droughts in low-income

[10] World Bank, ADB (2021). Climate Risk Country Profile – Uzbekistan
[11] Uzbekistan ranks 96th of 191 countries in climate vulnerability (ND-GAIN, 2019)
[12] An alternate measure of disaster risk is the ND-GAIN index which calculates a country's vulnerability to climate change and other global challenges as well as their readiness to improve resilience, where Uzbekistan ranks 80 out of 182 countries. The most at-risk country is ranked last.
[13] World Bank, ADB (2021). Climate Risk Country Profile – Uzbekistan

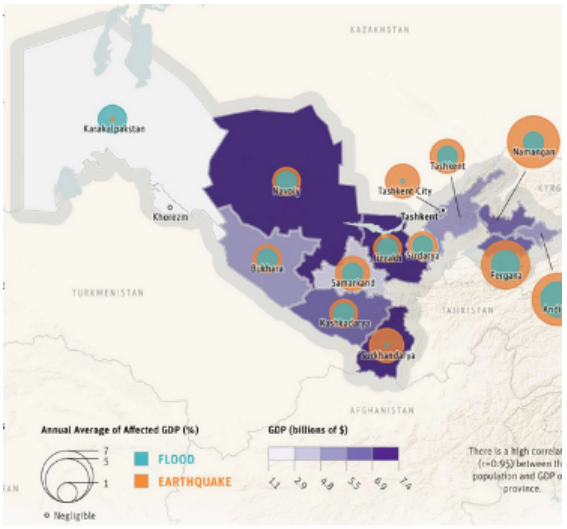
regions, that strongly depend on agricultural incomes. Frequency of droughts is higher in north-east part of Uzbekistan, affecting regions -the largest is Karakalpakstan- with poverty rates at above 15 percent[14], where agriculture occupies the largest place in the structure of the economy. Risks to the employment in this region is ranked first among all potential social risks identified within the socioeconomic survey by UNDP (2018). In this area, agricultural lands mix with regions of sparse grass vegetation affected by wind erosion, as well as salt and dust to the atmosphere. Lack of surface water flow supplied by the rivers, decreasing precipitation levels and increasing occurrence of droughts are main contributors to desertification of the Aral Sea region in Karakalpakstan.

Figure 1. Projected Mean-Temperature in Uzbekistan



Source: tbc

Figure 2. Floods and Earthquakes, GDP (%)



Source: GFDRR, 2016

Around 1.4 million people are impacted every year by earthquakes and floods causing almost US$3 billion in losses in the country[15]. Although the very high seismic risk could affect less than 15 percent of Uzbekistan's territory, the danger is concentrated in the Tashkent and Bukhara regions, which are home to more than half the country's population and 65 percent of GDP. Most affected areas by earthquakes are south-east regions of Uzbekistan (Figure 2), that are also densely populated and have developed urban infrastructure. At the same time, only over 20 percent of the population resides in buildings with high seismic vulnerability. This provides a strong signal for a need in investments directed to seismic retrofitting of critical public and private buildings, energy, and transportation systems.

Around 61,000 people are being affected each year due to high risk of river flooding and flash flooding, with an expected annual impact on GDP estimated at US$181 million[16]. Flood risk is also highest in the more densely populated parts of the country, such as Ferghana Valley. Many public buildings and assets are also in flood hazard zones, affecting approximately 34 percent of Tashkent's major roads, 18 percent of schools, and 23 percent of hospitals. Severe floods in urban areas would likely impact about 5 percent of country's GDP. Losses are being further intensified due to aging infrastructure, lack of drainage systems, poorly maintained drains and loss of greenery and loss of pervious surface.

Climate change is further increasing flood risks through a combination of more extreme precipitation events, glacier melt and slope destabilization through permafrost melt while the arid climate and

[14] World Bank (2020)
[15] World Bank (2017)
[16] World Bank, ADB (2021). Climate Risk Country Profile – Uzbekistan

regular high temperatures make drought also an increasingly regular occurrence in Uzbekistan. Thus, for instance, peak river flows due to snowmelt are expected to shift up to one month earlier in the year, which could increase the likelihood of increased occurrence of flood, mudflow, and landslide risks. And as droughts are projected to increase with the climate change, the cascade negative effects, such as declining agricultural yields of major crop yields (e.g., cotton, apples, alfalfa, potatoes, wheat) could be reduced by 25-63 percent by the 2050s compared to a 2000-2009 baseline[17] (Sutton et. al 2013)

1.3. Consequences of absence of action

While rich in natural resources, Uzbekistan is highly dependent on them, and their sustainable use remains a challenge. Estimates from 2018 suggest that the value of Uzbekistan's natural resources, at US$5,043 on a per capita basis[18], are second only to Kazakhstan in the Central Asia region and substantially above the lower middle-income country average. While fossil fuels and minerals play a dominant role, the country also has significant wealth in cropland and pastureland. Notably, the value of forests and protected lands, which are critical for preserving the value of croplands and strengthening resilience to climate change and natural disasters, accounts for just 5 percent of natural capita in Uzbekistan. This further highlights the potential vulnerability of the country's natural capital. At the same time, forest ecosystem services comprise a high natural capital value per hectare of land, comparable to the per hectare value of croplands. The country also has significant potential in renewable energy sources, such as solar, wind, and hydro, that can cover the growing energy needs and transition to a clean and efficient energy economy. The development of renewable energy sources, however, implies the implementation of measures for development of transparent and competitive auction trading, as well as the localization of equipment production for energy generation from renewable energy sources.

Table 2. Value added of domestic producers[19] (current US dollars)

	GDP in 2019	Agriculture	Industry	Manufacturing subset	Services
	($ billion)	(% of GDP)	(% of GDP)	(% of GDP)	(% of GDP)
Europe & Central Asia	22,792.8	2	23	14	65
Kazakhstan	181.7	4	33	11	56
Kyrgyz Republic	8.5	12	28	14	50
Tajikistan	8.1	19	27	11	42
Uzbekistan	57.9	26	33	20	32
Turkey	761.4	6	27	18	57
Poland	595.9	2	29	17	58
Russian Federation	1,699.9	3	32	13	54

[17] Sutton et al (2013)
[18] In 2018 prices.
[19] Shares may not add up to a hundred percent. Manufacturing value added is a subset of industry. Value added from services excludes financial intermediary services indirectly measured (FISIM) and net indirect taxes

Source: World Development Indicators, World Bank (2021).

With a significant role in the country's economy (total natural resources rents equivalent to nearly 19 percent of GDP in 2018[20]), natural resources are an important source of income for households, which depend on the status of natural capital stocks especially in rural areas. That said, Uzbekistan's economic development reflects a state-driven industrial sector growth model with a heavy reliance on natural resources and agriculture (see Table 2). Within Central Asia only Kazakhstan is more resource dependent than Uzbekistan. Natural resources also contribute substantially – though with important commodity price volatility – to government revenues, with revenues from oil, gas, and minerals estimated to contribute around 15 percent of the state budget[21]. Natural resources are particularly critical as a source of income for households in the country's rural areas. For instance, the agriculture sector (resource-based) accounts for 27 percent of employment and many working in the sector are from poorer segments of society.

Impacts from climate change increase country's vulnerability to droughts, high temperatures, heat waves, heavy precipitation, mudflows, floods, and avalanches. As annual average temperatures are increasing, the weather is becoming less predictable with the annual probability of experiencing severe droughts, intensified by river runoff decrease, specifically from the Amudarya and Syrdarya rivers[22]. Without support to adapt, Uzbekistan's poor and marginalized communities are likely to be affected most by climate change.

Challenges of social vulnerability undermine greener, stronger growth over a long term and hinder the country's performance in building environmental, social, and economic resilience[23]. Country performance varies in terms of natural and social resilience to climate change, which in Uzbekistan is lower (44 percent) than in compared ECA countries. And while the share of population that is affected by geophysical, meteorological, hydrological, or climatological natural disasters is below the average in the lower-middle income countries, the country shows higher exposure to dry shocks[24], severely affecting agricultural productivity in poor regions. While the country shows a relatively low exposure[25] to natural disasters, asset losses for low-income population are almost twice larger. The low risk to assets in Uzbekistan can be explained by the fact that natural disaster losses are concentrated on a small share of country population, that is imperfectly distributed and mostly have low-income. These households tend to experience asset losses that may be below average in the region –mounting to 0,25 percent of GDP– but their well-being losses from natural disasters are almost twice larger - 0,57 percent of GDP[26].

Weak physical resilience is complemented and reinforced by financial resilience, where the availability and inclusion of financial services remain very low. Only about 10 percent of households have catastrophic insurance, while the remaining uninsured homeowners require government financial support in the event of a major disaster[27]. It will be especially important to strengthen the financial resilience of vulnerable households in Uzbekistan, including low-income families, many of whom live in rural areas and rely directly or indirectly on agriculture. Also, only around 50 percent of Uzbekistan's population have bank accounts and only about 15 percent use mobile apps or internet banking[28]. That said, the digital banking services are still in the infancy and present growth opportunities. This would require improvement of the regulatory environment and development of financial literacy within the population.

[20] Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents (% of GDP)
[21] Source: United States International Trade Commission.
[22] Also considering the effect of upstream hydro projects in TJK/KGZ and the legacy of Soviet irrigation projects
[23] Resilience is considered as an economy's ability to minimize the impact of asset losses on well-being
[24] Damania (2019)
[25] Exposure to the risk of natural hazards can be found by estimating the population and assets located in an affected area.
[26] Hallegatte (2017)
[27] World Bank (2021b)
[28] World Bank (2021) Green Growth Note on Uzbekistan

The country lacks adequate support to research, education, extension, and advisory services, while poor financial conditions of farms restrict new technology adoption in farming. Around 85 percent of the farming in the livestock and horticultural sectors – responsible for important methane emissions, as well as nitrogen emissions due to high fertilizer consumption – are done by small-scale Dehkhan farmers that do not have many financial resources to invest in new technologies. The size of these farms is also up to 1ha area, which does not provide sufficient economies of scale for mechanization and advanced technological applications. Very high perception of risk is translated through high cost of funds, complicated administrative costs and high interest rates. These conditions make access to funds difficult for rural farmers. Institutions also lack the requisite capacity to engage in meaningful programs that will help them generate improved technologies and practices rendering farmers rely on R&D services that are age-old and outdated as well as indigenous technologies. R&D institutions need a massive boost by the government in terms of higher capital spending, international collaboration, and technology transfer.

Given that the country is still at its early stage of the transition process, it is an opportunity to invest early and at a relatively lower cost to build a greener and resilient economy. As Uzbekistan is acutely vulnerable to a changing climate and declining access to water, risks are becoming imminent. That said, climate change will further exacerbate the current growth model risks. Uzbekistan needs a path that will increase the efficiency and sustainability of its natural resources, lower carbon intensity, and help ensure that the benefits of the transition are inclusive for all its citizens. By following a path that prioritizes green investments, embraces systematic innovation, and manages risks and trade-offs, the country can deliver lasting benefits for its people. The resilience of the country's economy should be increased. As trading preferences become more sensitive to environmental impacts, development and deployment of new technologies and processes should be promoted and accelerated, allowing to enable Uzbekistan to increase its competitiveness in the global marketplace.

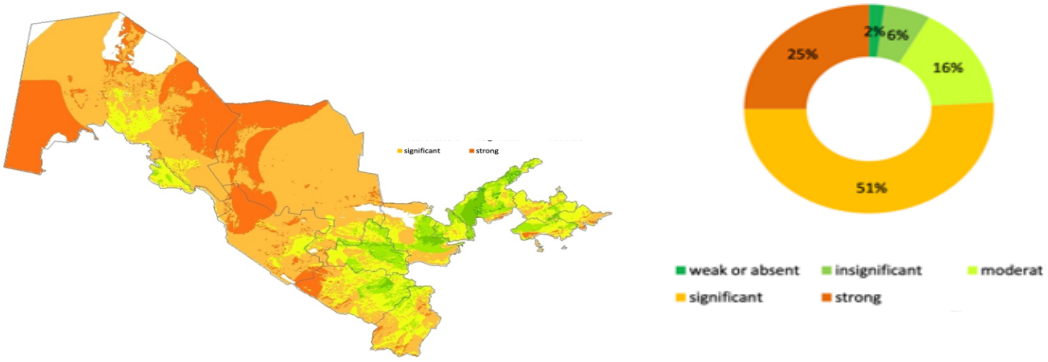
Forest resources

Productive land is a scarce resource in Uzbekistan. Land resources have an important role in biomass and mass production, in protection of biological diversity, and the productivity of an ecosystem. Land affected by erosion can have substantial economic implications. Land degradation has very high costs for rural communities and the national economy, causing losses equivalent to 4 percent of GDP in 2016[29]. These losses caused by active destruction of land were five times higher than the estimated cost of measures to protect land in the country. One of the major drivers of land degradation in the region is inadequate maintenance of irrigation and drainage networks while secondary salinization in the irrigated lands drives soil erosion, caused by high level of groundwater, improper irrigation and poor financing of the drainage. Around 50 percent of irrigated lands are exposed to different degrees of salinity in the country. Salinization also reduces the yields of crops (for instance, from 20 percent to by 80 percent for cotton depending on the salinity of soils).

Crop and livestock farming in rural livelihoods are the main sources of land and forest degradation. Decline in ecosystem services have worsened due to intensive grazing, unsustainable agricultural practices, poor water management, and the degradation of forest belts. Land degradation caused by soil erosion processes is a major environmental problem causing a loss of topsoil and nutrients, reduced soil fertility and productivity[30]. Maintaining and increasing productivity reduces the need for expansion and thus minimizes the loss and degradation of natural ecosystems.

Figure 3. Integrated map of the exposure of the territory to the processes of desertification

[29] Quillérou (2016)
[30] Zhao et al (2019)



Source: Rakhmatova et al. (2016)

Forest restoration will generate multiple ecosystem services and benefits not only by providing forage, food, and construction materials, but also by improving watershed management and preventing soil erosion, creating employment in forest management, recreation, and tourism, as well as agroforestry. Direct economic contribution of the forest sector was less than 1 percent of GDP in 2019, but with larger value driven by indirect contribution, as the protection of soil and water. Uzbekistan has 3.68 million ha of land covered with forests, corresponding to 8.6 percent of the land area (44.4 million ha). The main function of forest is protection of soil and water and ecosystem services that are estimated in US$10 billion per year. Every dollar invested in sustainable landscape restoration can yield 4 dollars in returns over a 30-year period[31]. This is regionally significant given the worth of ecosystem services by 2035 in Central Asia is estimated to be US$1,527 billion[32].

Agriculture and Water

Failure to address inefficient management of natural resources in the face of a changing climate raises severe risks to the country's agricultural sector. This is critical for Uzbekistan, where its rural population, or around 80 percent of the country's poor population, is highly dependent on. Agricultural land productivity[33] ranks well below average for lower middle-income countries and the low total factor productivity in agriculture in Uzbekistan is significantly low compared to the Central Asia region. Also, widespread land degradation will have increasingly large negative impacts on productivity, earnings, and health, and risk undermining some of the potential benefits of urbanization. Diversification of cropping systems at a large-scale might help to reduce country vulnerability to exogenous shocks, improve farmers' incomes and enhance soil fertility through adoption of agroecological practices with multiple crops. Developing rural infrastructure to reduce post-harvest losses, enhance rural processing of products and facilitate transport for distribution and exports are key infrastructural shifts that can create and enabling environment for product diversification and sustainable value-chain development.

The country lacks access to land, animal feed shortage, and subsequently vulnerable to low cattle productivity. Lack of access to adequate and quality land to produce forage crops and low availability of animal feed restrict livestock owners from expanding production quantum. Low feed supply levels and availability also reflect in low livestock productivity, e.g., low milk yields that are about 6 litres per day in Uzbekistan as compared to the international average of 22 litres per day. Further revisions to the land legislation will be required to allow secured tenure rights to farmers so as to incentivize land investments and sustainable management practices. Enhance cross sector and ministerial coordination, M&E for restoration and policy options for private sector engagement.

Uzbekistan is among the most water stressed countries in the world and highly sensitive to climate change. Low economic productivity of water use can be explained by low water efficiency in Uzbekistan, estimated at US$1.4/m3, compared to other countries. Low efficiency is responsible for

[31] Quillérou et al. (2016)
[32] Li (2019)
[33] Gross production value as a share of total agricultural land.

high water stress. Research underscores that farmers income in western Uzbekistan can fall by 25 percent and will vary significantly depending on the extend of water use efficiency use and temperature increase[34]. This further reinforces the current situation of climate vulnerability. Thus, appropriate actions that enhance adaptation/mitigation while improving the livelihoods of citizens, especially the rural populations that depend on agriculture is critical.

Inefficient use of water and high levels of water losses are adding pressure on scarce natural water resources by extending the hydrological cycle and worsening agricultural water productivity[35]. Annually more than 100 percent of the total renewable freshwater resources available are withdrawn. Water withdrawal rates are driven primarily by their inefficient management. Thus, approximately 80 percent of the country's agricultural production depends on inefficient pump irrigation systems, which suffer from high water losses due to aging and poorly maintained and operated infrastructure.

Direct economic costs of reduction in water availability occur due to limited water availability and quality for agricultural use. These impact further the low efficiency in agriculture. In Uzbekistan land productivity is well below average for lower middle-income countries, ranking in the bottom 20 countries of global water productivity index. With cotton and wheat consuming 90 percent of water in agriculture and more than 90 percent of agricultural public expenditures, totalling 2.1 percent of GDP in 2016.[36] Inefficient water use in agriculture is also linked to food security index, where Uzbekistan ranks low at 78 (to compare, Kazakhstan ranks 41, and Tajikistan - 83).

Also, indirect cost of reduction of water availability are driven by Uzbekistan hydropower potential and interregional electricity trade. Standard[37] domestic household and industry demands in the country are covered by the current electricity generation mix (around 10-15 percent of hydropower capacity and rest thermal/fossil capacity). However, non-efficient use of water resources in other sectors as well as infrastructure failures bear large economic costs. Thus, it is estimated that the costs (unrealized benefits) of non-efficient energy trade with neighbouring countries amounted to around US$600 million per year for Uzbekistan[38].

Timely supply of hydrological, weather and climate information are a foundation for assessing and mitigating climate risks. Strengthening regional water and environmental planning affecting the surface inflow, introduction of water management will promote green development and support to the rural livelihoods[39]. Climate change is affecting the water balances and is also linked to the desertification of the Aral Sea. Shorter and hotter summers, longer and colder winters, and a decrease in precipitation pose further risks to population living in the area. Main causes of environmental pollution are salt dust storms from the dried bottom of the Aral Sea, solid waste, pesticides, and emissions from large enterprises[40]. Considering losses caused by air pollution and soil degradation, lack of sanitation and water management, restoring vegetation becomes an affordable, reliable, and environment-friendly way to reduce the environmental impacts.

The country demonstrated increased efficiency in the use of scarce water for agriculture and a growth in agricultural productivity over time, although only very modest. The post 2017 macroeconomic policies in Uzbekistan have contributed to a modest improvement in agricultural productivity of 3.2 percent per year from 2000 to 2018. This largely happened due to removal of production targets and a shift away from cotton as well as introduction of new production routes such as horticulture. There was also a small increase in the efficiency of water use in agriculture. This was overall possible due to the rationing of water, a shift away from cotton and wheat, adoption of water saving technologies and some increases in water tariffs. At the same time, there is still a long way to

[34] Bobojonov, I. et al. (2016)
[35] Productivity is measured as amount of agricultural product yielded per unit of water spent on irrigation and agriculture
[36] Cotton Taxation in Uzbekistan: Recent Developments and Reform Agenda (2018), Uzbekistan Agricultural Public
Expenditure Review (2019). Reforming the Wheat Sector in Uzbekistan (2019), World Bank.
[37] In peak demand hours, electricity is provided by Kyrgyzstan and Tajikistan
[38] World Bank (2016a)
[39] UNDP (2021)
[40] UNDP (2017)

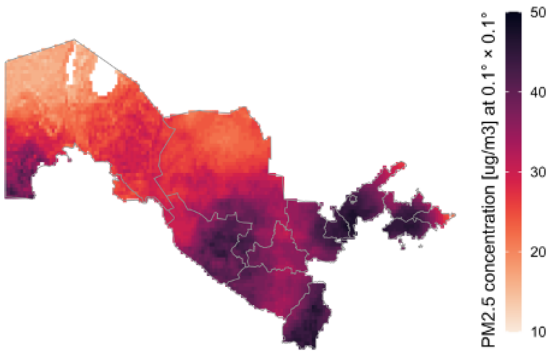
go. Use of water in agriculture, introduction of tariffs on water and sewage are planned by the government of Uzbekistan, while the distributional effects of the tariffs must be carefully analysed.

Air Pollution

Main sources of air pollution in Uzbekistan are residential heating, transport, industry, power, agriculture, and dust from municipal activities or/and desertification. In 2019, the annual mortality rate per 100,000 inhabitants from air pollution in Uzbekistan was 89, compared to an ECA average of 50 and an EU average of 38[41].

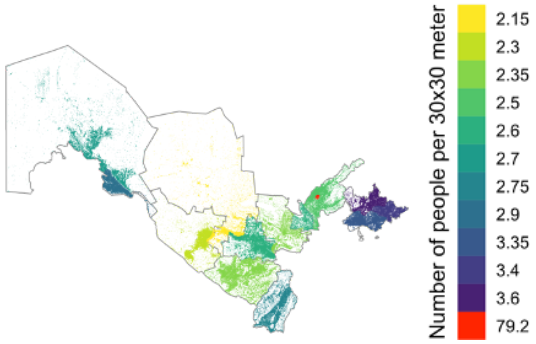
Air pollution can be characterized by high concentrations of fine particulate matter (PM2.5[42]) linked to fossil fuel and other solid fuels combustion by industry and households. Energy intensive structure of the economy maintained relatively stable consumption of fossil fuels between 2000-2019. The population weighted annual average PM2.5 concentration in Uzbekistan is therefore above the Central Asia average. Although natural gas has been consistently substituting oil, decreasing the energy intensity gradually, reduced, air pollution is still detected in densely populated Fergana Valley and in Tashkent (Figure 4, Figure 5).

Figure 4. PM2.5 concentrations in Uzbekistan, 2018 annual average



Source: Hammer et al (2020)

Figure 5. Population density in Uzbekistan



Source: CIESIN, Columbia University (2016)

Reducing the mortality and morbidity burden linked to air pollution in the country requires analysis of dominant sources and requires integrated pollution management systems. The total mass and distribution of air pollutant (PM2.5) in the air depends on local environmental conditions, dominant sources of pollution, and the magnitude of those source-specific emissions. Careful estimation of sources of PM2.5 pollution benefit to define mitigation strategies that address major pollution sources, especially when resources for effective action are limited. For instance, the airshed approach suggests that integrated air pollution management system should be developed at least in Fergana Valley, most affected by high pollution levels, given higher accumulation of particulates in the air.

In the urban areas, industry, transport, and waste burning are likely dominating sources. In the rural areas, solid fuels burning for heating and cooking together with agricultural waste burning. Also, dust and salt storms from soil erosion significantly affect the whole area of Uzbekistan. The dust from bare dry soils is usually lifted by strong winds and penetrates into buildings and areas over long distances, contributing to substantial increases in air pollutants[43]. Dust mixed with industrial pollutants and microorganisms may enhance the toxicity of aerosols in urban environments. The importance of measures aimed to reduce soil erosion, agricultural waste burning, and anthropogenic dust will have a

[41] As estimated by the Global Burden of Disease (2019)
[42] Fine particulate matter (PM2.5) is an air pollutant. These are tiny particles in the air that reduce visibility. Smoke from fires and emissions (releases) from power plants, industrial facilities, and cars and trucks contain PM2.5. Its high concentration in the air is a great concern for people's health.
[43] WHO (2021)

prominent effect, as largest relative contributors to high air pollution levels are dust and fires (51 percent). Among the emissions sectors, the largest disease burden is attributable to windblown dust (47 percent), the energy sector (12 percent), followed by waste and residential sectors (9 percent each on average). These contribute to increased level of cardiovascular, respiratory, and other diseases, mortality and reduced labour productivity. In 2019, for instance, total mortality from ambient air pollution (associated with PM2.5) contributed to 10 to 18 percent of all non-accidental mortality of all health risks[44]. Such mortality range corresponded to the losses in economic welfare due to pollution between 2 and 4 percent of GDP or around US$58 billion in 2019. Potential health benefits from eliminating arid conditions and soil erosion could have the largest positive impact on the attributable disease burden. In rural areas, rehabilitation of soil and improved agricultural and land use practices, together with development of renewable energy sources, could substantially contribute to improved air quality.

[44] The World Bank estimates based on the methodology described in Narain et al. (2016) and the estimations of Ward et al. (2021): local, regional, and national mortality among young people aged 10–24 years, 1950–2019: a systematic analysis for the Global Burden of Disease Study 2019.

II. Vision, Strategic Priorities and Targets

2.1. Vision

The vision of the GGSF build on and reinforce synergies of already existing strategic frameworks at the national level[45].

1. **Significantly increasing energy efficiency**
    a. Foster technological modernization
    b. Develop financial incentives for the adoption of green technologies
    c. Define targets for energy saving and energy efficiency and implement a performance reporting system;
    d. Audit energy management of energy-intensive enterprises.
2. **Increasing participation of the population and local communities**
    a. Provide the necessary resources and opportunities to the regions to conduct their integrated socio-economic development and enable population to voice their needs
    b. Expand the coverage and increase the efficiency of the provision of public services
    c. Set the framework conditions for achieving increased human well-being and economic mobility
3. **Creating an enabling environment for the transition to a green economy**
    a. Support green investments
    b. Optimize state participation in the economy
    c. Develop state incentives, public-private partnerships and enhanced cooperation with international financial institutions to create broad opportunities for the private sector
    d. Support private investors in the implementation of green innovations

2.2. Thematic strategic priorities

As consumer preferences and global trading regimes become more climate- and environmentally aware, Uzbekistan has more reason to pivot away from a business-as-usual approach to one that enhances innovation-driven development in the private sector. A greener growth model can unlock opportunities for innovation, investment, and value creation, thus reducing economic and fiscal losses and strengthening productivity. Furthermore, building a sustainable growth model now is a smart insurance strategy for avoiding higher and costlier risks in the future. However, there is no 'one-size-fits-all' prescription for fostering green growth but pursuing a long-term low-carbon and inclusive development strategy is consistent with sound economic growth. Uzbekistan will have to chart its path based on its policy and institutional settings, level of development, social structures, resource endowments, and environmental pressure points. Consistent with good international practice, Uzbekistan's green transformation priorities should be anchored by a long-term low-carbon development strategy.

Uzbekistan can chart a sustainable pathway for economic development along six green growth strategic priorities and key cross-cutting themes with specific sectoral priorities embedded within these main areas:

I. **Sustainable and Efficient Use of Natural Resources (Land and Water);**
II. **Strengthening Resilience to Natural Disasters and Climate Change;**

[45] 2019-2030 Transition to Green Economy Strategy, 2022-2026 Development strategy of Uzbekistan

III. **Green and Low-Carbon Development of Industry and the Economy;**

IV. **Innovation and Effective Green Investment;**

V. **Sustainable and Inclusive Urbanization; and**

VI. **Support for People and Places Most Impacted by the Transition.**

Each thematic building block could also integrate human capital development and collective action, an enabling policy environment, effective institutions, and the development of green finance flows. The key cross-cutting themes that will drive the green transition are job creation, capacity building and reskilling, institutional reforms, policies and regulations, strengthening of enforcement mechanisms and cross-sectoral coordination, and leveraging private sector investments.

I. Sustainable and Efficient Use of Natural Resources

Achieving food security is one of the country's top priorities and finding agricultural solutions that provide food for a growing population while conserving water and forest resources is essential. Agriculture is the largest employer in Uzbekistan's economy. In 2019, about 27 percent of Uzbekistan's labour force worked in agriculture[46], while about 80 percent of the poor are in rural areas and their livelihoods largely depend on agriculture[47]. Development of this sector can play a large role in reducing poverty and inequality, including through job creation. Evidence shows that globally, growth in agriculture has led to 2–3 times greater poverty reduction than growth in any other sector, and the largest impact has originated from being employed in agriculture[48]. However, agricultural land productivity in Uzbekistan is well below average for lower-middle-income countries and the country ranks in the bottom 20 countries globally for water productivity. Water withdrawal rates exceed 90 percent of the total renewable resource, driven primarily by their inefficient management. Widespread land degradation caused losses equivalent to 4 percent of GDP due to a failure to protect land. To support the growing economy while improving the quality of life for citizens in rural areas, the country will need to embrace market-oriented, inclusive, and private sector-led agriculture and water policies. Water allocation policies should also consider the water use by other sectors – such as energy production and ecological conservation – in a coherent way.

Sustainable landscapes, forest management and restoration, and establishment of natural-resource-based practices could generate multiple benefits. Ecosystem productivity and biological diversity has been declining and soil degradation in the wider landscape has increased due to intensive grazing, unsustainable agricultural practices, poor water management, and the unsustainable use of forests. The current practices are harming rural livelihoods throughout the country and reduces ecosystems capacity to store carbon, e.g., in healthy soils and forests. Supporting forest restoration could not only provide forage, food, and construction materials, but also improve watershed management and transboundary water management (as Uzbekistan shares watersheds with its neighbouring countries), prevent soil erosion, prevent incidence of large scale sand and dust storms (SDS), and enhance biodiversity, pollination and natural pest management services through improved landscape connectivity among Protected areas and Key Biodiversity Areas protected areas, as well as improve carbon sequestration. There are some high-profile examples (e.g., Costa Rica) of how forest restoration can be very successful in restoring the quality of the land and even generating ecotourism and other sustainable industries. Natural resources generated by sustainable landscapes could provide a strong input for agriculture and industrial and service sectors. Landscape restoration also has the potential support decarbonization efforts with a win-win opportunity for the country. A public works 'green-wagers' program that restores natural capital can create jobs and lay the foundation for economic growth for future generations by establishing natural-resources-based businesses in rural areas. It is estimated that every dollar invested in sustainable landscape restoration can yield four dollars in returns over a 30-year period[49]. Investing in landscape restoration is critical to address the complex nexus of local livelihoods, land degradation, climate change, natural resource security and environmental conservation, and economic growth.

[46] World Bank (2019)
[47] World Bank (2020a)
[48] World Bank (2020b); World Bank (2020c)
[49] Mirzabaev et al. (2016); Quillérou et al. (2016)

While challenges remain, crop diversification and water-saving agricultural techniques coupled with landscape restoration could provide opportunities for Uzbekistan. For instance, drip and sprinkler irrigation have been adopted by a wide range of water-scarce countries from Pakistan and China to Mauritania and Morocco. If not managed properly, however, it can encourage an unsustainable expansion of cultivation of more water-thirsty crops. Therefore, incentives for promotion of such technologies should be coupled with crop diversification towards agricultural commodities that are less water intensive. Noting, the large water consumption footprint of cotton and wheat production in Uzbekistan, all areas designated for continued production should prioritize investments in water-saving technologies. Any investments in agriculture should also consider the potential negative impacts on the fundamental natural capital: I.e. with regard to soil health and salinity, surface water salinity and pollution (pesticide/herbicides), and nutrient balance (fertilizer runoff). Investments in agricultural yield enhancement and water use efficiency technologies therefore needs to consider impacts on, and contribute to the overall objectives of landscape restoration, and the government could consider setting more ambitious land degradation neutrality assessments and targets in line with the UNCCD. Frequent tillage and heavy fertilizer use that underpin modern conventional agriculture, can accelerate degradation of soil organic matter, leading to increased carbon emissions. Investing in sustainable agriculture technologies, soil regeneration and introducing agro-forestry systems by planting trees in agriculture areas could improve soil productivity and additionally sequester carbon. Vertical hydroponic agriculture is another possible high-tech solution that could provide better opportunities for sustainable food production. Thus, it is now possible to have agriculture in cities and possibly even in individual households with very little land (and no negative landscape impacts) that would produce food that would not need to be shipped far to end consumers. For instance, vertical farming projects are now being developed and used in Denmark, South Korea, Japan, China, and Jordan, among others.

State owned enterprises (SOE) reforms and opportunities for private sector financing of irrigation through public-private partnerships (PPPs) will continue to be critical for future sustainable growth. Approximately 80 percent of the country's agricultural production depends on inefficient pump irrigation systems, which suffer from high water losses due to aging and poorly maintained and operated infrastructure. While Uzbekistan has undertaken reforms, including increasing water prices and a Presidential Decree requiring cost recovery, tariffs remain far below cost recovery levels. The heavily subsidized pump irrigation system requires reforms, including a cost recovery water tariff as a first step in rationalizing water usage. A fair price that reflects the true value of water will contribute to the long-term sustainable management of water resources. It is however not a simple task. The growth of private sector financing opportunities is also important. There are already good practices with prominent results. For instance, a 'farmer-centric' model created and strengthened in Central Asia's Fergana Valley to disseminate knowledge on improved agronomic and irrigation management practices improved average yield of cotton from 25 demonstration sites in the three countries of Fergana valley—the Kyrgyz Republic, Tajikistan, and Uzbekistan—by 28 percent higher than the average yield of cotton in the rest of the valley. This presents an effective institutional mechanism to disseminate information to farmers. Number of successful green entrepreneurship models are being implemented (e.g. solar panels, electric cars, etc.). PPPs should not only transform obsolete infrastructure, but also explore new business models.

Natural Hazards in Uzbekistan

Central Asia as a whole is recognized as one of the world's most vulnerable regions to the impacts of long-term climate change and current climate variability. Within the past decades, more and more climate related adverse events have triggered shortages in water for hydropower and irrigation, threats to food security due to crop failures and large-scale sand and dust storms (SDS). Since 1951, there has been an observed trend of warming within Uzbekistan, the annual average temperature has increased by 0.29 ^{0}C for each 10 years, which implies higher vulnerability to the effects of climate change than some other

countries, as warming is taking place at double the average pace for the world.[50] At the same time, climate change hazards are not well understood, as climate related extreme events and their impacts are very diverse.

A gradual increase in the intensity and frequency of events such as droughts, floods, mudflows, sand, and dust storms (SDS) and others are already becoming statistically significant. Many of these represent significant risks to key drivers of the economy, threaten to reverse recent gains in human welfare, lead to further degradation of the environment with long term and complicated consequences, and the possible deprivation of people of housing, water and food supplies, exposure to greater levels of pollution, health problems, or to loss of jobs.

Climate change is now recognized to have a significant impact on disaster management efforts and pose a significant threat to the efforts to meet the growing needs of the most vulnerable populations. In Uzbekistan climate change, specifically changes in precipitation patterns are likely to alter slope and bedrock stability, resulting in localized landslides. This is expected to be a high degree of hazard for southern and eastern parts of the country. Precipitation patterns and increased variability, land use, wind, glacial and snow melt, and other climatic conditions affect river systems. Changed precipitation patterns and river flows have led to riverine flooding and are also associated with heavy rainstorms, mudslides, and landslides.

Heatwaves: Uzbekistan regularly experiences high maximum temperatures, with an average monthly maximum around 18.5°C, but with average July maximum of 34.9°C. The current median probability of a heat wave (defined as a period of three or more days where the daily temperature is above the long-term 95th percentile of daily mean temperature) for Uzbekistan is around 2%. The frequency of heat waves has already risen, with the sharpest increase being observed in the northwester areas surrounding the Aral Sea and the lower Amu Darya.[51] This has led to a rise in the number of very hot days (>40°C), which have been shown to amplify the effects of ischemic heart disease in Uzbekistan.

Drought: Uzbekistan's arid climate and regular high temperatures make drought an increasingly regular occurrence, with one drought every five years on average during the 1980s and 1990s and four episodes between 2000 and 2012.[52] Three kinds of drought occur in the country: *hydrological drought* (water shortages from January to March due to low precipitation in the upper watershed of key rivers), *meteorological drought* (usually associated with a precipitation deficit, and typically occurring in spring or summer), and *agricultural drought* (a lack of moisture in the soil that inhibits crop growth).[51] Hydrological drought has been occurring with increasing frequency and severity in the western areas of Uzbekistan in the past two decades, whereas the central and southern provinces have experienced the highest frequency of meteorological drought.

Salt and Dust Storms[53]: Historical mismanagement of water resources led to the desiccation of the Aral Sea. The associated Salt and Dust Storms (SDS) results in increased prevalence of fine dust particles, widespread degradation of land and desertification, soil degradation and increased soil salinity, deterioration of water quality

[50] The Second National Communication of the Republic of Uzbekistan to the UNFCCC, Tashkent, 2008, p.205
[51] CIA (2020). The World Facebook. Central Intelligence Agency. Washington DC. URL: https://www.cia.gov/the-world-factbook/
[52] FAO (2017). Drought characteristics and management in Central Asia and Turkey. FAO Water Reports 44. URL: http://www.fao.org/3/a-i6738e.pdf
[53] Summary provided from: GGGI (2022), Climate-Resilient Green Growth Assessment for the Republic of Karakalpakstan (https://www.greengrowthknowledge.org/sites/default/files/2022-03/2.1%20Online_TAWG_CRGG_DRAFT_ENG.pdf)

and increases in waterborne diseases, micro-climate changes, wind erosion, and host of human health issues (Qadir, et al. 2009), (UNECE 2020) (Akramkhanov, et al. 2021). Of these impacts, the agricultural sector is most exposed to the increased number of SDS, with land and soil degradation expected to be further exacerbated in coming decades due to the increased temperatures, variable precipitation, decreased river discharge and more frequent drought conditions (World Bank and ADB 2021). The 60,000 km2 Aralkum Desert, which has formed on the exposed lakebed formerly occupied by the Aral Sea, The Aralkum SDS covering 20,000-30,0000 km2 is set to grow as local temperatures continue to increase, and regularly transports salt and dust to an area of irrigated lands, and populations across an area of 500,000 km2 in the Karakalpakstan and Khorezm (Akramkhanov, et al. 2021). The sand and dust from the Aralkum have a much higher concentration of salt and toxic particles that are considered to be a major health risk for 5.5 million people in Uzbekistan (Indoitu, et al. 2015) (WHO n.d.).

Flood and Mudflow: The majority of Uzbekistan is at high risk of both river flooding and flash flooding.[54] The most severe recent flood in terms of loss of life occurred in 1998 on the Aksu and Shahimardan rivers, killing 109 people.[55] The World Resources Institute's AQUEDUCT Global Flood Analyzer can be used to establish a baseline level of river flood exposure. As of 2010, assuming protection for up to a 1 in 25-year event, the population annually affected by flooding in Uzbekistan is estimated at 61,000 people and expected annual impact on GDP estimated at $181 million. Development and climate change are both likely to increase these figures.

II. Strengthening Resilience to Natural Disasters and Climate Change

Timely supply and quality of hydrological, weather, and climate information are a foundation for assessing and mitigating climate risks. Recent decrees by the Government, which set out ambitious modernization goals for Uzhydromet, recognize this critically robust information for decision-making across timescales. Automation, digitization, and commercialization of hydrometeorological and climate services can help achieve these goals. At the same time, it should also be ensured that basic information and services needed to protect lives and livelihoods are freely accessible to all relevant stakeholders and decision-makers, supported by the central public budget. Enhancing the hydrometeorological information services in the country will be important to support planning for climate change adaptation and mitigation, as well as optimization of weather-sensitive economic sectors such as agriculture, forestry, construction, energy, transport and water resource management.

To reduce exposure to increasing disaster risks, investment in critical infrastructure and natural assets is required, leveraging the benefits and advantages of nature-based solutions. Given Uzbekistan's high vulnerability to climate change, the economic and social costs of weather-related hazards and damages are set to rise. Earthquakes and floods in the country affect 1.4 million people every year causing almost US$3 billion in losses.[56] Severe drought, which is expected to become an increasingly regular occurrence, will have similarly large economic impacts. Many public buildings and assets are also in flood hazard zones[57]. Climate change is affecting the water balances and is linked to the desertification of the Aral Sea. The Southern Aral Sea in Uzbekistan, including its seabed, is a frequent source of sand and dust storms with air contaminants having a negative impact on the health

[54] Flato, G., Marotzke, J., Abiodun, B., Braconnot, P., Chou, S. C., Collins, W., . . . Rummukainen, M. (2013). Evaluation of Climate Models. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, 741–866. URL: http://www.climatechange2013.org/images/report/WG1AR5_ALL_ FINAL.pdf

[55] Westra, S., Fowler, H. J., Evans, J. P., Alexander, L. V., Berg, P., Johnson, F., Kendon, E. J., Lenderink, G., Roberts, N. (2014). Future changes to the intensity and frequency of short-duration extreme rainfall. Reviews of Geophysics, 52, 522–555. URL: https:// agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2014RG000464

[56] World Bank, UNDRR, Disaster Risk Profile: Uzbekistan, https://www.gfdrr.org/en/publication/disaster-risk-profile-uzbekistan.

[57] Affecting approximately 34 percent of Tashkent's major roads, 18 percent of schools, and 23 percent of hospitals

of the population and on agricultural productivity in the entire Central Asia region. To improve the resilience of infrastructure, particularly in urban areas, there is an increasing promotion of nature-based engineering solutions combined with built infrastructure solutions. The idea behind this 'nature-smart' approach is to invest in a country's natural capital, for example, to protect against flooding by investing in watershed management, forest and wetland restoration; or to reduce incidence and exposure to SDS by investing in afforestation in forest shelterbelts around settlements and agroforestry and windbreaks on farms. Such investing in nature-based. The approach could be a cost-effective way to deliver infrastructure services with greater impact while reducing risks from natural disasters, and thus enhancing climate resilience.

At the household, business, and national levels, financial resilience and physical resilience could complement and reinforce each other. Financial resilience actions are particularly important for vulnerable households in Uzbekistan, including low-income families, many of whom live in rural areas and rely directly or indirectly on agriculture. For instance, only about 10 percent of households have catastrophic insurance, while the remaining uninsured homeowners require government financial support in the event of a major disaster. For businesses, the insurance industry is also relatively underdeveloped, and firms hold large exposure in the event of a large disaster. These challenges are compounded by outdated technical regulatory frameworks and insufficient regulatory oversight. One possible response is to have an integrated financial resilience policy. New financial instruments, such as climate and disaster risk insurance, can be developed and combined with national planning and budgeting for contingent liabilities to disasters or contingent credit arrangements (World Bank and GFDRR 2018). This partnership leverages the risk information and pricing expertise of the insurance sector to deliver innovative risk transfer products and services. Furthermore, given that a minority of Uzbekistan's small-scale farmers or agricultural MSMEs have access to formal credit markets, investments in online business platforms that enhance access to information for financial services can enable such stakeholders to invest in climate resilient technologies (GGGI 2022). Diverse enhancements to distribution channels, pay-out mechanisms, and credit risk mitigation mechanisms can also be explored. Overall, strengthening resilience to natural disasters and climate change will require a comprehensive program of investments and institutional reforms to reduce risk exposure, mitigate physical impacts, and protect people and public finances against the worst effects of disasters. Capacity assessment of various stakeholders could also be provided, based on several dimensions including human and qualified labour, financial, technological, legal, informational & coordination capacity.

III. Green and Low-Carbon Development of Industry and the Economy

Diversifying the energy mix[58], including development of renewable energy resources[59], while reducing energy intensity, pollution, and carbon emissions are important objectives. Emissions intensity in Uzbekistan is more than twice the level of its Central Asian peers, more than six times the global average, and eighteen times the average in the ECA region.[60] Obsolete infrastructure results in high electricity losses, estimated at 20 percent of net generation, and frequent power outages,

[58] Uzbekistan's electricity production in 2019 (IEA), was: Natural gas (mcm) = 60'405 ; Gas condensate (kt) = 2'098 ; Conventional oil (kt) = 698 ; Coal (kt) = 4'049. Since the early 2000s, Uzbekistan has been exporting 10-15 bcm of natural gas annually. On top of its domestic oil production, Uzbekistan imports additional crude oil for its refineries (around 30% of total input in 2018). Uzbekistan's most important export destinations for energy commodities are China, Russia and Kazakhstan. Total final energy consumption is around 30 Mtoe (29.5 Mtoe in 2018).

[59] In Uzbekistan, HPP generation is counted as electricity produced from renewable energy sources (RESs). Despite the country's considerable solar energy potential, it has no industrial-scale solar power plants. There are also no industrial-scale wind farms (as wind potential has not been studied sufficiently). Uzbekistan is, however, taking measures to establish a legal framework for the development of this energy segment. The Law on the Use of Renewable Energy Sources and the Law on Public-Private Partnerships have been adopted, as well as the Regulations for Connecting Businesses that Produce Electricity, Including from Renewable Energy Sources, to the Unified Electric Power System. As solar, wind and biomass energy production shares are low, statistical agencies do not currently take them into account (source: IEA)

[60] World Bank, *"Uzbekistan: Choosing an Innovative and Green Future",* January 2022. Data source: World Resources Institute. 2018. IEA Energy Statistics https://www.iea.org/data-and-statistics, CAIT Climate Data Explorer.

undermining economic activities and the well-being of citizens. Since 2017, however, Uzbekistan has accelerated policy reforms toward a market-based system. Energy reform is among the highest reform priorities for the Government. Its key areas include addressing the inadequate operational and financial performance of the state-owned energy enterprises, removing infrastructure bottlenecks, restructuring of electricity and gas sectors and transitioning to a competitive market, decarbonizing the energy value chain, promoting the renewable energy, involving the private sector, and improving the institutional and market structure. Initial steps have been taken to develop renewable energy resources with private sector participation. In April 2020, the Government approved a 2020–2030 generation expansion plan,[61] which targets to increase the share of renewables in the power generation capacity mix from 0.2 percent to 25 percent over 2019–2030, a significant development. In August 2021, Uzbekistan began operating its first solar photovoltaic plant, which will produce 270 gigawatt hours per year of electricity from solar energy resources, enough to power more than 31,000 households, and prevent the release of 156,000 metric tons of GHG annually. New tenders on solar and wind power will follow to increase the share of renewable energy in the power mix and further contribute to the country's clean energy transition. For instance, Morocco has followed this growth model and could provide some lessons on how to build an energy future based on renewables. In addition, Uzbekistan has also foreseen to develop hydrogen infrastructure.

Reserves and potential of minerals critical for low-carbon development in Uzbekistan could result in significant opportunities and should be explored. Attracting domestic and foreign investment for the mineral resource base and encouraging mineral exploration would, however, require institutional changes. The growing demand for minerals and metals, especially critical raw materials, from the global clean energy transition, could provide economic opportunities and jobs for resource-rich countries like Uzbekistan. Uzbekistan has significant resources of multi-metal deposits, the production of which has several opportunities and challenges, and contribute to value-added opportunities. Efforts to produce electric vehicles are also undertaken. It is estimated that over 3 billion tons of minerals and metals will be needed to deploy wind, solar, and geothermal power worldwide, and the production of minerals such as graphite, lithium, and cobalt may increase by nearly 500 percent by 2050. However, it is essential for public and private partners to manage natural resources responsibly, maximize the life cycle of the metals and minerals used (improve circularity), and produce them in a socially and environmentally sensitive manner. Digitalization of the mining sector can be adopted to monitor environmental performance, as well as to track and map information on products, components, materials, and value chains to produce digital product passports. Focusing attention on social and environmental aspects of sustainable resource management can be supported by implementing the United Nations Framework Classification of Resources (UNFC) and United Nations Resource Management System (UNRMS)[62].

Adopting circular economy practices could promote and drive the greening of infrastructure and the modernization of industrial enterprises. New opportunities for Uzbekistan can emerge from building new sustainable industries. A circular economy is an alternative model to the current linear economy of 'take-make-dispose'. It is a model of production and consumption which involves 'reduce-reuse-recycle' existing materials and products as far as possible. A circular economy approach supports green growth and green industrialization by reducing inefficiencies and losses and promoting developing regenerative and circular systems. This may relate outright reduction in losses of electrical and thermal energy and water, and production of solid waste and wastewater, as well as reuse of these waste streams as inputs for other applications due to their latent calorific and nutrient content. While the circular economy has been mostly seen as a rich country agenda, it has enormous potential for lower- and middle-income countries and can open new possibilities across energy, manufacturing, agriculture value chains based on optimizing the use of resources and reducing waste. It can also foster the development of higher added value activities in the services sector, which play an important role in fostering circularity. Strengthening of the service sector can foster several cross-sectoral

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

[62] See UNECE for more on UNFC and UNRMS https://unece.org/sustainable-energy/unfc-and-sustainable-resource-management

linkages such as food, water, energy and mineral nexus through models such as "resources as a service."

Addressing market failures and 'getting the price right' is part of a broader green growth policy package globally. Fossil fuel subsidies are significant in Uzbekistan and represent major disincentives for efficient resource allocation. Energy subsidies can be approximated by the quasi-fiscal losses of SOEs (approximately 6 percent of GDP) that reflect the Government's support to capital-intensive industry. Green fiscal policies raise revenues in an economically and fiscally efficient way, making them good fiscal choices in addition to providing environmental benefits. Eliminating subsidies could increase innovation and develop financial markets by pricing environmental externalities (such as carbon) and creating tradable property rights[63]. Also, as EU adopts carbon border adjustment taxes (CBAM), industrial and energy production, which remains carbon intensive in Uzbekistan, may face some barriers in key export markets. In the first phase (expected to start in 2023), the main sectors that could be affected are chemicals and some non-ferrous metals. In the long term, as the coalition of countries aiming to adopt carbon border taxes broadens and encompasses a wider range of sectors, the value of Uzbekistan's primary export commodities could be sharply reduced with significant fiscal and financial implications.

IV. Innovation and Effective Green Investment

Significant public and private investment will be important to unlock Uzbekistan's growth potential, requiring policy and institutional reforms to create incentives and enhance opportunities for participation in global value chains. Policy reforms will be needed to unlock the potential of economic agents to invest in low-carbon technologies in SOEs, remove barriers for green investments of private companies, and to seek financing for them (namely through green funds and green bonds as incentives for green investments by the private sector). The financial sector in Uzbekistan seems to be excessively exposed to capital- and energy-intensive sectors and projects. It faces key challenges to reduce risk from exposure to assets that are vulnerable to the physical impacts of climate change and to the impacts of global green transition. To unleash its private sector investment, entrepreneurship, and growth potentials, the country would need to bring down barriers to business activity and strengthen the institutional and regulatory frameworks for private investors. The quality of governance, perceptions of state partiality, and security of property are important constraints that each country addresses in its own way. Taking advantage of new digital technologies, digital platforms and customization will also require firms and the Government to innovate by adopting new business models, upgrading their products and processes, and adopting more sophisticated technologies. This however could help to create opportunities for e-commerce and reach new customers. The vast number of new jobs that will be created by the green transition over the next decade.

Innovation policy and readiness of national innovation systems are fundamental for the green transition of Uzbekistan. This could create opportunities for broad productivity growth though requires investing in upgrading and adopting technologies that already exist. For instance, mobile payment systems and digital banking represent a path-creating leapfrogging. The digital payments sector in Uzbekistan presents an opportunity as it is an industry that is underdeveloped but growing rapidly and attracting private sector investment. By conservative estimates, only 50 percent of Uzbekistan's population have bank accounts and only about 15 percent use mobile apps or internet banking. Full-fledged digital banking is therefore in its infancy and presents growth opportunities. As another example, a large proportion of Uzbekistan's rural population lacks access to technical extension services or formal marketing channels. Investments in development of, and digital literacy in, the use of online business platforms to enhance access credit, technical advisory services, market intelligence would greatly enhance the capacities of agricultural sector actors in invest in innovative technologies and increase the willingness of the finance sector to provide innovative financing tools that will mobilize additional investment for development of a green transition agricultural sector.

[63] World Bank (2015)

V. Sustainable and Inclusive Urbanization

The opening of the economy in 2017 called into question the dominant role of approximately 8,000 active state-owned enterprises. Tashkent dominates the urban hierarchy and hosts much stronger urban economic activities and quality of urban infrastructure than all other cities[64].

Promoting greener, more compact, and inclusive urbanization will have multiple benefits for citizens, the private sector, and government. Rapid urbanization and sprawling of cities in Uzbekistan are deepening the challenges of service delivery and inclusion for residents who face significant gaps in access to and quality of basic services. Much of current growth is found in peri-urban areas and is characterized by sprawl and disorganized growth, leading to urban areas being unproductive, unliveable, and expensive to service and creating additional costs and complexities for infrastructure. Efficient public transport services have lagged (e.g fuel quality standards in force and aging car fleet), increasing traffic congestion with private and ride-share vehicles resulting in elevated levels of air and noise pollution, inadequate waste regulation, and the loss of green spaces. Many households are not connected to and/or face shortages in supply of water, sewage, and/or heating networks. This problem largely stems from a weak land market, inadequate planning systems, and low capacity of urban administrations to manage urban growth. Sprawl also leads to loss of arable land to suburban built-up expansions, poor access to public services, unsustainable pressures places on transportation infrastructure, and loss of access to green spaces that enhance human well-being particularly for economically marginalized communities. A strategy for sustainable and resilient cities needs to be developed for Tashkent and medium-size cities (Samarkand has joined EBRD's Green Cities programme) to make sure they contribute to the economic development of Uzbekistan, building on the opportunities that high urbanization provides. This strategy together with capacity building will pave the way for reform in governance planning and local stakeholder engagement in decision-making in Uzbekistan's cities. Since Uzbekistan's independence, urbanization in the country has lagged behind, leading to significant regional imbalances. Currently at just above 50%, the rate of urbanization has been inflated by the past administrative reclassification of rural settlements. National mobility constraints caused a significant level of out-migration, and low urban housing affordability further stifled rural to urban movement. More than half of the urban population is concentrated in 7.5% of the national territory, in the easternmost regions. Tashkent dominates the urban hierarchy and hosts much stronger urban economic activities and quality of urban infrastructure than all other cities.[65]

Urban forests, building retrofits, sustainable transport and waste management, clean air, and green tourism will all increase the liveability and productivity of Uzbekistan's cities and towns. With urbanization progressing in Uzbekistan urban forests and green areas are becoming more important. They are not just vital for aesthetics but improve the physical and mental health of inhabitants. Urban forests generate sizeable economic benefits by creating employment in recreation, maintenance, and tourism; reducing noise and air pollution; reducing the cost of energy and urban infrastructures, providing means for climate mitigation and adaptation, and reducing health-related costs. Building retrofits, municipal waste and greening urban transport represent significant investment opportunities as green building projects have one of the highest rates of job creation per dollar spent, according to the IFC's Green Reboot Report. In Uzbekistan, building upgrades and new building standards can address a range of issues for the building sector, including raising the chronically low energy performance of buildings and addressing earthquake risks in the region by incorporating seismic-resilient building design. Solid waste management also remains underdeveloped: garbage separation and recycling are uncommon, while landfills often lack adequate safety standards, posing a risk of soil, air, and water pollution and contributing to release of methane. Cleaner urban air can be achieved through an integrated policy approach, which targets multiple sources at a city/airshed level. The cost of air pollution in Uzbekistan is estimated as equivalent to 6 percent of its GDP.[66] Significant improvements in air quality require comprehensive airshed-based strategies that include better

[64] Latest steps in the area of industrial and regional diversification have been suggested in measure 88 (Goal 22) of the New Uzbekistan Development Strategy 2022-2026, including further development and diversification of industrial cooperation between large industrial sectors and regional enterprises.
[65] Asian Development Bank, *"Harnessing Uzbekistan's Potential Of Urbanization: National Urban Assessment"*, September 2021
[66] United States of America: Institute for Health Metrics and Evaluation (IHME). 2021. Global Burden of Disease Collaborative Network. *Global Burden of Disease Study 2019 (GBD 2019) Reference Life Table*. IHME: Seattle.

monitoring and planning while targeting a range of key sources in a particular location, such as residential heating, transport, industry, power, agriculture, and dust from municipal activities or/and desertification. In the long term, cleaner sources of heating and energy (including natural gas as an interim fuel, particularly for heating) will significantly reduce air pollution, with major health and economic benefits.

Land-use and urban planning are the responsibilities of the Ministry of Construction, which oversees the activities of the City Architecture Council. Master plans for cities with a population under 100,000 are approved by the Ministry, while those for the larger cities require the approval of the Cabinet of Ministers. Current urban planning for the cities in Uzbekistan is however limited to architectural urban design solutions.[67]

Hard infrastructure of major cities is significantly old, including buildings, power, heating, water and sanitation, roads, public transport. Rising urban population and number of personal and public transport vehicles as well as expanding construction activities have affected the air, water, soil, and the quality of life in general. There are early steps that have been taken in addressing these issues, however, more are yet to be done taking into account the international best practices. For instance, public transport fleet is largely outdated, therefore green e-mobility transport system needs to be developed and introduced. Construction practices are also of old standards, therefore the construction companies need to be required to introduce international standards, such as LEED standards. Green zones in urban areas have been reduced substantially, in particular due to large-scale construction programs, affecting the urban air. Roads have been built and repaired using old methods and without taking into account the changing mobility environment, namely pedestrians, separate lanes for cyclists, alleys, parks, inner rivers and canals.[68]

There are numerous opportunities to develop tourism that could revitalize the urban economy. Many of Tashkent's historic buildings, including a unique 600-year-old mosque, were fully rebuilt after the 1966 earthquake. The Central Asia region hosted about 11 million tourists in 2014 and was gaining more attention as an emerging tourism destination with strong potential for further development under the common brand of the Great Silk Road. There are five United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Sites in Uzbekistan, including Bukhara, a long-standing centre for trade, scholarship, culture, and religion. The city's historic centre was declared as a UNESCO World Heritage Site in 1993 and has been attracting visitors from across the globe. Investment in building out the tourism infrastructure (e.g. Uzbekistan's high-speed railway connection between Tashkent and Samarkand "Afrosiyob" and its extension), including for ecotourism, is expected to resume post-COVID-19. The development of green corridors and city belts for recreation and pedestrian and non-mechanized transportation has the potential to greatly enhance the tourism potential of these cities.

VI. Support for People and Places Most Impacted by the Transition

The delivery of better jobs over the long term will require comprehensive policies in support of training and skills development, labour mobility, and local economic development during the green transition. Green employment in various sectors and activities offers significant prospects for job creation. For instance, the energy sector offers significant opportunities for rapid job creation, with an estimated potential of up to 2.5 million new jobs per year globally for energy efficiency. Jobs in ecosystem restoration and organic agriculture are both important potential sources of employment in the green economy. For Uzbekistan, the economic transition towards a greener path could offer an opportunity to address some structural labour market challenges, thereby creating better jobs for more people. The transition will create green jobs in sectors such as waste management, recycling, carbon footprint assessment, biofuel crop farming, and other environmentally friendly commercial activities. As the country seeks to accelerate green growth and raise productivity, creating good jobs

[67] Asian Development Bank, *"Harnessing Uzbekistan's Potential Of Urbanization: National Urban Assessment"*, September 2021

[68] Asian Development Bank, *"Harnessing Uzbekistan's Potential Of Urbanization: National Urban Assessment"*, September 2021

for lower-skilled workers and those living in lagging regions of the country will be a priority. This can be supported through targeted stimulus measures yet will require structural reforms to strengthen skills and reduce barriers to employment.

The green transition will not only create opportunities but also new challenges to the livelihoods, which have to be addressed by the Government. The shifts in sectoral employment that will accompany the green transition will likely be uneven. For example, in the agricultural modernization strategy, while the transition from cotton production to higher-value cotton garment and textile manufacturing has the potential to create millions of decent jobs for women, the location of these jobs, and the skills requirements to do them, will be different. One measure that can be adopted by the Government to address this issue is to subsidize new employment positions for workers displaced in the cotton sector, recently freed from systemic child labour and forced labour[69]. New systems (tariffs, cross-subsidization, safety nets, business environment improvements) can protect the most vulnerable from the effects of green transition, and indeed ensure that the green job creation and entrepreneurialism opportunities preferentially benefit the poor, female-headed households, and ethnic minorities are also disproportionately affected by shocks such as natural hazards and climate variability. For example, female-headed households (up 20 percent of Uzbekistan households) have lower incomes than male-headed households and are less likely to afford increased utilities or food prices that might arise from the green transition. Also, survey data from Uzbekistan shows that female-headed households do not benefit from community social capital to the same extent and may have fewer friends and relatives to turn to for financial support. Interventions to increase their connectivity to other community members and access to financial, social, and other resources would help increase their resilience during the transition to a more sustainable model of growth.

A successful green transition will require a suitably trained workforce, with new skills both for new emerging jobs and for existing jobs that are evolving. Skills gaps and shortages are already recognized as a major bottleneck in several sectors, such as renewable energy, energy and resource efficiency, renovation of buildings, construction, environmental services, and manufacturing. The availability of workers and enterprises with the right skills for green jobs not only plays a critical role in initiating the transition to a green economy, but also in enabling a just transition that ensures social inclusion and decent work. Comprehensive measures for vocational training and reskilling can enhance the ability to successfully relocate across firms and sectors as needed, namely through clear identification and capacity assessment in terms of creating new green jobs and hiring, as well as through re-training existing workforce. While the energy transformation is likely to have an overall net-positive impact on employment, millions of fossil-fuel workers will need to find new jobs. Policies for a just transition can also facilitate the process of retraining fossil-fuel workers at risk. Partnerships between governments and industry can be built to finance reskilling and to ensure that training content meets the evolving needs of the sector.

2.3 Cross-cutting strategic priorities

I. Capacity building and human capital development

Capacity building and human capital development are critical, serving as drivers for Uzbekistan on its path to green economy. All stakeholders – not only policymakers, managers, specialists, NGOs and the private sectors, but the whole population needs to adapt their way of thinking, acting and lifestyle. For all of this they must be empowered by certain values, knowledge and skills.

Even though the term “Green economy” is new to Uzbekistan’s educational, research, and capacity building environment, the opportunities for utilizing existing infrastructure are vast. There are many subjects taught in the country related to the green economy: ecology, geography, biology, economics, law and other disciplines. The terms “rational use of natural resources”, “resource conservation”, “renewable resources”, “alternative energy sources”, “sustainable development of society”, “greening of

[69] https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_838396/lang--en/index.htm

production", "restoration and reclamation", "environmental management", etc. are commonly introduced and studied in kindergartens, schools, universities, research institutions and trainings platforms.

Uzbekistan has viable infrastructure for streamlining green education. 48 universities and institutes prepare specialists with certain knowledge/skills in various fields of GE. They offer courses on environmental safety and sustainability, resource-saving technologies, rational use and conservation of natural resources, ecology, climate change, geography, biology, technical sciences, economics, agriculture, industry and energy, construction, and tourism. In recent years, new disciplines have been introduced: ecotourism, eco marketing co-marketing, etc., which are also related to GE. The graduates of these higher educational institutions include engineers and economists in various fields, hydrologists, meteorologists, climatologists, and specialists in the agricultural sector (agronomists, irrigators, land ameliorators, soils scientists, hydro biologists, biotechnologists). These educational institutions offer bachelor, masters and PHD degrees, training, and retraining, fundamental, al, empirical and innovative research, as well as engineering, consultative, and project design services. Some higher educational institutions implement projects in cooperation with international organizations related to GE, without mentioning the term of GE.

Existing research facilities of Uzbekistan could be utilized for innovation, research, and development. There are 38 scientific and research institutions, which specialize in many areas related to green economy: energy, industry, environment, natural resources, geology, agriculture, water management, textile, healthcare, construction, transport, business, economy, finance, IT and science. They are mostly publicly funded and managed by the Academy of sciences and lineal governmental bodies, such as the ministries of water management, agriculture, energy and finance, as well as Uzbek Agency for Technical Regulation and The Centre of Hydrometeorological Service.

The activities of these research institutions have been reinvigorated after 2016 due to financial and political support from the new government in Uzbekistan to utilize their practical capacities in priority areas of development. Only in 2016-2020 28 research organizations and 4 "innovation techno parks" have been launched in the country, the salaries of the research institutions increased threefold, substantial amount of funding was provided by the government for the purchase of research equipment for these facilities. To support R&D the new Ministry of Innovation was established. For example, only for the research in water management in the region of Karakalpakstan 8 million USD was allocated by the government from 2016 to 2020.

Facilitating green education and innovation. However, all these subjects offered at these educational and research institutions are too narrow in their scope and do not provide interdisciplinary managerial and technical qualifications necessary for conducting successful strategic shift towards green economy. Moreover, goals, envisaged in the strategic documents on transition of the country to green economy, are yet not incorporated in the taught subjects in the higher educational and research institutions.

Another obstacle for engaging existing educational and research facilities in green growth processes is weak R&D commercialization, lack of sufficient practical implementation of the research proposals and ideas, insufficient participation of the educational and research facilities in current transformational processes in the country, start-ups, and industry development.

Introduction of green economy aspects in educational, research, training, retraining processes. The strategy for the transition of Uzbekistan to a green economy for the period 2019-2030, adopted by the government in 2019, stipulates the need for development of a system for training and retraining of personnel for the labor market in the green economy. The same document envisages integration of the principles of green economy into education and science, formation of a culture of careful attitude towards energy and resources, increasing of awareness among technical and managerial staff of the related industries, as well as strengthening of cooperation with leading foreign educational institutions and research centers in this regard. The role of local communities, mahallas, could be important for proper dissemination and raising the awareness among population. This specifically concerns layers of population that are not linked in higher or primary education such as pensioners, non-working people, self-employed, etc. This strategy also aims to improve governance in such areas as energy

efficiency, rational consumption and conservation of natural resources, reduction of greenhouse gas emissions, access to green energy, creation of green jobs and climate resilience.

Many similar goals and measures have been integrated into the strategic documents, roadmaps, action plans and other policy papers, adopted in Uzbekistan afterwards. Nevertheless, introduction of green economy aspects in educational, research, training, retraining processes is yet to be seen. One the main reasons for this is lack of necessary skills and expertise among educators, trainers, and scholars in these educational and research facilities, as well as public and private institutions.

Capacity development and awareness raising. Since the notion of green economy is relatively new among public and private stakeholders in Uzbekistan, focused capacity development and awareness raising actions are necessary to facilitate the coordinated and sustainable planning and implementation of green economy policies and measures. There is little public understanding and consumer demand that could streamline and drive efforts for transition to a greener ecosystem. The promotion of green lifestyle from early years in kindergartens, schools, educational institutions, public and private organizations may give strong impetus for increasing public attention to green economy issues. In addition, public awareness can be increased using the capacity of open budget portal (openbudget.uz). It can provide learning opportunity about public green finance when wider population regularly participate in voting for small projects from state budget.

The capacity building efforts should also aim to develop mechanisms for identifying continuously the capacity gaps, elaborating training programs for addressing the emerging green economy issues, enhancing coordination of international and national capacity-building efforts, promoting knowledge and experience sharing in this regard.

Considering the abovementioned factors, it is necessary to elaborate short-, mid- and long-term solutions in the capacity building and human capital development. The short-term measures may include developing on job training programs for managerial and technical staff of relevant public offices, educational and research institutions, conducting training of trainers, redefining objectives of concerned scientific and research facilities to foster transition. The mid-term solutions may aim for developing critical mass of human resources with relevant knowledge, skills and will to foster the transition to green economy; introducing new academic curriculum at educational institutions at all levels that contain transdisciplinary topics on green economy; launching projects at educational facilities, public and private offices for raising awareness and creating sustainable lifestyle; creating electronic platforms for sharing knowledge and best practices on green economy, fostering international cooperation in this regard, providing research funds for educational and research institutions. The long-term actions should focus on formation of strong institutional, legal and cultural basis for sustainable transition to green economy, ensuring coherence of measures with budgeting at national and local levels.

Capacity Development and needs

The UN defines Capacity, its development and assessment as follows[70]:

- Capacity as the ability of people, organizations and society as a whole to manage their affairs successfully.
- Capacity development as “the process whereby people, organizations and society as a whole unleash, strengthen, create, adapt, and maintain capacity over time,” in order to achieve development results.

[70] UNDAF Companion Guidance: Capacity Development

- Capacity assessment as "the identification of capacity assets and needs at national and local levels,"[71] equivalent to measuring baselines and the progress of (capacity) development indicators[72].

In Uzbekistan, there is a need for Training of Trainers (ToT) programs to train and build capacities of local experts and master-trainers within available In-Service Training Institutions under umbrella of each sectoral ministries that have a mandate to train national and local authorities of all levels. Training courses developed by international experts can be translated, further adapted to local context, and evolving sectoral needs and incorporated into National Training Service Providing Institutions and national universities educational curriculums and plans for wider scale up and replicability aiming to increase and sustain professional inputs across all sectors.

II. Enabling policy environment and effective institutions

Green growth relies as much on effective institutions as on capital and technologies. Green growth centers on the mutually reinforcing aspects of economic and environmental policies. It focuses on cost-effective ways to effect new patterns of sustainable production and consumption. This poses difficult challenges to public sector institutions as challenges like climate change or pollution permeates all sectors of the economy. Addressing them require deep structural transformations calling for long-term planning, sustained and implemented over multiple political cycles. Implementing these plans will require close coordination between government, civil society and the private sector - supported by transparent information on challenges and progress.

To accelerate the transition to a green economy, the government of Uzbekistan could strengthen the laws, institutions and organizations shaping it economic and environmental policies. This agenda would combine regulatory reforms, organizational capacity-building and the creation of new partnerships to set up an enabling environment for green growth in which (i) economic and environmental policies mutually reinforce one another, (ii) government strategies effect the changes needed to transition to a green economy, (iii) evidence and data serve as the basis for policymaking and monitoring, (iv) institutions are accountable for results and (v) the private sector and civil society are not only informed but actors of the transition.

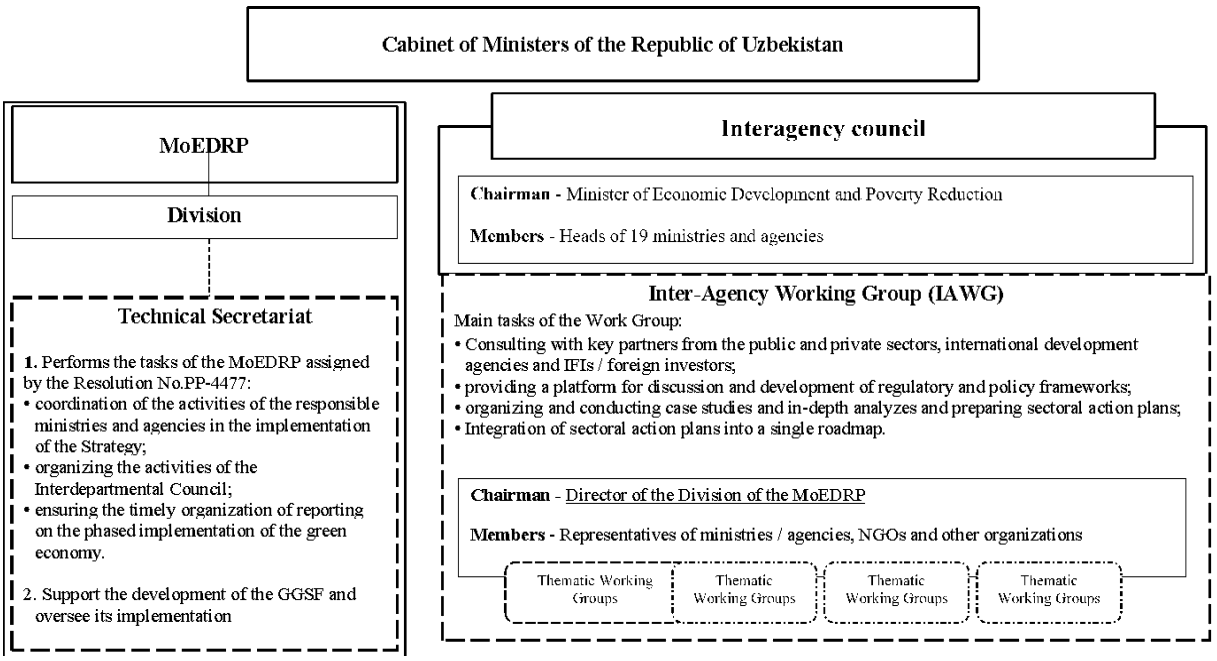
a) Coordination of policies, resources and regulations across government

Creating an effective institutional framework for the green economy. Implementation of the strategic framework across the nine pillars require close collaboration among public institutions. To improve coordination and deliver on green growth, the Government of Uzbekistan has created the Inter-Agency Council (IAC)[1]. Chaired by the Minister of Economic Development and Poverty Reduction and brining 19 agencies together, the Council will deliberate policy proposals, review progress, provide strategic guidance and serve as the decision-making authority for the advancement of green growth in Uzbekistan. To support and follow-through on the decision of the Council, the Government of Uzbekistan could create an Inter-agency working group (IAWG) to serve as a platform for technical discussion, cross-sector analysis and development of new polices. The IAWG would be composed of relevant heads of departments and chaired by the Department for a Green Economy of the MoEDPR. Organized in dedicated sub-groups (one per pillar), the IAWG would pool resources and knowledge – bringing in external expertise (e.g. academics, think tanks, civil society representatives) as needed. To coordinate the IAWG and act as the permanent secretariat of the IAC, a Technical Secretariat (TS)

[71] UNDG, 2009, United Nations Development Group – Capacity Assessment Methodology.
[72] WIUT CPRO has identified other dimensions for capacity identification and needs assessment including 1) human and qualifications 2) financial 3) legal 4) technological 5) information 6) coordination. Inclusion of such dimensions is important for a fair and comprehensive capacity assessment of all/diverse stakeholders and avoiding duplications.

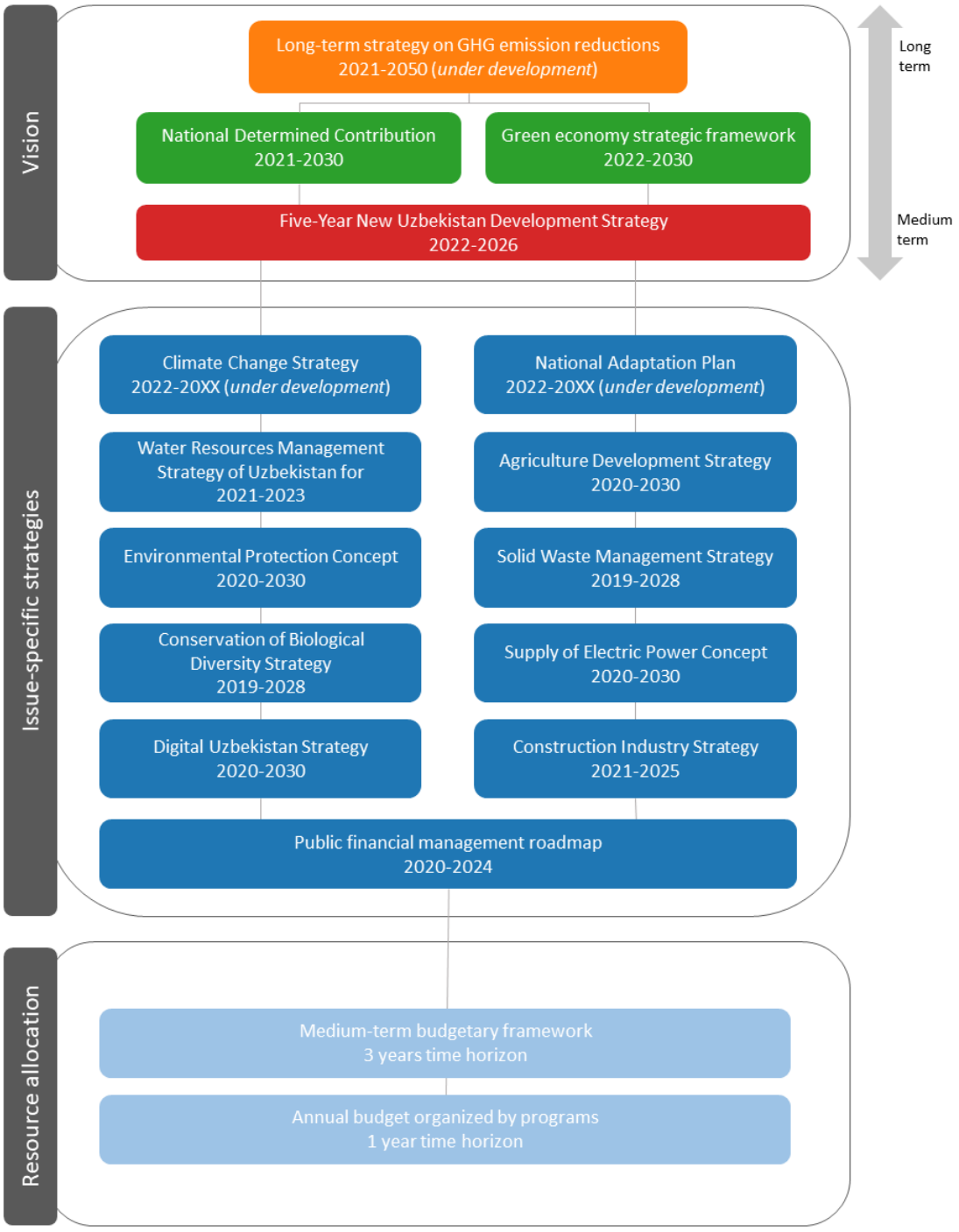
could be created within the Department for a Green Economy. The TS would ultimately be responsible for coordination the implementation of the Green Economy Strategic Framework and monitoring its progress – notably by preparing an annual implementation report to be submitted to the IAC.

Figure 7: Green Growth Institutional Framework



Aligning sector strategies with green growth objectives. Uzbekistan's policies and investments are governed by a set of strategies combining long and medium-term visions with more detailed plans (cf. Figure 8 below). The New Uzbekistan Development Strategy defines policy directions over 2022-2026 which are then further articulated into sectoral and issue-specific strategies. However, these documents were not developed at the same time and some are still under development (e.g. the long-term strategy or the national adaptation plan to climate change). In addition, sector strategies do not follow standards governing their content or mandating the inclusion of performance indicators. They do not always integrate cost estimates or list of key projects to be implemented. As such, key measures to transition to green growth are not always consistent across documents nor supported by a detailed roadmap for implementation. Last, sector strategies inform the selection of key performance indicators (KPI) used to implement program budgeting in Uzbekistan. The deployment of program budgeting is still in process and provides an opportunity to mainstream green growth target across institutions. To improve strategic coherence, the Government of Uzbekistan could (i) complement existing sector plans critical to green growth with cost estimates and high-priority investments aligned with the strategic framework, (ii) subject all relevant futures sector strategies to either a strategic environmental assessment (SEA) or a prior review by the IAWG and (iii) review existing budget program KPIs and ensure they take into account green growth objectives.

Figure 8: National and sectoral planning



Harmonizing and streamlining environmental laws and regulations. Unregulated economic activities can have a detrimental impact on the environment in the forms of pollution, degradation, waste, or resource overconsumption. To account for that fact, Uzbekistan has in place a relatively complete set of laws and regulation setting limits and standards on certain industries. However, these rules are fragmented over a large number of texts (59 laws, 50 presidential decrees and about 200 resolutions) which have not all kept up to date with recent development. As the state continue to privatize large sector of the economy, setting-up a clear and effective regulatory framework becomes instrumental

for the green economy – both to streamline burdensome procedures and close regulatory gaps. Uzbekistan is currently in the process of drafting an environmental code – consolidating norms spread over many acts into one legislation. This not only provides an opportunity to improve internal coherence but also to introduce or reinforce principles supporting a rational use of natural resources. Key principles such as polluter-pays (actors responsible for environmental degradation are financially liable for damage and restoration) and public participation (citizen should be informed of environmental risks and consulted in projects affecting their environment) directly support the long-term goals of the green economy. To harmonize and improve existing laws and regulations, the Government of Uzbekistan could (i) consolidate and simplify existing texts into a single environmental code, (ii) assess the potential for the introduction of new principles or alignment with international standards, (iii) adopt the code and (iv) train legal officers and inform stakeholders of changes introduced by the reform.

Table 3: Potential options to align Uzbekistan environmental laws with international standards (non-exhaustive)

Potential objective	Associated legal reform	International standards
Introduce strategic environmental assessments (SEA) to **evaluate environmental impacts** of future sector strategies and improve their alignment with the green economy.	Develop the legal framework to introduce a fully-fledged SEA system complementing the already existing Environmental Impact Assessments (EIA).	Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context
Increase **access to information** of the public on environmental matters and the ability of citizen and NGOs to participate and act on protecting the environment	Revise the current legal and regulatory framework on state ecological expertise in line with international standards	**Aarhus Convention** on Access to Information, Public Participation in Decision-making, and Access to Justice on Environmental Matters
Improve information and **safe handling of dangerous chemicals** and pesticides	Revise the current legal and regulatory framework on management and labelling of regulated chemicals in line with international standards	**Rotterdam Convention** on the Prior Informed Consent Procedure for hazardous chemicals and pesticides
Increase **transparency and access to information** along the extractives industries value chain (contract awards, revenue management) and increase the investment attractiveness of Uzbekistan's mining industry	Bring the current legal and regulatory framework around disclosure of contracts, licenses and revenues in the extractive industries in line with international standards	The Extractive Industries Transparency Initiative (**EITI**) standard

b) Information, data and evidence base for the green economy

Develop forecasting tools to identify risks and opportunities along different policy paths. Interactions between the economic, social and environmental sphere are complex and policies can often have unintended effects. Phasing out support to fossil fuels might have a detrimental effect on household consumption while supporting the development of renewable energy sources may create trade imbalance as Uzbekistan import the necessary technology and equipment. To weigh its options, the public sector needs adequate economic forecasting tool – either in the form of a general equilibrium model or more ad-hoc solutions focusing on the dynamic effects of the transition. These tools could be leveraged to identify key constraints to the transition (ex. social impact, external imbalance linked to the import of foreign equipment etc.) that needs to be addressed to make it workable. It would also provide the IAWG with specific insights when reviewing sector strategies. To develop and make use of these forecasting tools (see also green hub in the IFMR), the Government of Uzbekistan could (i) assess its options in a white paper reviewed by relevant public institutions, think tanks and development partners, (ii) develop the models and train technical staff to their use and (iii) update and release forecasts in the annual green economy progress reports.

Produce reliable data for decision-making. Conducting forecasts, monitoring progress and informing policymaking all require reliable data. Currently, Uzbekistan collects environmental and economic data from many sources (i.e. the State Committee on Statistics, the State Committee on Ecology and Environmental Protection, Uzhydromet, Academy of Sciences). This data is used to compute different environmental and economic indicators. The absence of a unifying framework for these indicators (the last one having been abandoned in 2011) creates measurement gaps in key dimensions, does not ensure alignment with international standards nor that the result is consolidated as a single database available to all institutions. To improve data collection and management on the green economy, the Government of Uzbekistan could (i) conduct a review of existing local and international data, collection methods and management processes, (ii) adopt a green economy data roadmap to address potential data gaps and methodological issue and (iii) establish an integrated environmental information system interlinking databases of different public authorities involved in the green economy.

Increase coverage of data and indicators on climate change. Mitigating and adapting to climate change are driving forces of the green economy. To monitor greenhouse gases (GHG) emissions and climate policies, Uzbekistan needs a state-of-the-art monitoring, reporting and verification (MRV) system. Since 1999, Uzbekistan has only submitted three national communications on its GHG emissions. In 2021, it submitted its first Biennial Update Report (BUR) – complete with an inventory of GHG emissions carried out in accordance with international standards and covering the years 1990-2017. Starting 2022, Uzbekistan plans to release national communication and BUR at a quickened pace. This will allow policymakers to use up-to-date data to monitor the results of the green economy strategy. However, the current system lacks coverage on two GHG (SF6 and PCFs). In addition, it does not cover support delivered by the international community to help Uzbekistan reach its climate goals. Covering these gaps will not only allow Uzbekistan to get a better view of its emissions but also enable it to track the delivery of climate finance in case it set a conditional target in a future NDC. To better monitor its response to climate change, the Government of Uzbekistan could (i) formulate an action plan to bring its MRV system in line with UNFCCC standards, (ii) publish update reports covering all major GHG every two years and (iii) publish national communications including reporting on climate finance, technology transfer and capacity-building every six years.

c) Transparency and accountability

Facilitate access to information on the green economy. Access to information on environmental matters and the green economy is still at its early steps. Most public institutions do not post online their information and data pertaining to the state of the environment – nor do they channel it into awareness-raising campaign to the public. Furthermore, active access to information through official requests is still marred by issues of timeliness and responsiveness. This lack of public information impairs the capacity of the public to weigh in on issues critical to the green economy. To improve access to information, the Government of Uzbekistan could (i) make available online all data and information on the environment and green economy, (ii) establish a system to ensure timely response

to request for information and (iii) organize activities to raise public and civil servant awareness on information on environmental matters and rights to access to it.

Evaluate and audit government interventions to identify national best practices and learn from experience. Long-term endeavors such as transitioning to a green economy require trial-and-error as well a frequent adjustment. Conducting regular review of public policies allow decision-makers to assess if they deliver on international commitment (e.g. reducing the GHG-intensity of the economy) and national targets (e.g. increasing energy efficiency by 20%) in an efficient and effective manner. These evaluations can also be the opportunity to measure how financial resources committed to the transition have been used and tally their costs against their outcome. To adjust and review its green growth policies during implementation, the Government of Uzbekistan could (i) conduct a mid-term policy evaluation, (ii) publish the results and (iii) use them to adjust the strategy for the remaining period.

Report regularly to Parliament and citizen. Effective oversight of public policy implementation and resource usage rests with the legislature. To effectively play that role, the Oliy Majlis and needs to have access to clear information on green economy targets, progress and financing. These information can further be contextualized by an update on the dangers associated with environmental degradation and unsustainable resource use (risk of inaction) and risks linked to structural changes in the economy (risk of action). Further extending the scope of this communication to the public can bring additional feedback on the government actions. To improve oversight and accountability over the green economy, the Government of Uzbekistan could (i) submit annually to Parliament its green economy implementation report completes with key measures adopted, indicators, green budget statement, forecasts and risk analysis and (ii) publish these communications and subject them to public consultation.

d) Private sector and civil society participation

Engaging all segments of society in complex, long-term reforms with their ups and downs is an important building block of sustainable and comprehensive green growth. There is a need for building strong consultative and participatory community approach (including Village Councils, NGO, Civil Society, media and private sector) in policy design, monitoring, implementation and evaluation processes. Bringing in expertise of academics and think tanks representatives would boost the government's capacities to reach green growth targets. Private sector and civil society serve as central source of information and needs assessment for the government, play vital role in ensuring transparency, accountability and integrity of the transformational processes and providing independent feedback in this regard. It is vital to involve civil society in advocacy and awareness campaigns to ensure effective outreach. Civil society organizations have the capacity to deliver wide range of opinions and voices, including those from vulnerable and least privileged groups, as well as to build public confidence and sense of ownership in reforms and increase preparedness of people for green transformations. Private sector and civil society can serve as driving forces behind innovation and start-up creation as well as their financing.

The government of Uzbekistan has positive experience on effectively engaging private sector and civil society in the reforms processes and addressing the matters of public interest. For example, the country adopted certain mechanisms for public discussions of draft legislations. The web-portal www.regulation.gov.uz has provided an opportunity for people to scrutinize and send almost 50 thousand proposals on more than 12 thousand laws and regulations at their developmental stage. Civil society has also been actively involved in resolving the issues of forced and child labour in cotton production, which allowed to end boycott of Uzbekistan's cotton products by leading global brands. Independent media in Uzbekistan is becoming instrumental in conveying people's needs to the government and focusing attention to pressing issues in the country. Mahalla – neighbourhood community system – traditionally served as primary self-governance institution in the country where people tried to address collectively their mutual problems.

Nevertheless, effective and constructive mechanisms for dialogue between the government and civil society are yet to be developed further. There is strong need for effective platforms for the exchange of views on important issues of further development of the state and society. The needs of NGOs,

media, academic circles and private sector are not assessed systematically. The civil society's participation in the implementation of socio-economic development programs and regulations is weak as well. There are vast untapped opportunities for involving civil society and private sector in addressing social problems. Overregulation of some areas such as functioning of NGOs and media, as well as lack of regulation in other areas as private sector's corporate social responsibility also hinder private sector and civil society's active participation in the green growth. Public-private (PPP) partnerships instruments and mechanisms are still at their developmental stage in Uzbekistan. Public-private sector dialogue, including through business councils and associations, needs to be strengthened. Capacities of the private sector and civil society in effective designing and implementing policies, promoting public interests, conducting advocacy campaigns, attracting investment and fundraising need to be strengthened and supported continuously. Private business and civil society need wider access to data on innovation and environmental trends and challenges as well as best international experience in those areas. Private sector needs access to efficient managerial and technical knowledge, and green technology to integrate with global markets and find its niche in transnational production chains.

Access to finance and capacity for private businesses needs to be enhanced to strengthen their role in the green growth. Special attention should be given to supporting promising, high-potential SMEs investing in green businesses through direct and intermediate finance, general and targeted credit lines, as well as improved lending capacity for micro, small and medium enterprises. Local money and capital markets as well as risk-sharing facilities through local state owned and private banks should be facilitated. Private sector's participation in state-dominated sectors – energy, finance, transport, infrastructure, chemicals, mining, etc. should be further increased. More than 2000 state-controlled companies still dominate the economy and curtail private sector's growth. Difficulties remain for small and medium businesses in accessing land, capital, energy and infrastructure. Wider, fair and transparent access for businesses to public procurement, privatization, as well as promoting competitiveness could be instrumental in increasing the role of private entities in sustainable green growth. Private businesses should be supported for transition to green economy, their capacities to cope with potential climate change and disaster impacts should be strengthened.

III. Green Finance

Building-up the Uzbek, green economy will require significant investments from the public and private sector. Decoupling economic growth from environmental and climate degradation require new infrastructure, technology and human capital. Just to address climate change, the IPCC estimate that countries around the world must mobilize between 1,8 and 6% of their GDP until 2035. In Uzbekistan, it is estimated that reaching carbon-neutrality in the electric sector while meeting the country's growing energy demand would require 4,8% of GDP in annual investments over the next decade. Other green targets – from addressing water scarcity to reversing land degradation – entail similar costs.

To increase financial flows to green projects the government of Uzbekistan could implement a Green Finance agenda. This agenda would combine regulatory reforms, fiscal policies, tariffs and financial management to create an enabling environment where (i) the financial system integrates environmental factors into its decisions to channel more private capital towards green initiatives, (ii) the government align its tax and spend decisions with green objectives and (iii) the public sector mainstreams environmental evaluation and incentives into its public financial management system. Taken together, this three-pronged approach would not only raise more capital for the green economy but also help decision-makers to identify the most cost-effective green investments.

a) Fiscal policies

Scaling-up green public investments. Over the last few years, Uzbekistan has markedly increased the volume of public investments into sectors critical to the green transition. In 2019, the energy and transportation sectors accounted for 53% of public investment. Public investment is mostly implemented by SOEs (80%) with only a small portion directly going through the state budget (20%) –either through direct spending or state-targeted funds (ex. the Intersectoral Energy Savings Fund).

Green projects implemented by SOEs are either financed on their own funds or through loans provided by the UFRD or state-guaranteed institutions. This framework had led to different process for project preparation, selection and monitoring – making it difficult to align the State Investment Plan with green priorities. The problem is compounded by the fact that national and sector plans are not always aligned with green objectives and lack information or cost estimates on major projects that could contribute to the green economy. The very question of what constitutes a "green" project makes coordination more difficult in the absence of a common green taxonomy. All these issues make it difficult to assess the current volume of public capital going to green infrastructures, identify potential financing gaps and rationale for government action, adjust fiscal and investment strategies accordingly and follow-through on their implementation. Creating purpose-built budgetary vehicles – such as a national Green Fund – could alleviate some of these issues but require careful design to complement, rather than duplicate, existing channels such as the UFRD. To scale-up green public investments while delivering on goals n°5 and n°24[73], the Government of Uzbekistan could (i) conduct a mapping of existing funding instruments to the green economy, (ii) assess their intervention against known structural constraints to green investments (e.g. market failures, barriers to green technology commercialization) to identify policy gaps, (iii) formulate or adjust the mandate of existing and new funding instruments, (iv) develop a common green taxonomy to clearly direct funding towards projects relevant to the green economy, (v) support the costing of projects needed to meet green economy goals in sector plans and (vi) monitor and report annually on public investment flows going to the green economy.

Phasing-out brown subsidies. Current fiscal policies support – through direct and implicit subsidies - a range of industries and technologies that are unsustainable or have a detrimental impact on the environment. These support measures are often justified economically and socially. Subsidizing the price of fossil fuels (e.g. gasoline, gas) allows firms and consumers access to cheap energy and motor vehicles – crucial prerequisites for industrialization and job-creation. However, it creates three problems. First, it discourages long-term green investments by making fossil fuel artificially more competitive than renewable energy (e.g. wind, solar) and lowering demand for other green goods such as electric cars. Second, it weighs heavily on the state budget. Current estimates assess that fuel subsidies accounted for 10,9% of GDP in 2017 – thus limited the budgetary space available to fund the green economy and other government priorities. Third, it sustains inequalities as wealthier households consume more energy – and benefit more from those subsidies – than modest ones. To address these challenges and implement goal n°22 of the New Uzbekistan Development Strategy[74], the Government of Uzbekistan could take steps to organize a targeted, gradual and orderly phasing-out of brown expenditures by (i) conducting an inventory of subsidies and tax incentives that hinders the green economy, (ii) prioritizing targeted measures for reform according to their environmental and socioeconomic impact, (iii) publish and implement a timetable for their gradual phasing-out and (iv) design an deploy mitigation measures to counteract potential losses to vulnerable households and firms.

Aligning tax policies to accelerate green growth and reduce pollution. To generate jobs and economic growth, the Government of Uzbekistan aims to reduce the tax burden on private businesses by 2026. At the same time, the Government of Uzbekistan wishes to incentivize investments in green projects and divestments from brown alternatives. The country can therefore aim for a "double dividend" by shifting the tax burden from economic functions (labor, capital, consumption) to activities leading to pollution and resource overconsumption. Realizing this shift will not only make growth more sustainable but also raise resource efficiency and lower distortionary taxes. To realize the double

[73] New Uzbekistan Development Strategy, goal n°5: « Introduce a compact, professional, fair and high-performance public administration system »; goal n°24 "Uninterrupted supply of electricity to the economy, active introduction of green economy technologies in all areas, increasing energy efficiency of the economy by 20 per cent"

[74] New Uzbekistan Development Strategy, goal n°22: « Liberalisation of the energy and natural gas market, with guarantees for social protection, widespread private investment in the sector, and the introduction of social measures to protect vulnerable households »

dividend and implement goals n°24 and 29[75] of the New Uzbekistan Development Strategy, the Government of Uzbekistan will take steps to green it tax policy framework by (i) conducting a review of the current tax framework against the objectives of the Green Economy Strategic Framework, (ii) prioritizing policy options according to their feasibility, environmental impact and socioeconomic costs and benefits, (iii) researching and developing chosen proposals (including the analysis of revenue-generation potential and distributional impacts on population and firms), (vi) developing draft legislation for a green tax package and (v) strengthening capacity on tax controls and monitoring to ensure the implementation of the new measures.

Revising the pollution charge system. The national pollution charge system currently covers over 250 waste, air and water pollutants. It is therefore complex to operate and burdensome on the private sector. Furthermore, the charge rate is very low – generating less than $1,75 million a year, or 0,01% of government revenues. These low rates do not create meaningful incentives for pollution abatement and are set without reference to national environmental targets. In effect, the system weighs on a wide variety of businesses but is set up so that it is cheaper to pay rather than investing in pollution abatement-technologies. Focusing the system major pollutants, linking it to national green objectives and streamlining it to make it less burdensome on private businesses could both reduce economic pressure on the environment and simplify the business climate. To improve the efficacy of the pollution charge system and deliver on goals n°79[76] of the New Uzbekistan Development Strategy, the Government of Uzbekistan could reform the pollution charge system by (i) evaluating the current system in terms of efficacy, effectiveness and alignment with national green goals and international standards, (ii) developing draft legislation for its revision, (iii) investing in simplification and automation to streamline its implementation and (iv) deploying the revised system.

b) Public financial management

Implementing a green budgeting framework. Recent reforms have brought budget documentation in Uzbekistan closer to international standards in terms of comprehensiveness and legibility. In the coming years, Uzbekistan will gradually move towards program budgeting by setting performance indicators in all sectors to track the outputs and outcomes of public spending. In addition, the government has started implementing an SDG-tagging system to link budget items to national development goals. These reforms currently do not allow the government to assess the impact – favorable or unfavorable – of its fiscal policies on green goals. This makes it difficult to align tax and spend decisions with the priorities of the green economy. To improve resource allocation and deliver on goal n°9 of the New Uzbekistan Strategy[77], the Government of Uzbekistan could introduce a green budgeting system able to classify public expenditure against their impact on green priorities (positive, negative, mixed, neutral) by (i) designing its own national methodology for green budgeting, (ii) piloting it in sectors critical to the green economy and (iii) disclosing the results in annual green budget statement to the Interdepartmental Council, Parliament and citizen of Uzbekistan.

Grounding procurement decisions on sustainable criteria. With greater volume of public investments going to the green economy, Uzbekistan has the opportunity to leverage public procurement in service of the green transition. Sustainable public procurement (SPP) is an approach through which procuring entities base their decisions not on a price-only basis but on a multi-criteria approach including dimensions of environmental quality. Through SPP, governments can help kick-start new green industries by increasing the domestic demand for green goods, demonstrating the technical and commercial viability of new green technologies and encouraging private firms to adopt better environmental and social standards. SPP can also generate substantial savings over the long run by integrating operating costs, energy consumption and longevity into procurement criteria at the

[75] New Uzbekistan Development Strategy, goal n°29: "Reducing the tax burden on business entities from 27,5 per cent to 25 per cent of gross domestic product by 2026", goal n°24: "Uninterrupted supply of electricity to the economy, active introduction of green economy technologies in all areas, increasing energy efficiency of the economy by 20 percent".

[76] New Uzbekistan Development Strategy, goal n°79: "Prevent existing environmental problems detrimental to public health and the gene pool"

[77] New Uzbekistan Development Strategy, goal n°9: "Parliament set specific strategic objectives for the responsible institutions when adopting the state budget and monitor their implementation, introducing the practice of requesting their results".

evaluation stage (lifecycle costing), thus shifting purchase to more cost-effective goods and works. Ultimately, the combination of market-driven information (such as eco-certification and ecolabelling which help communicate a product environmental performance) and SPP can create a dynamic framework in which governments buy better products and consumers are empowered to make more informed decisions. This would also allow Uzbek exports to comply with modern standards required in high-end foreign markets. To support greater demand for green goods and investments while delivering on n°28[78] of the New Uzbekistan Development Strategy, the government of Uzbekistan could (i) adopt a SPP policy statement outlining the objectives, (ii) develop an action plan for the deployment of SPP or integrate it into a wider procurement reform strategy, (iii) develop and adopt the necessary revisions to the legal and regulatory framework, (iv) implement the required tools, guidance and capacity-building to contracting entities and (v) monitor, report and communicate annually on green public procurement.

Leveraging green capital through tailored debt management. Globally, the green bond market has developed rapidly in recent years – jumping from $50 to $250 billion in the last five years. This capital can be used to finance the transition to a green economy in Uzbekistan. The Government of Uzbekistan already has experience in mobilizing impact capital, having raised a $750 million social impact bond and $870 million in SDG bonds prior to 2022. SOEs also represent a new frontier to green debt management. As they represent the bulk of green public investments – and given some of them now issue Eurobonds directly on global markets – they could diversify their creditors and lower their financing costs by issuing green bonds. To increase financing to the green economy while delivering on goal n°21[79] of the New Uzbekistan Development Strategy, the government of Uzbekistan could (i) establish a national green taxonomy for the classification of green activities, (ii) develop a regulatory framework for the issuance of green bonds by the state and SOEs, including standard and labels for financial products, (iii) mobilize existing public financial instrument to crowd-in private finance for green infrastructure, (iv) deliver common guidelines and capacity-building to issuing entities for project selection, use of proceeds and reporting and (v) foster sustainability disclosure by promoting adequate corporate reporting requirements.

Harnessing the state balance sheet to turn SOEs into green economy champions. SOEs account for close to half the economic output and 80% of public investments in sector critical to the green economy– including renewable energy generation, energy efficiency or water management. As such, they are critical actors of the future green economy. Strategic planning and supervision – both at a portfolio, board and corporate level – could turn strategic SOEs into green economy champions by aligning their mandate and investment program with green economy objectives. Alignment with the green economy priorities could further be incentivized by financial mechanisms to fund new investments (see paragraphs 28 & 34). Introduction of sustainable production practices (e.g. green procurement, energy efficiency audits, carbon footprint evaluation) could improve resource efficiency while reducing economic pressure on the environment. Adoption of sustainability standards for products and management systems could open new markets while improving operational effectiveness. To support the creation of national green economy champions, the government of Uzbekistan could (i) adopt a sustainable SOE roadmap to integrate green economy objectives at the portfolio, board and corporate levels, (ii) promote the adoption of sustainable production practices among pilot SOEs, (iii) support the adoption of sustainable standards and certifications and (iv) implement monitoring system reporting on financial and sustainability performance of the state portfolio.

[78] New Uzbekistan Development Strategy, goal n°24 "Introducing modern standards in the production of products that meet the requirements of foreign and international markets, attracting well-known brands".
[79] New Uzbekistan Development Strategy, goal n°21 "Ensure effective public debt management, keeping the size of the newly attracted external debt at a level not exceeding USD 4.5 billion per year"

Thematic priorities: summary of measures and short description (themes 1 to 6)

#	Measure	Short description
Theme 1: Sustainable and Efficient Use of Natural Resources		
1.1	**Diversified agricultural production through fostering diversification of cropping systems at a large-scale**	Diversify agricultural production away from cotton into horticulture and climate-smart production, including towards a broader range of crops to promote a more resilient and sustainable agroecosystem. On-farm diversification and specialization of crop production can improve households' resilience to climate-related risks. Support investment in resource efficient technologies for value-creation and development of new markets for climate-smart agriculture value chains.
1.2	**Implementation of sustainable grazing management**	Sustainable grazing and pasture management is affected by, *inter alia*, climate, land condition, pasture quality and quantity, as well as grazing frequency and intensity. Development and deployment of sustainable grazing and pasture management practices aimed at improving soil health and strength by focusing on the health of their pastures and rangelands, as well as reducing land and forest degradation from crop and livestock farming.
1.3	**Protection and sustainable management of forests and increased climate-resilient tree plantations, agroforestry, farm windbreaks, community shelterbelts, urban green belts**	Healthy forest ecosystems are source of multitude of products and services, maintain biodiversity, protecting landscapes, natural resources and infrastructure and mitigating climate change. Plant climate resilient trees as a fundamental natural-based solution to decrease erosion, sand and dust storms, and increase rural and urban resilience of ecosystems and infrastructure.
1.4	**Development and approval of a Landscape Management Plan to enable a shift from a sectorial approach to the landscape approach**	There is a need to manage agriculture, water and forest in a synergetic way. An integrated landscape management (ILM) approach is needed to connect forests, woodlands, agro-silvo-pastoral land, cropland, irrigated land for their effective protection, increased productivity, ecosystem services, and economic diversification. This requires development of a Landscape Management Plan aimed to facilitate the use of an integrated landscape approach. Landscape restoration offers great opportunities and benefits for many sectors of the economy as restoring lands damaged by overgrazing, fuel extraction, mining, irrigation or agriculture may return them to productive use.
1.5	**Increased food security and wellbeing through promoting sustainable agricultural production and processing**	Establishing a system of national governance that aims to promote food security concerns, nurturing healthy ecosystems and supporting the sustainable management of land, water and natural resource. Fostering adequate production systems and the policies and institutions that underpin national food security.
1.6	**Increase in job creation through green wager programs and natural resource-based businesses**	Assessing the feasibility of business models and potential for green jobs creation related to natural resources (e.g., in such areas as silvicultural measures, enrichment planting, afforestation, agro-silvo-pastoral systems on degraded pasture lands, nursery, fisheries, etc.) and developing green wager programs. Identifying potential of NRM-based enterprises for livelihood improvement and climate

		change resilience (e.g., woodlots, beekeeping, processing of NTFPs, processing of milk, production of fodder, small eco-tourism, etc.) to create jobs in agriculture, natural resources, and ecotourism.
1.7	**Setting/enforcing/monitoring sustainable withdrawal limits to reduce overall water use and water stress**	Strengthening institutions for participatory planning and setting/enforcing/monitoring sustainable withdrawal limits to reduce overall water use and water stress, and improving the efficiency of, water use and irrigation.
1.8	**Scale-up of efficient technologies in agriculture sector**	Deployment and scale up of more efficient technologies such as water saving irrigation (drip, sprinkler, subsurface) technologies, vertical agriculture, hydroponics, aeroponic, aquaponic), laser levelling, hyper-arid germplasm variety development, etc.)
Theme 2: Strengthening Resilience to Natural Disasters and Climate Change		
2.1	**Mainstream climate change adaptation and disaster risk management into national policy, planning, economic development planning and budgetary processes.**	Mainstream climate change and disaster risk reduction considerations at national level and build strong consultative and participatory community approach (including Village Councils, NGO, Civil Society and private sector) in climate change adaptation, mitigation and disaster risk reduction planning, implementation, monitoring and evaluation.
2.2	**Establish an effective CC and DRR regulatory and institutional framework to facilitate the development and implementation of national responses**	Establish an Interministerial Steering Committee to coordinate CC and DRR activities and to oversee the *Uzbekistan National Action Plan (UNAP) on Strengthening Resilience to Natural Disasters and Climate Change* Implementation Unit. Establish and fund a UNAP Implementation Unit within the Department of Environment to coordinate and monitor UNAP implementation and provide secretariat support to above Committee. Incorporate disaster reduction and climate change adaptation and GHG emissions reductions considerations into Uzbekistan's National Building Code. Develop an integrated risk-based approach to land use and development. Build national and local capacity to access external funding mechanisms.
2.3	**Strengthen partnerships and collaborations with national, regional and international organisations and build national and local capacity to access external funding mechanisms**	Build national and local capacity to access external funding mechanisms and strengthen institutional and governance arrangements for disaster risk reduction and climate change adaptation by strengthening partnerships and collaborations with national, regional and international organisations.
2.4	**Strengthen and coordinate public awareness campaigns through educational and promotional programs and partnerships such as public seminars, workshops and training, including through the use of multi-media and national partnerships with NGOs and the private sector**	Establish a national platform to share lessons learned and best practice. Review Uzbekistan MoES and MoE training Institutes/ Centres capacity to coordinate initiatives that support knowledge management and implement recommendations of the review. Share nationally, regionally and globally through appropriate mechanisms such as the Adaptation Learning Mechanism (ALM). Consult with sectors to identify appropriate mechanisms for integrating cities, local governments and community knowledge into DRR /CC at the appropriate level.
2.5	**Develop and implement a communications strategy for the UNAP and through relevant sectoral programs**	Develop and implement an effective Communications Strategy consolidating outputs and outcomes of CC and DRR related initiatives. Strengthen public awareness and improve understanding of the causes and effects of climate change, climate variability and disasters by strengthening and coordinating public awareness campaigns through educational and promotional programs and partnerships such as public

		seminars, workshops and training, including using multi-media and national partnerships with NGOs and the private sector.
2.6	**Incorporate climate change advocacy into universities and school curricula, as appropriate**	Strengthen public awareness and improve understanding of the causes and effects of climate change, climate variability and disasters by incorporating climate change advocacy into universities and school educational curricula, as appropriate.
2.7	**Strengthen cities/local governments and communities' capacity to cope with potential climate change and disaster impacts**	Strengthen cities, local governments (LGs) and community-level disaster risk management and climate change adaptation programmes. Establish effective Early warning systems to provide accurate and timely warning for all hazards to the cities and community.
2.8	**Strengthen technical and institutional capacity to collect, store and analyse climate and disaster risk information**	Develop integrated information management system(s) to support DRR and CC decision-making processes and inform UNAP implementation. Strengthen technical and institutional capacity to collect, store and analyse climate and disaster risk information.
2.9	**Improve energy security and strengthen governance to support Energy Efficiency and Renewable Energy (RE) options.**	Improve energy security by assessing disaster and climate risk on existing and planned energy infrastructure and implement cost effective risk reduction options, develop contingency plans and response mechanisms to address energy supply issues, particularly during and after natural disasters, and identifying and promoting use of appropriate technology transfer to support mitigation actions and energy efficiency measures.
2.10	**Strengthen disaster preparedness and capacity for effective response and recovery**	Strengthen disaster management arrangements in Uzbekistan. Strengthen cities governments, Local Governments (LGs) and community preparedness and response to disasters, CC impacts, and update evacuation plans and strategies. Strengthen capacities to respond effectively to disasters and develop awareness of International and Regional Humanitarian Assistance.
2.11	**Incorporate Gender Inclusiveness and Gender Sensitive Approach in National Climate Change and Disaster Resilience Policy and Planning Processes**	Strengthen disaster preparedness for effective response by incorporating Gender Inclusiveness and Gender Sensitive Approach in National Climate Change and Disaster Resilience Policy and Planning Processes.
2.12	**Engage Private Sector in Climate Change and Disaster Resilience Planning and Implementation Processes**	Strengthen disaster preparedness for effective response by engaging Private Sector in Climate Change and Disaster Resilience Planning and Implementation Processes and activities at national, sectoral and local levels.
Theme 3: Green and Low-Carbon Development of Industry and the Economy		
3.1	**Develop and approve a Long-Term Strategy on Green Growth/ Low-Carbon Development**	A greener growth model can unlock opportunities for innovation, investment, and value creation, thus reducing economic and fiscal losses and strengthening productivity. Uzbekistan will have to chart its path based on its policy and institutional settings, level of development, social structures, resource endowments, and environmental pressure points. Consistent with good international practice, Uzbekistan's green transformation priorities should be anchored by a long-term low-carbon development strategy and building on relevant national policies (NDC 2021, National Climate Change Strategy, 5-year

		Aral Sea Strategy, Renewable Energy Strategy, Yashil Makon (National Greening) Program, National Biodiversity Strategy, the Concept for the Development of the Electric Power Industry etc).
3.2	**Increased electrification and increased reliability**	In Uzbekistan, electricity demand is expected to grow to over 100 TWh by 2030, a significant increase from 61 TWh in 2018. The country has more than 250,000 km of electricity transmission and distribution lines, most of which were built during the Soviet period and are now past their useful economic life. The obsolete infrastructure results in high electricity losses, estimated at 20 percent of net generation, and frequent power outages undermining economic activities and the well-being of citizens across the country.
3.3	**Reduced losses in transmission and distribution networks**	Obsolete infrastructure results in high electricity losses, estimated at 20 percent of net generation, and frequent power outages, undermining economic activities and the well-being of citizens. Distribution power networks are used to deliver electricity to end-users and are characterised by relatively dynamic development as well as high level of technical losses. Since 2017, however, Uzbekistan has accelerated policy reforms toward a market-based system. Energy reform is among the highest reform priorities for the Government. Key priorities in the distribution grid development include (i) reduction of technical and commercial losses of electricity during distribution; and (ii) improvement of reliability and quality of power supply to the consumers.
3.4	**Large-scale deployment of renewable energy sources**	In April 2020, the Government approved a 2020–2030 generation expansion plan which targets to increase the share of renewables in the power generation capacity mix from 0.2% to 25% over 2019–2030, a significant development. New tenders on solar and wind power will follow to increase the share of renewable energy in the power mix and further contribute to the country's clean energy transition. Exploration of new and further development of existing renewable energy sources shall overall facilitate fulfilment of objectives to ensure affordable electricity supply to the regions with electricity shortages, stimulate development of local industries, infrastructure, and job creation.
3.5	**Deployment of energy efficiency solutions**	Continued reduction of primary energy intensity is important for Uzbekistan's long-term energy security. By halving its primary energy intensity of GDP in 2015 over the following 15 years, Uzbekistan would be able to achieve its vision of doubling GDP in 2030 without additional primary energy requirement. This is an attainable goal but requires substantial efforts in scaling up EE investments in residential, commercial and industrial sectors.
3.6	**Circular Economy Action Plans for select value chains/sector**	Circular economy offers a pathway for Uzbekistan to address development challenges and meet national and sectoral strategic targets towards to green economy. Circular economy is a system solution framework that tackles global challenges like climate change, biodiversity loss, waste, and pollution. The recommended Circular Economy Action Plan in the agri-food value chain (incl. improving natural resource efficiency and reducing agriculture and food waste, pollution, and GHG emissions) is being consulted with government agencies.
Theme 4: Innovation and Effective Green Investment		

4.1	**Integrate Green Investment concept to policies and investment projects**	Ensure comprehensive system for developing policy reforms and implementing investment projects from all sources and across all sectors that will meet with ESG standards for a green transition and green growth needs.
4.2	**Update infrastructure of industrial enterprise**	Ensure sustainability of industrial enterprise infrastructure in industry, construction, agriculture and other sectors of the economy by integrating new available technologies and standards.
4.3	**Strengthen role of SMEs in the economy through enhanced access to finance and capacity**	Support promising high-potential SMEs, including women-led and across regions, to build capacity and improve competitiveness and governance.
4.4	**Increase private sector participation in the national economy**	Selectively engage with State Owned Enterprises (SOEs) to increase private sector participation in state-dominated sectors and strengthen public-private sector dialogue (including through business councils and associations).
4.5	**Develop a transparent and competitive public procurement regime**	Support responsible corporate governance, development of a transparent and competitive public procurement regime and PPP and SME frameworks.
4.6	**Strengthen e-government and public administration capacity for government efficiency**	Computerization and informatization of the administrative system of ministries-Provision of ICT infrastructure and associated systems for the framework of e-government system; Strengthen the capacities of public administrations for innovation and investment and support the digitalization of government services and processes and expand the ICT framework and infrastructure to facilitate the exchange of knowledge and information.
4.7	**Improve the effectiveness of policy governance and mechanisms in the innovation system**	Strengthening innovation policy institutions, governance and coordination across relevant actors.
4.8	**Strengthen the innovation infrastructure to support innovation-led growth**	Reinforce the infrastructure and capacities of the support elements within the innovation ecosystem.
4.9	**Enhance science-industry linkages**	Strengthen the capacities of R&D organisations, businesses support the increased engagement of foreign technology providers to ensure technology upgrading and transfer in the business sector.
Theme 5: Sustainable and Inclusive Urbanization		
5.1	**Diversify the economic base of some regions**	Ensure sustainable and balanced development of regions in terms of their contribution to GDP creation as well as the levels of socioeconomic development.
5.2	**Pursue further decentralization**	Increase the independence and responsibility of local government bodies in tackling socioeconomic development of the regions.
5.3	**Manage the formation of urban agglomerations, taking into account the creation of satellite cities**	Improve the formation of urban agglomerations, taking into account the creation of satellite cities by including the development of social, engineering, communal and road transport infrastructures through the introduction of advanced energy-saving, and environment friendly technologies and materials.

5.4	**Build sustainable and resilient urban infrastructure**	Creating a sustainable and resilient urban environment and infrastructure, including construction, buildings, power, transport, roads, water and sanitation, green spaces, urban and peri-urban forests that should target the better quality of life of urban residents and visitors. A program (that is currently under consideration by the government) in line with the President's new *Yashil Makon* (National Greening) program's target of achieving 30% green space in cities, will support the planning, monitoring, maintenance, and financing of urban forests, parks, riparian corridors and urban green belts in Tashkent with potential extensions to upstream and downstream landscape/watershed management.
Theme 6: Support for People and Places Most Impacted by the Transition		
6.1	**Develop inclusive and resilient human capital**	Ensuring macro-economic stability and inclusive economic growth to improve the living standards of the population, especially in the regions, and reducing poverty, largely through the creation of decent jobs, and ensuring an enabling environment for entrepreneurship, especially among youth and women, are priorities.
6.2	**Address rural livelihood to bridge rural-urban gaps**	Reducing the gaps between rural and urban areas must be prioritized as communities living in rural areas are among the most affected by poverty or the risk of poverty. They are also the most vulnerable towards the impacts of climate change.
6.3	**Encourage innovative youth start-ups**	Developing some schemes to support innovation and start-ups is a priority to help diversifying the economy and promote youth employment.
6.4	**Improve quality education and learning outcomes**	The priorities set forth by the Government for the next five years include improvement of people's well-being and improving the quality and coverage of education at all levels while continuing systematic work to support children, youth and women.
6.5	**Improve coverage and efficiency in the social protection system**	The priorities set forth by the Government for the next five years include improvement of people's well-being and strengthening their social protection, developing and improving the quality of health care services, while continuing systematic work to support children, youth and women.
6.6	**Support and incentivize SMEs within the context of transition**	There is a need for measures to support MSEs to grow, coupled with support for their formalization, in order to create decent and protected jobs.

Cross-cutting priorities: summary of measures and short description (cross-cutting themes A, B and C)

#	Measure	Short description
Cross-cutting Theme A: Capacity building and human capital development		
A.1	**Increasing managerial, planning competencies of senior staff of the governmental institutions**	Conducting trainings for senior managerial staff of the relevant ministries and agencies on sustainable management.
A.2	**Strengthening technological competencies of the governmental and private organizations to plan, implement, evaluate results of actions and measures on transition to green economy**	Conducting trainings for middle and technical staff of relevant governmental bodies and private institutions.
A.3	**Training of trainers on green growth, climate change resilience, climate smart agriculture**	Developing and conducting short training of trainers' courses for educational, scientific and research institutions and other capacity building facilities.
A.4	**Providing support for training and consultancy services in private profit and non-for-profit institutions by allocation of small grants**	Providing small grants, aimed at covering the costs of conducting open lectures, conferences and seminars for private profit and non-for-profit organizations on green economy.
A.5	**Incorporating green economy topics into relevant curriculum of the educational institutions**	Incorporating topics of green economy practices and principles into existing subjects offered at all relevant educational institutions such as the Agricultural University, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, etc. (there are 48 higher educational institutions in Uzbekistan teaching subjects related to green economy).
A.6	**Creating online green economy hub**	Creating electronic platform for aggregation of information on green economy, legal basis, past and future activities, best international practices and other relevant aspects of green growth.
A.7	**Preparation of specialists on green economy and sustainable business at the Tashkent State University of Economics**	Launching a faculty (department) on green economy and sustainable business at the Tashkent State University of Economics, one of the leading and old higher educational institutions focused on economic subjects.
A.8	**Introducing research funds on green growth**	Launching public fund aimed at supporting green growth research in Uzbekistan (ex. Potentially to be financed through an Aral Sea Green Bond).
Cross-cutting Theme B: Enabling policy environment and effective institutions		
B.1	**Improve coordination across government by pooling expertise, data and resources on the green**	The 2019 decree on the green economy transition created an Inter-Agency Council bringing together key ministries and agencies. However, the Council is not operational and lack the support of technical groups

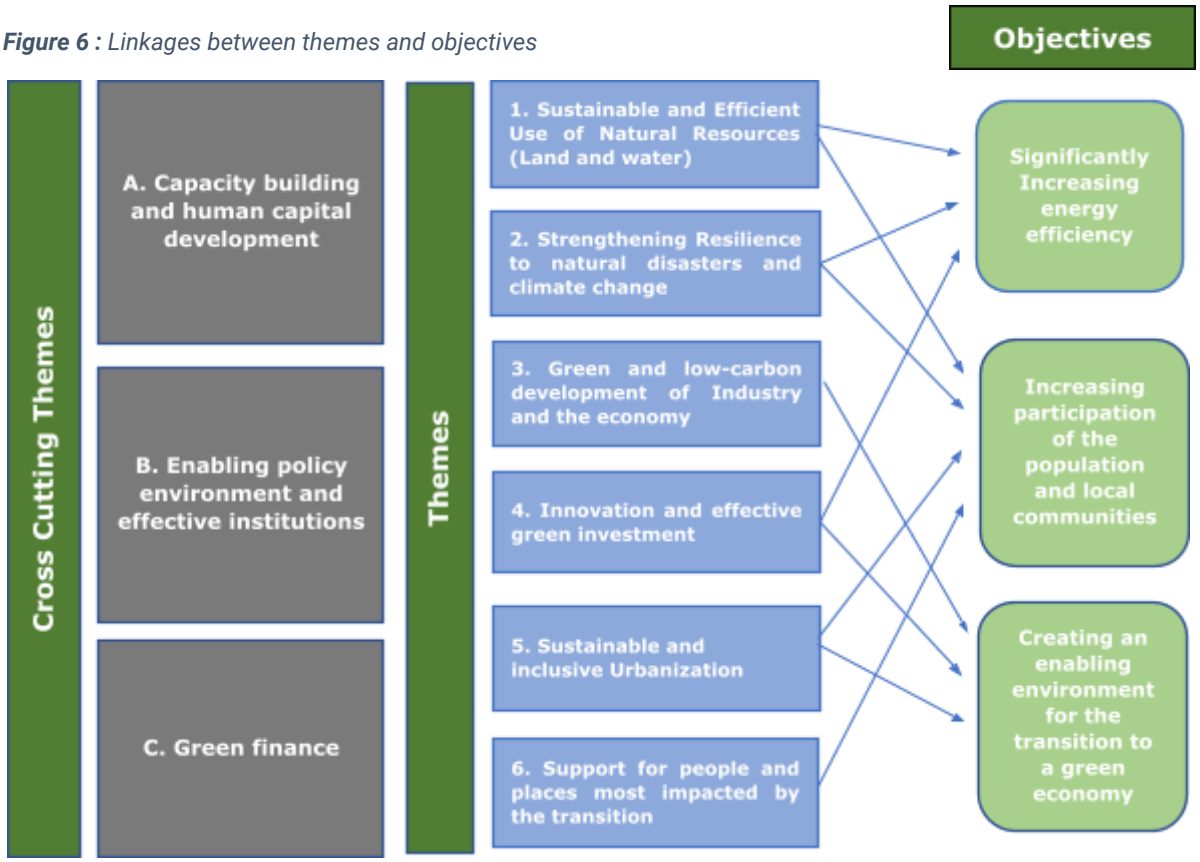
	economy, creating an effective institutional framework	to prepare policy options, coordinate implementation and consolidate progress reports. Data on the environment and the economy is collected by different institutions to compute indicators. These indicators are not unified into a single framework or database. Data gaps exist and prevent evidence-based analysis and monitoring.
B.2	**Align sector strategies with green growth objectives**	Sector strategies are not all aligned with the green economic strategic framework. They do not include cost estimate or investment plans outlining key green infrastructures to finance. The associated KPIs in program budgeting do not take into account targets set for the green economy. While the government does implement a system of project-level Environmental Impact Assessments, these could strengthen; furthermore, the government currently lacks a system for implementing Strategic Environmental Assessments for key sectors or industries whose impacts might be expected to be harmful for the environment.
B.3	**Harmonize environmental regulations on economic activities**	Environmental regulations (and institutional mandates for their implementation) are fragmented across a great number of texts (+200) which are not always coherent with one another or supportive of key principles needed to support the green transition (access to information, public participation, polluter-pays, environmental justice etc.)
B.4	**Develop modelling and forecasting tools for the green economy**	No economic model currently exists in Uzbekistan to forecast long-term interactions between the economy (growth, jobs, external balance…) and the environment (carbon emissions, availability of water…). Long-term plans are not informed by scenario analysis.
B.5	**Improve data collection and management on the green economy**	
B.6	**Deploy a state-of-the-art monitoring, reporting and verification (MRV) system on climate change**	Uzbekistan monitoring, reporting and verification (MRV) systems allows for regular greenhouse gases (GHG) inventory. However, the system does not cover all GHG, implementation of adaptation measures and support by the international community to the country's climate policies.
B.7	**Facilitate access to information on the green economy by citizen and civil society organizations**	Access to information on environmental matters is still difficult. Most institutions do not publish their information and data on the environment and requests for information take a long time to be answered.
B.8	**Evaluate government green growth policies**	Policy evaluations are not frequent in Uzbekistan and the 2019-2030 strategy on transition to a green economy has never been subjected to it.
B.9	**Report regularly to Parliament and citizen on the implementation of the green economy transition**	Parliament is not informed of the rationales for moving to a green economy, the risks associated with inaction, the key measures implemented by the executive or how the budget they adopt contribute to the transition. Citizens are in the same case.
B.10	**Strengthen cities/local governments and community capacity to cope with future challenges**	Improve energy security by identifying, developing and implementing viable renewable energy technologies and seeking opportunities to finance renewable energy investments in solar, wind and

		hydropower, with related policy engagement (e.g. development of ETS) to develop the regulatory framework.
B.11	**Strengthen international support, private sector and civil society participation**	Improve and promote exchange of views on green growth amongst all stakeholders of society.
Cross-cutting Theme C: Green finance		
C.1	**Channel greater amount of public capital to green economic infrastructure**	Setting-up the green economy require significant infrastructure spending, both private and public. The current public investment management practices make it difficult to identify infrastructure needs and financing gaps. This may in part be addressed through the proposed Aral Sea Green Bond, which is being developed based on Uzbekistan's SDG Framework, and which may provide an institutional model for assessment and prioritization of green economic infrastructure to be considered for public investment across the nation.
C.2	**Phase out brown subsidies and support measures**	Public subsidies currently support, implicitly or explicitly, fossil fuel energy – thus making them more competitive than renewable energy and lowering demand for electric cars.
C.3	**Shift the tax burden from firms and households to activities leading to pollution and resource overconsumption**	Taxes on business are relatively high and taxes with environmental relevance only make up 5,03% of total – mostly in the forms of fuel taxes. The tax framework does not create incentives to invest in green technologies, infrastructure or create green jobs. This could be financed through a national environmental compliance strategy based on polluter-pay principle in which the polluter is held responsible for the environmental damage and pollution.
C.4	**Revise the pollution charge system to make it less burdensome on the private sectors while providing more incentives to adopt green technologies**	The pollution charge system covers 250 pollutants and is burdensome to operate and comply with. Low charge rate fails to provide strong incentives to invest in pollution-abatement technologies.
C.5	**Implement a green budget methodology to assess and disclose the alignment and impact and of public tax and expenditure with the green economy**	The current state budget has KPIs and an early system of SDG-tagging. It is however impossible to assess the share of public tax and spending with favorable – or unfavorable – impact on green priorities
C.6	**Implement green public procurement to ground purchasing decisions on sustainable criteria**	The public procurement law authorizes the use of environmental criteria in tenders and contracts. This provision is not yet leveraged to its full extent to support local markets for green goods, promote sustainable standards in production or improve the cost-effectiveness of state purchase. Sustainable Public Procurement (SPP) is still at its infancy.
C.7	**Raise private capital for green infrastructure through green bonds**	Ensuring private sector is motivated to invest in green businesses, by creating incentives and architecture for broader promotion of green finance.
C.8	**Leverage the state balance sheet to turn state-owned enterprises into green economy champions**	SOEs are the main vehicles by which green public investment is currently channeled. They account for half of the country's economic output and are critical to the reform of sectors such as energy or water

		management. SOE supervision practices by the state do not encourage the planning, adoption or reporting of green investments and sustainable standards and certifications.

2.4. Linkages between themes and objectives

Figure 6 : *Linkages between themes and objectives*



III. Detailed Action Plan

3.1 Action plan per six strategic themes

The following tables highlight key priorities in generic terms. They present the set of measures for each theme, describe their implementation mechanism (the steps or outputs of the measures) and form. In addition, the tables highlight duration, cost and responsibilities expected for each measure.

Special attention has been paid to the consistency of this action plan with other existing national and international strategies. Presidential decrees [80] have been used as a guidance for selecting the measures. This action plan is also aligned with national reports and strategy documents[81], as well as donors' country strategies[82] and reports on topic areas[83], which have been used as an opportunity to broaden the discussion and ground the identified priorities in the current socio-political reality of Uzbekistan.

A more detailed version of the action plan, such as the implementation agent might establish it, is exemplified in Appendix 1.

[80] For example, but not limited to: Improved energy efficiency (UP-4422); Digital strategy (UP-6079); Development strategy (UP-60); Urbanization strategy (UP-5623); Strategy for the construction sector (UP-6119);

[81] For example, but not limited to: Updated nationally determined contribution (2021); Needs of the population in the Aral Sea region (UNDP, 2017); Choosing an Innovative and Green Future (WB, 2022); Poverty Reduction Strategy 2021-2030 (Early draft, January 2021)

[82] For example, but not limited to: Uzbekistan Country Strategy (EBRD, 2018); Country Partnership Framework (WB, 2021); Country Partnership strategy (ADB, 2019); United Nations Sustainable Development Cooperation Framework 2021-2025 (UN, 2020); Sustainable Consumption and Production Action Plan, Republic of Uzbekistan (Draft) (SWITCH-Asia, April 2022);

[83] Harnessing Uzbekistan's potential of urbanization (ADB, 2021); Green recovery and the Transition to Green Economy in Uzbekistan (UNDP, 2021); Atlas of socio-economic and environmental indicators in the Aral Sea Region (UNDP, 2018);

***Theme 1** | Sustainable and Efficient Use of Natural Resources*

#	Measures	Mechanisms	Form	Duration	Costs	Responsibility
1.1	**Diversified agricultural production through fostering diversification of cropping systems at a large-scale**	Assessing potential and opportunities of on-farm diversification and specialization of crop production	E.g., revise input support subsidies and public expenditure, etc.	From 2022 onwards	Based on calculations	MOA MOWR MOEDPR Line Ministries Interested DPs
1.2	**Implementation of sustainable grazing management**	Development and deployment of sustainable grazing and pasture management practices	E.g., Sustainable grazing and pasture management plan/ program	From 2022 onwards	Based on calculations	MOA MOWR MOEDPR Line Ministries Interested DPs
1.3	**Protection and sustainable management of forests and increased climate-resilient tree plantations, agroforestry farm windbreaks, city shelterbelts**	Protect and sustainably manage forests, and plant climate resilient trees as a fundamental natural-based solution to increase resilience of ecosystems and infrastructure	E.g., Forest protection and integrated management plans, Trees planting campaigns/ plans, etc.	From 2022 onwards	Based on calculations	MOA SCEEP SCOF MOWR MOEDPR Line Ministries Interested DPs

#	Measures	Mechanisms	Form	Duration	Costs	Responsibility
1.4	**Development and approval of a Landscape Management Plan to enable a shift from a sectorial approach to the landscape approach**	Move from a sectorial approach to the landscape approach, starting with development and approval of a Landscape Management Plan	E.g., Landscape Management Plan	From 2022 onwards	Based on calculations	MOA SCEEP SCOF MOWR MOEDPR Line Ministries Interested DPs
1.5	**Increased food security and wellbeing through promoting sustainable agricultural production and processing**	Identifying how private sector companies could relocate to production hotspots	E.g., a package of incentives for private sector companies to relocate to production hotspots developed	From 2022 onwards	Based on calculations	MOA MOWR MOEDPR Line Ministries Interested DPs
1.6	**Increase in job creation through green wager programs and natural resource-based businesses**	Assessment of feasibility and potential of green jobs and development of green wager programs and natural resource-based businesses	Green wager programs developed and approved (e.g., in silvicultural measures, enrichment planting, afforestation, nursery, etc.); and natural resource-based businesses piloted	From 2022 onwards	Based on calculations	MoLabor MOA MoInnov MOWR MOEDPR Line Ministries Interested DPs
1.7	**Setting/enforcing/monitoring sustainable withdrawal limits to reduce overall water use and water stress**	Review existing planning, integrated sector plans and strategies, requirements and standards to identify how to set/enforce/monitor	E.g., regulatory/ processes/ standards revisions introduced and enforced	From 2022 onwards	Based on calculations	MOA MOWR MOEDPR Line Ministries Interested DPs

#	Measures	Mechanisms	Form	Duration	Costs	Responsibility
		sustainable withdrawal limits				
1.8	**Scale-up of efficient technologies in agriculture sector**	Deployment and scale up of more efficient technologies	E.g., cost recovery water tariff system, public-private (PPP) partnerships are efficiently financing irrigation systems	From 2022 onwards	Based on calculations	MOA MOWR MOEDPR Line Ministries Interested DPs

***Theme 1** | Strengthening Resilience to Natural Disasters and Climate Change*

#	Measures	Mechanisms	Form	Duration	Costs	Responsibility
2.1	**Mainstream climate change adaptation and disaster risk management into national policy and planning processes**	Review existing planning, decision making and budgetary processes, integrated sector plans and strategies and identify where and how DRR and CC could be mainstreamed	National budgetary and sectoral planning processes revisions to integrated risk management considerations (strategic entry points for mainstreaming of disaster and climate risk identified)		Based on calculations	Lead Agencies (LAs): Ministry of Emergency Situations (MoES) and Ministry of Environment (MoE) Supporting Partners (SPs): UNDP & WB
		Conduct training for department policy and planning units in on climate change and disaster risk reduction mainstreaming and the use of mainstreaming tools	Policy makers capacity to draw upon mainstreaming tools to effectively mainstream climate change and DRR where appropriate		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

		Review regulations for development consent such as the Integrated Environmental Impact Assessment (EIA) to incorporate disaster and climate change considerations	Consent regulations incorporate DRR and climate change		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Build strong consultative and participatory community approach (including Village Councils, NGO, Civil Society and private sector) in climate change adaptation, mitigation and disaster risk reduction planning, implementation, monitoring and evaluation.	Policy, guidelines and programs for strong community engagement in addressing climate change adaptation, mitigation and disaster risk reduction		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
2.2	**Establish an effective CC and DRR regulatory and institutional framework to facilitate the development and implementation of national responses**	Government (Ministry of Emergency Situations and Ministry of Environment) to initiate and formalise new Uzbekistan National Action Plan (UNAP) on Strengthening Resilience to Natural Disasters and Climate Change Coordination and Implementation Interministerial Steering Committee which coordinates all relevant sectoral Ministries input and engagement.	Interministerial Steering Committee to coordinate CC and DRR activities and to oversee the Uzbekistan National Action Plan (UNAP) on Strengthening Resilience to Natural Disasters and Climate Change Implementation Unit		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

		Review the Environment, Climate Change and Disaster existing Acts (including other relevant legislations) and their mandated committees to provide guidance on streamlining the coordination of climate change adaptation and disaster risk reduction	Environment, Climate Change and Disaster Risk Reduction Acts revised to provide recommendations for coordinated approach to DRR and CCA via streamlined committees		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop a policy paper and seek relevant lead Ministry/Government approval based on the recommendations of the review. (Facilitate administration; funding coordination, etc.)	Policy paper Relevant lead Ministry/Government approval		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Establish and fund a UNAP Implementation Unit within the Department of Environment to coordinate and monitor UNAP implementation and provide secretariat support to above Committee. Develop and submit a proposal to fund the UNAP Unit for the first 3 years.	UNAP Implementation Unit (staff fund for the 1st three years)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Document and share lessons learned and best practices	UNAP Unit maintains Lessons Learned documentation based on UNAP implementation.		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Incorporate disaster reduction and climate change considerations into Uzbekistan's National Building Code. Develop a ToR for the review and updating of the Building Code including compliance and enforcement.	Building Code review (scoped and carried out with recommendations)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

		Strengthen in-country capacity on the use and application of the building codes	Training and capacity building (strong national capacity for undertaking building inspections)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop an integrated risk-based approach to land use and development. Enforce Environmental Impact Assessment (EIA) regulation for guiding development and land use practices to including development of critical infrastructure.	Guidebook on the EIA regulation (linking of EIA regulation to investment and development)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Undertake cost-benefit analysis of various adaptation and disaster risk reduction options.	Cost benefit analysis undertaken of climate change and disaster risk reduction in key sectors with the development of documentation to support EIA regulation and Building Code enforcement		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Identify and promote use of appropriate tools to support risk assessments.	Appropriate risk assessment tools used widely in DRR and CC related projects		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

2.3	**Strengthen partnerships and collaborations with national, regional, and international organisations and build national and local capacity**	Provide appropriate training for key personnel in following thematic areas: - Negotiations for climate change including regional and global disaster platforms. - Grant and proposal writing to access funds such as GCF and GEF - Training for writing proposal for Small Grants Programme.	Access funds (GCF and GEF) Training for writing proposal for Small Grants Programme National		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
2.4	**Strengthen and coordinate public awareness campaigns through educational and promotional programs and partnerships and establish a national platform (lessons learned and best practice)**	Establish a national platform to share lessons learned and best practice. Review Uzbekistan MoES and MoE training Institutes/ Centres capacity to coordinate initiatives that support knowledge management.	Training for knowledge management MoES and MoE Training Centres /Institutes (recommendations from review lead to enhanced capacity)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Share nationally, regionally, and globally through appropriate mechanisms such as the Adaptation Learning Mechanism (ALM)			Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Consult with sectors to identify appropriate mechanisms for integrating cities, local governments, and community knowledge into DRR /CC at the appropriate level	UNAP's lessons learned and best practice (strengthen awareness) MoES and MOE Training Centres/Institutes (material present on appropriate forums / mechanisms)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

2.5	**Develop and implement a communications strategy for the UNAP**	Develop ToR for the UNAP Communications Strategy and recruit local consultant to draft the document	ToR advertising		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop the Communications Strategy, in collaboration and consultation with key ministries and agencies	Communications Strategy developed with a well-informed public		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Produce relevant multimedia materials with key messages on CC and DRR targeted at targeted audiences	Multi-media materials (target audiences well informed of CC and DRR) UNAP Communications Strategy		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

2.6	**Incorporate climate change advocacy into universities and school curricula, as appropriate**	Review current curricula to integrate CC & DRR with guidance from the Curriculum Development Task Force. Consultant to develop outputs that include: Resources for school and university teachers and students adapted to the Uzbekistan country context. These should include but not be limited to template lesson plans for teachers incorporating DRR and CC into existing curricula to assist in the delivery of the modules, workbooks for teachers, teaching materials and programmes for schools Training of Teachers in delivering DRR and CC modules Trial of the modules being delivered by trained teachers and assessment in schools and universities with future program improvement	Universities and schools' curricula integrate DRR and CC Multi-media materials		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop Training materials, university and school programmes, community awareness programmes and curricula incorporating climate change issues	Broad toolkit available for incorporation of CC		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Monitoring and Evaluation of Training of teachers and students continued and further enhanced materials through food security-related adaptation experience. Sectoral CC & DRR initiative	Teachers and materials (M&E support continuous improvement) Educational products and practices relating to DRR and CC		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

2.7	**Strengthen cities/local governments and community capacity to cope with potential climate change and disaster impacts**	Develop cities, LGs, and community Risk Profiles	Community Risk Profile for each village		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Build cities governments, LGs, and community capacity to participate in DRR and CC planning, implementation, and monitoring activities	Capacity building (training) for cities, LGs, and community to conduct monitoring		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Establish effective Early warning systems to provide accurate and timely warning for all hazards to the cities and community. Strengthen capacity to monitor plans and programmes targeting hazards and climate change	Strong capacity for cities governments, LGs, community to monitor and assess land and water resources, hazards, and climate change		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop a Climate Early Warning System and tailored information products to support primary sectors	Climate Outlook Modelling Programme (provides usable products to support sectors)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
2.8	**Strengthen technical and institutional capacity to collect, store and analyse climate and disaster risk information**	Develop integrated centralised information management system(s) to support DRR/CC decision-making processes and inform UNAP implementation.	DRR and CC initiatives are supported by centralised information management system		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

		Compile and standardise statistical information and data on climate and disaster risks, impacts and losses	Centralised repository developed to host data and information related to climate and disaster risks		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Strengthen the capacity of sector focal points to analyse the data and information to support programmes	Training on the analysis of data and information to support sectoral and national development programmes		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
			Information products for policy makers on the applications of climate and risk information collected		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
2.9	**Improve energy security and strengthen governance to support Energy Efficiency and Renewable Energy (RE) options**	Develop incentives and packages to support private sector participation in renewable energy and energy efficient initiatives including supply and demand management.	Training (up-skilled electricians on the use of renewable energy in place of/or with grid power)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop relevant education and awareness programs on energy efficiency and renewable energy	Training		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Assess disaster and climate risk on existing and planned energy infrastructure and implement cost effective risk reduction options	Review of existing infrastructure in regard to hazard and climate risks		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop contingency plans and response mechanisms to address energy supply issues, particularly during and after natural disasters	Contingency plan and response mechanisms developed		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

		Identify and promote use of appropriate technology transfer to support mitigation actions and energy efficiency measures	Identification of needs for technology transfer and implementation of appropriate technology		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
2.10	**Strengthen disaster preparedness and capacity for effective response and recovery**	Develop a TOR and undertake a review of the Uzbekistan National Disaster Management Arrangements	DRR arrangements review Recommendations regarding the potential strengthening of the system to the Ministry of Emergency Situations (MoES)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop Standard Operating Procedures (SOPs) and Contingency Plans in the event of a disaster	SOPs and contingency plans		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Identify and establish an alternative communication and/or broadcasting system to provide redundancy in the event of failure during an emergency event.	Recommendations developed from review of emergency communications equipment Procurement of emergency communications equipment based on review		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop a manual to guide city governments, LGs, and communities in preparing for disasters and adapting to CC.	How-to guide and checklist for city governments, LGs, and communities to assess the status and effectiveness of their disaster preparedness and climate change adaptation programmes		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

		Training of city governments, LGs, village councils, NGOs and community groups and households in disaster preparedness, response, and recovery to respond to alerts; secure property; conserve food and water in the event of a disaster; encourage the use of evacuation centres which have been vetted as shelters by PWD and Police; ensure vulnerable groups in the community are considered in the plans	Training (personnel involved in community based DRR and CC to work with communities)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Review and update existing evacuation plans including testing of procedures for cities and villages.	Evacuation plans reviewed and recommendations made for improvement		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Review/Retrofit existing evacuation centres (linked to the national disaster emergency plan)	Evacuation centres assessed based on Building code and capacity of people it should contain		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop a procedure that ensures the people receives the correct and timely information during any emergency	Procedures for receipt, dissemination, and capacity to respond to warnings of all hazard warnings and roles and responsibilities of various departments (review)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

		Strengthen Community Affairs capacity in post disaster support	Number of trained trauma counsellors to support Community Affairs during an event		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
			TV ads and programme, newspaper ads		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
		Develop awareness of international and regional assistance available	Coordination mechanism by OCHA (communication)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB
2.11	**Incorporate Gender Inclusiveness and Gender Sensitive Approach in the National, Sectoral, and local resilience and DRR processes**	Conduct series of training workshop on: "Mainstreaming Gender Considerations and Inclusiveness in Climate Change Adaptation Policies, and in National and Sectoral Adaptation Plans Formulation and Implementation" for sectoral ministries team of experts and master trainers from universities and training centres and local experts/master trainers.	Gender Inclusiveness and Gender Sensitive Approach (incorporated in the National, Sectoral, and local resilience and DRR plans, policies, and budgeting processes)		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

2.12	**Greater engaged private sector in climate change adaptation planning and implementation processes and activities at national, sectoral, and local levels**	Convene series of training workshop on “Engaging Private Sector in Climate Change Adaptation Planning and Programming Processes”; Formulate private sector Baseline, Engagement Action Plan and Strategy through conduct private sector baseline analysis and establishing private sector engagement mechanism; Develop List of Incentives with recommendations drafted and outreach tools for greater engagement of private sector in adaptation efforts designed; Develop outreach programme guideline manual, products, and tools to support private sector engagement in adaptation processes and implement outreach program for local financial institutions and insurance companies.	Private Sector Engagement Strategy Report with list of incentives and recommendations on how greater engage private sector in climate change and disaster resilience processes		Based on calculations	LAs: MoES & MoE SPs: UNDP & WB

***Theme 3** | Green and Low-Carbon Development of Industry and the Economy*

#	Measures	Mechanisms	Form	Duration	Costs	Responsibility
3.1	**Develop and approve a Long-Term Strategy on Green Growth/ Low-Carbon Development**	Green transformation priorities anchored by a long-term low-carbon development strategy	Long-Term Strategy on Green Growth/ Low-Carbon Development	From 2022 onwards	Based on calculations	MOE MOEDPR Line Ministries SOEs Interested DPs
3.2	**Increased electrification and increased reliability**	Removing barriers to the effective operation and growth of the electricity sector; facilitating electricity supply access, developing business processes, operational performance, digitalization, institutional capacity of relevant institutions and entities	E.g., tariff and subsidy reform, established regulatory framework, planning, etc.	From 2022 onwards	Based on calculations	MOE MOEDPR Line Ministries SOEs Interested DPs
3.3	**Reduced losses in transmission and distribution networks**	Introduction of modern digital and telecommunication technologies and solutions to improve the process of monitoring, control, and operation of the power transmission system and distribution networks	E.g., modern digital and telecommunication technologies and solutions	From 2022 onwards	Based on calculations	MOE MOEDPR Line Ministries SOEs Interested DPs

#	Measures	Mechanisms	Form	Duration	Costs	Responsibility
3.4	**Large-scale deployment of renewable energy sources**	A regulatory framework to enhance renewable energy penetration; Achieve national NDC target for RE electricity generation by 2030	E.g., new tenders on solar and wind power, revised legislation to incentivise RE investments, PPP for green infrastructure, etc.	From 2022 onwards	Based on calculations	MOE MOEDPR Line Ministries SOEs Interested DPs
3.5	**Deployment of energy efficiency solutions**	Enforce energy efficiency standards and codes	New/ revised energy efficiency standards and codes	From 2022 onwards	Based on calculations	MOE MOEDPR Line Ministries SOEs Interested DPs
3.6	**Circular Economy Action Plans for select value chains/sector**	Circular Economy Action Plans for select value chains/sector; Eco-industrial parks to accelerate decarbonization and introduce circularity	Circular Economy Action Plans for select value chains/sector approved and enforced; Eco-industrial parks established	From 2022 onwards	Based on calculations	MOE MOEDPR Line Ministries SOEs Interested DPs

***Theme 4** | Innovation and Effective Green Investment*

#	Measure	Mechanisms	Form	Duration	Cost	Responsibility
4.1	**Integrate Green Investment concept to policies and investment projects**	Introducing “green” investment concept and system Introducing “green” loan concept and system (green and SDG-focused lending, including in local currency) Developing and introducing “green” criteria to investment projects financed from all sources (public and private: develop sovereign ESG indicator, etc.) Developing technical regulation characteristics and requirements for “green” investments and loans Developing fiscal privileges to green investments (and loans) Suspension or introducing gradual moratoriums to existing and/or new non-green investment projects	Laws and regulations Standards Fiscal policies	2025	Based on calculations	MEDPR, Ministry of Finance, MIFT, Donors (UNDP and others)
4.2	**Update infrastructure of industrial enterprise**	Increase energy efficiency of industrial enterprise infrastructure by wider use of clean and environmentally friendly technologies and industrial processes, further introducing energy-saving technologies	Laws and Regulations Standards Fiscal policies (subsidies, taxes, exonerations, etc.)	Constantly	Based on calculations	MEDPR, Ministry of Energy, Ministry of Transport, Ministry of Construction, Industrial SOEs, IFIs (ADB, WB, AIIB, others), Donors (UNDP), OECD
4.3	**Strengthen the role of SMEs in the economy through**	Support promising, high-potential SMEs investing in green businesses (introduction of “green” loan system, direct and intermediate	Laws and Regulations	Constantly	Based on calculations	Ministry of Finance, MEDPR, Ministry of Labor, Commercial

	enhanced access to finance and capacity	finance, general and improved MSME lending capacity, partial grans and subsidized loans, tax reliefs); Help develop local money and capital markets as well as risk-sharing facilities through local state owned and private banks	Targeted credit lines & monetary policies Fiscal policies (subsidies, taxes, exonerations, etc.)			Banks, Chamber of Commerce, Regional Khokimiyat
4.4	**Increase private sector participation in the national economy**	Promote improved governance, financial & operational performance (including. Energy/resource efficiency improvements); Equip firms with managerial and organizational skills to absorb, assimilate and integrate external knowledge and technology to upgrade activities and enhance competitiveness of firms; Encourage and support transparent privatisation; Increase private sector participation	Laws and Regulations Standards (CSR, best practices, etc.) PPPs	Constantly	Based on calculations	MEDPR, Ministry of Finance, State Assets Management Agency, SOEs, IFIs (ADB, WB, EBRD, others), Donors (UNDP)
4.5	**Develop a transparent and competitive public procurement regime**	Convey public procurement opportunities transparently; Set clear TORs, as well as transparent and comprehensible attribution criteria	Laws and Regulations TORs	2025	Based on calculations	Ministry of Finance, MEDPR IFIs, Donors
4.6	**Strengthen e-government and public administration capacity for government efficiency**	Digitalization & informatization of the administrative system in each government sector, shaping public sector personnel digital competencies; Provide support to skill development in public administration for innovation and project management	Laws and Regulations Computerization and informatization of the administrative system Trainings and HR policies	Constantly	Based on calculations	MICT, Ministry of Innovative Development, Ministry of Justice

4.7	**Improve the effectiveness of policy governance and mechanisms in the innovation system**	Improve innovation policy coordination of initiatives across national and regional government authorities, as well as private sector and civil society; Strengthen public capacities for effective design and implementation of policy; Promote start-up creation by ensuring coordination of innovation policy initiatives to exploit the entrepreneurial capacity of the population, including targeted support for female entrepreneurs; Enhance the national statistical system to provide policymakers, business, and civil society with sufficient data on innovation and environmental trends and challenges; Ensure evidence-based policy making for sustainable and innovation-led development through a systematic approach to policy design, monitoring, implementation, and evaluation	National and regional laws and Regulations Monitoring systems (national statistical system, innovation data)	Constantly	Based on calculations	Ministry of Innovative Development, MEDPR, Ministry of Justice, MICT, State Statistics Committee, Academy of Sciences, UNECE
4.8	**Strengthen the innovation infrastructure to support innovation-led growth**	Expand the infrastructure and administrative capacities of FEZs to improve their effective support for attracting FDI and channeling it to innovation projects, as well as facilitating the access of resident firms to global value chains (GVCs), and strengthen governance processes; Improve the effectiveness of innovation centres and incubators by clarifying strategic frameworks, providing support in developing sustainable capacities in service provision to start-ups and further facilitating access to finance;	Laws and Regulations (digitalization and innovation) Engage all relevant stakeholders in the Stakeholder decision-making processes (FEZ) development Strategic frameworks	Constantly	Based on calculations	Ministry of Innovative Development, MEDPR, Ministry of Justice, MICT, State Statistics Committee, Academy of Sciences, UNECE

		Enhance the functioning of science and technology parks (STPs) by improving and expanding regulatory frameworks to benefit from ongoing efforts towards digitalization and IT innovations; Adequately equip accelerators with the necessary resources to provide comprehensive and effective support to foster start-up creation and create accelerators targeted towards the support for start-ups in emerging and promising fields such as green technology	Budget allocation			
4.9	**Enhance science-industry linkages**	Generate capacities for innovation-based growth to foster the development of innovative, high-growth enterprises and gradually restructure the R&D system to facilitate the commercialisation of research; Improve the quality of middle level skilled labour and support the increase in productivity of firms to unleash the latent potential for high-quality SME entrepreneurship; Generate opportunities to use FDI and GVC integration as levers for upgrading technology and as mechanisms for accessing new technologies and learning from foreign partners	Laws and Regulations Public investment International scientific cooperation	Constantly	Based on calculations	Ministry of Innovative Development, MEDPR, Academy of Sciences, MIFT, MICT, State Statistics Committee, UNECE

***Theme 5** | Sustainable and Inclusive Urbanization*

#	Measure	Mechanisms	Form	Duration	Cost	Responsibility
5.1	**Diversify the economic base of some regions**	Develop clusters in such areas as copper mining and metallurgy (Almalik city), mining & chemical-technology (Navoi), agriculture machinery cluster and techno-park in Chirchik, automotive (Jizzakh), pharma (Zangiata) and technological parks in many areas that need to be identified, IT (Korakul), IT innovation parks in four cities – Nukus, Bukhara, Jizzakh and Namangan; Develop free transborder trade zones	Laws and Regulations	Constantly	Based on calculations	Ministry of Economic Development and Poverty Reduction; State Geology Committee, MICT, MIFT ADB; World Bank
5.2	**Pursue further decentralization**	Develop procedures for the transfer of functions and powers of National public administration bodies to territorial public administration bodies and authorities; Organize the effective work of the territorial administrations of all levels of government (including the introduction of digital technologies); Increase the revenue base, ensure timely and targeted financing of the approved	Laws and Regulations Administrative policies and procedures	Constantly	Based on calculations	Ministry of Economic Development and Poverty Reduction; Ministry of Justice ADB; World Bank

		spending parameters of local budgets, and ensure further development and maintenance of social facilities and infrastructure				
5.3	**Manage the formation of urban agglomerations, taking into account the creation of satellite cities**	Elaborate strategies of urban social and economic development that determine the long-term prospects of city development as well as the driving forces that will be the basis for the city's future economic growth	Urban planning	Constantly	Based on calculations	Ministry of Economic Development and Poverty Reduction; ADB; World Bank
5.4	**Build sustainable and resilient urban infrastructure**	Strengthen urban governance and institutional capacity as an effective approach for building back better; Include a mix of water supply, sanitation, SWM, urban public spaces, and tourism infrastructure and services in physical investments, combined with capacity building to strengthen urban governance and management Reach urban ambient air quality to satisfy World Health Organization (WHO) recommended limit values by 2050 Prohibit the placement on the mark et of energy-related and other consumer products that lie within the scope of the	(international) Standards (best practices in construction, roads, transport, water and sanitation, power, heating): UNECE Convention on Long-Range Transport of Air Pollutants (CLRTAP), National Air Pollution Control Plan (NAPCP), pre-EURO 4 diesel-powered road vehicles Urban forests and green spaces		Based on calculations	Ministry of Economic Development and Poverty Reduction; Ministry of Tourism and Cultural Heritage, Regional Khokimiyat, UzHydroMet, Infrastructure SOEs – UzSuvTaminot, ADB; World Bank; municipal authorities; OECD/ITF

		current / strengthened Eco-design Directive and Ecolabel scheme Prohibit the import of pre-EURO 4 diesel-powered road vehicles Achieve Yashil Makon (National Greening) Program target of 30% green space in cities	mapping and planning			

***Theme 6** | Support for People and Places Most Impacted by the Transition*

#	Measure	Mechanisms	Form	Duration	Cost	Responsibility
6.1	**Develop inclusive and resilient human capital**	Learn market-driven skills, focusing on NEET (not in education, employment, or training), youth, women, and people with disabilities; Use migration as a livelihood opportunity including pre-migration skills and orientation; Support the participation of women in the labour force	Inclusive legal frameworks Migration policies Training programs	2025	Based on calculations	FAO, ILO, IOM, ITC, UNAIDS, UNDP, UNESCO, UNFPA, UNICEF, WHO
6.2	**Address rural livelihood to bridge rural-urban gaps**	Continue decentralization (including budget allocation) to strengthen the role of rural districts	Laws and Regulations (roles and attributions) Budget allocation Administrative policies and procedures	Constantly	Based on calculations	FAO, ILO, IOM, ITC, UNAIDS, UNDP, UNESCO, UNFPA, UNICEF, WHO
6.3	**Encourage innovative youth start-ups**	Create local incubators as a support to innovative start-ups	Budget allocation	Constantly	Based on calculations	FAO, ILO, IOM, ITC, UNAIDS, UNDP, UNECE, UNESCO, UNFPA, UNICEF, WHO
6.4	**Improve quality education and learning outcomes**	Increase budget allocation to education, especially in regions with high poverty rates; Align tertiary education priorities with long term green growth strategy; Develop affordable preschool structures to increase economic opportunities for women	Budget allocation Educative system reform	2025	Based on calculations	ILO, IOM, UNAIDS, UNDP, UNESCO, UNFPA, UNICEF, UNODC, WHO

6.5	**Improve coverage and efficiency in the social protection system**	Enhance access to gender-sensitive social services for the most vulnerable	Welfare policies	2025	Based on calculations	ILO, IOM, UNAIDS, UNDP, UNESCO, UNFPA, UNICEF, UNODC, WHO
6.6	**Support and incentivize SMEs within the context of transition**	Draw-up a formalization strategy targeting to support SMEs and create the institutional framework for its regular monitoring and evaluation	Laws and regulations Monitoring systems	2024	Based on calculations	Ministry of Economic Development and Poverty Reduction and all implementing partners

3.2 Action plan per three cross cutting themes

***Theme A** | Capacity building and human capital development*

#	Measure	Mechanisms	Form	Duration	Cost	Responsibility
A.1	**Increasing managerial, planning competencies of senior staff of the governmental institutions**	1. Approval of the training programs 2. Selecting international and local trainers. 3. Compiling the list of trainees from the senior managerial staff of the relevant ministries and agencies. 4. Conducting trainings on sustainable management, the concept of green economy, priority tasks and measures, best international practices and regulations on GE, methods of incorporating green solutions in planning and budgeting	Instruments: Quarterly training plans Legal requirements: Approval the training plans by the Cabinet of Ministers	Constantly	80 000 USD (annually)	MEDPR, Academy of Public Administration, and other all relevant ministries and regional executive bodies, EBRD, World Bank, UNDP, AFD, OECD
A.2	**Strengthening technological competencies of the governmental and private organizations to plan, implement, evaluate results of actions and measures on transition to green economy**	1. Approval of the training program. 2. Selecting international and local trainers. 3. Compiling the list of trainees from the middle and technical staff of relevant governmental bodies and private institutions. 4. Conducting trainings on improving knowledge and technical competencies of middle and junior staff of the relevant public and private offices to develop, implement measures aimed at transitioning to green economy and assess the outcomes.	Instruments: Adoption of training plans Legal requirements: adoption of training plan by the Cabinet of Ministers	Regularly	80 000 USD (annually)	Responsible national agency): MEDPR Potential partners: All relevant ministries and governmental bodies Interested DPs: EBRD, World Bank, UNDP, AFD

A.3	**Training of trainers on green growth**	1. Development of short training of trainers' courses for educational, scientific and research institutions and other capacity building facilities. 2. Selection of international and local trainers. 3. Compiling the list of trainees. 4. Conduction of the training of trainers. 5. Evaluation of trainers and adjustment of training curriculum	Instruments: launching of project in cooperation between the Ministry of Higher and Secondary Specialized Education and DPs Legal requirements: approval of the project by national authorities and international partners	regularly	80 000 USD (annually)	Responsible national agency: Ministry of higher and Secondary Specialized Education Potential partners: Academy of sciences, MEDPR, ministries of water management, agriculture, energy and finance, Uzbek Agency for Technical Regulation and The Centre of Hydrometeorological Service Interested DPs: EBRD, WB, OECD
A.4	**Providing support for training and consultancy services in private profit and non-for-profit institutions by allocation of small grants**	1. Development of a draft Decree of the Cabinet of Ministers on providing small grants, aimed at covering the costs of conducting open lectures, conferences and seminars for private profit and non-for-profit organizations on green economy. 2. Approval of the decree and support provision procedures. 3. Implementation of the Decree.	Instruments: small grants project on GG Legal requirements: approval of the project by DPs and national government	2022-2030	10 million. USD	Responsible national agency: The chamber of commerce and industry Potential partners: large, medium, and small enterprises, NGOs, and media Interested DPs: EBRD, WB
A.5	**Incorporating green economy topics into relevant curriculum of the**	1. Conducting comparative analysis of the current curriculums in educational institutions and best world practice on increasing understanding of GG policies and values among students and teachers. 2. Modifying and adopting curriculums.	Instruments: updated educational curriculum Legal requirements: adoption of	2023	50 000 USD	Responsible national agency: Ministry of Higher and Secondary Specialized Education, Ministry of Public Education

	educational institutions		relevant curriculum by the central educational authorities			Potential partners: MEDPR Interested DPs: UNDP, WB
A.6	**Creating online green economy hub**	1. Provision of funding, technical and commercial offers for creation of website. 2. Identifying staff for maintaining and updating the website 3. Creation of the content and a website. 4. Promotion of online GE hub. 5. Maintaining and constantly updating the Online Green Economy Hub	Instruments: GE Hub website Legal requirements: Project approval by the Ministry of Innovation and MEDPR	2023	20 000 USD	Responsible national agency: Ministry of Innovation Potential partners: MEDPR, Institute for Prognosis and Macroeconomic Analysis Interested DPs: EBRD, UNDP, WB
A.7	**Preparation of specialists on green economy and sustainable business at the Tashkent State University of Economics**	1. Drafting and adoption of the Decree on launching a faculty (department) on Green economy and sustainable business at the Tashkent State University of Economics. 2. Implementation of the decree: staff recruitment, space/office/building allocation and renovation, curriculum development, addressing organizational issues. 3. Students' enrollment. 4. Stating of the education.	Instruments: Development of a proposal, curriculum, justification on the opening of new department Legal requirements: Adoption of a governmental decree	2023	1,5 million USD	Responsible national agency: Tashkent State University of Economics Potential partners: MEDPR, Westminster International University in Tashkent Interested DPs: WB, EBRD
A.8	**Introducing research funds on green growth**	1. Drafting and adoption of the decree on launching public fund aimed at supporting green growth research in Uzbekistan.	Instruments: Creation of new public research fund Legal requirements:	2023	50 million USD	Responsible national agency: Academy of Sciences Potential partners: MEDPR

		2. Allocation of funds, ensuring fair mechanisms of selection and distribution of funds. 3. Announcement of procedures for applying for funds. 4. Conduction of selection and allocation of grants.	governmental decree			Interested DPs: EBRD, WB
A.9	**Capacity building workshops for regional and city administrations and executive bodies**	1. Drafting and adoption of the decree on conducting capacity strengthening workshops on incorporating green growth into provincial development plans and budgets. 2. Adoption of annual workshops' schedule in the regions of Uzbekistan.	Instruments: regular workshops in the regions Legal requirements: governmental approval of the workshop plans	2023-2030	80 000 USD (Annually)	Responsible national agency: MEDPR Potential partners: regional and city administrations Interested DPs: UNDP
A.10	**Strengthening capacities for green finance, development of public and private green investment projects**	1. Development and adoption of the project, aimed at conducting trainings for public servants, private organizations in developing investment projects in various fields of green economy, sustainable development, and environment. 2. Execution of the training project.	Instruments: Training project, open budget portal (openbudget.uz) Legal requirements: approval of the project by the Ministry of Finance and DPs, creating a separate chapter about green budget in Citizen Budget of Uzbekistan	2023	30 000 USD (annually)	Responsible national agency: Ministry of Finance Potential partners: local executive authorities, MEDPR Interested DPs: WB, EBRD, OECD
A.11	**Promoting sustainable lifestyle**	1.Development and approval of The Concept of the sustainable lifestyle campaign	Instruments: The concept of the sustainable lifestyle campaign	2023	100 000 USD	Responsible national agency: The Agency for Youth Affairs.

		2. Development of the projects at educational facilities, public and private offices for raising awareness and creating sustainable lifestyle. 3. Execution of the projects.	Legal requirements: approval of the campaign by the Agency for Youth Affairs			Potential partners: The Chamber of Commerce and Trade, Regional Administrations, MEDPR Interested DPs: UNDP
A.12	**Raising awareness among all stakeholders on the benefits of green practices through mass media**	1. Drafting and adoption of the Presidential decree on launching advocacy campaign in partnership with mass media to promote preen growth values and lifestyle. 2. Execution of the Decree.	Instruments: Materials and funds for promotion of GG values and strategies Legal requirements: MoU between DPs and the Agency for Information and Mass communication	2022-2025	50 000 USD (annually)	Responsible national agency: Agency for Information and Mass Communication Potential partners: National Television and Radio Company, local independent media

***Theme B** | Enabling policy environment and effective institutions*

#	Measures	Implementation mechanisms	Form	Duration	Costs	Responsibility
B.1	**Improve coordination across government by pooling expertise, data and resources on the green economy, creating an efficient framework**	1. Create an Inter-Agency Working Group on the green economy, supported by a Technical Secretariat.	Draft normative document, Decree of the IAC	2022	[To be completed]	MoEDPR
		2. Identify lead independent experts from civil society, the private sector and academic institutions and integrate them regularly to the activities of the Inter-Agency Working Group	Minutes of the Inter-Agency Working Groups	From 2022 onwards	[To be completed]	Inter-Agency Working Group
		3. Produce and publish an annual implementation report on the green economy complete with the latest data on green indicators, progress made, emerging challenges and any update to the action plan.	Annual green economy report	From 2022 onwards	[To be completed]	Technical Secretariat, Inter-Agency Working Group
		4. Convene every year the Inter-Agency Council on the Green Economy to review and discuss the green economy report, arbitrate policy proposals, and set objectives for the years ahead (policy proposals are submitted to the Inter-Agency Council for deliberation and adoption)	Minutes and decision record of the Inter-Agency Council	From 2022 onwards	[To be completed]	Inter-Agency Council
B.2	**Align sector strategies with green growth objectives**	1. For any sector strategies linked to the green economy, estimate the costs of major new infrastructure projects	Sector strategies	From 2023 onwards	[To be completed]	MoEDPR, line ministries
		2. Subject new sector or regional development strategies to either a review by the Inter-Agency Working Group or a strategic environmental assessment	Sector strategies	From 2023 onwards	[To be completed]	Inter-Agency Working Group, line ministries, SCEEP

		3. Align performance indicators used in program budgeting with national green economy objectives	Draft budget	From 2023 onwards	[To be completed]	MoF, Line ministries
B.3	**Harmonize environmental regulations on economic activities**	[To be completed]	[To be completed]	[To be completed]	[To be completed]	[To be completed]
B.4	**Develop modeling and forecasting tools for the green economy**	1. Submit a white paper to the Inter-Agency Working Group outlining analytical needs for the green economy transition, potential tools to answer them and what it would require to develop them.	White paper	2022	[To be completed]	MoEDPR, IFMR, CERS, Inter-Agency Working Group
		2. Develop the chosen tools and train staff to use them	Capacity-building	From 2023 onwards	[To be completed]	MoEDPR, IFMR, CERS
		3. Regularly update and release forecasts to inform national and sector strategies as well as green economy progress report	Green economy progress report	From 2023 onwards	[To be completed]	MoEDPR, IFMR, CERS
B.5	**Improve data collection and management on the green economy**	1. Conduct a review of available local and international data on the green economy, associated collection methods and management processes	Data readiness assessment	2023	[To be completed]	MoEDPR, State Committee on Statistics, SCEEP, UzHydromet, Line ministries
		2. Adopt a green economy data roadmap to address potential gaps and methodological issues	Green economy data roadmap	2023	[To be completed]	MoEDPR, State Committee on Statistics, SCEEP,

						UzHydromet, Line ministries
		3. Implement the roadmap and establish an integrated database interlinking sources from various institutions	Green economy database	From 2024 onwards	[To be completed]	MoEDPR, State Committee on Statistics, SCEEP, UzHydromet, Line ministries
B.6	**Deploy a state-of-the-art monitoring, reporting and verification (MRV) system on climate change**	1. Propose an action plan to bring Uzbekistan's MRV system in line with UNFCCC standards and best practices	MRV action plan	2022	[To be completed]	UzHydromet
		2. Publish biannual update reports covering all major greenhouse gases emissions	Biannual update report to UNFCCC	2023	[To be completed]	UzHydromet
		3. Publish national communications including reporting on climate finance, capacity-building, and technology transfers from the international community	National communications to UNFCC	2025	[To be completed]	UzHydromet, MoF, MIFT
B.7	**Facilitate access to information on the green economy by citizen and civil society organizations**	1. Compile and make publicly available free-of-charge key data, information, and reports on the green economy	Publication of information	2023	[To be completed]	MoEDPR, SCEEP, UzHydromet, line ministries
		2. Set-up a system for request of information enabling citizen and CSOs to address questions/demands on economic and environmental management	System is in place	2024	[To be completed]	MoEDPR, SCEEP, UzHydromet, line ministries
B.8	**Evaluate government green growth policies**	1. Conduct a mid-term evaluation of the green economy strategic framework to review	Draft policy evaluation	2026	[To be completed]	MoEDPR, Inter-Agency

		progress made, key challenges and identify areas for improvement				Working Group
		2. Present preliminary results to independent experts, private sector representatives and civil society organizations to gather and integrate their feedback	Final policy evaluation	2026	[To be completed]	MoEDPR, Inter-Agency Working Group
B.9	**Report regularly to Parliament and citizen on the implementation of the green economy transition**	1. Submit annually to Parliament the green economy implementation report, complete with an outline of measures adopted, indicators, green budget statements, economic forecasts, and risk analysis	Annual report to Parliament	From 2023 onwards	[To be completed]	Inter-Agency Council
		2. Publish these elements and make them accessible to citizen free or charge	Public of information	From 2023 onwards	[To be completed]	Technical Secretariat
B.10	**Strengthen cities/local governments and community capacity to cope with future challenges**	1. Strengthening cities and local governments (LGs) and community-based disaster risk management and climate change adaptation. 2. Strengthening evacuation plans and strategies; 3. Strengthening capacities to respond effectively to disasters. 4. Developing awareness of International and Regional Humanitarian Assistance programmes and indicators	Roadmap, adopted by the Cabinet of Ministers	2023	[To be completed]	Lead Agencies (LAs): Ministry of Emergency Situations (MoES) and Ministry of Environment (MoE) Supporting Partners (SPs): UNDP & WB
B.11	**Strengthen international support, private sector, and civil**	1. Creating a platform for the exchange of views on green growth. 2. Promotion of the platform	Action plan (Roadmap), adopted by IAC	2023	[To be completed]	Lead Agencies (LAs): Ministry of Economic

	society participation	3. Engaging national and international partners (governments and others) on transboundary resource management and climate issues				Development and Poverty Reduction Supporting Partners (SPs): UNDP & WB

***Theme C** | Green Finance*

#	Measures	Implementation mechanisms	Form	Duration	costs	Responsible
C.1	**Channel greater amount of public capital to green economic infrastructure**	1. Estimate the cost of major new investment projects needed to implement national development and sectoral plans instrumental to the green economy	Cost estimates of sector plans	2022	[To be completed]	Line ministries, MoEDPR, MIFT
		2. Map and review existing and upcoming funding instruments (e.g., State Investment Plan, UFRD, SOEs, Intersectoral Energy Savings Fund) to align their mandate with green economic priorities.	Report Draft normative documents	2022	[To be completed]	MoEDPR, MIFT, MoF, UFRD
		3. Establish standardized criteria for all investment project selection, based on a scorecard approach that takes into account the alignment with green economy priorities	Standardized criteria for project selection	2023	[To be completed]	MoEDPR, MIFT, MoF, UFRD
		4. Align the medium-term budgetary framework and State Investment Plan to set green public investments on an upward trajectory	Medium-term budgetary framework	From 2024 onwards	[To be completed]	MoF, Line ministries, MoEDPR
		5. Consolidate into a single annual report the amount, composition, and nature of green investments across all funding instruments to identify remaining needs and gaps.	Annual report	From 2024 onwards	[To be completed]	MoEDPR
C.2	**Phase out brown subsidies and support measures**	1. Conduct an inventory of public subsidies and support measures that support fossil fuel energy and make them artificially more competitive than green energy	Public report	2022	[To be completed]	MoEDPR, MoF, MoE, SOEs of the energy sector, UFRD
		2. Evaluate the environmental and socioeconomic impact of selected measures and formulate potential mitigation measures to compensate impacted firms and households	Public report	2023	[To be completed]	MoEDPR, MoF, MoE, MELR
		3. Propose subsidies and support measures for gradual deletion and draft a timetable for their phasing out-out, complete with the planned introduction of mitigation measures	Draft timetable	2023	[To be completed]	MoEDPR, MoF, MoE, MELR

		4. Implement the timetable and report on its execution to the Interdepartmental Council on the Transition to a Green Economy	Execution report	From 2024 onwards	[To be completed]	MoEDPR, MoF, MoE, MELR
C.3	**Shift the tax burden from firms and households to activities leading to pollution and resource overconsumption**	1. Conduct a review of the current tax framework against the objectives of the green economy to identify tax adjustments and new proposals to be developed (including carbon tax mechanism)	Green tax review	2022	[To be completed]	MoF, MoEDPR, Line ministries, SCEEP, UzHydromet
		2. Research and develop selected green tax proposals (including carbon tax mechanism) to detail their revenue generation potential, socioeconomic impact, implementation modalities	Policy proposals	2023	[To be completed]	MoF, MoEDPR
		3. Submit to Parliament a green tax package (including carbon tax mechanism)	Draft budget with green taxes	2023	[To be completed]	MoF
		4. Build national capacities and systems to control, monitor and report on green taxation	Capacity-building	From 2023 onwards	[To be completed]	MoF
C.4	**Revise the pollution charge system to make it less burdensome on the private sectors while providing more incentives to adopt green technologies**	1. Conduct an evaluation of the pollution charge system in terms of efficacy, effectiveness and alignment with national green goals and international standards	Evaluation report	2023	[To be completed]	MoF, MoEDPR, SCEEP
		2. Draft a proposal for the reform of the system, complete with measures (automation, administrative simplification) to make it easier to operate and comply with	Draft normative documents and action plan	2024	[To be completed]	MoF, MoEDPR, SCEEP
		3. Deploy and implement the new system	Implementation report	From 2025 onwards	[To be completed]	MoF, MoEDPR, SCEEP
C.5	**Implement a green budget methodology to assess and disclose the**	1. Adopt a national green budgeting methodology complete with a roadmap for its gradual piloting and implementation	Draft methodology	2022	[To be completed]	MoF, MoEDPR, Line ministries, SCEEP, UzHydromet

	alignment and impact and of public tax and expenditure with the green economy	2. Pilot the methodology across a limited number of pilot sectors, objectives and/or budget items and disclose the results to Parliament and citizen	Green budget statement annexed to budget	2023	[To be completed]	MoF, MoEDPR, Line ministries, SCEEP, UzHydromet
		3. Extend the methodology to additional sectors, objectives, and budget items in line with priorities outlined in the Green Economy Strategy	Green budget statement annexed to budget	From 2024 onwards	[To be completed]	MoF, MoEDPR, Line ministries, SCEEP, UzHydromet
		4. Use the open budget portal (openbudget.uz) to educate the population on green public finance	Communicate openbudget.uz	2022	[To be completed]	MoF, MoEDPR, Line ministries, SCEEP, UzHydromet
C.6	**Implement green public procurement to ground purchasing decisions on sustainable criteria**	1. Adopt a public procurement reform strategy including provisions for the gradual deployment of sustainable public procurement (SPP) and a SPP policy statement outlining its objectives in line with the Green Economy Strategy	Procurement reform strategy and SPP policy statement	2022	[To be completed]	MoF, MoEDPR, Line ministries, SOEs
		2. Adopt a sustainable public procurement action plan with pilot contracting entities and start building their capacity to implement green public procurement	SPP action plan and capacity-building	2023	[To be completed]	MoF, Line ministries, SOEs
		3. Report annually on the share of green public procurement and its progress	Annual report	From 2024 onwards	[To be completed]	MoF, Line ministries, SOEs
C.7	**Raise private capital for green infrastructure through green bonds**	1. Develop a national green taxonomy for the classification of green activities	Draft normative act	2023	[To be completed]	MoF, MoEDPR, MIFT, Line ministries, SCEEP, UzHydromet
		2. Adopt a regulatory framework to enable the issuance of green bonds by the state and SOEs	Draft normative act	2023	[To be completed]	MoF

		3. Support issuing entities in designing their green bond framework, obtain external certification and publish impact & proceeds reports	Capacity-building	From 2024 onwards	[To be completed]	MoF
C.8	**Leverage the state balance sheet to turn state-owned enterprises into green economy champions**	1. Adopt a national sustainable SOE roadmap to integrate green objectives at the corporate, board and portfolio levels	National roadmap	2022	[To be completed]	MoF, MoEDPR, SAMA, SOEs
		2. Set-up a sustainable SOE taskforce to support pilot SOEs in implementing sustainable practices, tools, and standards	Capacity-building	From 2023 onwards	[To be completed]	MoF, SAMA, SOEs
		3. Publish an annual state shareholder report including financial as well as environmental performance indicators	Annual state portfolio report	From 2024 onwards	[To be completed]	MoF, SAMA, SOEs

IV. Monitoring system for the implementation and progress assessment

4.1 Definitions

Monitoring: Contrary to many definitions that treat monitoring as merely reviewing progress made in implementing actions or activities, the definition used here[84] focuses on reviewing progress against achieving goals. In the more limited approach, monitoring may focus on tracking projects and the use of the agency's resources. In the broader approach, monitoring also involves tracking strategies and actions being taken by partners and non-partners, and figuring out what new strategies and actions need to be taken to ensure progress towards the most important results. Either way, monitoring is an ongoing process to be done mainly by internal members of the team by the start of the projects, which helps to improve the design of the current project.

Evaluation: It is a rigorous and periodically conducted independent assessment of either completed or ongoing activities to determine the extent to which they are achieving stated objectives and contributing to decision making. It provides an in-depth assessment of the project and helps in formulating the design of future projects. Evaluations, like monitoring, can apply to many things, including an activity, project, programme, strategy, policy, topic, theme, sector or organization.

Planning: This can be defined as the process of defining objectives, developing strategies, framing the implementation mechanisms and allocating resources. Planning helps defining what an organization, programme or project aims to achieve and what steps needs to be taken.

Together planning, **monitoring** and **evaluation** are defined as **results-based management (RBM)**. RBM is defined as "a broad management strategy aimed at achieving improved performance and demonstrable results", and has been endorsed by many multilateral development organizations, bilateral development agencies and public administrations. It is an ongoing process grounded on continuous feedback, learning, and improving and supported by the lessons learned through monitoring and evaluation.

4.2 Monitoring framework for the GGSF

The first step in developing a monitoring framework for the GGSF[85] is to establish an **inter-agency working group** on data, results monitoring and evaluation (M&E Technical Working Group). This supports monitoring efforts by sharing agency-specific data collection, analysis, and capacity development activities, and planning for management arrangements and evaluation. The United Nations' Development Assistance Framework (UNDAF) process can help in doing so[86].

Then, monitoring and evaluation starts with the development of a **results and resources matrix**, which highlights what must be achieved with projected resources, and how identified changes will be tracked, measured and communicated. Sound monitoring is driven by robust formulation of results, indicators, baselines and targets. The results and resources matrix will allow the development of a costed monitoring and evaluation plan that highlights specific activities to demonstrate progress in the targeted results. Identifying the means of verification that will reliably provide information in a timely manner is a key achievement in such a process.

M&E responsible groups should develop a **costed M&E plan for a 5-year cycle** (see Appendix 2), which:

[84] HANDBOOK ON PLANNING, MONITORING AND EVALUATING FOR DEVELOPMENT RESULTS United Nations Development Programme

[85] The following guidelines refer to the UNDAF companion guidance on monitoring and evaluation

[86] Where needed, UNDAF can provide coherent M&E advice to inter-agency programme, communications and operations groups. The group also can offer technical assistance in the development of joint work plans, joint programmes and the UNDAF. The group promotes agreement on data needs, standards and data disaggregation.

- Provides an overview of how the results matrix will be monitored throughout the year (incl. data sources for the indicators, baselines and targets) in the form of a calendar, also uncovering linkages to agency-specific M&E activities. The M&E plan should highlight which agency is responsible for each indicator as well as the frequency of data provision.
- Supports national data availability and quality through promoting coordination. Plans specify the data sources, the main activities to improve them, which institutions (within and outside UN agencies) should be involved, and a timeline to make data available.
- Outlines opportunities for reviewing operational risks as well as those related to the programming environment, assumptions and opportunities, and how experiences readjust theories of change (see chapter 5.3).
- Includes plans for data analysis to inform decision-making to improve efficiency and effectiveness, including efforts to engage the general public in data literacy for accountability.

The costed M&E plan is designed with the involvement of the government and other stakeholders and partners alongside the results matrix. The plan aligns and supports efforts to increase the capacity of national institutions for producing data and statistics for monitoring and evaluation.

Once a plan is in place, **monitoring and evaluation activities** can be conducted as part of agency plans.

4.3 Continuous Improvement Model & Theory of change

Theory of change helps systematically think through the many underlying and root causes of development challenges and their interlinkages, when determining what a GGSF should address as a priority[87]. A theory of change also provides a framework for ongoing learning both within and between programming cycles. By articulating the causes of a development challenge and formulating clear assumptions on how the proposed strategy is expected to yield results, as well as confronting these assumptions with evidence, the theory of change helps develop a sound logic for achieving change.

The theory of change also helps identify risk realization and rectify the selected approach. Lessons from monitoring and evaluation help refine assumptions and inform decisions on how an approach should be adapted to deliver planned results. Adjustments to the theory of change should be made in response to crisis and shocks, as well as part of regular monitoring.

Key principles for developing a theory of change:

a) Should be developed consultatively to reflect the understanding of all relevant stakeholders
b) Should be grounded in, tested with, and revised based on robust evidence at all stages
c) Should support continuous learning and improvement from programme design to closure.

While developing the theory of change, it is necessary to confirm the various steps against available evidence and the viewpoint of other stakeholders to ensure that the key assumptions are valid.

4.4 Milestone and indicator selection for a green recovery

Impact Indicators

Impact indicators describe the changes in people's lives and development conditions at global, regional, national, as well as community levels. They provide a broad picture of whether the development changes that matter to people and UNDP are occurring. Uncovering the linkages between the outreach of the project and the needs first identified gives clues on the overall utility of the realized actions.

Outcome indicators

[87] Theory of change UNDAF companion guidance

Outcome indicators assess progress against specified outcomes. They help ensure that a positive change has taken place. Outcome indicators are designed within the results framework of global, regional and country programmes. Outcome indicators are not intended to only measure an agency's contribution (such as UNDP), but more importantly they are indicators of change in development conditions and are therefore expected to be at a higher level than the output indicators.

Outcome indicators should measure the results of agencies' actions. As outcomes can only be observed in the long run, the concept of 'signals of change,' or early indications that change is underway in the intended direction, can add value by providing a mean to track the advancing of a country's green growth strategy[88].

Further distinction can be made between interim and advanced signals across three dimensions of transformational change – systemic change, scale, and sustainability – which can then be applied to thematic areas of interest (e.g., clean energy, resilience)[89].

The following table provides guidelines of how outcome indicators can be monitored, as an example.

Outcome indicators			
Measure	Indicator	Frequency	Responsibility
4.1	**Carbon intensity of the country's economy** Baseline: 2010 Target: reduction of 35% by 2025 (against 2010)	**annual**	**...**

Output indicators

Output indicators assess progress against specified outputs. Since outputs are tangible and deliverable, their indicators may be easier to identify. In fact, the output itself may be measurable and serve as its own indication of whether or not it has been produced.

The following table provides guidelines of how output indicators can be monitored, as an example.

Output indicators			
Measure	Indicator	Frequency	Responsibility
2.2	**Total energy saved (GJ/y)** Baseline: Target:		
	Total CO2e reduced (ton/yr) Baseline: Target:		
	Total water saved (volume/y)		

[88] The Climate Investment Funds (CIF) has developed a framework composed of 'signals of transformational change' that may be effectively applied to the work of the CSF and others (Savage, 2020).

[89] The CIF terms of 'emerging signal' and 'advanced signal' have been adopted in preference over the generic term 'indicator'. Initial planning could emphasise the emerging signals of change, in the expectation that these would be met within the first two years, whereas advanced signals might take several years to become apparent. Such an approach would need to be dynamic, with annual reviews leading to possible changes in emerging signals as relevant processes develop. The selection of outcome indicators will require political sensitivity and understanding in its application in each country. Such a framing could also apply to relevant support beyond the CSF.

	Baseline: Target:		

Other existing green economy indicators are provided by Measuring Progress[90] and the Green Policy Platform[91].

4.5 Monitoring tool (link excel tools)

The following section aims at defining a monitoring and assessment table of indicators of outputs and outcomes, that are linked to measures, as well as to initial objectives, as assessed in relation to the situation and needs (chapter 2). This will ensure overall coherence and relevance of the strategy, as well as efficient implementation in time (assessments of GGSF implementation effectiveness and progress to 2030 green transition goals).

The below tables showcase examples of what elements indicators might cover. They therefore serve an illustrative purpose and are not meant to be exhaustive. The indicator identification process is based on Appendix 3.

Theme 1			
Indicator:	Related to measures:	Output	Outcome

Theme 2			
Indicator:	Related to measures:	Output	Outcome
Number of sector plans reviewed and current national budgetary process reviewed	2.1	**X**	
Number of operative circulars for planning and budgeting stipulating requirements for the use of hazard/risk information in national and sectoral planning processes	2.1	**X**	
Critical number of staff from each key sector responsible for DRR and CC that successfully completed mainstreaming training	2.1	**X**	
Integrated EIA explicitly features DRR and CC	2.1	**X**	

[90] https://measuring-progress.eu/

[91] https://www.greengrowthknowledge.org/research/measuring-inclusive-green-growth-country-level

Number of guidelines for community engagement developed and utilised	2.1	**X**	
Number of local community groups more active in local-level risk management	2.1	**X**	
Interministerial Steering Committee structure developed and approved	2.2	**X**	
Fully functioning Interministerial Steering Committee	2.2		**X**
Number of committees concerned with DRR and CC streamlined and coordinated	2.2	**X**	
Endorsement of Steering Committee and sustained support for UNAP	2.2	**X**	
UNAP Implementation Unit established	2.2	**X**	
Activities drawn from Lessons Learned documentation	2.2		**X**
Completion of updated Building Code Review	2.2	**X**	
Number of building inspectors participating in training	2.2	**X**	
Environment and climate change impacts from development activities minimised	2.2	**X**	
Cost effective adaptation initiatives pursued	2.2	**X**	
Proportion of uptake of risk assessment tools across sectors	2.2	**X**	
Number of staff that have increased capacity in climate change negotiations and grant writing for various funding schemes	2.3	**X**	
Critical number of staff from each key sectors that successfully completed training	2.3	**X**	
Number of successful grant applications	2.3	**X**	
Number of presences of MoES and MOE Training Centres/Institutes in forums	2.4	**X**	
Number of local consultants recruited through advertised ToR	2.5	**X**	
Published toolkit	2.6	**X**	
Number of students that are aware of CC and DRR issues in Uzbekistan	2.6	**X**	
Strong awareness of the risks at each village	2.7	**X**	
Number of cities, LGs, and communities (in partnership with govt.) responsible for DRR and CC	2.7	**X**	

plans and programmes monitoring at cities and community levels			
Number of cities, governments, and Community (in partnership with local govt.) responsible for local DRR and CC planning, monitoring and assessments have competencies in EWS	2.7	**X**	
Use of products (Climate Outlook Modelling Programme) across sectors	2.7	**X**	
Number of community members trained Uptake of climate early warning information services	2.8	**X**	
Key sectors draw upon centralised information system to assist in coordination of CC and DRR activities	2.8	**X**	
Number of trained staff and uptake /use of centralised repository	2.8	**X**	
Number of staff in key agencies that completed training on data and information analysis and use information products	2.8	**X**	
Number of electricians trained	2.9	**X**	
Trained teachers on RE and Production or Adaptation of Multimedia packages	2.9	**X**	
Proportion of teachers including RE in classroom teaching	2.9	**X**	
Number of recommendations from existing infrastructure review implemented	2.9	**X**	
Number of recommendations of the DRR review implemented	2.10	**X**	
Number of SOPs and contingency plans developed	2.10	**X**	
Disaster preparedness manual drawn upon by cities governments and communities	2.10	**X**	
Number of key personnel trained	2.10	**X**	
Proportion of evacuation centres retrofitted	2.10	**X**	
Number of recommendations regarding receipt and dissemination of warnings implemented	2.10	**X**	
Number of trained trauma counsellors to support Community Affairs during an event	2.10	**X**	
Number of brochures, newspaper, TV, and radio ads	2.10	**X**	
Number of training workshop conducted, and summary report produced and sent to UNDP and respective ministries	2.11	**X**	
Number of training workshops conducted.	2.12	**X**	

Theme 3			
Indicator:	Related to measures:	Output	Outcome
Average annual rate of gross investment	3.1	**X**	

Theme 4			
Indicator:	Related to measures:	Output	Outcome
Carbon intensity of the country's economy	4.1		**X**
Energy efficiency in industrial enterprise	4.1		**X**
Number of advisory clients reporting increased productivity	4.2, 4.3	**X**	
Number of businesses reporting increased sales/turnover/ revenue.	4.2, 4.3,	**X**	
Volume of loans provided by local banks to local green businesses	4.2	**X**	
Total number/volume of MSME loans outstanding of PFIs (incl. WiB, LCY)	4.3	**X**	
Number of private sector firms' managers going through continuous training	4.3	**X**	
Position in doing business country ranking	4.2, 4.3	**X**	
Publication of TORs with articulated attribution criteria	4.4	**X**	
Number of administration employees going through continuous training regarding digital skills	4.5	**X**	
Time needed to achieve administrative procedures	4.5	**X**	
Position in UN e-government index	4.5	**X**	
Number of businesses adopting innovation management standards (incl. SOEs)	4.6	**X**	
Number of startups created	4.6, 4.7	**X**	
Number of FDI toward FEZ	4.6, 4.7	**X**	
Number of innovation and incubators	4.6, 4.7, 4.8	**X**	
Total investment in R&D	4.8	**X**	
Agreement/collaboration with foreign innovation centers	4.7, 4.8	**X**	

Legal, institutional, and regulatory changes to improve the business environment	4.7, 4.8	**X**	

Theme 5			
Indicator:	Related to measures:	Output	Outcome
Existing list of areas to develop techno-parks	5.1	**X**	
GDP-share generated in regional economic clusters	5.1	**X**	
Socioeconomic inequalities among regions	5.1, 5.2		**X**
Regional Development Index scores	5.1, 5.2		**X**
List of national/regional/local legal responsibilities	5.2	**X**	
Publication of strategy for urban agglomeration development	5.3	**X**	
Population having access to improved infrastructure	5.4		**X**
Surface of green areas in urban centres	5.2, 5.3, 5.4		**X**
Mental health and physical health scores	5.2, 5.3, 5.4		**X**
Share of national renewable energy use out of total energy consumption	5.4	**X**	
Air pollution related diseases and hospitalization	5.4		**X**

Theme 6			
Indicator:	Related to measures:	Output	Outcome
Proportion of youth (16-24 yr) not in training or employment	6.1		**X**
Unemployment rate by sex	6.1		**X**
Share of women in labor force	6.1		**X**
Share of women in leadership positions	6.1		**X**
Proportion of informal employment in non-agricultural sectors (by sex)	6.1, 6.2		**X**
Share of poor population	6.1, 6.2		**X**
Poverty level	6.1, 6.2		**X**
Revenue inequality gap between rural and urban region	6.2		**X**
Number of enterprises managed by females in rural areas	6.1, 6.2	**X**	
Number of youth-led enterprises in rural areas	6.3	**X**	
Budget allocation to education in high poverty regions	6.4	**X**	
Share of female enrolment in school, per region	6.4		**X**

Economic mobility coefficient	6.1, 6.2, 6.3, 6.4,		**X**
Number of jobs advertised	6.6	**X**	
Proportion of public spending on education in total government spending	6.4	**X**	
Proportion of children from 3 to 6 years of age covered by the pre-school education system	6.4	**X**	
Proportion of schools with access to adapted infrastructure and materials for students with disabilities	6.4, 6.1	**X**	
Proportion of public spending on social protection in total government spending	6.5	**X**	
Share of population receiving social benefits in the total population	6.5		**X**
Share of population with access to electricity, gas and drinking water	6.2	**X**	

Theme A, B & C			
Indicator:	Related to measures:	Output	Outcome
Number of professionals taking part in sustainable development trainings	A1, A2, A3	**X**	
Number of trained trainers'	A3, A4	**X**	
Amount $ of grants provided for promoting green growth among organization	A4	**X**	
Number of green-growth related courses	A5, A7	**X**	
Existence of a national online platform for green economy	A6	**X**	
Creation of a GE faculty	A7	**X**	
Number of green growth research projects/publications	A5, A7, A8	**X**	
Number of regional budgets/development plans integrating a green growth section	A.9	**X**	
Number of professionals trained on green finance topic	A.10	**X**	
Number of campaigns (or $) on sustainable lifestyles	A.11, A.12	**X**	
DRR arrangements reviewed and recommendations made regarding the potential strengthening of the system to the Ministry of Emergency Situations (MoES)	B.1, B.3,	**X**	
Position in Rule of Law Index	B.1		**X**

Standard Operating procedure (SOPs) and contingency plans developed	B.10	**X**	
Recommendations developed from review of emergency communications equipment; Development of a how-to guide and checklist for city governments, LGs and communities to assess the status and effectiveness of their disaster preparedness and climate change adaptation programmes	B.10	**X**	
Trained key personnel involved in community based DRR and CC to work with communities	B.10	**X**	
Evacuation plans reviewed and recommendations made for improvement	B.10	**X**	
Written procedures for receipt, dissemination and capacity to respond to warnings of all hazard warnings and roles and responsibilities of various departments	B.10	**X**	
15 trained trauma counsellors to support Community Affairs during an event	B.10	**X**	
Strong awareness of services available	B.7		**X**
Public awareness TV ads and programme, newspaper ads	B.7	**X**	
Amount of green public investments	C.1		**X**
Existence of a green budgeting system	C.5	**X**	
Estimated impact of public spending accounts on green economy	C.1, C.2, C.5		**X**
Inventory of brown subsidies and taxes	C.2, C.3, C.5	**X**	
Adopted strategy to decrease brown public spending	C.2, C.3	**X**	
Increased compliance with environmental regulation	C.4		**X**
Number of Sustainable public procurements/Total public procurement	C.6		**X**
Number of green investment reports by the SOEs	C.8		**X**
Number of clients reporting increase in sales/turnover/revenue.	C.7		**X**
Number of clients improving corporate governance and/or standards (incl. SOEs)	C.7	**X**	

4.6 Further steps toward implementation and improvement

One of the primary reasons for collecting M&E data is to inform ongoing and future planning and programming. Lessons from evaluations of programmes, projects and initiatives and management responses should be available when new outcomes are being formulated or projects or programmes

are identified, designed and appraised. At the time of revising or developing new programmes, projects, policies, strategies and other initiatives, consultative meeting with key partners and stakeholders of former projects (or phases) should be planned to review and share learnt lessons.

Knowledge from monitoring and evaluation should be incorporated in the following:

- **Project revisions** | Monitoring and evaluation should together answer several questions such as whether the project initiatives are relevant to development needs, is the implementation on track and therefore outputs are being delivered in a timely manner or is the project reaching its target beneficiaries. In addition to answering these questions, M&E provides information as to 'why' things are working or not. Such information should be incorporated in the improvements of the project strategy. When revisions are made to the project document, the lessons associated with the purpose of such change should be exposed. Good documentation of lessons and their internalization in project revisions help foster a culture of systematic learning.
- **Replication and upscaling** | Evaluation of pilot initiatives is necessary before replication or upscaling with particular attention paid to what has and has not worked and why. Again, good documentation of lessons and their internalization in the replication and upscaling processes will help ensure that mistakes are not repeated.

Monitoring and evaluation lessons should be incorporated into the formulation of:

New programme documents | Country, regional and global programmes, projects and actions are formulated considering results achieved and lessons learned M&E reporting tools, internal reviews, project and outcome evaluations and independent evaluations. The evaluations of the regional and global cooperation frameworks should also provide substantive inputs to the design of respective programmes. It is also helpful to consult reviews and evaluations in a similar thematic or subject area to find out whether any lessons can be drawn from their experiences. Sourcing of evaluative information in a programme document is part of good practices.

Project documents or Annual Work Plans (AWPs) | Project documents should include reference to the findings of relevant reviews or evaluations in the situation analysis section. Members of the Project Appraisal Committee should ensure compliance with this requirement by requesting explicitly which evaluation findings and lessons have informed the project design.

Appendix 1 | Detailed action plan

Example for the first measure of Theme 2[92]

Measure 2.1 Mainstream climate change adaptation and disaster risk management into national policy, planning, economic development planning and budgetary processes, and into sectoral policies and plans					
ACTIONS	**SUB-ACTIONS**	**OUTPUTS**	**INDICATORS**	**RESPONCIBLE AGENCIES**	**FINANCES**
2.1.1 Mainstream climate change and disaster risk reduction considerations at national level	Review existing planning, decision making and budgetary processes, integrated sector plans and strategies and identify where and how DRR and CC could be mainstreamed	Strategic entry points for mainstreaming of disaster and climate risk identified. Revisions made to national budgetary and sectoral planning processes to integrated risk management considerations	All sector plans reviewed Current national budgetary process reviewed. Operative circulars for planning and budgeting stipulate requirements for the use of hazard/risk information in national and sectoral planning processes	Lead Agencies (LAs): Ministry of Emergency Situations (MoES) and Ministry of Environment (MoE) Supporting Partners (SPs): UNDP & WB	
	Conduct training for department policy and planning units in on climate change and disaster risk reduction mainstreaming and the use of mainstreaming tools	Enhanced capacity of policy makers to draw upon mainstreaming tools to effectively mainstream climate change and DRR where appropriate	Number of staff from each key sector responsible for DRR and CC that successfully completed mainstreaming training	LAs: MoES & MoE SPs: UNDP & WB	

[92] Full report : Armen Rostomyan, "Uzbekistan National Action Plan on Strengthening Resilience to Natural Disasters and Climate Change", 24.03.2022

	Review regulations for development consent such as the Integrated Environmental Impact Assessment (EIA) to incorporate disaster and climate change considerations	Development consent regulations incorporate DRR and climate change	Integrated EIA explicitly features DRR and CC	LAs: MoES & MoE SPs: UNDP & WB	
2.1.2 Build strong consultative and participatory community approach (including Village Councils, NGO, Civil Society, and private sector) in climate change adaptation, mitigation and disaster risk reduction planning, implementation, monitoring, and evaluation.	Develop policy, guidelines, and programs for strong community engagement in addressing climate change adaptation, mitigation, and disaster risk reduction	Guidelines for community engagement developed and utilised	Local community groups more active in local-level risk management	LAs: MoES & MoE SPs: UNDP & WB	

Appendix 2 | Costed monitoring and evaluation plan

Monitoring and evaluation activities					
5-year cycle	**2022**	**2023**	**2024**	**2025**	**2026**
Surveys and studies	Surveys and studies can be conducted to address data gaps spotted during the development of the results framework and the M&E plan. They will allow to collect specific missing information and achieve higher quality M&E. In alignment with the principle of inclusiveness, participatory monitoring technique can be chosen to enable communities to bring to light performance gaps any unintended consequences of programme interventions[93,94].				
Monitoring systems	***Tracking progress*** **/** Tracking progress on outcomes entails collecting and reviewing evidence on results using the indicators in the results framework, thus highlighting whether a result is on track. In this regard, monitoring will serve to provide information that enables adjustment to the theory of change (see chapter 5.3) for achieving outcomes. Equally important is tracking the allocation and use of resources and performance reporting. ***Strengthening national data collection systems*** **/** Monitoring should help improve data availability, quality, analysis and use. Setting up and reinforcing routine information system procedures helps to make ongoing data collection sustainable and to strengthen government ownership. Determining those systems that will need support, either through primary data collection efforts, or working on the capacities of statistics units could be the focus of a programme or project outcome. ***Subnational monitoring*** **/** Subnational monitoring is well-suited to addressing issues of inequality and exclusion. In decentralized settings, joint monitoring with the direct involvement of local government is a powerful way to achieve quick results and to avoid creating parallel data systems.				
Reviews	***Revisiting theories of change*** **/** (see chapter 5.3) Necessary adjustments can be made during implementation, thereby reinforcing the element of continuous learning and adaptation. ***Periodic reviews of results*** **/** It is essential to get an overview at all times of how far outputs have been achieved, relevance of the strategy as well as what are the barriers and bottlenecks to results achievement. Reviews of results also allow for sharing updates on any changes to previously identified risks as well on emergence of new risks.				
Evaluation[95]	Evaluations are done by independent entities to provide stakeholders with an objective assessment of whether they are on track. Also, evaluation draws heavily on data generated through monitoring during the programme and project cycle, including, for example, baseline data, information on the programme or project implementation process and measurements of results.				

[93] In Benin, for example, the UNCT established a real-time monitoring system that gathers mobile feedback from beneficiaries via an SMS-based system.
[94] A number of countries, such as Uganda, are also domesticating the UN Global Pulse platform to monitor UNDAF outcomes and outputs
[95] Guidelines for the Evaluation of the United Nations Sustainable Development Cooperation Framework, 2021

Appendix 3 | Indicator identification process

Illustration for themes 4, 5 & 6, as well as cross-cutting theme A

Overview	Objective	Expected output/outcome
4.1 Update infrastructure of industrial enterprise	**Goal:** Ensure sustainability of industrial enterprise infrastructure in industry, construction, agriculture, and other sectors of the economy by integrating new available technologies and standards	**Output:** Increase energy efficiency of industrial enterprise infrastructure by wider use of clean and environmentally friendly technologies and industrial processes, further introducing energy-saving technologies **Outcome:** Increased share of less energy-intensive (carbon-intensive) industries in the structure of the economy; overall standardization of infrastructures
4.2 Strengthen the role of SMEs in the economy through enhanced access to finance and capacity	**Goal:** Stronger role of SMEs in the economy through enhanced access to finance and capacity	**Output:** Support promising, high-potential SMEs investing in green businesses (direct and intermediate finance, general and targeted credit lines, improved MSME lending capacity); Help develop local money and capital markets as well as risk-sharing facilities through local state owned and private banks **Outcome:** Enhanced competitiveness by strengthened the private sector's role in the economy and developed local currency lending mechanisms (including policy engagement)
4.3 Increase private sector participation in the national economy	**Goal**: Selectively engage with State Owned Enterprises (SOEs) to increase private sector participation in state-dominated sectors and strengthen public-private sector dialogue (including through business councils and associations)	**Output:** Promote improved governance, financial & operational performance (including. Energy/resource efficiency improvements); equip firms with managerial and organizational skills to absorb, assimilate and integrate external knowledge and technology to upgrade activities and enhance competitiveness of firms; encourage and support transparent privatisation; increase private sector participation, including via PPPs **Outcome:** Enhanced competitiveness by strengthening the private sector's role in the economy; sustained business environment
4.4 Develop a transparent and	**Goal:** Support improved corporate governance, development of a transparent and competitive public procurement regime and PPP and SME frameworks	**Output:** Convey public procurement opportunities transparently; set clear TORs, as well as transparent and comprehensible attribution criteria

competitive public procurement regime		**Outcome:** Enhancing competitiveness by strengthening the private sector's role in the economy
4.5 Strengthen e-government and public administration capacity for government efficiency	**Goal:** Building of e-government system and public administration capacity for government efficiency	**Output:** Computerization and informatization of the administrative system in each government sector, shaping public sector personnel digital competencies. Provide support to skill development in public administration for innovation and project management. **Outcome:** Standardized government administrative informatization; Strengthened public sector personnel capacity to effectively support innovative processes in the economy.
4.6 Improve the effectiveness of policy governance and mechanisms in the innovation system	**Goal:** Creating an effective policy and business environment for innovations and ensure the systematic generation, diffusion and application of innovation across the economy and improve the efficiency of the innovation processes, including those needed to spur green growth.	**Output:** Improve innovation policy coordination of initiatives across national and regional government authorities, as well as private sector and civil society; strengthen public capacities for effective design and implementation of policy; Promote start-up creation by ensuring coordination of innovation policy initiatives to exploit the entrepreneurial capacity of the population, including targeted support for female entrepreneurs; Enhance the national statistical system to provide policymakers, business and civil society with sufficient data on innovation and environmental trends and challenges; Ensure evidence-based policy making for sustainable and innovation-led development through a systematic approach to policy design, monitoring, implementation and evaluation. **Outcome:** Innovation to happen more systematically across the economy, with stakeholders experimenting with new ways of creating socio-economic value to address sustainable development challenges. Mitigating risks and putting the right incentives in place will create a more favourable environment for innovative activity and experimentation will entice investors and companies to expand their investments and other resources into the innovation-driven businesses and activities.
4.7 Strengthen the innovation infrastructure to support	**Goal:** Ensure that the infrastructure available to entrepreneurs and start-ups provides the necessary assistance to help individuals and firms to develop their innovative ideas throughout the business	**Output:** Expand the infrastructure and administrative capacities of FEZs to improve their effective support for attracting FDI and channeling it to innovation projects, as well as facilitating the access of resident firms to global value chains (GVCs), and strengthen governance processes to engage all relevant stakeholders in the decision-making processes of FEZ

innovation-led growth	development process, from the ideation phase to commercialisation and further growth.	development; Improve the effectiveness of innovation centres and incubators by clarifying strategic frameworks, providing support in developing sustainable capacities in service provision to start-ups and further facilitating access to finance; Enhance the functioning of science and technology parks (STPs) by improving and expanding regulatory frameworks to benefit from ongoing efforts towards digitalization and IT innovations; Adequately equip accelerators with the necessary resources to provide comprehensive and effective support to foster start-up creation and create accelerators targeted towards the support for start-ups in emerging and promising fields such as green technology. **Outcome:** Higher quality service provision and infrastructure provided by the innovation infrastructural elements, such as incubators, accelerators, science, and technology parks, etc. to strengthen the creation and diffusion of innovations for sustainable development.
4.8 Enhance science-industry linkages	**Goal:** Facilitate innovative activity by ensuring the effective cooperation between Academica, science and industry to develop and produce innovative products and services	**Output:** Generate capacities for innovation-based growth to foster the development of innovative, high-growth enterprises and gradually restructure the R&D system to facilitate the commercialisation of research; Improve the quality of middle level skilled labour and support the increase in productivity of firms to unleash the latent potential for high-quality SME entrepreneurship; Generate opportunities to use FDI and GVC integration as levers for upgrading technology and as mechanisms for accessing new technologies and learning from foreign partners **Outcome:** Stronger and more effective collaboration between domestic and foreign innovation stakeholders that positively impact innovation processes within the national innovation system and leverage the opportunities for innovation, specialization, economies of scale and export competitiveness in the economy.

5.1 Diversify the economic base of some regions	**Goal:** Ensure sustainable and balanced development of regions in terms of their contribution to GDP creation as well as the levels of socioeconomic development	**Output:** Develop clusters in such areas as copper mining and metallurgy (Almalik city), mining & chemical-technology (Navoi), agriculture machinery cluster and techno-park in Chirchik, automotive (Jizzakh), pharma (Zangiata) and technological parks in many areas that need to be identified,

		IT (Korakul), IT innovation parks in four cities – Nukus, Bukhara, Jizzakh and Namangan; develop free transborder trade zones **Outcome:** Gap reduction in socioeconomic development among the regions by modernizing and diversifying the economy of the territories, accelerating the development of relatively lagging regions and cities, and increasing their industrial and export potential; Develop regional growth poles
5.2 Pursue further decentralization	**Goal:** Increase the independence and responsibility of local government bodies in tackling socioeconomic development of the regions	**Output:** Develop procedures for the transfer of functions and powers of National public administration bodies to territorial public administration bodies and authorities; organize the effective work of the territorial administrations of all levels of government (including the introduction of digital technologies) ; increase the revenue base, ensure timely and targeted financing of the approved spending parameters of local budgets and ensure further development and maintenance of social facilities and infrastructure **Outcome:** Increase the role and abilities of local executive authorities and territorial public administration bodies in resolving issues on the ground
5.3 Manage the formation of urban agglomerations, taking into account the creation of satellite cities	**Goal:** Improve the formation of urban agglomerations, taking into account the creation of satellite cities by including the development of social, engineering, communal and road transport infrastructures through the introduction of advanced energy-saving, and environment friendly technologies and materials.	**Output:** Elaborate strategies of urban social and economic development that determine the long-term prospects of city development as well as the driving forces that will be the basis for the city's future economic growth. **Outcome:** Cost reduction of perpetuating the current, inefficient, low-density urban sprawl model based on the development of satellite cities
5.4 Build sustainable and resilient urban infrastructure	**Goal:** Creating a sustainable and resilient urban environment and infrastructure, including construction, buildings, power, transport, roads, water and sanitation, green spaces, urban and peri-urban forests that should target the better quality of life of urban residents and visitors.	**Output:** Strengthen urban governance and institutional capacity as an effective approach for building back better; include a mix of water supply, sanitation, SWM, urban public spaces, and tourism infrastructure and services in physical investments, combined with capacity building to strengthen urban governance and management.

		Outcome: Improved quality of life mental and physical wellbeing, health benefits in urban areas, with increased availability of and accessibility to green areas and transport options; Improved air, water and, soil quality. by developing and introducing international best practices in construction, roads, transport, water and sanitation, power, heating.

6.1 Develop inclusive and resilient human capital	**Goal:** Inclusive human capital development leading to health, well-being and resilient prosperity	**Output:** Learn market-driven skills, focusing on NEET (not in education, employment or training), women and people with disabilities; use migration as a livelihood opportunity including pre-migration skills and orientation; support the participation of women in the labour force **Outcome:** Expanded opportunities for youth, women, and vulnerable groups to improve livelihoods, foster decent work and generate by inclusive and equitable economic growth
6.2 Address rural livelihood to bridge rural-urban gaps	**Goal:** Rural-urban gaps is reduced with the aim to improve rural livelihood and reduce poverty	**Output:** Continue deconcentrating (including budget allocation) to strengthen the role of rural districts **Outcome:** Improved standard of living for people living in rural areas
6.3 Encourage innovative youth start-ups	**Goal:** Innovative start-ups are encouraged to increase the economic opportunities for the population	**Output:** Create local incubators as a support to innovative start-ups **Outcome:** Economy is diversified; more economic opportunities are offered to the population
6.4 Improve quality education and learning outcomes	**Goal:** Enhance access to gender-sensitive education for the most vulnerable, focusing on preschool and tertiary education and prioritizing women's enrolment in higher and technical education,	**Output:** Increase budget allocation to education, especially in regions with high poverty rates; align tertiary education priorities with long term green growth strategy; develop affordable preschool structures to increase economic opportunities for women **Outcome:** Increased capacity of Government and other educational stakeholders to provide access to equitable, inclusive and quality education at all levels; promoted lifelong learning in an integrated manner
6.5 Improve coverage and	**Goal:** Inclusive human capital development leading to health, well-being, and resilient prosperity. By	**Output:** Enhance access to gender-sensitive social services for the most vulnerable

efficiency in the social protection system	2025, the most vulnerable benefit from enhanced access to gender-sensitive quality health, education and social services.	**Outcome:** Strengthened national social protection system to deliver progressively universal social security and social protection benefits, community-based family services, and inclusive multi-sector response to vulnerabilities and gender-based violence
6.6 Support and incentivize SMEs within the context of transition	**Goal:** Expanding labour market demand and creating more job opportunities, especially for the poor and those living in more deprived locations	**Output:** Draw-up a formalization strategy targeting to support SMEs and create the institutional framework for its regular monitoring and evaluation **Outcome:** Increased support for viable private sector businesses to offer more jobs for vulnerable people

A.1 Increasing managerial, planning competencies of senior staff of the governmental institutions	**Goal:** disseminating information on the concept of green economy, priority tasks and measures, best international practices and regulations on GE, methods of incorporating green solutions in planning and budgeting.	**Output:** creation of momentum for development of measures, action plans on GG and their implementation. **Outcome:** Increased understanding of the green economy concepts and evaluation tools, increasing green growth commitment at managerial level.
A.2 Strengthening technological competencies of the governmental and private organizations	**Goal:** improving knowledge and technical competencies of middle and junior staff of the relevant public and private offices to develop, implement measures aimed at transitioning to green economy and assess the outcomes.	**Output:** creation of network of public officers, capable of engaging in planning and implementing green growth initiatives. **Outcome:** improved capacities, understanding and willingness to plan, execute and assess measures, aimed at transitioning to green economy.
A.3 Training of trainers on green growth	**Goal:** strengthening local capacities for ensuring continuous education on green economy principles, strategies, benefits and values	**Output:** creation of sufficient national capacities for training individuals in public and private offices **Outcome:** ensuring sustainability of capacity building measures on green growth
A.4 Providing support for training and	**Goal:** promoting understanding among private organizations on the benefits of incorporating	**Output:** increasing understanding the importance and benefits of green growth solutions among private organizations

consultancy services in private profit and non-for-profit institutions by allocation of small grants	green practices in their development strategies and daily activities.	**Outcome:** development of critical mass of businesses following green practices, improving their understanding of the competitive advantages of green approaches
A.5 Incorporating green economy topics into relevant curriculum of the educational institutions	**Goal:** provision of interdisciplinary knowledge and skills on green economy in schools and universities	**Output:** increasing understanding of GG policies and values among students and teachers. **Outcome:** preparing future workforce for green economy
A.6 Creating online green economy hub	**Goal:** improving access to information on green economy, promoting international cooperation in this regard.	**Output:** creation of a website on GE in Uzbekistan. **Outcome:** better access for local organizations and individuals in Uzbekistan to the materials related to green growth and green economy, improved international cooperation in this regard
A.7 Preparation of specialists on green economy and sustainable business at the Tashkent State University of Economics	**Goal:** preparing specialists on green growth and sustainable business practices	**Output:** preparing national specialists and experts on GG, ESG, CSR and sustainable development. **Outcome:** increased national capacities and human capital capable to facilitate green growth and sustainable development.
A.8 Introducing research funds on green growth	**Goal:** fostering development of practical solutions to transitioning of Uzbekistan to green economy	**Output:** availability of R&D funds for GG. **Outcome:** increased involvement and focus of national research institutions on green growth topics, increased capacities for developing green solutions to existing developmental challenges of the country

A.9 Capacity building workshops for regional and city administrations and executive bodies	**Goal:** promoting practical aspects of green growth on local level.	**Output:** supporting capacities on local level. **Outcome:** practical implementation of green growth measures on local levels.
A.10 Strengthening capacities for green finance, development of public and private green investment projects	**Goal:** strengthening capacities among public and private organizations for formulating green growth projects with focus on defining challenges and tasks, identifying indicators, utilizing assessment tools, conducting stakeholder mapping, budgeting, etc.	**Output:** increased number of individuals and institutions capable of formulating needs for GG projects. **Outcome:** increased capacities of local authorities and private organizations in formulating, attracting finance and implementing green growth projects
A.11 Promoting sustainable lifestyle	**Goal:** promoting such values as: sustainable shared well-being, human development, health, social justice, human rights, equity, more inclusive society, protecting biodiversity, soil, water, air and other ecosystem capitals, public participation, and social dialogue.	**Output:** increased practical sustainable lifestyle awareness campaigns in public and private organizations. **Outcome:** increased awareness of the green economy values, goals and benefits, better public participation.
A.12 Raising awareness among all stakeholders on the benefits of green practices through mass media	**Goal:** raising awareness among population on the benefits, importance of sustainable lifestyle.	**Output:** increased number of materials on media about GG values and benefits. **Outcome:** improved public understanding, commitment, and demand for green practices.