The Future of Green Transition in Uzbekistan

Tashkent 2023

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Introduction

Futures and Foresight are amongst the tools increasingly embraced by sustainable development practitioners. Navigating the uncertainty, complexity, and ambiguity by exploring possible futures allows for the generation of insights for strategic planning, the identification of opportunities for transformation, and the anticipation and mitigation of critical risks. In the face of climate change and environmental degradation, sustainable development practices must balance sustainability with improving human well-being both now and in the future.

One of UNDP's key areas of interest and its national counterparts in Uzbekistan is green transition. For Uzbekistan, a green transition is an opportunity to upgrade its economy in the value-added chains, increase resource efficiency, and achieve balanced growth across the various social groups. The government of Uzbekistan understands this and has adopted several strategic documents to outline the priorities and goals in mid-and long-term perspectives. For example, the Strategy for the transition of the Republic of Uzbekistan to a green economy in the period of 2019-2030 identifies key goals and targets, priority areas, and implementation measures. In December 2022, an update to this strategy was released via ***Presidential Resolution No.436: On measures to improve the effectiveness of reforms aimed at the transition of the Republic of Uzbekistan to a "green" economy until 2030.***

In support of the government, UNDP Uzbekistan applied futures and foresight tools to explore possibilities for a Green Transition in Uzbekistan. The process produced a range of outputs, including a signals database, drivers, narrative scenarios, and a custom scenario exploration system. The exercise was a participatory process involving UNDP program staff and a wider group of counterparts from various government ministries, agencies, and non-government organizations.

Executive Summary

Over the course of numerous online and in-person engagements from 2022-2023, a team comprised of global futurists, UNDP, and government partners utilized the University of Houston's Foresight Framework to refine the domain areas; scan for signals of novelty, continuity, and change; generate a range of drivers; model alternative futures scenarios; and identify key ideas for further action to support ongoing government reforms, specifically the December 2022 strategy update entitled: ***Presidential Resolution No.436: On measures to improve the effectiveness of reforms aimed at the transition of the Republic of Uzbekistan to a "green" economy until 2030.***

The horizon scanning efforts yielded 454 hits that were evolved into 22 Drivers using the Futures Triangle, which looks at the weight of the past, push of the present, and the pull of the future. Drivers were used to model alternative futures scenarios using two approaches:

1. the global team developed narrative scenarios;

2. UNDP and government partners developed snapshot scenarios.

Both were used to develop key ideas, which outline innovative approaches, such as: developing a national tariff system; putting youth at the forefront of green economy development; focusing on internal capacity development; and building-out a mission ecosystem to drive cross-government coordination. The narrative scenarios and templates for various activities are included as appendices.

Approach: The Houston Framework

The University of Houston's Framework for undertaking futures and foresight research (hereafter Houston Framework) is an established and widely-used approach to generating forward-looking insights on a wide array of topics.[1] Developed over decades of research and practice, the Houston Framework aligns with the Association of Professional Futurists' Foresight Competency Model, which outlines the key capabilities and capacities of foresight practitioners.[2]

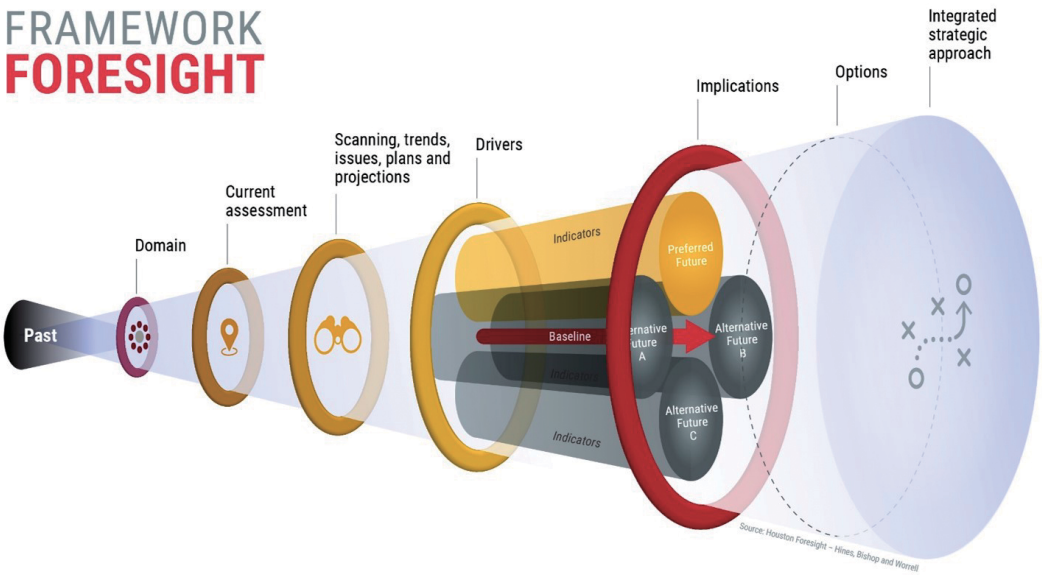


Figure 1: The Houston Framework's research-driven method uses a multi-step process that uses various activities across six phases.

1 Hines, Andy, and Peter C. Bishop. "Framework Foresight: Exploring Futures the Houston Way." Futures 51 (July 2013): 31–49. https://doi.org/10.1016/j.futures.2013.05.002.

2 Hines, Andy, Jay Gary, Cornelia Daheim, and Luke van der Laan. "Building Foresight Capacity: Toward a Foresight Competency Model." World Futures Review 9, no. 3 (September 2017): 123–41. https://doi.org/10.1177/1946756717715637.

In relation to the Houston Framework's six-step process, the following activities are typically carried out:

Phase	Activities
Framing	Scoping the project, defining the focal issue and current conditions
Scanning	Exploring signals of change or indicators of the futures
Futuring	Identifying a baseline and alternative futures
Visioning	Exploring implications of the futures
Designing	Crafting options and an integrated strategic approach
Adapting	Communicating the response, ongoing monitoring, and implementation

Each step of the Houston Framework includes a series of specialty activities, such as horizon scanning, drivers, scenarios, and option integration. For this project, specific activities were carried out using the six-step framework:

Phase	Activities
Framing	Scoping meeting; Learning Webinar; Domain map; Local interviews
Scanning	Global and Local Horizon Scanning; Drivers Workshops; Drivers
Futuring	Narrative scenarios; Scenarios and Implications Workshop
Visioning	Scenarios and Implications Workshop
Designing	Alignment and Strengthening
Adapting	Next Steps

In the following sections, each step of the process is explained in detail and key outcomes from the process are detailed.

Domain Map and Signals

Scoping a project requires not only asking the right question but also a map from which to start one's journey into exploring the future(s). Domain maps provide not only a point of departure from which to begin research but also serve as a "living map" that can, and should, be updated as the process unfolds. In this way, a domain map offers a heading as well as a guide for research and scanning.

The domain map for this project has seven sub-domains and over 62 issues areas.

Environment 	• Waste management system and infrastructure and recycling; sectoral waste management (health, construction, energy sectors, etc.)... • Electric transport may not necessarily mean green... • sustainable agriculture; water practices; land use • energy efficient and green construction • conscience consumption • Water pollution control
Political, Governance, & Rule of Law 	• Top down or demand driven? • Regional approach to conservation/ adaptation; Regional Agreements • Cross-border issues • Incentive schemes • Macroeconomic goals vs Green Transformation • Corruption, nepotism — promotion of narrow interests even against green principles • Green as new development paradigm • Narrative on Green Transition
Energy, Natural Resources, & Climate 	• Linked to social: plans to lift energy subsidies. Poverty vs state revenue generation • Circular economy • Low energy prices • Graded/Lifeline Tariffs • Nuclear Energy (Uzbekistan was planning to build a NPP) • New projects for solar, geo-thermal and wind generation • Organic farming • Dusty/dry climate

Technological & Infrastructure 	• Industrial immaturity — need to skip several tech steps • Access and high costs of Green technologies • Skills and retraining • Modernization of existing industrial facilities • Innovation in Green Tech • Carbon Removal Tech • Adoption of waste management technologies • Technical regulation: quality assurance (market defined) • Standardization, classification, certification • Green Infrastructure and Service (charging stations, battery maintenance and recycling, power grids readiness) • Digitalization
Financial & Economic 	• Financial risks • Expensive to fund • Commercially/economically viable green transition • Low purchasing power • Need to find a balance Loss vs. gains for the economy • Not only production but also services and supply chains • Private sector must be leading/involved • Can Uzbekistan find a competitive edge/focus in green economy? • Availability of Financial products for private sector • Preferences/Incentives • Short term priorities over long term/abstract goals (e.g. choosing cheaper “dirty” energy sources/ technology over expensive “green” ones • Investments in energy, construction, housing and communal services (e.g. PPP) • Green marking/labeling of products • Green Fund to be launched in Uzbekistan • Digitalization (Green or not)

Social & Behavioral 	• Job losses in conventional sectors • New paradigms in society — Green deal • Mind shift • Conscience consumption • Waste sorting and utilization culture • Need for more specialized research and studies • Top down or demand driven? • Behavior change for environmental protection • Green as a new development paradigm • Education and awareness raising • Is society ready to make sacrifices? (e.g. plastics ban, price rise) • Education and awareness raising
Regulatory & Legislative Frameworks 	• Technical regulation: quality assurance (market defined) • Standardisation, classification, certification • Green/Climate Prioritization in all lawmaking • Enforcement, Fines, & Penalties • Preferences/Incentives

The original domain map was created by the team, which included futurists from around the world, and then subsequently updated by the local team, which included UNDP and government colleagues.

Horizon Scanning

Both strong (well-evidenced, established trends) and weak (emerging and novel relative to the context) signals were identified through a distributed horizon scanning process that engaged a broad and diverse group of individuals, including practicing futurists, graduate students from the University of Houston's Masters of Foresight program, and colleagues from UNDP and the Government of Uzbekistan.

Scanning took place from March to September 2022, and the team sought to gather data from a geographically and linguistically diverse range of sources. Scan hits included expert reports from McKinsey and other top consulting firms, region-specific and niche publications like Kun.uz, Blockworks, and MarineLink, globally recognized news outlets such as the Guardian, New York Times, and Bloomberg.

The team utilized Diigo, a cloud-based library for annotation, and Newness, [an AI-enabled collaborative scanning platform], to enhance the scanning and sense-making process. Additional hits were contributed in both Russian and Uzbek language by UNDP and government colleagues in addition to the English-language scanning by the team.

The team conducted several initial rounds of collaborative scanning to identify the key domain map categories. Once the domain map was finalized, focused scanning was conducted within chosen areas. The team continued scanning efforts and dove deeper into core areas of interest that were identified from the initial scanning.

Over 20 people, including futurists from around the world, participated in scanning and 454 scan hits were collected and analyzed. At the end of the scanning period, the Newness platform analyzed and clustered the collected signals, and generated mini-narratives aimed to highlight key concepts and convey emotions and attitudes gleaned from the source articles.

The project team used the Newness analysis, the Diigo database, and supplemental research to inform the next step in the process: sense-making to identify drivers of change.

Key Signals

Uzbekistan is the place for investors

Could China's population start falling?

China's decades-long economic miracle was made possible, in part, by the strength of its large and growing population. If that trend reverses, China may revise its 5 Year Plans towards the homeland and Uzbekistan will need new sources of capital.

Image credit: Robert and Linda Buckalew

Why Europe Is Looking to Nuclear

Power to Fuel a Green Future Nuclear energy holds a lot of potential for meeting energy needs. The industry and regulators have learned from the past and are positioning themselves as part of a green future.

Image credit: IAEA Imagebank

Greed Hub or Green Hub?

Uzbekistan, Kazakhstan regulate crypto with eyes on energy deficits

Technology brings with it incredible opportunities, but managing the costs can be challenging. Cost-benefit analyses can be misleading, and the risk is giving up the future to get today.

Image credit: Jernej Furman

The pandemic has increased «conscious consumption» habits

Achieving economic prosperity is good, as long as wealth is used constructively. Fulfilling our every desire for material goods can start a vicious cycle of consumerism that's hard to unwind.

Image credit: i bi

Reactive versus Proactive Change?

Green Energy Economy for Gender Equity

Inclusivity in the green transition empowers faster growth and more resilient prosperity.

Image credit: The Rockefeller Foundation

Prospects for Transitioning from a Linear to Circular Economy in Developing Asia

Leveraging natural resources in a green economy is as much about extending their useful life as it is about maximizing price.

Image credit: debs-eye

From industrial development to green economy

A new green learning agenda: Approaches to quality education for climate action

Redesigning educational programs to prepare tomorrow's workers with the skills they will need is already under way.

Image credit: Brookings

To Withstand Global Shocks, Uzbekistan Needs to Continue Reforms and Build an Inclusive Market Economy

Transforming the economy often means transforming the government to offer citizens more freedom to make decisions and act on their consciences.

Image credit: Daniel Chodusov

Interviews

Although not formally part of the Houston Framework, interviews provide a clear and engaging way to deepen one's understanding of the local context. Interviews were conducted with local experts, including with development practitioners and government colleagues. Key insights from the interviews have been captured in this infographic.

LOCAL INTERVIEWS

Conversations to identify local perspectives on Uzbekistan's transition to a green economy.

1

WHAT DOES "GREEN TRANSITION" MEAN TO YOU?

- The importance of changing the mindset of citizens and the government, focusing on children and youth — moving away from the consumerism.
- Avoiding the usage of fossil fuels as much as we can. Over coming dependency on natural gas (gives 85% of energy).
- Finding alternatives.
- Green standards and regulations in the industry.

WHAT EXAMPLES OR CASES PROVIDE A SENSE OF "BESTPRACTICE" WITHIN UZBEKISTAN?

- Houses that installed solar panels and can then sell energy back tothe grid.
- Institutional progress — the government started talking about energy transition and digitalization.
- Youth are more responsive and care about the future

2

3

WHAT ARE THE GREATEST BARRIERS TO ENABLING A"GREEN TRANSITION" WITHIN UZBEKISTAN?

- Lack of human resource capacities, specifically in green sectors.
- Insufficient collaboration between government and NGOs
- Lack of awareness among the population. Low level of involvement of the citizens in decision-making processes.
- Low price of electricity.

WHAT SHOULD BE THE MAIN PRIORITIES IN UZBEKISTAN'S GREEN TRANSITION PATH?

- Adaptation policies.
- Transforming the energy sector, waste management, and transportation.
- Need more national parks (protected natural reserves).
- Opening a green bank to promote financing.

4

5

IMAGINE IT IS 2032. LOOKING BACK, WHAT HAS BEEN THE GREATEST SUCCESS FOR UZBEKISTAN'S "GREEN TRANSITION?"

- Afforestation level up to 10% from current 3%.
- 25% of the households use solar panels, more in urban areas.
- ESG principles become mainstream
- The private sector sees an opportunity in green technologies.
- Optimistic — we are adapted to climatic changes.

LOOKING BACK FROM 2032, WHAT HAS BEEN THE BIGGEST FAILURERELATED TO UZBEKISTAN'S "GREEN TRANSITION"?

- Number of climate change migrants increases dramatically.
- Resource wars between countries in the region.
- Failure to adapt agriculture to new realities of environmental degradation and climate change. Unsuitable growth of the cities.

6

7

WHAT OTHER QUESTIONS SHOULD WE BE ASKING?

- Climate adaptation should be number one on our agenda.
- There is too much reliance on international opinion/expertise.
- We need to use experts who have regional knowledge.
- The green transition must be more in the rural areas.
- They aremost vulnerable to climate change effects.

Workshops

Drivers

Scanning and interviews can provide rich data from which to develop key insights, but it is critical to utilize sensemaking approaches and tools to localize and prioritize the data further. An essential step in the Houston Framework is the development of Drivers, which act as “gravity wells” that create push and pull effects. To say that Drivers have “gravity” is to say that they are not merely trends but can act as macro-scale forces that can redirect and mutate trends, sprout and even extinguish emerging issues, and shape and reshape contexts.

For this project, we used the Futures Triangle, which is a widely-used method for “mapping the future.” While it is common to cluster signals by subdomain or category area (technology, politics, etc.), the Futures Triangle uses three areas of analysis: weight of the past, push of the present, and pull of the future. Framing questions for the Futures Triangle are:

Weight of the Past

- What is holding us back or getting in our way?
- What are the barriers to change?
- What are the deep structures that resist change?

Push of the Present

- What drivers of change are pushing us towards particular futures?
- What quantitative drivers of change are changing the future?
- What is happening now? What is popular now?

Pull of the Future

- What drivers of change are pulling us towards particular futures?
- What are the compelling images of the future, those we can’t overlook?
- Are there competing images of the future?

In June 2022, the team came together for two online sessions to analyze the signals using the Futures Triangle. The clustering and sensemaking carried out during this session formed the foundation for what would become the Drivers.

Based on this preliminary analysis, 19 initial Drivers were identified. Prior to the workshop on 5 July, and in consultation with the UNDP team, the original 19 were expanded to 22. Each Driver was turned into a card that included: a title, description, and exploratory question.

Weight of the Past

The (Infinite) Great Game...

Colonial legacies continue to influence regional development narratives and models, especially as some seek to capitalize on opportunities across the region.

How can (neo)colonial legacies be confronted and thwarted?

Fossilized Frameworks...

The Soviet Era created relationships of dependency and institutionalized bureaucratic and inefficient processes and practices that have been difficult to overcome.

How can Soviet Era practices and processes be overcome?

One Road to Rule Them All...

The Silk Road did more than move goods from one place to another. It connected people across cultures and remains a powerful metaphor for trade and commerce.

How can and might "the Silk Road" (as metaphor and medium) be leveraged to build *a* better future?

Culture Eats... Everything...

As Uzbekistan continues to undergo change, the question about how its culture (broadly defined) will change (for better and/or worse) remains unanswered.

How will cultural traditions cope with an increasingly complex and uncertain future?

Greasing the Wheels...

Corruption, nepotism, and hesitancy towards change is a challenge everywhere, and Uzbekistan must confront the factors and forces that are working to stall the green transition.

What incentives can be used to shift unethical and unequal practices and processes?

Going, Going, Gone...Green?

Achieving sustainable development has become a paramount challenge, and as different frameworks (from the MDGs to the SDGs) come and go, questions remain about what can really be done, how, and by whom?

Can Uzbekistan break free from the (neo)colonial legacies of the past?

Push of the Present

Triangulated...

Across Central Asia, Russia's influence is without equal. But, China and India have emerged as players seeking to gain a foothold.

How can Uzbekistan take advantage of its geography while also being mindful of the (self-)interest of its suitors?

00010101011010...

Digitalization is a cross-cutting driver of change that is transforming all sectors, and it continues to boom.

How can Uzbekistan increase its online footprint while confronting the security and social challenges of further digitalization?

And not a drop to drink...

The Aral Sea is a cautionary tale but also a sign of things to come. Water and food system insecurity (from climate change and conflicts) are critical issues.

Can Uzbekistan lessen its reliance on imports and find ways to confront increasing water insecurity?

From Russia with...

As the crisis in Ukraine persists, various effects, from economic to social, are being felt, especially amongst those countries with strong ties.

How will the crisis in Ukraine impact not only Uzbekistan's economy but also social dynamics?

Weirding World...

Climate change is a threat multiplier that can have cascading effects across numerous sectors leading to “unlikely” (rare and unexpected) outcomes.

How can the “unlikely” effects of climate change not only be anticipated but also explored?

Away from Home...

For many, there is a strong belief that things are better elsewhere. Brain drain continues to be an issue, and while remittances are a net positive, this model comes at a cost.

How will Uzbekistan create opportunities that can keep its best and brightest at home?

Resource Curse...

From gold to uranium, Uzbekistan has a range of resources that many are keen to exploit. Foreign governments and corporate actors are working to influence what is developed and how.

How can and might Uzbekistan navigate its resource wealth while also meeting its sustainability goals and commitments?

Winds of (Financial) Change...

High tariffs can protect local industries but also scare away foreign investors. Globally, fintech innovation remains a growth sector, and the advent of a Green Climate Fund shows that the winds of (financial) change are blowing strong.

How can and might Uzbekistan leverage ongoing financial changes and innovations?

Pull of the Future

Tech to the rescue?

From agriculture to manufacturing, automation is expected to reshape the labour market, and, yet, Covid-19 showed the importance of essential workers and the fragility of supply chains in times of crisis.

What can Uzbekistan do to ensure that it anticipates the critical challenges emerging from the advancement and adoption of new and emerging technologies?

Demographic Dividend...

With a significant youth bulge, Uzbekistan has an opportunity to invest (literally) in its future and drive growth from within by identifying the capabilities and skills of tomorrow.

What capabilities and skills will provide Uzbekistan's youth with not just opportunities but an advantage in increasingly complex labour markets and entrepreneurial landscapes?

Less than Zero...

Carbon emission reduction pledges are often unmet, and some have turned to promoting carbon removal technologies, which remain speculative, as a pathway forward.

How can Uzbekistan use any and all approaches to meet reduction targets?

Who's Picking Up the Tab?

From climate financing to incentives to drive investment, change comes at a cost. Consumption patterns can and might shift, but they often require the right incentives to do so.

Can Uzbekistan implement the policies and plans needed to shift not only fiscal frameworks but also consumption patterns?

A New Power?

Renewables have become more cost effective, and to capitalize fully, infrastructure must be upgraded. Shifting energy systems requires sound regulatory and policy moves aimed at creating stability.

How can Uzbekistan leverage developments in clean energy production through sound and forward-looking regulation and policy?

Come One, Come All...

Although the Covid-19 pandemic had a negative impact on tourism, Uzbekistan has taken steps to strengthen the sector and looks to leverage its rich cultural and historic treasures.

How can and might tourism play an integral role in Uzbekistan's post-Covid-19 and Green Transition development?

Closing the Loop...

Waste disposal is one thing, and creating a truly circular economy is another. Pollution-intensive industries require innovation that can work towards achieving a more sustainable future.

How can Uzbekistan fund and implement circular innovations aimed at not just reducing waste but reimagining key sectors?

The Future is Female...

Shifting attitudes and practices are promoting gender equality, and while most women provide unpaid work, especially within the informal economy, global changes are having regional and local effects.

What can and must Uzbekistan do to ensure that women have equal opportunities and can realize their preferred future?

Scenarios and Implications

On 8 November, 2022, an in-person workshop was held in Tashkent to create scenarios and generate implications. This session utilized both Drivers and issues from the interviews to create "snapshot" scenarios using a modified version of the Scenario Exploration System, which is a gaming platform developed for the European Commission Joint Research Centre's Policy Lab. The approach taken for this workshop is outlined in **Appendix Two**.

Scenario One

SITUATION	Investment in nuclear power by US and EU countries gained momentum with focus on spent fuel reactors. After the Russo-Ukraine war, heavy sanctions left Russia isolated and economically devastated. With the coming depopulation of China, the country launched efforts to bring the Chinese diaspora back home and began refocusing investment in its own country to accelerate the development of greener, sustainable, and more efficient technologies.
SCENARIO TITLE	**Uzbekistan is the place for investors**
THIS IS A WORLD IN WHICH…	In light of the war between Russia and Ukraine, the EU and US switched their focus and investments into nuclear power. China is busy with its own regional restructures. Uzbekistan is left with no potential investors and should rethink its future strategy.
KEY DRIVERS & DISRUPTORS	THREE YEARS • From Russia with (Present) • Resource curse (Present) • Greasing the wheels (Past) SIX YEARS • Demographic dividend (Future) • Digitalization • Transparent society • Anti-Corruption measures NINE YEARS • Capacity building • Results based approach • More investment for friendly society • Incentive programmes for digital apps
LOCAL NARRATIVE	In 2030, Uzbekistan is green and more attractive for investors, but this was not always the case. In 2022, it began to feel the effects of the Russian-Ukrainian war and then started losing its investors and has shifted its focus on internal resources to gain back its position in the market and to attract investors, in order to improve the situation Uzbekistan focused on private sector development and privatization. But, then, Uzbekistan realized it needs major reforms to attract investors leading to more reforms.

Scenario Two

SITUATION	Change gains momentum and is carried forward by the youth of the country. As usual, much of the energy comes from centralized areas like cities, but there is also a strong rural connection. A shift in values continues to drive the future, however, leaving the past behind is not easy. All of this is represented not just in the culture of the country but in the transition to a green economy. Consumption is a key topic and possibly the biggest area of conflict. While the need to consume less (goods and energy) is prevalent, there is also a drive for «now it's our time to shine». Uzbekistan becomes a regional hub for growth and move towards «green is good», but foreign investments also bring in «greed is good» to the picture and old ways of politics, business, and corruption continue, undermining the progress of going green.
SCENARIO TITLE	**Greed Hub or Green Hub?**
THIS IS A WORLD IN WHICH…	High dependence on traditional/conventional energy sources affects all sectors of the economy, delaying the green transition, and hinder achieving ambitions regarding global competitiveness and efficiency. Uzbek economy still heavily relies on natural gas, oil and coal utilization, that hold the majority of the energy market. Although some investments are made into renewable energy sources like wind, solar, biogas/biomass, etc., they are not enough to meet the increasing demand. The consumption, on the other hand, is far from rational and smart models, which requires changing the attitude to protecting nature and a bigger mental shift in society. Shortage in the supply of energy sources is becoming more and more evident, the reforms on price liberalization were delayed for the sake of MSME support, but cause limited funding and investments into modernization of infrastructure. Therefore, the issues related with energy efficiency and rational/smart consumption have to be prioritized and addressed to tackle the transition to the green economy.

KEY DRIVERS & DISRUPTORS	THREE YEARS • Culture Eats Everything (Past) • Closing the Loop (Future) • Sudden and unexpected increase in energy prices SIX YEARS • Who's picking Up the Tab? (Future) — change comes at a cost right incentives needed • A New Power? (Future) Renewables become a little more effective, but infrastructure needs upgrading. • Raise of public awareness against increased inequalities NINE YEARS • Greasing the wheels (Past) • Demographic Dividend (Future)
SHORT NARRATIVE	In 2022, Uzbekistan began to feel the effects of overconsumption linked to cultural patterns. This overconsumption was exacerbated by the lack of the will to develop the circular economy, recycling, and waste management. Citizens were reluctant to change the usual way of consuming goods and services, while the State was not prioritizing addressing the level of consumption among the growing population. Thus, development of green technologies was not cost efficient, since the government subsidized fossil fuels industry and energy prices. Energy sector highly required reinvestment and modernization. However, in 2025 The Government finally liberated prices for energy leading to inflation, decrease in people's income and this impacted consumption patterns. This led to more intensive development of green and renewable technologies since the fossil fuel industry was not anymore subsidized and green could compete with them. Although general dissatisfaction of the population was growing, it was expressed in a few instances of civil unrest. By 2027, Raise of public awareness against increased inequalities was able to further develop civil activism, and society supported tackling overconsumption and consciously moving towards rational consumption. Growing young population was supportive of changing traditional ways of consuming. Finally, corruption continued to create barriers and obstacles to transparent and inclusive development and had a major impact on fast expansion of green technologies and renewables.

Scenario Three

SITUATION	Uzbekistan is the beacon lighting the way for the world's developing economies. Europe's advanced economies are carrying the economic burden of developing green technologies, and Uzbekistan is charting the path for leapfrogging the digital economy to the green economy. Russia's dominance in the region toppled after the loss in the Russo-Ukrainian war and subsequent economic devastation. In its aftermath, Uzbekistan's improved liberties, advancing green tech economy, region-leading education outcomes, and the leading role in the economic and environmental union provide workers with a major incentive to stay and contribute to the green transition.
SCENARIO TITLE	**From industrial development to green economy**
THIS IS A WORLD IN WHICH…	The transition to a low-carbon economy is delayed by limited supply of necessary minerals — extending the lifespace of fossil fuel economics. As a resource rich country this benefits Uzbekistan economically, however, it also frustrates the development of green infrastructure within the country. The risks of heatwaves, droughts, and flash floods are compounded by the retention of industrial waste that can escape containment in an extreme weather disaster.
KEY DRIVERS & DISRUPTORS	THREE YEARS • From Russia with (Present) • Who's picking Up the Tab? (Future) • Change comes at a cost SIX YEARS • Closing the loop (Future) • Demographic dividend (Future) • Less than Zero (Future) NINE YEARS • A new Power? (Future) • Future is female (Future) • Going, Going, Gone.. Green? (Past)

SHORT NARRATIVE

In 2030, Uzbekistan has become green and sustainable partially in some sectors of economy {which have historically been attractive to donors}, but this was not always the case. In 2022, Uzbekistan began to feel the effects of the Russia-Ukraine war and various negative effects on economy and social life. With fossils and natural resources rich economy, Uzbekistan didn't see much incentives to transition to a more sustainable and green economy back then, energy prices remained low; some fragmented approach happened towards green but general awareness and capacities remained insufficient.

But, then given external pressures from investors, politicians and international community, Uzbekistan started seriously considering opportunities that circular economy could offer to the country leading to some investments and loans taken to strengthen capacities (especially of youth and women), infrastructure and policies. When situation changed internationally and renewables became more attractive, Uzbekistan started investing in them more actively and by that time there would have emerged some capacities thanks to loans.

At the same time, external debt of the country has risen. Corruption, bureaucracy and fragmentation would remain negative factors hindering faster growth. Not clear still if Uzbekistan would access the World Trade Organization or Eurasian Economic Union, and this would pretty much affect economic outcomes.

Due to external support the role of women in greening the economy would be strengthened. Finally, lack of investment and incentives in R&D had a major effect on the country's speed of progress.

Scenario Four

SITUATION	Globally, the transition to a low-carbon economy is delayed by limited supply of necessary minerals — extending the lifespace of fossil fuel economics. As a resource rich country this benefits Uzbekistan economically, however, it also frustrates the development of green infrastructure within the country. Investments in technical and professional education have supported growth, but not among all. The risks of heatwaves, droughts, and flash floods are compounded by the retention of industrial waste that can escape containment in an extreme weather disaster.
SCENARIO TITLE	**Reactive versus Proactive Change?**
THIS IS A WORLD IN WHICH…	The transition to a low-carbon economy is delayed by limited supply of necessary minerals — extending the lifespace of fossil fuel economics. As a resource rich country this benefits Uzbekistan economically, however, it also frustrates the development of green infrastructure within the country. The risks of heatwaves, droughts, and flash floods are compounded by the retention of industrial waste that can escape containment in an extreme weather disaster.
KEY DRIVERS & DISRUPTORS	THREE YEARS • And not a Drop to Drink (Present) • Tech to the Rescue? (Future) • Greasing the Wheels (Past) SIX YEARS • One Road to Rule Them All (Past) • A new Power? (Future) • Culture Eats Everything (Past) NINE YEARS • Demographic dividend (Future) • Less than Zero (Future)

SHORT NARRATIVE	In 2030, Uzbekistan's economy became a digitized green economy, but this was not always the case. In 2022, it began to feel the negative effects of outdated equipment, infrastructure of the power distribution system. Loss of energy was around 15-20%. But, then the Ministry of Energy with the Ministry of Communal Services decided to reform the whole energy production, distribution, tariff and consumption system which should increase the efficiency of energy usage. Finally, in 2025, it was introduced a lifeline tariff system in the energy consumption in the country. The limits per person in households and per product in industries are introduced depending on the market averages and based on that, higher consuming customers will be charged a higher tariff rate. By 2027, the energy sector became self-sustainable with due reinvestments in the production of electricity, infrastructure, including the energy transportation and dissemination systems.

What's Next?: Impacts, Implications, and Key Ideas

Based on the scenarios exercise, participants were asked to identify some impacts (near-term) and implications (mid to long-term).

What are the biggest impacts (near-term) on the development of Uzbekistan's Green Economy?

- **For the energy sector:** investments in renewables: wind, solar, bio gas, micro-hydro power
- **For business:** investments or subsidies would mean slight growth in capacities and skills, as well as some access to technology
- **For the environment:** waste management, e-vehicles piloting would start
- **For government:** green policy framework development

What are some implications (mid- to long-term) for the development of Uzbekistan's Green Economy?

- Liberalization and privatization in energy sector: and as a result emergence of energy market
- Perhaps a carbon trading system regional (CA) or inclusion of Uzbekistan in the global market (if emerges, alike what we see in the EU); projects to restore forests; monitoring and verification systems
- For businesses and the general population, there would be a rise in capacities and awareness; the population will start paying for "traditional" energy use and consumption more; the Government will gradually stop subsidizing fossil fuels and energy following privatization.
- Increased efficiency of the energy as a result of access to the green energy and technology and sustainable agriculture (as a result cleaner air, less Co_2 and methane emissions, reduction of disasters

What opportunities (both assumed and uncommon) should be taken advantage of now to support the development of Uzbekistan's Green Economy?

- Attracts investments for green businesses
- Carbon trading and higher environmental outcomes
- Transition to green technologies and renewables may be painful but in the longer run will lead to more sustainable economic growth

Additionally, participants were asked to generate a few illustrative "key ideas" that could support the green transition strategy.

Key Idea #1:
A national lifeline tariff system for energy consumption

What's the key idea?

Limits per person could be introduced depending on the market averages and based on that, higher consuming customers will be charged a higher tariff rate. This way, the average of the collected tariff should equal the level at which the energy sector could become self-sustainable with due reinvestments in the infrastructure, including the energy transportation and dissemination systems. This same lifeline tariff system should be also applied for the industries and other businesses.

Who owns it? Who needs to support it?

This should be owned by the Ministry of Energy and the Ministry of Communal Services.

What do you expect/ think it will achieve?

The key achievement will be the incentivizing energy efficiency in both households and in industries. Secondly, due to higher income, the energy sector can invest in infrastructure to avoid energy loss in the transportation (currently 15-20% loss) due to old equipment.

What might be some unintended consequences?

- Incorrect calculation of tariff limits, based on the previous example of limit per household irregardless of the number of household members
- Social unrest due to forced change in lifestyle

Key Idea #2:
Youth-led Change Model

What's the key idea?

External pressures can drive change, but deep understanding of an issue at all levels can drive action towards sustainable change from within. Focusing on youth to lead change could be an opportunity for not only sustainability but also societal transformation centered on green economic principles, such as the circular economy, energy efficiency, and others.

What might be some unintended consequences?

- Higher financial burden on population to sustain energy consumption in the medium term; may drive some parts of the population into more poverty
- Slower economic growth during transition period, especially if enabling policies are not enacted
- Potential backlash as conservative societal elements resist change

What do you expect/ think it will achieve?

- A shift in mindset and action, specifically in areas such as lifestyle and consumption patterns
- A foundation for fighting brain drain and ensuring the career pathways and entrepreneurial opportunities in green economic sectors are available for youth
- A generational transition towards green with a minimal amount of economic shock for the population

Who owns it? Who needs to support it?

Youth, policymakers, citizens, NGOs

Key Idea #3:
Beyond External Experts and “Shiny Tech”

What’s the key idea?

In order for Uzbekistan to seed a sustainable and substantive green transition, it must develop internal capabilities and capacities across key sectors and industries.

Without the right personnel, investment and even “shiny tech” will not make a difference.

Who owns it? Who needs to support it?

Government, private sector, education, society-at-large

What do you expect/ think it will achieve?

- Forming a local base for innovation and technology
- Reducing the cost of foreign experts and technology towards making more efficient use of existing resources
- Greater long-term effect by building local expertise
- Increased capacity of the country in the world arena within green industries and sectors

What might be some unintended consequences?

- Increase in social stratification
- Slowdown in the development of our own highly skilled workforce, as this is a longer and more expensive process.
- Imbalance where government and private sector are “too-far-ahead” of society-at-large leading to a backlash

Key Idea #4:
R&D Mission

What's the key idea?

Major cross-government research and development (R&D) mission to create "leapfrogs" in key green industries, sectors, and practices, such as hydroelectric power, water system resiliency, and climate-resistant agriculture.

Who owns it?
Who needs to support it?

Ministry of Agriculture; Ministry of Investment, Industry, and Trade; Agency for Innovative Development; Ministry of Education

What do you expect/ think it will achieve?

- Drive national and regional investment in green industries and sectors
- Emergence of localized "green studies" educational programs and degrees
- Technological advancements in need-based areas

What might be some unintended consequences?

- Shift in relations with regional and global trade partners
- Rising costs that could drive inequality during the transition period
- Rapid development moves partners to look elsewhere to provide support

Alignment & Strengthening

With the release of ***Presidential Resolution No. 436: On measures to improve the effectiveness of reforms aimed at the transition of the Republic of Uzbekistan to a "green" economy until 2030***, it is clear that the government has committed itself to a set of reforms aiming to create sustainable change. Outlining a range of strategic and policy objectives, Presidential Resolution No. 436 outlines a number of key issues that align with critical issues and key areas that arose through the process, primarily:

While ***Presidential Resolution No. 436*** highlights the importance of inclusive growth, it does not make explicit reference to women, youth, and those most vulnerable to climate change, especially those in rural areas. These were key areas of consideration that arose throughout the foresight process, and there was specific attention to these areas in the scenarios and what emerged from them, specifically the youth-led change model.

- Development of sectoral and territorial development strategies based on the characteristics of the sensitivity of industries and territories to climate change covers measures and investment projects to reduce the impact of climate change on the population and sectors of the economy as well as adaptation to climate change (4)
- Develop an innovative database of solar, wind, and biogas energy resources across the country (8)
- Implementation of the **"polluter pays" principle**, as well as improvement of the system of pollution charges by increasing the fixed fee rate for pollution and expanding the list of pollutants (10)

Next Steps

This project aimed to explore a broad range of factors and forces that will shape the context within which a green economic transition within Uzbekistan can and might emerge. Rather than outline potential pathways towards a green future, the materials and insights within this report offer an effective and usable array of tools and approaches for testing the resilience of strategic and policy objectives. Potential next steps include:

- **Establish an ongoing "scanning" process — that would build upon the signals uncovered during the early stages of the process and allow for further exploration on critical issues and key areas. As scanning within the Houston Framework is based on the domain map, an updated version should be created based on Presidential Resolution No. 436.**

Both as a form of sensing and sensemaking, scanning is ultimately a learning process that allows one to go beyond mere research. Scanning for signals is as much an art as science, which is to say that it is a practice or capability. Scanning aims to uncover signals that have potentiality to shape and reshape the future. As a practice, scanning has many modes, as outlined by Choo[3] below in Figure 2.

Scanning Modes	Information Need	Information Use	Amount of Targeted Effort	Number of Sources	Tactics
Undirected Viewing	General areas of interest; specific need to be revealed	Serendipitous discovery **'Sensing'**	Minimal Medium	Many	• Scan broadly a diversity of sources, taking advantage of what's easily accessible **'Touring'**
Conditioned Viewing	Able to recognise topics of interest	Increase understanding **'Sensemaking'**	Low	Few	• Browse in pre-selected sources on pre-specified topics of interest **'Tracking'**
Informal Search	Able to formulate queries	Increase knowledge within narrow limits **'Learning'**	Medium	Few	• Search is focused on an issue or event, but a good-enough search is satisfactory **'Satisficing'**
Formal Search	Able to specify targets	Formal use of information for planning, acting **'Deciding'**	High	Many	• Systematic gathering of information on a target, following some method or procedure **'Retrieving'**

Figure 2: Choo's analysis of scanning modes is considered a classic in the futures and foresight field and highlights the importance of taking multiple approaches, even some that might seem nontraditional.

3 Choo, Chun Wei. "The Art of Scanning the Environment." Bulletin of the American Society for Information Science and Technology 25, no. 3 (January 31, 2005): 21–24. https://doi.org/10.1002/bult.117.

- **Cultivate the capability to go beyond plausible and projected futures — which form the foresight comfort zone for most agencies and organizations. Few governments fund truly expansive futures and foresight research, although those who do have long-standing practices and show results, notably Singapore.**

Building on the classical futures cone, Voros outlines the range of potentialities that one must take into consideration when exploring the future, as displayed below in Figure 3. Adding to the categories developed by Voros[4], "preventable" was included to showcase how futures and foresight can be a practice for creating alignment not only on preferences but also on unpreferred aspects and dimensions of the future.

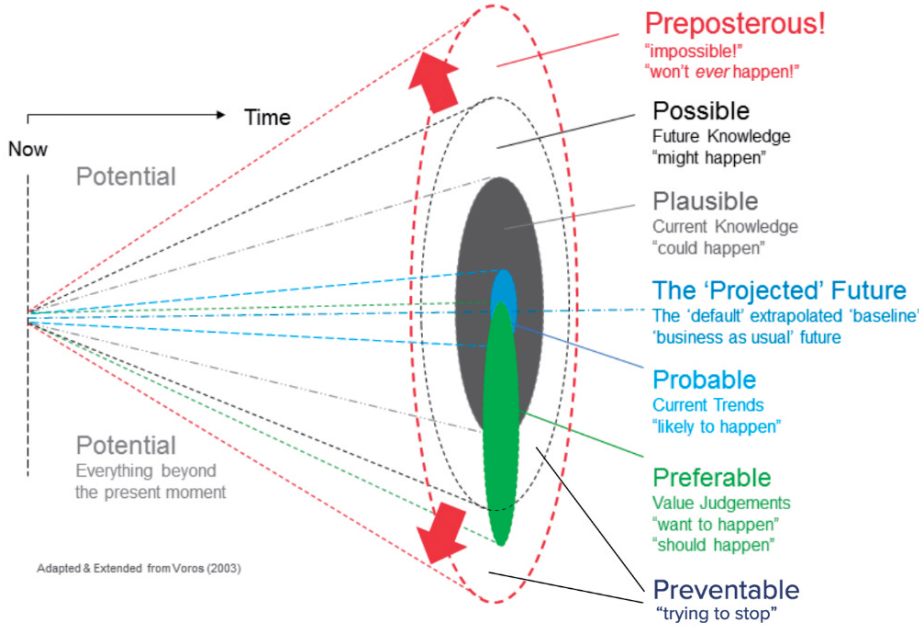


Figure 3: The Futures Cone, as visualized by Voros, emphasizes that exploring the future critically requires a focus both on actualities and perceptions in order to challenge assumptions, illuminate blindspots, and generate forward-looking insights.

4 Voros, Author Joseph. "The Futures Cone, Use and History." The Voroscope (blog), February 24, 2017. https://thevoroscope.com/2017/02/24/the-futures-cone-use-and-history/.

- **Utilize outcomes from the process — such as 1) creating additional futures with the Drivers using the template provided in Appendix Two; 2) carry out experiments/ prototypes based on the impacts and implications; or 3) wind-tunneling strategies and policies with the narrative scenarios. Long-form, or narrative, scenarios provide a rich basis from which to explore possibilities for the future.**

As visualized by the Centre for Strategic Futures and Civil Service College, Singapore[5], wind-tunneling is a method for testing the robustness and resilience of strategies and policies within and across different sets of conditions (i.e. scenarios).

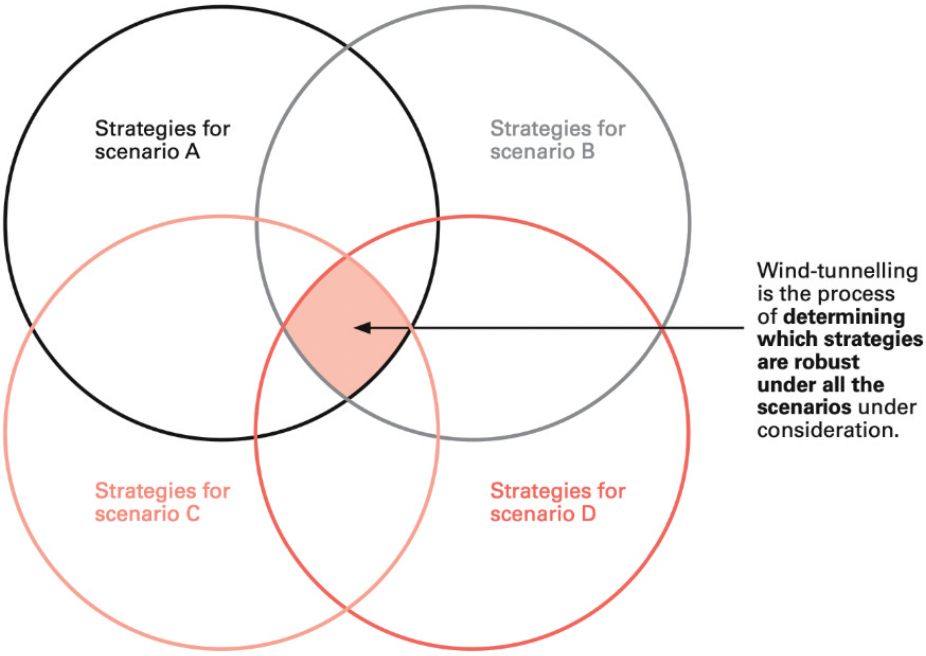
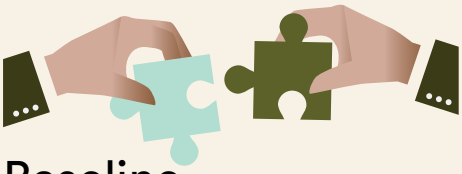


Figure 4: By literally putting present day strategies and policies into different futures, wind-tunneling creates a space to test under different conditions, such as the aerospace industry does.

5 Centre for Strategic Futures and Civil Service College, Singapore. Foresight: A Glossary. 2012.

Appendix One: Narrative Scenarios



Baseline

In 2022, Uzbekistan, like the rest of the world, is navigating a return to a new normal living with Covid-19 and adapting to a changing climate. The guiding theme of the moment is laying the foundation for sustainable growth and adaptation in the years ahead. With that aim in mind the government is taking major steps to create an environment attractive to foreign investment, understanding the capital and knowledge needed to develop the country's natural resources, and building the transportation infrastructure necessary to make Uzbekistan a hub for Central Asian commerce and culture in the coming decades.

To reach a green future and improve the lives of its citizens, Uzbekistan must find a way to pay for it. Formerly the center of the Silk Road, Uzbekistan has become remote and difficult to access. Fortunately in the past several years, Uzbekistan has changed its isolationist stance to international relations.

Diversifying foreign trade and transport corridors is an urgent priority — fortunately, Uzbekistan is able to finance this infrastructure without relying on China through public-private partnerships with other foreign investors. However, Uzbekistan's integration with the world may be perceived as a challenge to Moscow.

Russia's war against Ukraine divides Uzbekistan and highlights the challenging diplomatic road ahead. Many Uzbekistanis support their families back home by sending remittances from Russia. China is Uzbekistan's largest trading partner and partner in the planned China-Kyrgystan-Uzkezistan (CKU) railroad.

The government attempts to navigate a neutral path within the orbit of "great powers." Without taking an overtly preferential stance, Uzbekistan remains a trade partner with Russia, cooperates with China in the CKU, and accepts billions of FDI from the west.

In 2025, Partnerships established with leading foreign universities begin to bear fruit. Mining and construction jobs are still mostly filled by men. International aid programs targeting women have had

moderate success, but suffer from volatile funding cycles. However, there are a growing number of women in water management, small-scale agriculture, and civil engineering careers.

There is a concerted effort to improve irrigation canals and reduce water loss. Partnerships like one with the Yuma Center at the University of Arizona to grow low-water tobacco near the Syr Darya outside of Tashkent, hopefully a precursor to a low-water cotton aim to stoke agricultural innovation within the constraints of climate change.

The Mazar-i-Sharik-Kabul-Peshawar railroad nears completion. The CKU is well underway. China is still Uzbekistan's primary trading partner, but a growing portion of trade is with Central Asian neighbors, Turkey, and Pakistan. In Tashkent, there is a growing community of Russian expatriates keeping a low-profile away from their homeland.

Good governance efforts have produced rising levels of trust with citizens and foreign investors. In fact, International Financial Institutions announced plans for a 0.5 gigawatt of solar installation. Unfortunately, due to high global demand for renewable energy technology, the scale of the project was reduced from the 2.0 gigawatt installation initially announced.

Increasing demand, aging infrastructure, and heat increases demand on the electrical grid. Rural customers experience brownouts in the hottest weather when demand for air conditioning surges.

In 2030, Humanity misses its renewable energy target — 2/3 of all power generation in 2030 — by nearly half. Instead of 25% of energy through hydro and renewables, Uzbekistan generates just 15% renewable energy. Drought has devastated hydroelectric production. As rich countries attempt to increase the rate of their green transition, low and middle income countries struggle to buy solar panels and wind turbines.

Around the world, industrialists and governments call for an increase in mining and Uzbekistan is no exception. Because of the global green transition's appetite for minerals, prices for copper, gold, and zinc are at an all-time high. Companies race to break ground before the competition, despite concerned citizens and environmental groups loudly raising concerns about the risks to the land, water supply, and human health. In a human-rights test for the government, protestors' objections are registered in the media but ignored in practice.

A change in leadership in Russia presents the West with an opportunity to lift the sanctions of 2022, increasing the global supply of fossil fuels. The combination of lower prices for natural gas and the restrained supply of renewables leads to the extension of the lifespan of fossil fuel infrastructure.

Uzbekistan continues to export natural gas to other countries in the region, though the majority of people support clean energy. Despite best intentions, fossil fueled development is a bitter pill to swallow.

Wealth accumulating + Higher levels of higher education + Improved access to financing and foreign investment = Growth in entrepreneurship in and around Tashkent. Mining robotics, desert agriculture biotech, and digital textiles are the hottest fields. As a result of increased commerce and higher incomes — new kinds of entertainment and recreation are emerging. Attractions like exclusive organic desert agriculture resorts and the 20th anniversary of the Tashkent Biennale draw tourists to the region.

In 2035, there is an unprecedentedly hot summer, cotton crops genetically engineered for drought and salinity resistance fail. There is a crisis as conservation and economic growth cannot be reconciled to resolve the issue of water rights. At the clandestine urging of transnational mining interests, local police are dispatched to break-up a protest in the republic's capital. The government restricts access to the western splinternet, but not before graphic images reach foreign investors who press pause for the time being.

Transportation — Trains are intermittently delayed or canceled during the hottest months. Yet, greater connection between Karachi, Urumqi, and Istanbul has benefitted Uzbekistan. By providing access to markets to export goods like copper wire and mosaic tile, and to import energy efficient technologies and sometimes even drinking water.

The relationship between China and Russia is eroding. Russia is making overtures to the European Union seeking climate aid. The improving political climate to the north draws migrants from Uzbekistan. The first to leave are those who have benefited the most from increased trade and educational programs. The attraction? Cooler weather and water security.

Robotics are commonly used in the mining industry and the lowest skilled jobs are disappearing.

In 2040, after decades of evaporation, the Aral Sea is no more. Not much water flows through the Syr Darya and agricultural production has shifted to food production with very few exports. Every drop of water that falls is painstakingly captured and stored. The loss of the Aral Sea triggered an influx of migrants from west to east, and new encampments on the edges of the cities are causing political tensions.

Many copper and gold mines opened in the 2030's are now closed and have to be carefully monitored. In high winds, toxic dust is blown hundreds of kilometers. During the rainy season, flash flooding is

a major risk near industrial waste containment sites. However, because the world is still struggling to reduce carbon emissions using conventional renewables, nuclear energy is poised for a comeback and uranium mining is an increasingly important source of income for the country.

Renewable energy reaches 45% of global supply, and humanity is not on track to meet Paris goals. Uzbekistan has managed to install a significant base of solar energy, providing nearly 25% of the country's energy needs. Energy efficiency technologies have come a long way, especially in cooling. In a trade off for increased development funding, several natural gas plants have been decommissioned. A few times a year, the government has to issue energy rationing notices to keep power flowing to essential sectors.

Collapse

In 2022, things were looking promising for Uzbekistan despite the previous couple of years dealing with the worst of the pandemic. The country had been on a seemingly positive path of opening up to the world — restoring relations with neighbors and entering into new investment deals with countries further afield — and progressive reforms.

Although there were concerns about how the Russo-Ukraine war would impact the region it seemed to be balanced by excitement about the country's green transition plans. It seemed for a while that relationships could be strengthened enough to enable meaningful cooperation across the region towards a shared vision of a more sustainable world for all.

Those dreams dried up when talks to reach a viable transboundary agreement soured. In 2025, the upstream countries banded together to build new hydroelectric power stations on the main tributaries. For them, the benefits of creating intra-country peace by making unilateral decisions about water resource usage far outweighed the potential costs of inter-country conflict.

The impacts of climate change shifted from far-off concerns to daily reality, and countries all around the world began retreating into themselves. For all but the most privileged countries, the muscle memory of operating in survival mode was still strong and easy to return to as things turned increasingly scary and uncertain.

While many around the world saw the overall weakening of Russia as a positive, for Uzbekistan it meant the

dwindling of a major source of funding for some of its key initiatives.

Russia pulling out of its plans for a nuclear power plant in Uzbekistan was the first domino. It wasn't long before China started putting the brakes on BRI projects so it could focus instead on investing in new technologies within its own borders to try to stem the devastation from mass depopulation challenges. Then, the India-Uzbekistan railroad plans fell through.

The Uzbek population still felt comfortable knowing their country was rich in Uranium and the West would surely come looking to strike agreements in order to feed their growing nuclear programs. It would only be a matter of time and they simply had to wait it out. To bridge the gap, they continued strengthening their relationship with the countries of the Middle East, who were happy to fund more of Uzbekistan's projects and provide support to build up their tourism industry.

With more money came more influence around Islamic education and stricter religious practices. The nudge was welcomed by the Muslim majority during a time of increasing uncertainty. This change came in fierce opposition to the views of the groups in the other extreme of the society. Overall, the country suffers from an inability to build a diverse but harmoniously functioning society. The destructive polarization and complete denial of opposing views is a barrier to having a common national vision and implementation of the green transition goals.

2030 came and went and so did the Uzbek government's promise to supply 100% of the population with high quality drinking water.

It became clear that Central Asia would not be spared from the challenges of worsening water shortages and skyrocketing food prices. Uzbekistan had to deal with particularly severe water shortages which added new fuel to long simmering ethnic conflicts.

The big turning point that no one saw coming was the West's turn toward recycling its vast store of spent fuel leading to a drop in demand for Uranium. Paired with the near commercialization of nuclear fusion technology, Uzbekistan's hopes of being a key supplier to US and Europe were dashed.

Neighboring nations started turning their attentions inward and Uzbekistan found itself isolated, this time not by choice.

The idea of a bright green transition had begun withering for a while but a string of corruption scandals at the local government level killed any shred of hope Uzbek citizens were holding onto that things might yet be turned around.

As 2035 neared, intensifying internal conflicts, loss of hope for a

green transition, and dwindling foreign funding sources pushed Uzbekistan further into the hands of its handful remaining allies, which can't offer much for the implementation of the ambitious transformation plans. Given these challenges, the country faced a serious political and cultural crisis.

By 2040, as a means of taking the situation under control, the country had experienced harsh measures which led to devastating reversals on rights , the return of forced labor to attempt to mitigate skyrocketing costs of producing cotton, complete isolation and from the West, and a premature waning of Uzbekistan's promising future as a leader of the green transition.

New Equilibrium

Uzbekistan becomes a regional hub for growth and move towards "green is good", but foreign investments also bring in "greed is good" to the picture and old ways of politics, business, and corruption continue, undermining the progress of going green.

Leading the way in a Green Transition is not just about technology and emissions. It is about getting back in touch with nature, balance, and working together regardless of religion, nationality, or creed.

As Uzbekistan continues its journey toward a (more) open society, several transformations converge at once. Influences from beyond Central Asia find their way into the culture with new ideas, innovations, art, and money. At the same time, there is a movement to live more sustainably. While capitalism and consumerism are on the rise and transforming business and daily lives, sustainability, circular economy, and tighter communities form. While seemingly at odds, they come to a "new equilibrium".

In 2030, after devastating global climate disasters, the continued struggles of supply chains and globalizations, there is a massive refugee shift, first dubbed the great migration, later known as the Massive Migration 1, or MM1. Uzbekistan and the green movement are affected in several ways. At first some nations with closer ties migrate to Uzbekistan, this includes Russians disillusioned with the continued wars, famines, and poverty and climate refugees and migrant workers from China. However it is Turkiye that has the largest impact on Uzbekistan. After years of growing diplomatic, cultural, and economic bilateral relationship growth and the Uzbekistan-Turkiye pact of 2027, Uzbekistan gov and people feel a duty

to help those still reeling from the earthquakes of 2023.

Many that had been on the fence about supporting green initiatives prior to MM1 realize that the crisis is no longer on the horizon but at their door. Some change their minds and support the refugees and new green and social programs to help, while others turn nationalistic, take a stance against the refugees who are stealing the precious and rare resources of living space, water, and food, and push for more closed borders and a return to a more isolated nation.

Many who see the decline of Uzbekistan and the growing concern for water try to leave the country for more secure nations, only to realize that they are in competition with the 100s of millions of other refugees now seeking a life in other lands.

Uzbekistan realizing it is at a tipping point on the verge of its own crisis issues the Great Works program in 2032 — designed to take advantage of all the new refugees and imported talent as part of its earlier growth. This program puts many of the green programs and plans into accelerated motion. Because Uzbekistan has taken in so many refugees, they are eligible for a lot of international funds set aside to help offset the increased costs of MM1.

With a strong talent pool, renewed sense of living sustainably, and additional international funds, Uzbekistan is poised for a great transformation in 2033. But even rapid development of green programs takes time, and the inability for Uzbekistan to plan and grow fast enough starts to show. Tensions rise. While jobs are available, massive inflation makes buying even basic goods difficult. On the top of the list and way ahead of all other concerns is water. Western Uzbekistan becomes even more dry with some areas not seeing measurable precipitation in over three years. Cotton has long been an important crop for Uzbekistan, but the water reduction act of 2031 is now coming into play and many farmers are upset. While energy production has greatly increased with an emphasis on green power, it does not keep up with the growing need for air conditioning, refrigeration, and water treatment costs.

The other side of the tracks...

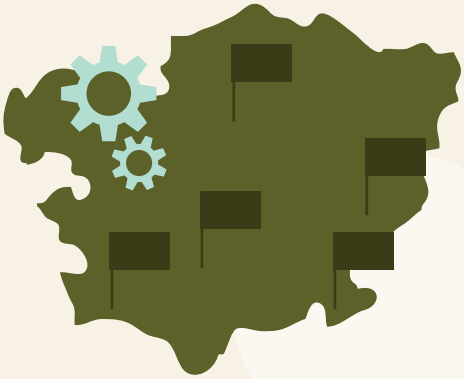
While there has been some prosperity and help for refugees, much of the country continues to struggle. Being green (individually) is a privilege while many are burned out and not seeing an improvement.

By 2035, the transition during the end of MM1 for Uzbekistan has been rough and it shows. Incomplete projects, corruption, embezzlement, and continued infrastructure issues and a changing demographic have left the country scarred. However, they have fared better than some other countries. While there was a lot of corruption, human rights issues, and a backlash from conservative traditionalists, the

country has made significant advances. There are several strong urban centers that rely not just on the land but on indoor crops and food production. While there is still not enough water to feel secure, Uzbekistan has more clean and available water overall supporting a larger population. Changes made in 2025-2030 are starting to gain maturity and stability. Investments are paying off and while not the green center of the world, foreign investors are still putting money into the country.

By 2040, after only a few years of seeming stability, the world enters into Mass Migration 2 (MM2). This time it is as much political as related to climate as many diplomatic relations start to strain. Uzbekistan and neighbors have their share of disputes but Uzbekistan is no stranger to a changing demographic and flow of immigrants and manages the situation better than most. Water, however, is still an issue. Plans to work in the region on the water crisis have largely been abandoned. However, with MM2 Uzbekistan sees an opportunity to reignite the process.

A new deal is struck to create desalination plants in Turkey supplying water through the new Life Pipeline, in return for taking a large portion of the immigrants. New cities in Uzbekistan pop up to support refugees that claim to be Net 0. While it is a bit of an exaggeration, the chance to spend UN funding for refugee support is a great way to also fund new green cities.



Transformation

To be an Uzbek in this future is to be waking up from a long sleep. The 2020s started with a bang for the whole world, but in Uzbekistan, it was the quieter, slower echoes that had the most profound consequences. Russia's invasion of Ukraine reminded the world that democracy and peace are always at risk. The world's response was swift and decisive; the trade sanctions it leveled against Russia dried up its economy. The military battle fared no better. As the weeks dragged into months, the Ukrainian defense stymied Russia's efforts until supplies and morale fell very low.

Over time, it became clear that maintaining ties with Russia was not the path to a prosperous future. The suffering in Russia and Ukraine only stopped when the oligarchs, whose fortunes had been decimated by the West's sanctions, persuaded leaders in the Duma to hold a vote of no confidence in the government. The result didn't really matter, the act said everything. The President was a victim of his own

nepotism. Meanwhile, outside the inner circle, radical reformists who had been gradually building support and resources stormed the President's offices and seized control.

The west watched with glaring spotlights and glittering lenses as every newscaster with breath pontificated about what the new Russia would do next. Uzbeks watched with anxious attention to gauge how much they had to fear for their safety and families in the tumult of another Russian revolution. Uzbekistan's leaders listened inward to the concerns of its people and waited for the right moment to strip away the façade of hoping for a future that feels like the past.

The wait wasn't long, but it wasn't what anyone expected either. The radicals blamed Russia's failure on the former President's imperialistic expansion. Russia's future, they claimed, lay in rebuilding the country without the burden of military campaigns, economic conquests, and lazy foreigners who took more than they earned. Within the first 100 days, the new Russian government dissolved the Commonwealth, all of its commitments, and the control it had over Central Asia.

In Uzbekistan, the shock was silencing. But it was the vacuum of power that was deafening. China, India, Europe, America (anyone who was looking for influence or profit), they all brought their best diplomats and gilded offers. The precious metals and rare minerals that enriched Central Asia's earth were the prize for hungry consumerists. And the offers were attractive indeed. They wouldn't just pay for roads and hospitals; they would pay for private yachts and mansions too. It was too good to resist. Besides, after years of low-pay struggle to reach the highest office, what was so bad about taking advantage of this opportunity? The public was getting something good too.

That was the challenge that Uzbekistan's leaders faced in speaking with their peers in Central Asian governments. How to convince them to hold out for the future instead of selling out for today? The answer, they reckoned, was cost. Taking the money now might not have a high cost if today is all you're concerned about. But it might cost a lot, depending on your future. To know the answer to that, you had to know if the offers were missing something. Of course, no one would just tell you that, you had to make them show you. And the best way to achieve that was from a position of strength: together.

The first round of negotiations opened in Kyrgyzstan, at Lake Issyk-Kul, in a reclaimed Soviet naval weapons development facility. The discussion was brief, but the weight of it was massive. The five neighbors agreed to continue meeting and discussing the formation of an economic union, the Central Asian Economic and Environmental Community (CAsEEC). This wasn't the first time that they had tried to climb

this mountain. In the past, political manipulation and economic troubles had disrupted the endeavor. This time, though, it would be different. Not only would the union include environmental and cultural consideration, but also, they all believed that their future lay in their own hands. And those hands would be fuller if the first thing they held onto was fellowship and filiation. If they could keep their shared interests in the center, their individual interests would also be taken care of.

Over the coming three years, each of the 5 Brothers took turns hosting the negotiations. Each stage focused on one of the 5 Steps To The Promise: water, health, family, freedom, satisfaction. Satisfaction, the last step, was meant to encompass more than just economic happiness. It was meant to symbolize the completion of all of the other steps, which would bring prosperity in all of its forms. It cannot not be reached by anyone if everyone is not enjoying the benefits of the 4 previous steps.

At Issyk-Kul, the topic was water. For decades, water was valued for its ability to grow crops. Bringing water for cotton, rice, and wheat drained the sea and left a network of sclerosed arteries. That mental model had to change. Water isn't just a resource, it's life. Especially in a desert. All other decisions must be made in terms of water. Mining, agriculture, construction, defense; all bow to the rule of water. Any person, company, or Brother that allows water to be wasted, polluted, or used unsustainably risks the survival of everyone and must immediately correct it. This even goes as far as reducing carbon emissions limits to protect the health of the Himalayan glaciers that feed the valleys and rivers below.

The second stage focused on health. Traditionally, health was a resource that was used to work. Laborers spent their youth making things that benefitted rich men in faraway places. The only abundance that was left for the laborer was frustration and brokenness. Health, unfortunately, cannot be had directly. It comes from clean air, adequate food, and safe work. New work would need to be done, and it would start with new energies. The petroleum fuels that had sustained Central Asia for so long are losing their usefulness. They still bring in money, sure, but at a cost to air and laborers that gets harder to pay every day. Uzbekistan would lead the way in clean power generation and circular economic practices for the developing world. The 5 Brothers agreed to steadily curtail petroleum production and use the excess revenues to develop alternative resources. Here is where Europe could help. They would trade the European powers' training, research, and funding for infrastructure upgrades in exchange for the mining rights they so desperately wanted. Equipped with a new array of sustainable technologies and tools, they could educate youths, rebuild factories, harvest wind in the west and solar in the south, and build

facilities to produce hydrogen power from natural gas and carbon capture. Family filled the middle stage. Not only does family form the center and strength of any successful future, but it takes the most care to manage. The 5 brothers knew this very well and set out to preserve essential cultural traditions for future generations to rely on in uncharted circumstances. The brothers each brought a list of ambitions and fears for the future of Central Asian societies. Many were specific to the countries and peoples that colored the cultural palette, but a few were common to all.

Young people are no strangers *to Western movies, music, and culture. Images of compelling people doing fascinating things in evocative places were easy to find. What was hard to miss, though, was how visible women were in that world. Young men and young women alike couldn't help but wonder what the difference was, and if that world was coming to Central Asia. Offering women authentic choice for how they spend their lives is a critical risk, especially when it could cost society something as important as the contribution of a wife and mother. And what would men do? Would they have to give up their work? Would they lose status? Would they have a choice if they were all to reach the prosperity of the 5 Steps To The Promise? The only thing that you can tell yourself is that the cause is just, then start small. After all, "big things have small beginnings[1]," and the smallest thing they can invest in are little girls.*

The 5 Brothers agree to emphasize teaching all primary and secondary school students English. Local languages are certainly important, but in a globalized world, English is essential for long-term prosperity. With that foundation, they craft plans for funding and curricula that support low-cost secondary and post-secondary education opportunities for women in graphic design, social media content creation, and social media content management. This combination of skills opens a door to work which can be done from a mobile phone without regular daytime hours and for global clientele. Women will have the chance to own their own small businesses and do valuable work without sacrificing family roles or stability. The 5 Brothers know that this isn't the same as full equity, but a change as momentous as this must happen in small steps to avoid fragmenting society, and women are the essential glue to keep society together. They also know that these same skills can be used to create the images and visions of Central Asia's next steps of social change.

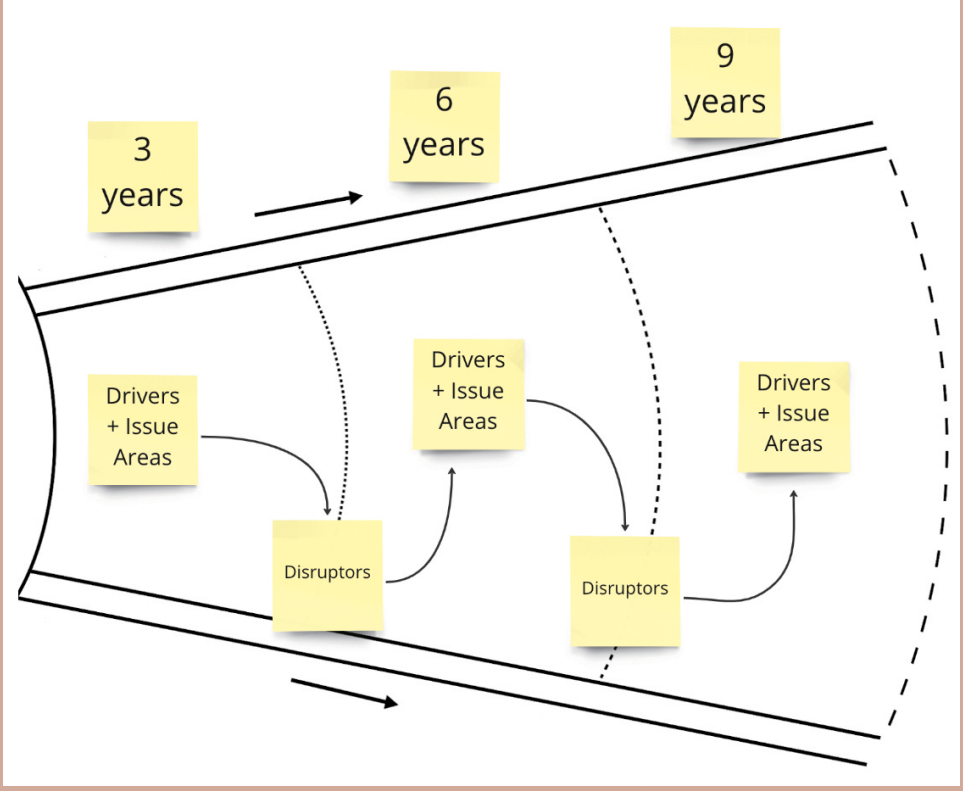
The fourth stage was dedicated to freedoms. In some ways, this was the easiest. It didn't require complicated international bargains or delicate balancing of tradition and progress. It just required writing a few words and signing a few laws. But for the leaders themselves, this was the most difficult. Opening the 5 Brothers and giving freedom to the people was unknown territory. Would a free press make them look weak? Would the

people use their voice to disrespect them? Would giving people the freedom to worship who and how they please lead to extremists overthrowing them? The gravity of these questions isn't just corruption or selfishness. The failure of their leadership would surely mean the failure of the 5 Steps and the failure of their peoples' futures. But they also remembered what it felt like to be controlled by the Soviets, and how that led to failure too. Rather than repeat the same mistakes of the past, the path to the future lies in trusting the people to use their freedom responsibly. After all, a person who is made to lie prostrate will never stand at their tallest. And a people who cannot stand straight will never reach the heights of prosperity.

In 2025, the final stage of the 5 Steps To The Promise the 5 Brothers was held on Vozrozhdeniya Island, in Kantubek, in the middle of the starburst pattern of runways at the airfield. At this stage, the 5 Brothers looked at the final step on the path to the future, satisfaction. Like health, satisfaction isn't something that can be had directly. In this case, it's an investment in education for future skills and industries. Specifically, circular economics. From primary school, children learn about sourcing, design, use, and repurposing of resources and materials. They also learn about circular consumption and the risks to culture, environment, and long-term prosperity from consumerism. In secondary school, they're introduced to technology and tools used to analyze, create, and maintain circular economies. The governments have also developed many university and apprenticeship opportunities where students and workers can gain circular economics skills, training, and even specialties in infrastructure, energy, manufacturing, and systemic resilience.

The apprenticeship programs are particularly popular for members of outgroups, seniors, and women. Getting a good future used to be hard to come by, and the 5 Brothers knew that. Making a good future would not be possible without making opportunities for everyone. Whether they're too old to go to school, they come from the wrong background, they've made mistakes, their body is different or they've had to see to family needs first, it doesn't matter — the 5 Brothers have created doors that open into a prosperous future so that no Uzbek, Tajik, Kazakh, Turkmen, or Kyrgyz is left without a place at the end of the 5 Steps To The Promise.

Appendix Two: Scenarios & Implications Workshop Approach Template



STEP ONE:

Read your scenario framing (starting point for exploring the future):

Group 1

Investment in nuclear power by US and EU countries gained momentum with focus on spent fuel reactors. After the Russo-Ukraine war, heavy sanctions left Russia isolated and economically devastated. With the coming depopulation of China, the country launched efforts to bring the Chinese diaspora back home and began refocusing investment in its own country to accelerate the development of greener, sustainable, and more efficient technologies.

Group 2

Change gains momentum and is carried by the youth of the country. As usual, much of the energy comes from centralized areas like cities, but there is also a strong rural connection. A shift in values continues to drive the future, however, leaving the past behind is not easy. All of this is represented not just in the culture of the country but in the transition to green Uzb. Consumption is a key topic and possibly the biggest area of conflict. While the need to consume less (goods and energy) is prevalent, there is also a drive for "now it's our time to shine". Uzb becomes a regional hub for growth and move towards "green is good", but foreign investments also bring in "greed is good" to the picture and old ways of politics, business, and corruption continue, undermining the progress of going green.

Group 3

Globally, the transition to a low-carbon economy is delayed by limited supply of necessary minerals — extending the lifespace of fossil fuel economics. As a resource rich country this benefits Uzbekistan economically, however, it also frustrates the development of green infrastructure within the country. Investments in technical and professional education have supported growth, but not among all. The risks of heatwaves, droughts, and flash floods are compounded by the retention of industrial waste that can escape containment in an extreme weather disaster.

Group 4

Uzbekistan is the beacon lighting the way for the world's developing economies. Europe's advanced economies are carrying the economic burden of developing green technologies, and Uzbekistan is charting the path for leapfrogging the digital economy to the green economy. Russia's dominance in the region toppled after the loss in the Russo-Ukrainian war and subsequent economic devastation. In its aftermath, Uzbekistan's improved liberties, advancing green tech economy, region-leading education outcomes, and the leading role in the economic and environmental union provided workers with a major incentive to stay and contribute to the green transition.

STEP TWO: Choose two drivers and two issue areas (from the Green Economy strategy) per time horizon (3 years, 6 years, 9 years) and create a story. Explain what is happening in Uzbekistan during that time.

How are these drivers shaping the development of Uzbekistan's Green Economy?

In what areas of the Green Economy is there the most change? Some change? No change?

Who is winning and losing?

What are the key challenges and opportunities?

Create a short paragraph (just 3-5 sentences).

STEP THREE: Select a Disruptor or create your own, which will move the story into the future.

- One of the biggest challenges preventing effective Green Transition in the country is corruption and bureaucracy at all levels involved with green work.
- Lack of human resource capacities. Lack of professionals in the green areas. Most of the ones who hold managerial positions in the green sector — cannot respond and address correctly/effectively environmental issues. "Capacity building" aspects are necessary at the national level — both the decision-making and technical levels. Those new specialists will push for policy-level and technological-level changes.
- A fragmented approach to green transition
- The non-favorable geopolitical situation, external and internal political pressure in decision making
- Lack of stronger collaboration between government and NGOs (usually bad attitude and unhealthy competition with them)
- Lack of awareness among the population. Low level of involvement of the citizens in the conversation and decision-making process

- The government is not balancing all important dimensions — too much push on decarbonization.
- Too much involvement of the government in all areas/sectors. The checks and balances system is not present in the government.
- Systematic barriers — governance, cultural values, economic hardships (other priorities)
- Increasing demand for energy — we even catch up to build capacities and modernize old power plants, let alone build new renewable energy sources.
- Infrastructure losses in gas and power transmission/transportation.
- Technological barriers — low efficiency of solar panels — 15%. Max potential 1kW for 1 sq 1. It gets 150W.
- Low price of the electric power. People are not incentivized to generate power in solar panels or save energy. Eliminate subsidizing electric power.
- Low awareness among businesses. For example, some framers have enough money but don't have the knowledge and awareness.
- Plus, there is no after-sale support, maintenance, or guarantees for green technologies
- Lack of finance for businesses and households.
- Industrial-wise — R&D. We don't have an R&D potential. We don't have the engineering potential to do that. Technologically this is a bottleneck. But there is a demand in the country.
- Recycling of used car batteries.
- Covid-19 was a wakeup call for many, but it also pointed towards serious issues in combating global health challenges. What happens next time a pandemic (or other mass disruptive event) affects verification and nuclear operations?
- From extreme weather to conflict and cyberattacks to solar storms, infrastructure, and electric grids in particular, are increasingly vulnerable. What is it going to take to keep the lights on in the future?
- From extreme weather to conflict and cyberattacks to solar storms, infrastructure, and electric grids in particular, are increasingly vulnerable. What is it going to take to keep the lights on in the future?

- The decline of the international rules-based order could lead to a new paradigm or complete chaos. What does a world without those rules look like?

- Experiments with digital currencies are moving from the fringe to the mainstream as governments trial e-money. How might new electronic forms of value sharing affect nuclear cooperation and trade and create broader kinds of change?

- From increasing storm surges to coastal erosion and droughts to flooding and fires, climate migration is here to stay. What happens in a future where millions, if not billions, decide to move?

- Economic uncertainty might be here to stay, and some are looking at new economic paradigms. How might our economies and thereby societies be revolutionized?

- Decolonial movements and calls for reparations are not only increasing but are changing discourse and action. What can and must be done to make up for colonial and neocolonial practices and processes?

STEP FOUR:

Repeat the process for all three time horizons (3, 6, and 9 years)
By the end of the process, you should have a story of a *possible* future.

STEP FIVE:

Answer the questions

What are the biggest impacts (near-term) on the development of Uzbekistan's Green Economy?

What are some implications (mid- to long-term) for the development of Uzbekistan's Green Economy?

What opportunities (both assumed and uncommon) should be taken advantage of now to support the development of Uzbekistan's Green Economy?

Appendix Three:
Scenario-based Option Creation Template

STEP ONE: FROM THE FUTURE (20 minutes)

In step one, you will explore a possible future and choose one to perform a wind-tunneling exercise. As with testing a new vehicle design, wind-tunneling is a form of stress testing that looks at what might happen to something (in this case the focal issues/areas of the green economy strategy update) under different conditions (alternative futures scenarios).

SCENARIO Select one narrative scenario to read as this will provide the context for your option	
STRATEGIC UPDATE Select a focal issue/area from the transition to a "green" economy and ensuring "green growth" in the Republic of Uzbekistan until 2030 document	
WIND-TUNNELING Answer the following questions: 1) What will happen to this focal issue/area in the future you chose? 2) What specific aspects of this future will most impact this focal issue/area? 3) What can be done to make this focal issue/area "work" in this future?	

STEP TWO (20 minutes)

WHAT IS YOUR POLICY RESPONSE? IS IT A... Levers make things move. They create effects through very direct means and (often) lead to a systemic reordering. Options are a bit softer than levers but still have impact. They work across different levels and often involve various stakeholder groups. Experiments are all about learning and "doing things differently." They can (sometimes) produce surprising outcomes and effects.	
WHAT'S THE KEY IDEA? In 2-3 sentences, explain the essence of your key idea.	
WHO "OWNS" IT? Identify the key stakeholders or groups who will need to own this idea to put it into action.	
WHAT DO YOU EXPECT / THINK IT WILL ACHIEVE? Identify the major effects that you expect/ think that your idea will achieve.	
WHAT MIGHT BE SOME UNINTENDED CONSEQUENCES? Some outcomes are expected, but there are always unintended consequences.	

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