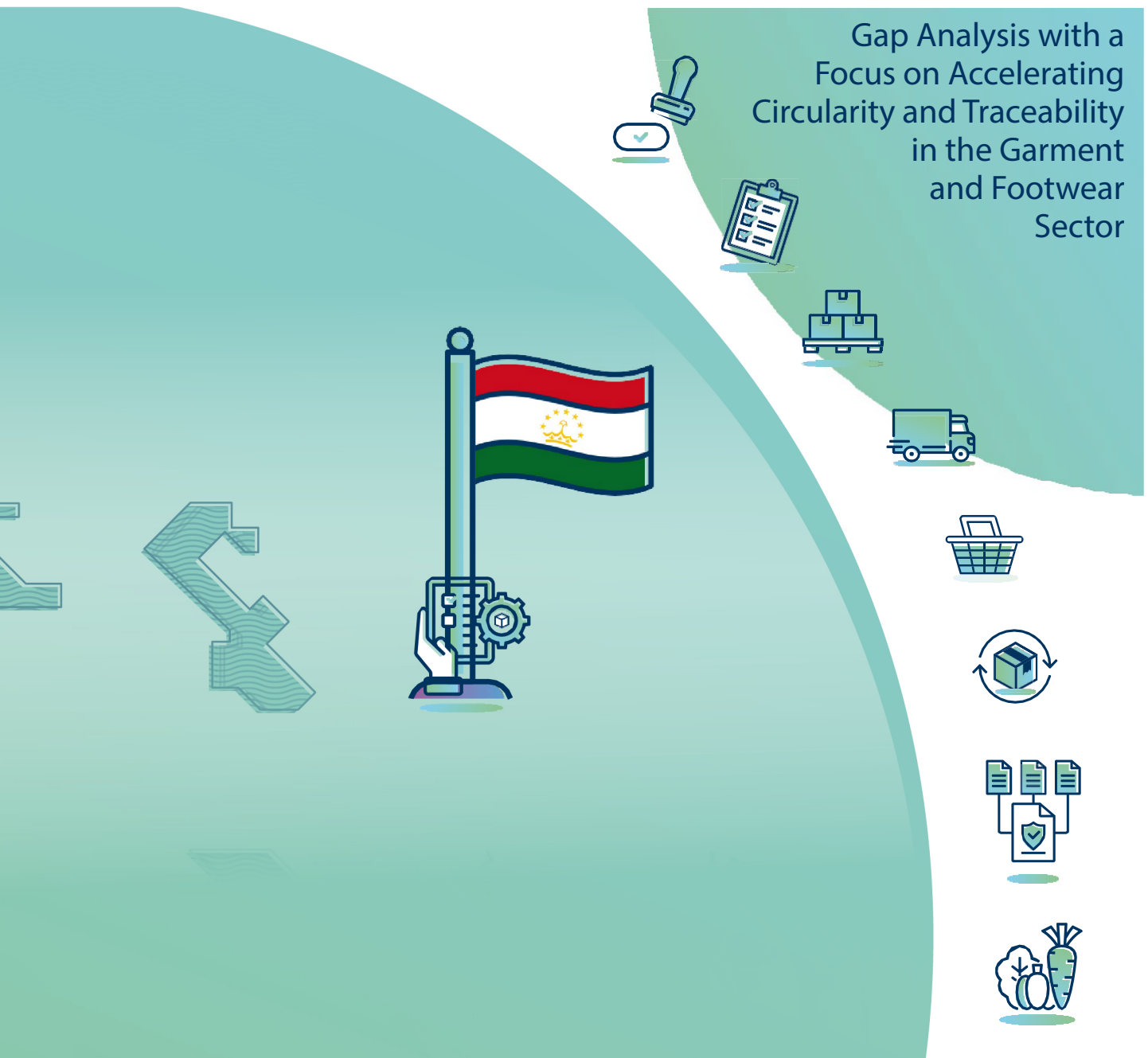


Circular Economy for the Sustainable Use of Natural Resources in the Republic of Tajikistan



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ECE/TRADE/TM/2025/1

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ACKNOWLEDGEMENTS

This study was drafted by Hana Daoudi, Economic Affairs Officer in the Market Access Section, Economic Cooperation and Trade Division (ECTD) at the UNECE. The following consultants provided substantive contributions: Jack Barrie provided a background document on Environmental, Social, and Governance (ESG) traceability in the garment and footwear sector of Tajikistan, and Nozigul Khushvakhtova conducted face-to-face interviews with Tajik enterprises engaged in the sector.

Comments on the draft were provided by the following UNECE colleagues: Christopher Athey, Tony Bonnici, Iva Brkic, Antoine Nunes, Maria Teresa Pisani, Elisabeth Türk and Lukasz Wyrowski, as well as by Owais Parray, Economist at the United Nations Resident Coordinator's Office in Tajikistan.

The secretariat is grateful to the assistance of the Ministry of Economic Development and Trade and the Permanent Mission of the Republic of Tajikistan to the United Nations Office in Geneva, Switzerland. Particular thanks to Dilshod Sharifi, Head of the International Economic Department, Ministry of Economic Development and Trade of Tajikistan and the UNECE Circular STEP focal point in the country for his valuable comments and assistance in engaging key stakeholders and ensuring due diligence in validating the findings of the assessment.

A preliminary version of this study was discussed with Government stakeholders, representatives of academia, enterprise support organisations and the private sector on 27 November 2024 in Dushanbe, Tajikistan during the High-Level Policy Dialogue of the United Nations Special Programme for the Economies of Central Asia (SPECA) Economic Forum, held under the theme “Green Development in the SPECA Region” (26-27 November 2024).

This study was edited by Lise Lingo and visual design was prepared by Tara Drev Miklavžina.

The study was made possible through the United Nations Development Account in the context of the regional project “Accelerating the Transition towards a Circular Economy in the UNECE region”. The project was carried out under the guidance of Ariel Ivanier, Chief, Market Access Section, ECTD.

The development of the series of policy papers is led by Elisabeth Türk, Director of ECTD and benefits from the UNECE-wide task force on circular economy, under the leadership of Dmitry Mariyasyn, Deputy Executive Secretary of UNECE.

ABBREVIATIONS

BCI	Better Cotton Initiative
BRS	Business Requirements Specification
CAPS	Central Asian Power System
CEP	Committee for Environmental Protection
CO ₂	Carbon dioxide
CO ₂ eq	Carbon dioxide equivalents
DE	Domestic extraction
DMC	Domestic material consumption
DMI	Direct material input
EU	European Union
ESG	Environmental, social, and governance
FDI	Foreign direct investment
GOTS	Global Organic Textile Standard
GDP	Gross domestic product
GHG	Greenhouse gas
GSP	Generalized System of Preferences
HPP	Hydropower plant
ICT	Information and communication technology
IEA	International Energy Agency
ISO	International Organization for Standardization
Kg	Kilogram
Km	Kilometre
Kt	Kilotons
KV	Kilovolt

kWh	Kilowatts-hours
MW	Megawatts
MSMEs	Micro, small and medium enterprises
PCI	Product complexity index
PM _{2.5}	Particulate matter
PPP	Public-private partnership
QI	Quality infrastructure
RCA	Revealed comparative advantage
RME-IMP	Raw material equivalents of imports
RMI	Raw material input
SDG	Sustainable Development Goal
TIR	Transports Internationaux Routiers
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UNECE	United Nations Economic Commission for Europe
UN/SPECA	United Nations Special Programme for the Economies of Central Asia
WTO	World Trade Organization

EXECUTIVE SUMMARY

This study examines the legislative, policy and capacity gaps undermining Tajikistan's transition to a circular economy, with a particular focus on circularity and traceability in the garment and footwear sector. This focus is intertwined with the Government's efforts to support the sector's diversification towards greater specialization in sustainable, high value-added, upstream activities. It also reflects the Government's commitment to addressing climate change, given the textile industry's significant contribution to global pollution.

The study draws on available socioeconomic and environmental data and the results of face-to-face interviews with 12 privately-owned Tajik garments and footwear manufacturers from across the country with proven records in integrating circular economy principles. These include small, medium, and large enterprises primarily engaged in manufacturing final products, of which three are small enterprises owned by women entrepreneurs in mountainous regions.

1. Impressive progress on the three pillars of sustainability

The study shows that Tajikistan has made significant strides across the three pillars of sustainability, advancing in economic, environmental and social development. The country has:

- Maintained a 7 per cent annual growth rate in gross domestic product (GDP) over the past five years as well as a manageable fiscal deficit of 2 to 2.5 percent of GDP, despite global challenges and the coronavirus pandemic.
- Led Central Asia in green energy, generating 98 per cent of its electricity from hydropower.
- Drastically reduced maternal and infant mortality rates and sustained a 100 per cent literacy rate for the past 20 years.

2. Conducive environment for green and circular economies transition

Tajikistan has made remarkable progress in decoupling economic growth from environmental impacts:

- The Government has consistently prioritized environmental protection by integrating it into key regulations and policies, resulting in a progressive alignment with circular economy principles:
 - Environmental protection is enshrined in the national constitution, with the environmental laws promoting measures to minimize pollution, ensure the sustainable use of natural resources and hold individuals and entities accountable for environmental protection.

- Circular economy principles are reflected in many sectoral laws, commitments under various international agreements and key development strategies and initiatives. These focus on promoting hydropower development, improving waste management, and minimizing pollution.
- This consistent prioritization has enabled the country to achieve relative resource decoupling, with a 153 per cent GDP increase from 1992 to 2019, outpacing the 122 percent rise in material productivity.
- In 2022, the Government adopted the Strategy for the Development of the Green Economy for 2023-2037 to achieve a systemic shift towards sustainable production and consumption.
 - The strategy envisions a gradual transition to renewable energy, improved energy efficiency, greener transport and energy infrastructure, green jobs and equitable access to benefits.
 - Promotes market-based green financing mechanisms and phasing out of harmful subsidies.
 - Funding, estimated at \$ 2.1 billion in total, will come from the State budget, the private sector and foreign investors.

3. Tajikistan's sustainability challenge

Tajikistan's pursuit of sustainable development is complicated by its mountainous terrain, landlocked position and climate vulnerability. These factors pose significant challenges to the development of a robust productive base and the achievement of social and environmental sustainability.

- **Economic sustainability:** Despite efforts, the economy is still characterized by a lack of diversification. In 2022, agriculture dominated – a shift from 2000 when industry led growth, indicating de-industrialization. Exports are concentrated in raw materials and a limited range of high-value products, with enterprises relying on a relatively narrow network of partners for selling their products and sourcing their supplies. Inadequate transport infrastructure further hinders trade and economic development.
- **Social sustainability:** Despite a decline in poverty rates, multidimensional poverty affects 7.4 per cent of the population. More needs to be done to improve access to essential services like safe drinking water, women's participation in the economy and the education system. Although Tajikistan achieved full literacy rate, it is struggling to meet the demands of rising enrolment and the green economy transition.

- **Environmental sustainability:** Tajikistan faces significant environmental challenges, marked by rising greenhouse gas (GHG) emissions and growing solid waste. Further, biodiversity is under threat due to land degradation and overexploitation, with forest cover dropping from 25 per cent in the 1990s to 3 per cent in 2022.

4. Challenges to circular economy transition

Tajikistan's current resource utilization patterns pose challenges to circularity. Agricultural and industrial expansion involve unsustainable extraction and raw material utilization. The resulting harmful impacts on the environment and the country's resources are compounded by inadequate solid waste management systems. Additionally, energy production and consumption patterns are unsustainable, with hydropower facing inefficiencies and water stress, making full decarbonization difficult. Financial constraints further hinder progress, making it difficult to invest in climate-resilient transport and energy infrastructure.

Inefficiencies in resource utilization

- **Raw materials:** Domestic material consumption (DMC) per capita rose over 300 per cent from 2000- to 019, driven by non-metallic minerals and fossil fuels, with raw material productivity, estimated at \$ 0.3 per kilogram (kg) in 2021, 60 per cent below the global average.
- **Water:** Despite its abundant water resources, Tajikistan faces significant water stress, with 70 per cent of freshwater withdrawal driven by agriculture. Renewable freshwater resources per capita have declined from 10,934 cubic meters in 1994 to 6,650 in 2020, exacerbated by climate change impacts like flooding and droughts.
- **Land:** With just 6 per cent of land suitable for cultivation, agricultural productivity is constrained, impacting food security, and increasing dependency on imports. Unsustainable farming practices complicate this challenge, exacerbating water stress, soil degradation and biodiversity loss.

Unustainable energy production and consumption patterns

- Although hydropower accounted for 87.6 per cent of electricity generation in 2022, the industrial and transport sectors depend on fossil fuels, particularly coal.
- Tajikistan exploits only 4 per cent of its hydropower capacity and faces chronic energy shortages, exacerbated by climate-induced disasters, aging energy infrastructure, and limited connectivity to Central Asia's power grid.

Under-developed solid waste management systems

- The industrial waste management system is underdeveloped, with enterprises disposing of waste at municipal sites.
- Municipal waste management is nascent, with limited separate collection systems and heavy reliance on the informal sector for waste collection and recycling.
- Outdated pollutant charge systems and inadequate monitoring hinder effective waste management.
- Despite government efforts, public awareness of proper waste management practices remains low.

Financing gap

- Tajikistan remains unable to generate sufficient resources for financing development, with domestic tax revenues at 19.5 per cent of GDP in 2022 and a persistent trade deficit, constituting 33.4 per cent of GDP. Further, despite reforms, net foreign direct investment (FDI) inflows were only 1.7 per cent of GDP in 2022 and were heavily concentrated in mining and quarrying.
- The Government relies on loans for financing development with public debt constituting 34.6 per cent of GDP in 2022. Further, fiscal spending is imbalanced, with 60 percent allocated to the energy sector.

5. Challenges to circularity and traceability in the garment and footwear sector

The study reveals promising circular economy practices in the garment and footwear sector. The enterprises interviewed adopted circular economy practices on their own initiative, spurred by the Government's targeted tax incentives and successive development programmes over recent years. Furthermore, the government has entered into an exemplary partnership with the Better Cotton Initiative (BCI) and SAROB (one of the leading national non-profit cooperatives focused on agriculture) to promote sustainable practices throughout the garment and footwear supply and value chains.

As of 2024, the sector featured a community of licensed Better Cotton farmers and textile producers. The Better Cotton farmers are also integrated into a homegrown traceability system developed by SAROB, which provides a solid starting point for developing a modern traceability system for the sector.

Nonetheless, the road to transforming the sector into full circularity remains long. A main issue is the lack of familiarity with the circular economy principles among enterprises and consumers. Enterprises that have integrated these principles, such as the ones interviewed for this study, are still in the early stages of transitioning to circularity; they face a range of challenges that are summarized below.

Challenges to circularity

- **The enterprises' weak technological capabilities:** Enterprises lack the knowledge, skills, information and communication technology (ICT) systems and financial resources needed to fully transition to circularity.
- **Low domestic demand:** The low demand for durable products is discouraging enterprises from investing in circularity, a major challenge that reflects a lack of familiarity with the circular economy concept among consumers.
- **Low levels of global sourcing and partnerships:** Enterprises experience difficulties in sourcing machinery and equipment, identifying buyers, and negotiating favorable terms.
- **Limited consumer engagement:** The enterprises interviewed primarily engage with communities post sale, which limits opportunities to raise public awareness about circular economy principles and explore potentials for product improvement.
- **Limited engagement in waste management:** Low production volumes were cited as a main disincentive to investment in waste recycling among small and medium enterprises (SMEs), while large enterprises see no long-term benefits.
- **Limited knowledge of existing regulatory frameworks:** Large enterprises are familiar with national regulations, but SMEs struggle with both national and global requirements.
- **Weaknesses in the quality infrastructure:** Weaknesses in technical regulations, standardization and conformity assessment undermine the consolidation of a level playing field, hindering investments in circular economy business models.
- **Low levels of standards implementation:** Only two of the enterprises interviewed have implemented international standards as a result of joint ventures with European companies; the remaining ones are unfamiliar with such standards.
- **Women-owned enterprises:** The lack of financial resources is a major concern for the enterprises interviewed due to their size and location. Many rely on personal resources and grants, which are insufficient for productivity improvements. Enterprises that succeed in obtaining loans experience difficulties in repayment owing to high interest rates. The enterprises also find the current tax regime burdensome, noting that it exacerbates their financial constraints.

Challenges to transparency and traceability

- **Digital connectivity issues:** Persistent problems with internet access and affordability, especially in rural areas undermine traceability.
- **Lack of legislation for promoting environmental, social, and governance (ESG):** This undermines transparency and producer responsibility, making it difficult to hold producers accountable for environmental impacts throughout product life cycles.
- **Weaknesses in interoperability:** Data exchange practices underpinning at-the-border controls are bilateral and reliant on memorandums of understanding, leading to paper-based procedures and inefficiencies. Such procedures undermine trade facilitation, while causing errors and reducing visibility into the supply chain.
- **Weaknesses in cybersecurity:** Tajikistan lacks the required legislative and institutional framework for ensuring cybersecurity, including certification and accreditation in cybersecurity.

6. A whole-of-government approach for a circular economy transition

The study indicates that the Government needs to complement its green economy agenda with targeted measures to promote circularity throughout the country's supply and value chains. The emphasis should be on developing the horizontal, cross-cutting regulations and policies necessary to provide a unified, economy wide, framework for ensuring consistency and for anchoring sectoral reforms.

This study proposes two sets of inter-linked horizontal and sector-focused recommendations, drawing on UNECE's norms, standards and best practice guidelines in sustainable energy, waste management, trade facilitation and innovation. The recommendations correspond to the ambitious objectives set in the national Strategy for the Development of the Green Economy, and are sequenced by priority across immediate and medium and long-term time frames to ensure the flexibility required for successful implementation. This includes addressing potential trade-offs between Sustainable Development Goals (SDGs), ensuring, among other things, that:

- Agricultural expansion, essential for food security, does not lead to deforestation, greater GHG emissions or come at the expense of ensuring drinking water for all.
- Sustainable energy, which involves substantial investment in power grid and renewable sources, does not come at the expense of upgrading industrial, digital and waste management infrastructure.

- Access to finance for the disadvantaged groups does not come at the expense of investment in education, healthcare and other basic social services.

The recommendations, summarized below, will form the basis for furthering UNECE's support of Tajikistan.¹ They aim at enabling the Government to (i) consolidate a proactive, forward-looking governance framework, including horizontal policies and regulations and institutional capacities, for enabling the circular economy transition, and (ii) build the required governance framework and capacities for circularity and traceability in the garment and footwear sector.

A proactive, forward-looking circular economy governance framework

Horizontal, cross-sectoral policies and regulations

- **Sustainable energy:** Focus on achieving carbon neutral (i.e., net zero emissions) and resilient energy systems that integrate sustainable development of hydrogen energy; anchor renewable energy development in a just transition framework; and align energy policies with international best practices.
- **Waste management:** Update the existing pollutant charge system and ensure complete alignment of laws with circular economy principles, while fostering regional and international cooperation for addressing transboundary waste management issues.
- **Quality infrastructure:** Develop the required technical regulations for promoting circularity across sectors, ensuring that they reference internationally recognized circular economy and traceability related standards.
- **Cybersecurity:** Consolidate a robust system for cybersecurity, including legislation, institutional capacities and international partnerships.
- **Sustainable trade and supply chain digitalization:** Promote sustainable trade practices and further improve trade facilitation conditions.
- **Sustainable transport:** Develop a strategy for improving the inland transport system's resilience to climate change.
- **Sustainable consumption:** Promote regenerative consumption patterns through awareness-raising campaigns and educational programmes.

Institutional capacities for effective governance

- **Develop capacities for coherent planning,** including expertise knowledge and inter-agency coordination mechanisms.

¹ The approach and structure of these recommendations were developed in close consultation with the Government to ensure alignment with national policies and priorities and support the successful implementation of the national Strategy for the Development of the Green Economy.

- **Develop capacities for successful implementation**, including conformity assessment bodies and robust systems for tracking and reporting progress towards circularity.

Innovative financing mechanisms

- **Accelerate reforms to enhance public-private partnerships (PPPs)** for financing infrastructure projects using the UNECE “PPPs for the SDGs” approach and “PPP and Infrastructure Evaluation and Rating System against the SDGs”.
- **Promote green and sustainability-linked loans** to help enterprises transition to circular economy business models.
- **Introduce environmental pricing** to reflect the environmental cost of emissions and encourage investment in green technologies.

Supporting circularity and traceability in the garment and footwear sector

Innovative financing mechanisms

- **Promote circularity and transparency across the garment and footwear supply and value chains**: Develop the required legislation for ensuring adherence to ESG principles among enterprises and for enabling traceability.
- **Promote transformative innovation** for achieving circularity in the sector, including through accelerators and incubators.
- **Leverage the free economic zones** to support the circular economy transition.

Capacities for circularity and traceability in the garment and footwear sector

- **Promote deepening and expanding enterprise support services**, with an emphasis on building their technological capabilities for adopting circular economy principles and business models.
- **Develop the domestic market for secondary garments and footwear** as a pre-requisite for closing the loop.

Competitive women-owned garment and footwear enterprises

- **Promote gender-responsive standards** as an essential requisite for ensuring women’s safety and quality of life.

- Ensure consistent participation of women's organizations and business associations in policy-making processes.
- Promote targeted support to help women entrepreneurs and enterprise owners access finance and develop the capacities required for circularity.

1. INTRODUCTION

Tajikistan is a small² landlocked country that is strategically located at the crossroads of north-south and east-west trade routes, bordering Afghanistan to the south, China to the east, Kyrgyzstan to the north, and Uzbekistan to the north and west. It has abundant water resources, a wealth of minerals (particularly gold, silver, aluminium and uranium) and fertile, though limited, agricultural lands, which play a significant role in driving the economy. It also has strong labour force potential. Youth accounted for 29 per cent of the population in 2023. Further, the working-age population (15 to 64 years old) represented the largest segment, at 66 per cent, indicating a substantial labour force poised to fuel economic growth.³

Tajikistan has made notable advancements in capitalizing on its strategic strengths, with remarkable progress across the three pillars of sustainability. Key milestones include:⁴

- **Environmental sustainability:** Tajikistan has positioned itself as a front runner in the adoption of green energy within Central Asia, generating 98 per cent of its electricity from hydropower.
- **Economic growth:** Despite global challenges and the coronavirus pandemic, the economy has maintained an impressive annual growth rate, averaging 7 per cent over the past five years.
- **Social Development:** Tajikistan reduced maternal mortality from 67.5 per cent to 16.6 per cent between 2000 and 2020 and infant mortality from 83.7 per cent to 31.4 per cent, while maintaining a 100 per cent literacy rate for the past 20 years.

However, Tajikistan continues to face challenges in its journey towards sustainable development. It is still classified as a lower middle-income country,⁵ with gross domestic product (GDP) per capita estimated at \$ 1,356 (constant) or \$ 4,139 (purchasing power parity) in 2022.⁶ It ranked 85th (of 166 countries) on the global Sustainable Development Goals (SDG) Index in 2023 with a score of 69.27, and 126th (of 193 countries) on the Human Development Index in 2022 with a score of 0.679. Further, it ranked the 38th (out of 166 countries) on the global Spillover Index in 2022 with a score of 98.28, indicating fewer positive and more negative spillover effects from economic activities.⁸

² According to the Agency on Statistics under the President of the Republic of Tajikistan (<https://www.stat.tj/>), Tajikistan covers 141.4 square kilometres.

³ United Nations Department of Economic and Social Affairs (2024) Revision of World Population Prospects, available at: <https://population.un.org/wpp/>.

⁴ Government of Tajikistan (2023), Green Development for Shared and Sustainable Prosperity, Voluntary National Review, available at <https://hlpf.un.org/sites/default/files/vnrs/2023/VNR%202023%20Tajikistan%20Report%20EN.pdf>; and United Nations Resident Coordinator Office (forthcoming), Common Country Analysis 2023.

⁵ According to the World Bank's income classification system, lower middle-income countries have a gross national income per capita between \$1,036 and \$4,045. Updated country income classifications are available at <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.

⁶ World Bank, World Development Indicators, available at <https://data.worldbank.org/country/TJ>.

⁷ United Nations (2023), Sustainable Development Report, Special Edition, available at <https://dashboards.sdgindex.org/profiles/tajikistan/fact-sheet>.

⁸ UNDP (2024) Human Development Report 2023/2024, available at <https://hdr.undp.org/system/files/documents/global-report-document/hdr2023-24reporten.pdf>. The index measures the direct and indirect impacts of production and commercial activities, finance, international trade, and security. A higher score means that a country causes more positive and fewer negative spillover effects.

To accelerate progress towards the SDGs, the Government is scaling up reforms to decouple economic growth from environmental degradation and biodiversity loss. The reforms are focused on supporting a systemic transition to a green economy, characterized by resilient, low-carbon, resource-efficient and clean growth, one where pollution is minimized, and ecosystems are enhanced, with no one left behind.

Recognizing the harmful environmental impacts of the traditional linear “take-make-consume-throw away” production and consumption patterns, the Government is keen on promoting the circular economy principles across manufacturing supply chains in the context of a sector focused approach, starting with the garment and footwear sector. This emphasis is intertwined with the Government’s efforts to promote sustainable diversification within the sector towards increased specialisation in upstream activities with higher value added and positive feedback loops into cotton-growing. The Government’s focus on this sector also reflects its commitment to addressing climate change, as the textile industry is among the primary contributors to global pollution.

This study aims at supporting Tajikistan’s reform efforts. It provides a gap analysis of the country’s circular economy transition and examines the challenges to accelerating circularity and traceability within the garment and footwear sector. It was prepared upon the request of the Government, drawing on available socio-economic and environmental performance data and the results of interviews with national garments and footwear manufacturers integrating circular economy principles. It also draws on insights from successful global experiences, including with respect to the institutional support needed, garnered through desk research and interviews with international garment and footwear producers and programmes engaged in promoting traceability within the sector.

The study places the analysis within the broader context bearing on the country’s transition toward a green economy and proposes action-oriented recommendations for the Government’s consideration. The recommendations are linked to the priorities detailed in the Strategy for the Development of a Green Economy and its associated action plan, and are sequenced by priority within a timeframe that distinguishes between immediate, medium and long-term to facilitate implementation.

The study is structured into seven comprehensive chapters. The introduction is followed, in chapter 2, by an analysis of Tajikistan’s sustainable development trajectory, emphasizing the socio-economic and environmental challenges that hinder progress towards achieving the SDGs.

Chapter 3 offers an overview of the country's reforms related to the circular economy, setting the stage for chapter 4, which discusses the challenges to the transition to a circular economy. Chapter 5 focuses on the garment and footwear sector, examining the obstacles to its shift towards circularity. In chapter 6, the study explores the challenges of establishing traceability in this sector, a crucial step for ensuring transparency and corporate responsibility. Chapter 7 concludes with proposed recommendations for the Government's consideration.

2. OVERVIEW OF TAJIKISTAN'S SUSTAINABLE DEVELOPMENT TRAJECTORY

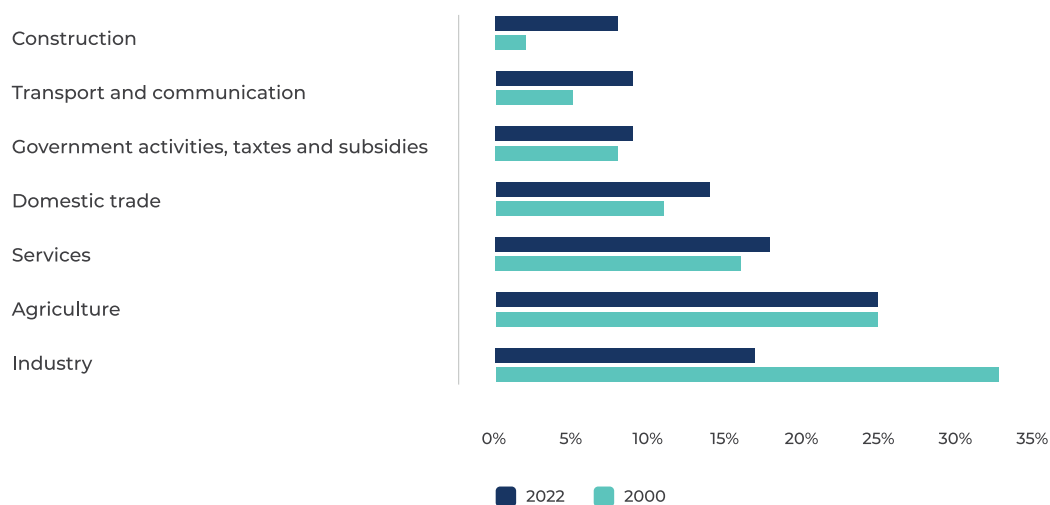
Tajikistan's ability to achieve sustainable development has been consistently challenged by its mountainous terrain, landlocked position and climate vulnerability. These challenges, discussed in chapter 4, have undermined Tajikistan's ability to develop its productive base. As shown in this chapter, the economy is still characterized by a lack of diversification, making the country highly vulnerable to external shocks linked to price fluctuations in global markets, rendering a strong dependence on remittances among households.

2.1 Economic sustainability

Lack of economic diversification

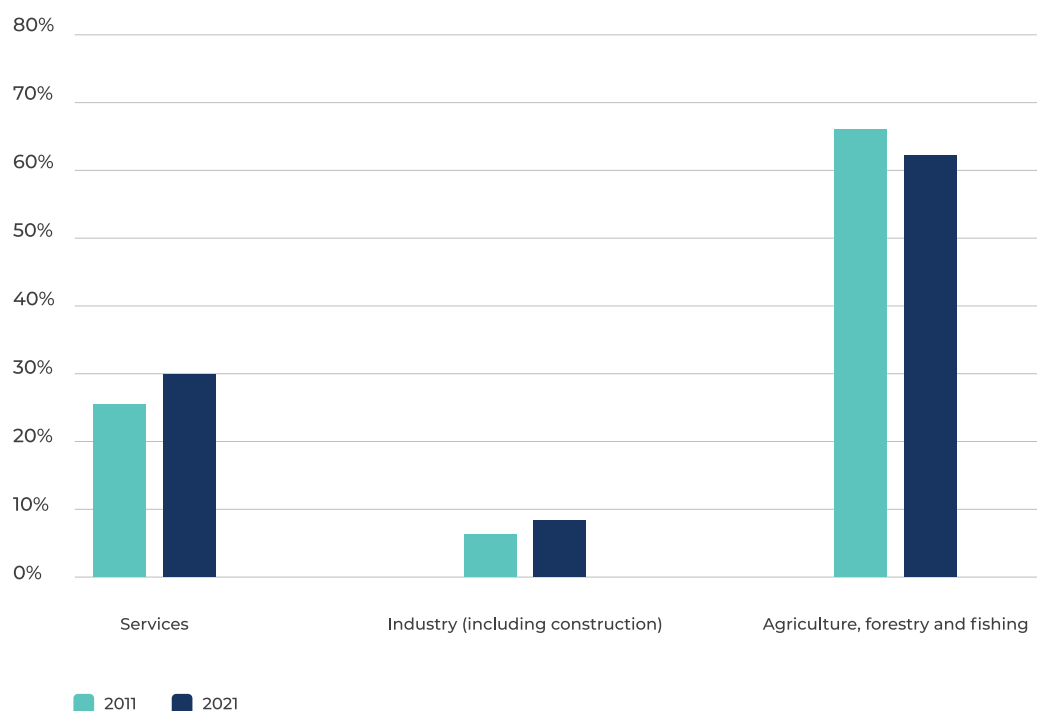
The Tajik economy is dominated by the agriculture sector, serving as the main source of income and job creation in 2022. This stands in contrast to the economic landscape in 2000 when the industrial sector was the primary engine of income generation, indicating a de-industrialization trend. Further, as shown in figures 1 and 2, the receding role of industry has been underpinned by increased contribution to employment, suggesting reduced productivity. At the same time, growth in the services sector has been restrained, with only a slight increase in its contribution to income and job creation.

Figure 1. Tajikistan's GDP by sector, 2000 and 2022 (percentage share)



Source: Agency on Statistics under the President of the Republic of Tajikistan.

Figure 2. Breakdown of Tajikistan's employment by sector 2011 and 2021 (percentage share)



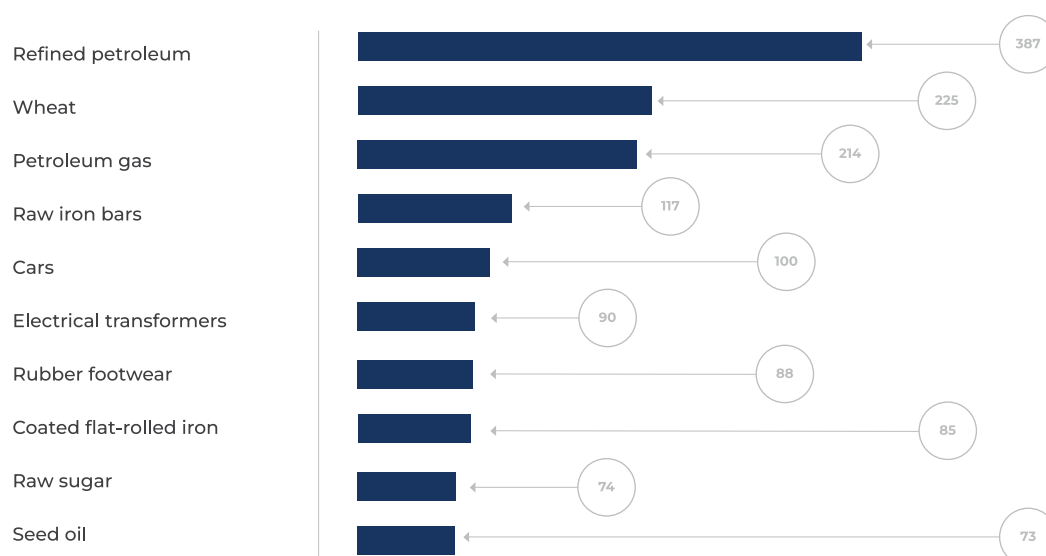
Source: Agency on Statistics under the President of the Republic of Tajikistan and UNECE.

The decline in industrial and agricultural productivity, coupled with the slow-paced development in the services sector, have set the limits to the trade sector's contribution to economic growth. The services sector's share of total trade was 9.5 per cent in 2021, with exports concentrated in transport (84.6 per cent of total services exports), followed by construction (4.6 per cent) and ICT (2.7 per cent). On the import side, transport services accounted for the largest share, and its value increased by 11 per cent annually over the period 2017-2021.⁹

Trade in goods remains under-developed. Exports are concentrated in raw materials, including gold, aluminum, raw cotton, antimony and zinc ore (Figure 3), which are sold to a limited number of countries. Switzerland stands as the main outlet (mainly for gold with a 25.6 per cent share of total exports in 2021), followed by Kazakhstan (17.1 per cent), Türkiye (11.4 per cent), China (7.5 per cent), and Uzbekistan (6.2 per cent).

⁹ Agency on Statistics under the President of the Republic of Tajikistan (<https://www.stat.tj/en>).

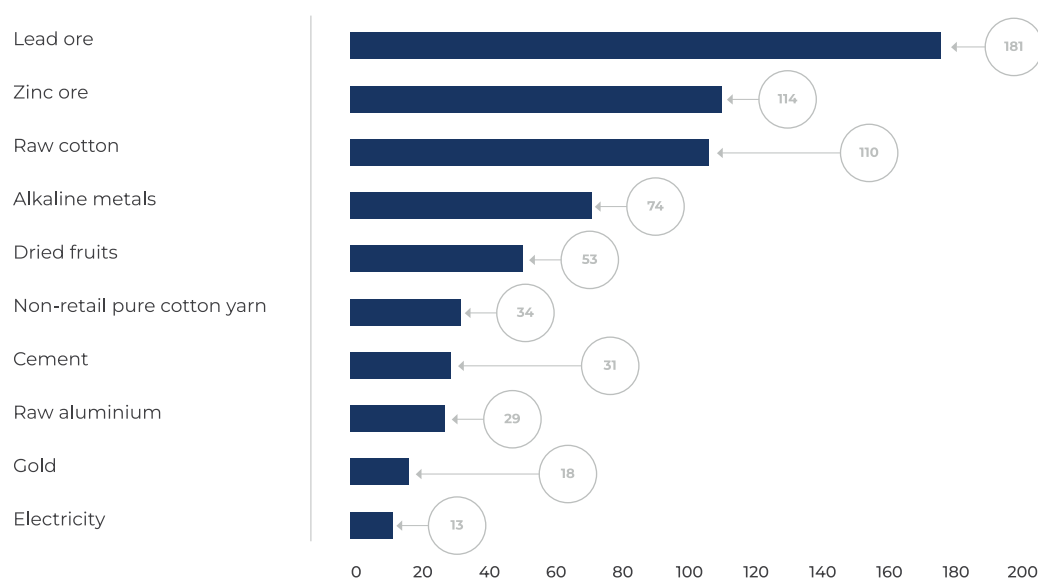
Figure 3. Tajikistan's top 10 imports, 2021 (\$ million)



Source: Observatory of Economic Complexity.

Only a handful of exports are of high value added. The highest complexity exports, measured by the product complexity index (PCI),¹⁰ are fireworks along with machinery for agricultural and textile manufacturing. Further, as shown in figure 4, Tajikistan has export disadvantages in all of its top products on the complexity index, as measured by the revealed comparative advantage (RCA)¹¹ index, indicating a lack of scale and efficiency to compete with larger, more established global producers.

Figure 4. Tajikistan, revealed comparative advantage, 2021



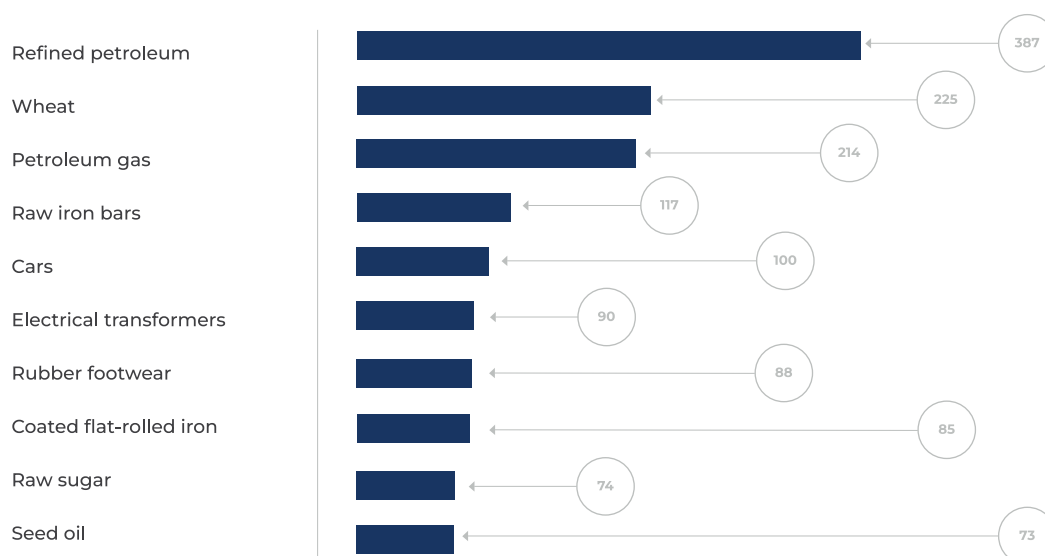
Source: Observatory of Economic Complexity.

¹⁰ The PCI ranks the diversity and sophistication of manufacturing methods and know-how embedded in products. Higher PCI values signify greater technical and knowledge intensity.

¹¹ The RCA index measures a country's export performance in a particular good relative to the average export performance of that good globally. A value greater than 1 indicates that a country has a comparative advantage in exporting that product, suggesting that it exports more of the product in question than would be expected given the size of its export market and the size of the global market for that product.

On the import side, Tajikistan is reliant on international markets for sourcing gas and oil, particularly petroleum (Figure 5). China and the Russian Federation have historically stood as the main suppliers (with 31.8 per cent and 22.7 per cent shares of Tajik imports in 2021, respectively) followed by Kazakhstan (14.2 per cent), Uzbekistan (6.7 per cent), and Türkiye (5.3 per cent).¹²

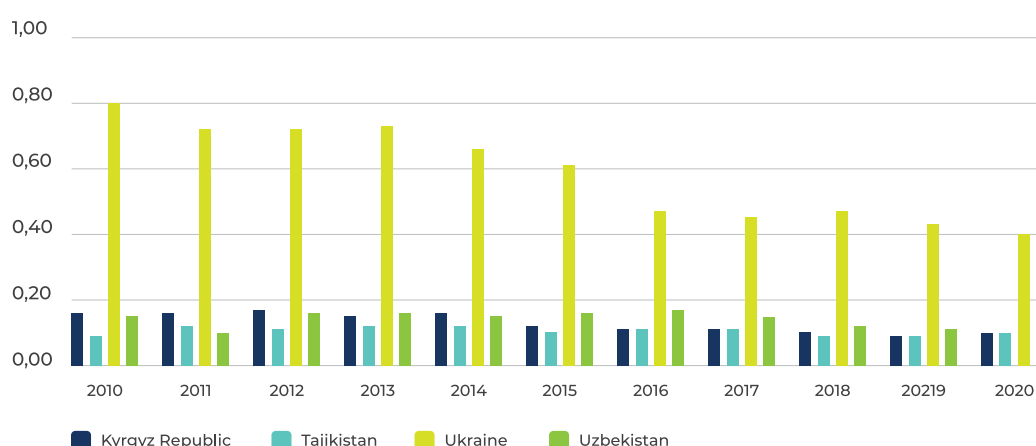
Figure 5. Tajikistan's top 10 imports, 2021 (\$ million)



Source: Observatory of Economic Complexity.

Tajikistan thus faces a more challenging learning curve in transitioning to a green economy compared to other, more diversified economies. Furthermore, the country's gross domestic expenditure on research and development¹³ has been consistently below that of other lower middle-income countries in the UNECE region (Figure 6).

Figure 6. Tajikistan's research and development expenditure compared to other UNECE lower middle-income countries (percentage share of GDP)



Source: World Bank, World Development Indicators.

¹² Observatory of Economic Complexity.

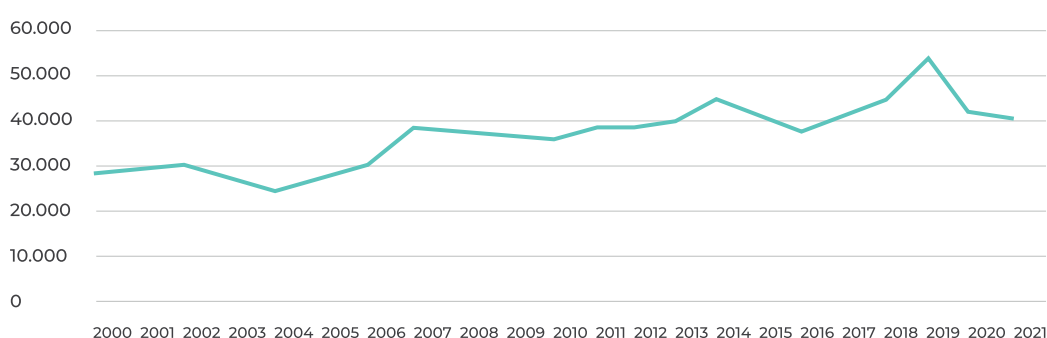
¹³ Gross domestic expenditures on research and development include capital and current expenditures by enterprises, the government, higher education and private non-profit organizations.

Limited job opportunities and skills mismatch

Given the lack of diversification, the Tajik economy has consistently struggled to generate enough jobs for its growing labour force. While unemployment declined from 15 per cent in 2000 to 6.9 per cent in 2023,¹⁴ the labour participation rate has remained persistently under 50 per cent over the past two decades. In 2023, it was estimated at 41 per cent, indicating that a substantial segment of the population was entirely disengaged from the labour market.¹⁵

With more than half of the workforce neither employed nor actively seeking employment domestically, migration, especially to the Russian Federation and predominantly among the male workforce, became a key livelihood option among households (Figure 7). This led Tajikistan ranking among the world's top five countries for dependence on labour migration in 2020, as measured in terms of the share of remittances in GDP.¹⁶ Remittances accounted for almost 50 per cent of the country's GDP in 2022, with the share of households having at least one labour migrant estimated at 48 per cent in June 2023.¹⁷

Figure 7. Migration from Tajikistan (number of persons)



Source: Agency on Statistics under the President of the Republic of Tajikistan.

At the same time, Tajikistan's specialization in low-knowledge products has rendered a workforce unprepared for the complexities of the modern economy. This skills mismatch is likely to slow the adoption of advanced production methods, including circular economy practices, as enterprises will struggle to find qualified personnel.

Inadequate transport infrastructure

Tajikistan's ability to leverage its geographical location to integrate into global markets is undermined by the lack of adequate transport infrastructure. As a landlocked country, it depends on inland and air transport, featuring about 26,600 kilometres (km) of roads, 978 km of railway tracks and five airports.

¹⁴ World Bank, Tajikistan, available at <https://data.worldbank.org/country/TJ>.

¹⁵ World Bank, Labor force participation rate, total (% of total population age 15+) (modeled ILO estimate) – Tajikistan, available at <https://data.worldbank.org/indicator/SL.TLF.CACT.ZS?locations=TJ>.

¹⁶ International Organization for Migration (2022), World Migration Report, available at <https://publications.iom.int/system/files/pdf/WMR-2022.pdf>.

¹⁷ World Bank (2023), Tajikistan Economic Update, available at <https://thedocs.worldbank.org/en/doc/d5f32ef28464d01f95827b7e020a3e8-0500022021/related/mpo-tjk.pdf>.

Road transport constitutes the dominant mode for both trade and movement of people, accounting for about 94 per cent of freight transport and nearly all passenger transport.¹⁸ However, the network remains in a poor state, with dilapidated and hazardous roads.¹⁹ Further, the railway network is segmented into distinct northern and southern sections, with much of the trackwork requiring significant repair and renovation.²⁰

These conditions have rendered certain regions difficult to access, with the mountainous regions most affected. This is the case, for example, in the mountainous regions in the south-easternmost region (Gorno-Badakhshan Autonomous Oblast), which is vulnerable to natural disasters such as avalanches and landslides. Its hazardous mountainous roads, combined with the lack of railway links, makes it effectively inaccessible for extended periods during winter. This inaccessibility has adverse consequences for equality, as it isolates communities and limits their access to economic opportunities and essential services.²¹ The lack of adequate transport infrastructure is also accentuating the country's structural challenges – in particular, those stemming from its landlocked position, which complicate connectivity with regional and international trade routes (Chapter 4).

2.2 Social sustainability

Persistent inequality

Tajikistan has registered significant improvements in reducing inequality, with the percentage of the population living below the international poverty line of \$ 3.65 per day decreasing from 32 per cent in 2009 to an estimated 12.4 per cent in 2022.²² Yet, challenges remain. The incidence of poverty, measured by the percentage of population living below the national poverty, which has been on the decline, remains a challenge, estimated at 22.5 per cent in 2022.²³

Further, about 7.4 per cent of the population were experiencing multidimensional poverty in 2021, and another 20.1 per cent were classified as vulnerable to multidimensional poverty.²⁴ Available estimates also highlight the need for greater efforts to enhance access to drinking water, with only 55 per cent of the population having access to safely managed drinking water services in 2022.²⁵

¹⁸ Agency on Statistics under the President of the Republic of Tajikistan, available at <https://www.stat.tj/tj/database-real-sector>.

¹⁹ For informative assessments of Tajikistan's transport sector, see, for example, the Asian Development Bank (2021), Tajikistan Transport Sector Assessment, available at <https://www.adb.org/documents/tajikistan-transport-sector-assessment>; and the World Bank (2021), Assessment of Economic Impacts from Disasters along Key Corridors, available at <https://documents.worldbank.org/en/publication/documents-reports/document-detail/545481624287902413/pdf>.

²⁰ See, TRACECA, various reports, available at <http://www.traceca-org.org/en/countries/tajikistan/>.

²¹ World Bank (2022), "Protecting lives and livelihoods from natural disasters in Tajikistan", 12 September.

²² World Bank, World Development Indicators, Tajikistan available at <https://data.worldbank.org/country/TJ>.

²³ The national poverty line was set at SM 146.77 per month in 2013 and stood at SM 198 per month in 2018 after accounting for inflation. World Bank (2023), Tajikistan Economic Update.

²⁴ UNDP (2023), Global Multidimensional Poverty Index 2023: Tajikistan, available at <https://hdr.undp.org/sites/default/files/Country-Profiles/MPI/TJK.pdf>.

²⁵ United Nations and UN Water, "SDG 6 snapshot in Tajikistan", available at <https://sdg6data.org/en/country-or-area/Tajikistan>.

Slow progress towards gender equality

Gender equality is enshrined in Tajikistan's legal framework. The Constitution guarantees equal rights for men and women (Article 19), and ensures the right to work, choose an occupation, and receive equal pay for equal work (Article 35).²⁶ The Labor Code further prohibits discrimination in employment relations (Article 7),²⁷ while the Civil Code provides for equal legal rights for women and men, including the abilities to own property, conclude contracts, and travel freely, and the right to compensation for unlawful harm (Article 19).²⁸ Violations of equal rights, including gender discrimination, are punishable under the Criminal Code, and amendments adopted in 2022 have strengthened penalties for sexual abuse of minors.²⁹

Gender equality is emphasized as a key priority in the national Strategy for the Development of the Green Economy for 2023-2037. The strategy provides for scaling up efforts to equip the female labor force with the necessary knowledge and skills to engage in green jobs and the digital economy. Additionally, it aims to develop and adopt gender-sensitive green job standards.

The legislative reforms and Strategy for the Development of the Green Economy support bridging the gender gap. They scale up efforts to address domestic violence and discrimination as well as the gaps in girls' access to education, especially upper secondary education.³⁰ The reforms also address inequalities in women's economic participation. Women's labour participation rate stood at 31.3 per cent in 2021 (significantly lower than the men's at 51.2 per cent) and exhibit a higher exposure to vulnerable employment (at 26.4 per cent in 2021 compared with 21.2 per cent for men). Additionally, women show limited engagement in the business community, with only 8 per cent of the total registered enterprises owned by women in 2018.³¹

Evolving education system

Tajikistan has registered significant progress in terms of overall literacy rates and access to primary education.³² However, with more students enrolling in primary and secondary schools, public resources may be stretched thin, making it difficult for the higher education system to equip the youth with the skills they need for 21st century job market.³³

²⁶ Tajikistan adopted its Constitution in 1994 and amended it in 1999 and 2003. It is available at <https://www.prokuratura.tj/en/legislation/the-constitution-of-the-republic-of-tajikistan.html>.

²⁷ Government of Tajikistan, Ministry of Labor, Migration and Employment of Population, Laws of Tajikistan, available <https://mehnat.tj/en/legalacts>.

²⁸ Ecolex, Civil Code of the Republic of Tajikistan, available at <https://www.ecolex.org/details/legislation/civil-code-of-the-republic-of-tajikistan-lex-faoc219741/>.

²⁹ Food and Agriculture Organization, FAOLEX Database: Criminal Code of the Republic of Tajikistan, available at <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC197648/>.

³⁰ Republic of Tajikistan, Draft National Strategy for Education Development, 2021-2030.

³¹ World Bank, Gender Data Portal.

³² See official statistics by the Agency on Statistics under the President of the Republic of Tajikistan; available at <https://www.stat.tj/en/database-socio-demographic-sector>.

³³ United Nations Resident Coordinator's Office in Tajikistan (2022), "Tajikistan Common Country Analysis", available at https://tajikistan.un.org/sites/default/files/2023-07/Tajikistan_CCA_2022_Public_Version_Final.pdf.

Further, despite improvements, the country's technical and vocational education and training remains under-developed. Reforms have been consistently more focused on improving access to, rather than the quality of, training, which remains limited to traditional areas.³⁴ As of 2023, such education and training were provided by:

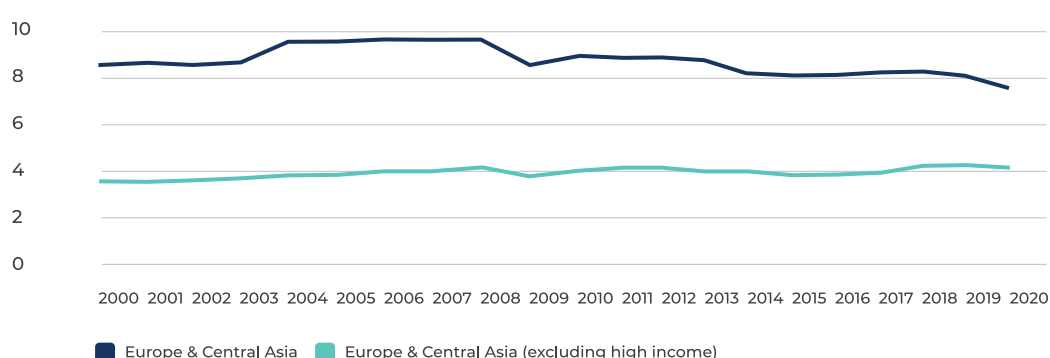
- 60 initial vocational education and training institutions (lyceums)³⁵ under the Ministry of Labour, Migration and Employment, offering one- and two-year diploma courses to prepare students graduating from basic education (grade 9) for entry into secondary and higher vocational institutions or the labour market.
- 49 senior secondary technical education institutions (technical colleges) managed by Stated-owned enterprises and ministries, offering three- and four-year courses to develop technicians, forepersons, and supervisors.³⁶
- 25 adult learning centres under the Ministry of Labour, Migration and Employment, offering targeted training to the most vulnerable segments (e.g., women and the poor) to help them acquire professional skills (e.g., accounting, tourism and ICT) for joining the labour market.

2.3 Environmental sustainability

Rising emissions

Tajikistan's economic development path has been marked by growing GHG emissions. While well below the levels observed in Europe and Central Asia (Figure 8), given its reliance on hydropower, these emissions have been assuming a rising trend. Total emissions more than doubled from 6,617 kilotons (kt) of carbon dioxide equivalents (CO₂eq) in 2000 to 17,692 in 2020,³⁷ and carbon dioxide (CO₂) emissions per capita almost tripled from 0.4 to 1 metric ton between 2000 and 2022.³⁸

Figure 8. GHG emissions in Europe and Central Asia, 2000-2020 (million gigatons of CO₂eq)



Source: World Bank, World Development Indicators.

³⁴ Asian Development Bank (2021), Technical and Vocational Education and Training in Tajikistan and Other Countries in Central Asia: Key Findings and Policy Options, available at <https://www.adb.org/sites/default/files/publication/691671/tvet-tajikistan-central-asia.pdf>.

³⁵ Agency on Statistics under the President of the Republic of Tajikistan, Professional Technical Education Institutions, available at <https://www.stat.tj/en/database-socio-demographic-sector>.

³⁶ Asian Development Bank (2021), Technical and Vocational Education and Training in Tajikistan and Other Countries in Central Asia: Key Findings and Policy Options.

³⁷ World Bank, World Development Indicators.

³⁸ The Global Carbon Project, Global Carbon Budget 2023, available at <https://www.globalcarbonproject.org/>.

This trend has been propelled by the heightened combustion of coal and oil, as the country shifted away from using gas as a primary energy source.³⁹ As shown in table 1, agriculture is the major contributor, followed by industry with a significant gap.

TABLE 1.	Greenhouse gas emissions by sector, 2020 (metric tons of carbon dioxide equivalent)
Sector	Emissions
Agriculture	6 760 000
Industry (mining and quarrying)	2 490 000
Electricity and heat	2 079 999
Transport	1 730 000
Manufacturing and construction	1 320 000
Other fuel combustion	1 250 000
Buildings	1 010 000
Aviation and shipping	80 000
Waste	910
Fugitive emissions	130
Land-use change and forestry	-130 000

Source: Climate Watch, <https://www.climatewatchdata.org>.

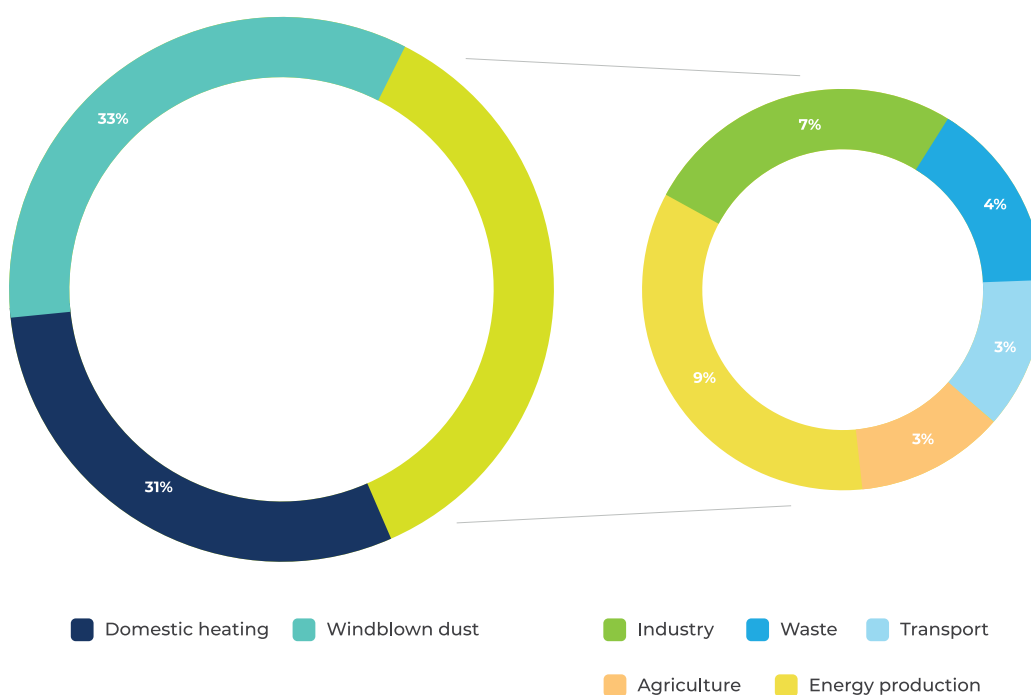
In addition, Tajikistan's heavy reliance on vehicles for internal mobility and trade has been compounding concentrations of inhalable particulate matter (PM_{2.5}). In 2022, PM_{2.5} was found to be 9.2 times higher than the World Health Organization annual guideline, placing the country among the top 10 with the poorest air quality. These emissions vary by city. For example, Dushanbe's average annual concentration stood at 59.5 micrograms per cubic meter in 2021, ranking it as the fourth most polluted capital globally, highlighting the urgent need for diversifying transportation options and enhancing infrastructure to support more sustainable and efficient modes of mobility and trade.⁴⁰

A cursory examination of preliminary PM_{2.5} source apportionment in the city shows windblown dust (33 per cent) and residential heating (31 per cent, individual households) as the major contributors (Figure 9). These are followed by contributions from electric power generation (9 per cent, including central heating plants), waste (7 per cent), industry (4 per cent), and transport (3 per cent).

³⁹ In 2022, GHG emissions from burning coal was estimated at 3.8 million tonnes of CO₂eq up from 49,968 in 2000), while emissions from burning oil was 3.00 million tonnes (up from 729,136 tonnes). Emissions from gas was 380,009 tonnes (compared to 1.44 million tonnes in 2000), while emissions from cement reached 1.95 million tonnes (compared to 24,470 tonnes). See, Global Carbon Project, Global Carbon Budget 2023; available at: <https://www.globalcarbonproject.org/>.

⁴⁰ UNECE (2023) Developing sustainable urban mobility policy on car sharing and carpooling initiatives – Tajikistan, available at: <https://unece.org/transport/publications/developing-sustainable-urban-mobility-policy-tajikistan>.

Figure 9: Source apportionment of particulate matter concentration in Dushanbe, 2021 (percentage shares)



Source: World Bank (2023), "Air quality management in Tajikistan".

Growing solid waste generation

Tajikistan's pursuit of economic development, coupled with a relatively high population growth rate,⁴¹ implies significant levels of solid waste generation. However, it is difficult to trace these levels, given the lack of reliable data. Primary data on waste generation, processing and disposal are collected by the Committee for Environmental Protection (CEP) under the Government through an array of reports, which enterprises and environmental organizations submit to relevant departments and sections within CEP headquarters and its regional and district branches.

These reports are not processed or analysed. Further, neither the reports nor the data contained within them are forwarded to the Agency of Statistics. Consequently, the agency lacks reliable statistical data on the generation, processing, and disposal of both municipal solid waste and industrial waste. This means that data on waste generation and management comprise only estimates and should be regarded as merely indicative of broader trends.⁴²

Despite the data gaps, it is still possible to gain an understanding of the challenges ahead. Data on household solid waste, the only type of waste for which data is available, shows such waste as exceeding 2 million tons annually.⁴³ This figure is a conservative estimate, as it includes only solid waste generated within the boundaries of cities, where waste per capita is estimated to range between 280 and 330 kg.⁴⁴

⁴¹ The population grew 34.10 per cent between 2000 and 2014, with an annual growth rate averaging 2.05 per cent, compared with 0.31 per cent in Europe and Central Asia. The country continues to register a high rate of population growth, estimated at 2.2 per cent in 2022. See World Bank (2014), "Cities in Europe and Central Asia: Tajikistan", and World Bank, World Development Indicators for Tajikistan.

⁴² UNECE (2024), Fourth Environmental Performance Review of Tajikistan.

⁴³ Data provided by the State Unitary Enterprise Housing and Public Utilities.

⁴⁴ Government of Tajikistan, Strategy for the Development of the Green Economy in the Republic of Tajikistan for 2023-2037, available at <http://www.portali-huquqi.tj/>.

When considering the industrial waste, the risks to the environment and public health cannot be over emphasized. Estimates put the accumulated industrial waste in landfills in excess of 150 million tonnes over an area of 1,000 hectares, mostly in northern Tajikistan. Some progress has been made in industrial waste recycling in the aluminium and textile sectors, but most uranium and toxic waste legacies remain unresolved.⁴⁵

Biodiversity loss

Tajikistan is already grappling with biodiversity loss, primarily due to land degradation and overexploitation of natural resources. Most significant has been the reduction in forest area since the 1990s, from 25 per cent to just 3 per cent in 2022, owing to uncontrolled grazing and unsustainable agricultural and industrial practices.⁴⁶ The reduction in forest cover not only harms biodiversity but also exacerbates soil erosion and undermines agricultural productivity, further intensifying the threats to the country's ecological systems.

Further, anecdotal evidence shows old stocks of pesticides as leaching into soils and rivers,⁴⁷ increasing the risk of toxic metal contamination in the ecosystem.⁴⁸ This poses significant threats to biodiversity, which is particularly concerning given Tajikistan's diverse range of flora and fauna, including over 13,000 species of invertebrates, 346 species of birds, 84 species of mammals, 49 species of fish, 44 species of reptiles, and 2 species of amphibians.⁴⁹ These pressures are exacerbated by climate change, highlighting the need for sustained and coordinated efforts, both nationally and regionally, to effectively address biodiversity loss.

2.4 Policy implications

This chapter highlights several intertwined development challenges. From heavy reliance on primary resources and infrastructural inadequacies to skills mismatches, persistent social inequalities, and rising pollution levels, the Government faces an urgent need to scale up its efforts.

Navigating these challenges requires moving away from prioritizing short-term income gains towards a holistic approach, focused on preserving natural resources, building the ecosystem and protecting the environment for future generations. As shown in the next chapter, Tajikistan has been taking steps in this direction, which reached a significant milestone in 2022 with the adoption of the national Strategy for the Development of the Green Economy for 2023-2037.

Circular economy principles provide essential tools for the successful implementation of this strategy, promoting the adoption of sustainability practices across various industries and communities. This will enable decoupling production and consumption across all sectors and communities from environmental impacts, thereby ensuring the achievement of:

⁴⁵ Regional Environment Center for Central Asia (2020), "Climate change in Tajikistan: Illustrative summary", available at <https://zoinet.org/wp-content/uploads/2018/01/TJK-climate-summary-en.pdf>.

⁴⁶ Drita Dade (2021), "Why Tajikistan must strengthen the resilience of its forests and restore its landscapes", World Bank Blogs, 21 March.

⁴⁷ Alexandra Brutsch (2020), "Lands poisoned by obsolete pesticides", Fondation Suisse de D minage, 21 December.

⁴⁸ Daler Abdusamazoda et al. (2020), "Assessment of the toxic metals pollution of soil and sediment in Zarafshon Valley, Northwest Tajikistan (Part II)", Toxics 8(4), 113.

⁴⁹ Government of Tajikistan (2020), Tajikistan Health and Pollution Action Plan.

- **Economic sustainability**, enabling the transformation of the economy into a competitive one, characterized by more efficient use of resources and specialization in technology-intensive products.
- **Social sustainability**, generating new job opportunities for all, which offer higher income levels, while alleviating the pressure on urban infrastructure caused by migration for employment.
- **Environmental sustainability**, promoting reduced reliance on non-renewable energy resources sources by enterprises, while maximizing efficiency throughout supply chains and minimizing pollution and waste.

3. OVERVIEW OF TAJIKISTAN'S CIRCULAR ECONOMY-ALIGNED REFORMS

Tajikistan has already laid the groundwork for transitioning to a circular economy. The country has integrated a range of circular economy-aligned principles into its legislative framework and development strategies, establishing them as essential drivers for achieving sustainability. It has also launched circular economy-aligned initiatives, focused on transforming both production and consumption patterns.

Following a brief discussion of the concept of the circular economy, this chapter provides an overview of Tajikistan's circular-economy aligned legislation, strategies and initiatives that align with circular economy principles. This is done with the aim of setting the context for identifying the challenges to circularity in the garment and footwear sector.

3.1 The different facets of the circular economy concept

First advanced in 1977, the circular economy concept refers to decoupling production from environmental degradation by moving away from the traditional linear "take- make-dispose" production model towards closed systems, which operate in loops from producers to consumers and back again to producers.⁵⁰ In such systems, products are rendered durable by extending both their lifecycle (i.e., the period during which a product remains functional and usable) and life span (i.e., from creation to disposal). This minimizes solid waste and pollution, while improving resource productivity and strengthening job creation and economic competitiveness.⁵¹

The concept is fundamentally linked to achieving inclusive green economy transition. As shown in box 1, the green economy concept emphasizes the adoption of low-carbon, resource- efficient production and consumption patterns, while the circular economy stresses embedding production and consumption in closed-loop systems.

⁵⁰ W.R. Stahel and G. Reday-Mulvey (1977), *The Potential for Substituting Manpower for Energy*, report for the Commission of the European Communities, Battelle Geneva. The concept was further developed in W.R. Stahel and G. Reday-Mulvey (1981), *Jobs for Tomorrow: The Potential for Substituting Manpower for Energy*, Vantage Press.

⁵¹ Walter R. Stahel (2016), "The circular economy", *Nature* 24(531), 435–438.

BOX 1.

Defining the concepts green and circular economies

Green economy

First advanced in 1989^a, a green economy is one where all production activities as well as transport and basic utility infrastructure are geared towards minimizing carbon emissions and pollution, ensuring the efficient use of energy and natural resources, and preventing the loss of biodiversity. It is also socially inclusive, where development does not come at the expense of the most vulnerable population groups and where benefits are shared equitably.^a

Circular economy

A circular economy is one that “replaces production with sufficiency: reuse what you can, recycle what cannot be reused, repair what is broken, remanufacture what cannot be repaired”, transforming “goods that are at the end of their service life into resources for others, closing loops in industrial ecosystems and minimizing waste”. It is characterized by the following principles:

- “The smaller the loop (activity-wise and geographically), the more profitable and resource efficient it is.
- Loops have no beginning and no end.
- The speed of the circular flows is crucial: the efficiency of managing stock in the circular economy increases with a decreasing flow speed.
- Continued ownership: re-use, repair and remanufacture without a change of ownership save double transaction costs.^c

^a D. Pearce, E.B. Barbier and A. Markandya (1989), A New Blueprint for a Green Economy. Earthscan, London. The blueprint was prepared for the Government of the United Kingdom as part of its response to the Brundtland Report (World Commission on Environment and Development (1987), Our Common Future, which highlighted the urgency of addressing the harmful environmental consequences of industrialization.

^b Based on UNEP (2011), Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication—A Synthesis for Policy Makers, available at https://sdgs.un.org/sites/default/files/publications/126GER_synthesis_en.pdf.

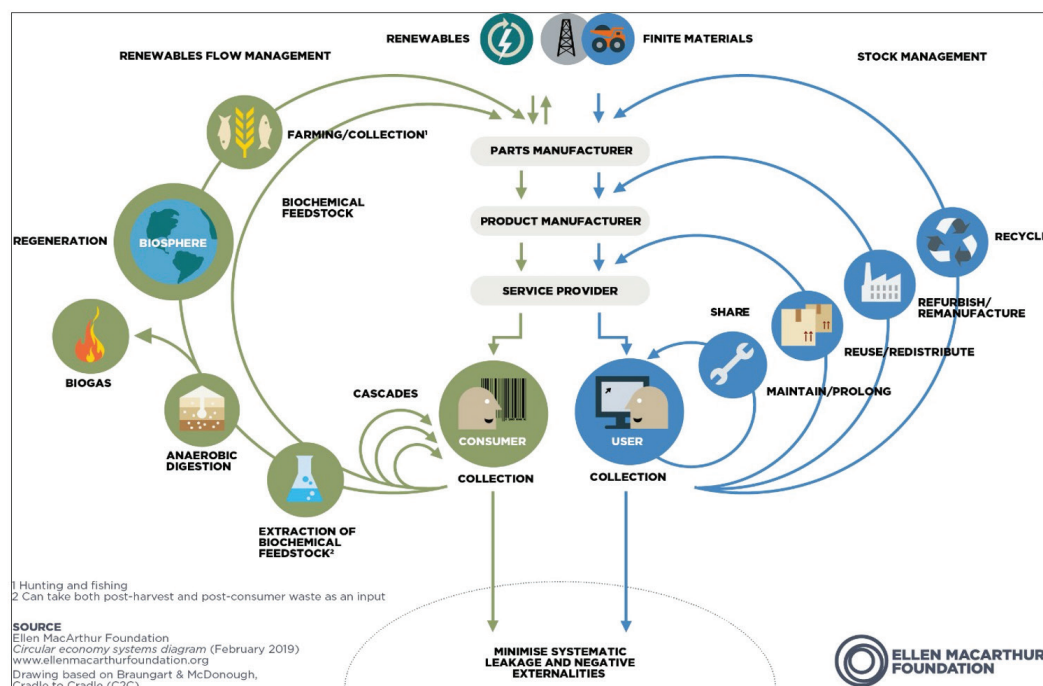
^c W.R. Stahel (2016), “The circular economy”, Nature 531, 435–438.

The circular economy concept has evolved over time with experts and research institutions expanding on its dimensions and practical implementation, as illustrated in the circular economy butterfly system of the Ellen MacArthur Foundation. As shown in Diagram 1, this system divides production processes into two distinct cycles based on the type of materials utilized, namely, the technical cycle (which uses abiotic, nonliving materials) and the biological cycle (which uses biotic, living materials). The emphasis is on minimizing waste and boosting resource efficiency by orienting the design phase to the following three main principles:⁵²

- **Eliminating waste and pollution** by designing products that can withstand extended use without significant performance degradation.
- **Circulating products and materials at their highest value** by designing products that can be easily disassembled into their individual components and using materials that can be easily reused.
- **Regenerating nature** by integrating nature-based solutions such as renewable energy sources and sustainable agricultural practices.

⁵² For a detailed discussion of these principles and most widely used circular economy business models, see the Ellen MacArthur Foundation at: <https://www.ellenmacarthurfoundation.org/the-circular-economy-in-detail-deep-dive>.

Diagram 1. Circular economy butterfly system



Source: Ellen MacArthur Foundation.

Adopting these principles will enable enterprises to minimize their environmental footprint while strengthening supply chain resilience through product diversification, regulatory compliance, increased customer trust in domestic and global markets, and new partnerships across domestic industries and international suppliers.⁵³

3.2 Circular economy principles in Tajik legislation and latest development strategies

Tajikistan's legal and policy frameworks are progressively aligned with the circular economy principles, driven by a steadfast commitment to environmental protection.⁵⁴ This commitment is enshrined in the country's constitution, which underscores environmental protection as a prerequisite for ensuring healthcare for all (Article 38); emphasizes the protection of nature, including land, water, airspace, fauna and flora, as the "duty of every person" (Article 44); and, vests the State with the responsibility to ensure the effective utilization of these resources in the interests of the people (Article 13). The foundational principles and approaches for mainstreaming environmental concerns into policies and legislation are elaborated in the country's environmental laws. As shown in annex 1, these stipulate the following:

- **Comprehensive environmental responsibility**, holding individuals and legal entities accountable for environmental protection, including against air and water quality, soil pollution, waste management, and unsustainable use of natural resources.

⁵³ UNECE member States established "Circular Economy and the Sustainable Use of Natural Resources" as a cross-cutting theme at the 69th Commission session in 2021 (<https://unece.org/info/events/event/349487>). Detailed information on the UNECE's analytical work and capacity-building activities for promoting the circular economy is available at <https://unece.org/trade/CircularEconomy>.

⁵⁴ <https://www.prokuratura.tj/en/legislation/the-constitution-of-the-republic-of-tajikistan.html>.

- **Adherence to environmental standards and regulations**, emphasizing due diligence in ensuring compliance with environmental standards and regulations. Violations, such as unauthorized use of resources, pollution, and non-compliance with sanitary requirements, are subject to penalties.
- **Scientific and objective assessments**, mandating environmental assessments and audits that should be carried out on a regular basis and be comprehensive, scientific, and objective to inform environmental policies and programmes, with the aim of ensuring compliance with environmental standards; enabling monitoring and forecasting; and supporting climate change mitigation and adaptation.
- **Holistic approach to environmental management**, integrating environmental considerations into various sectors such as urban planning, industrial activities, road transport, and land use, thereby ensuring that environmental impacts are considered in all economic and developmental activities.
- **Participation and transparency**, promoting the involvement of various government bodies, local authorities, and the public in environmental decision-making processes, ensuring transparency and accountability.
- Collaborative enforcement across different government ministries and local authorities.

Complementing the environment laws is a range of horizontal legislation aligned with the circular economy principles, targeting the main stages of resource utilisation, starting with initial extraction and ending with waste management. In addition, Tajikistan is party to numerous international environmental conventions and agreements as part of a broader effort to achieve regulatory harmonization and facilitate joint action in tackling environmental challenges (Annex 1).

The above foundational principles and legislation, along with its World Trade Organisation (WTO) compliant trade legislation⁵⁵, underpin the country's latest development strategies. These include the National Strategy of Adaptation to Climate Change of the Republic of Tajikistan for the period up to 2030; the National Disaster Risk Reduction Strategy for 2019-2030; the National Development Strategy for the Period until 2030; the State Industrial Strategy till 2030; Sustainable Energy for All for 2013-2030; and the Concept of the Digital Economy.⁵⁶ These strategies emphasize balancing environmental concerns with economic and social progress, prioritizing:

- Climate change mitigation and adaptation
- Environmental and biodiversity conservation
- Waste management development

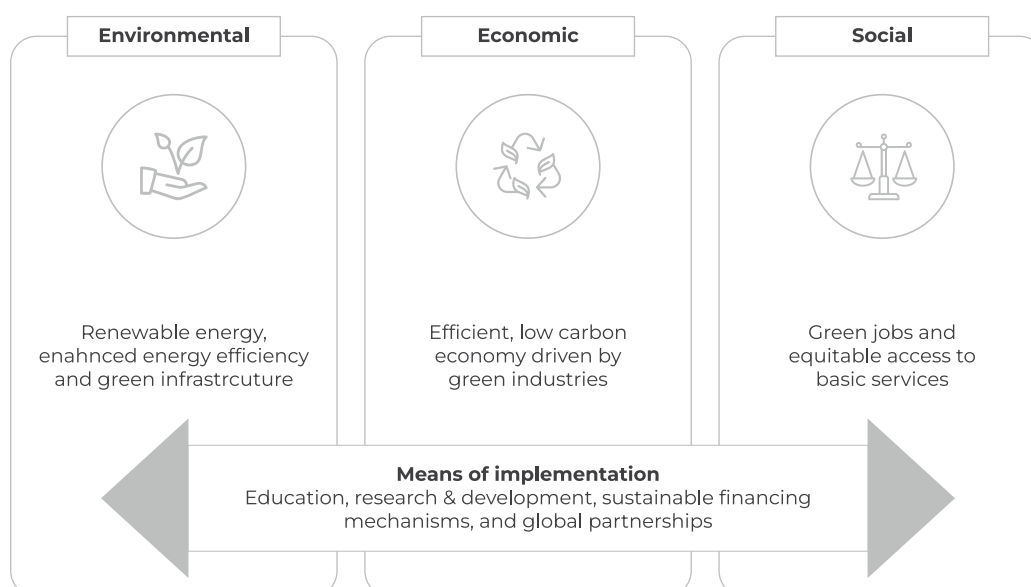
⁵⁵ Tajikistan became a member of the World Trade Organisation on 2 March 2013 and has ratified the Agreement on Trade Facilitation.

⁵⁶ The strategies are available at <http://www.portali-huquqi.tj/>.

- Energy efficiency (reducing energy losses in grids by up to 10 per cent by 2030 in relation to 2010; increasing the efficiency of energy use in all economic sectors, irrigation systems and final users up to 20 per cent)
- Decarbonization
- Renewable energy (increasing energy production from renewable sources by 20 per cent by 2030 in relation to 2010)
- Energy security, increasing local energy sources from 59 per cent in 2010 to 80 per cent in 2030
- Digital transformation
- Optimization of natural resources utilization, including water and land
- Equitable access to sustainable and high-quality basic services, including electricity

In 2022, the Government scaled up reforms with targeted measures to further decouple economic growth from environmental degradation and biodiversity loss with the adoption of the Strategy for the Development of the Green Economy for 2023-2037. The strategy aims at setting in motion a systemic shift toward sustainable production and consumption patterns in a manner that ensures a balanced treatment of the three pillars of sustainability. As shown in figure 10, it envisions a gradual transition towards renewable energy, while bolstering energy efficiency and simultaneously greening basic utility, energy and transport infrastructures as well as production to create new jobs. The strategy also envisions equitable access to the resulting benefits, including new employment opportunities and basic services.

Figure 10. Key pillars of Tajikistan's National Strategy for the Development of the Green Economy



Source: UNECE, based on Tajikistan's National Strategy for the Development of the Green Economy for 2023-2037.

The strategy is divided into five phases. The initial two phases (2023-2028) are focused on spreading awareness about the green economy, shaping economic and environmental mindsets, integrating green principles into policies, and commencing the process of applying green standards in socio-economic sectors. The middle stages (2029-2034) involve embedding green economy principles in key sectors, including agriculture, mining, manufacturing, transport, construction, tourism, and waste management while enhancing the country's green economy framework. The final phase (2035-2037) aims to further develop the green economy, focusing on promoting sustainable use of natural capital and green investment.

The strategy highlights four means of implementation: (i) enhancing the national education system, (ii) advancing research and development, (iii) increasing public investments in basic infrastructure (including basic utility, transport and renewable energy), energy-efficient buildings and natural capital; and (iv) global partnerships. The required investments, estimated at \$2.1 billion, will be funded through the State budget that was undergoing comprehensive reforms in 2024,⁵⁷ the private sector, foreign investors and official development assistance through green financing mechanisms. In this regard, the strategy stipulates consolidating market-based incentives through:

- Introducing a public procurement policy favouring enterprises that manufacture environmentally friendly products and utilize sustainable production methods.
- Phasing out subsidies that encourage wasteful consumption or the use of environmentally harmful products and services.
- Introducing a new system to price natural resources that takes into account the environmental and social impacts of their extraction and utilization.
- Imposing taxes on the extraction or use of resources that have negative environmental impacts.

3.3 Main circular economy-aligned initiatives

The past few years have seen the Government launch several reform initiatives aligned with the circular economy principles, underscored by efforts to boost public awareness of environmental issues in the context of the State Environmental Programme for 2023-2028.⁵⁸ Annex 2 provides a summary of the latest initiatives, organized by the main priority areas outlined in national development strategies and plans and stages of resource utilization from initial extraction to waste management.

⁵⁷ See Tajikistan Tax Reform Operation project, launched in 2021 with the support of the World Bank, aimed at simplifying the tax system, enhancing the quality of taxpayer services and improving voluntary compliance (<https://projects.worldbank.org/en/projects-operations/project-detail/P171892>) as well as the reform measures under the International Monetary Fund Policy Coordination Instrument, detailed in Country Report No. 24/84, April 2024, available at <https://www.imf.org/-/media/Files/Publications/CR/2024/English/TJKEA2024001.ashx>.

⁵⁸ See <http://www.portali-huquqi.tj/publicria/ibtido.php>.

The initiatives demonstrate a sustained effort to improve resource utilisation, with the Strategy for the Development of the Green Economy addressing emerging challenges and opportunities to further enhance the scope and impact of previous reforms. Below is a summary of key elements forming the focus of Tajikistan's reform initiatives:

Resource extraction

- **Advanced water management technologies** to reduce water usage in resource extraction and ensure proper treatment of wastewater in the context of an integrated water resource management system.
- **Protection of natural** areas for preserving biodiversity and ensuring sustainable land use.
- **Land reclamation**, particularly restoring saline lands and previously unused irrigated lands.
- **Standards** for supporting the adoption of green economy principles in the mining sector.
- **Stricter environmental regulations** on resource extraction, including setting limits on pollutants, requiring environmental impact assessments, and enforcing compliance through fines and penalties.

Resource utilization in production and basic services

- **Standards** for supporting the adoption of green economy principles across key sectors including agriculture, manufacturing and construction.
- **Sustainable production practices** through promoting the use of environmentally friendly and locally sourced raw materials and eco-friendly products and packaging materials.
- **Skills development**, particularly new vocational training programs to promote the use of energy efficiency and clean technologies.
- **Transport infrastructure development**, particularly the emphasis on introducing public electric transport in cities and developing infrastructure to support electric vehicles.
- **Sectoral initiatives** for supporting the transition of the cotton industry and tourism towards a green economy.
- **Financial incentives**, such as tax breaks, to engage the private sector in housing and communal services.

Energy production and consumption

- **Renewable energy**, particularly enhancing the use of hydropower and promoting the development of other renewable energy sources.
- **Energy efficiency**, particularly restructuring the national electric utility and developing smart energy management systems.

Waste management

- **Waste processing**, particularly the establishment of standards for waste processing and commissioning industrial waste processing plants.

Reform initiatives have involved a range of horizontal and sectoral programmes along with capacity-building projects, aimed at developing the legislative frameworks and institutional capacities to deliver on the country's priority areas. These have enabled the country to put in place nearly half of the necessary policies and practices for achieving IWRM.⁵⁹ Further, the Government has achieved important progress in promoting green financing mechanisms, including:

- The launch of the first-of-its kind green bond in local currency (issued in February 2024) to provide MSMEs and retailers with climate finance, enabling them to invest in clean, energy-efficient technologies.⁶⁰
- The adoption, in 2023, of the new law “On public procurement”, which provides guidance for inclusive sustainable procurement. This includes establishing rules and practices for prioritizing goods and services that reduce negative impacts; contribute to environmental conservation, increase opportunities for SMEs (especially those led by women and marginalized groups) and promote corporate and social responsibility.⁶¹

However, the initiatives have primarily focused on hydropower and water management. Other renewable resources are not fully exploited, and progress in integrating the country into the regional energy network and developing waste management systems remain slow. The same applies to developing enterprises' productive capacity and addressing the skills mismatch in the labour market.

⁵⁹ The rate of implementation of integrated water resources management was estimated at 46 per cent in 2020 (<https://sdg6data.org/en/country-or-area/Tajikistan>). Major achievements include the adoption of the revised Water Code, the Law on Drinking Water Supply and Sanitation, and the Law on Water Users Associations (annex 1).

⁶⁰ International Finance Corporation (2024), “IFC invests in Tajikistan's first green bond to support climate-smart projects, build resilience”, 16 February.

⁶¹ Government of Tajikistan, Law No. 1955, “On public procurement”, available at <https://www.ecolex.org/details/legislation/law-no-1955-on-public-procurement-lex-faoc221406/>.

3.4 Policy implications

This chapter shows that Tajikistan has made significant strides in establishing a conducive environment for circularity, integrating circular economy principles into its legislative and policy framework with targeted initiatives for transforming both production and consumption patterns.

The challenge facing the government is how best to ensure a more balanced reform effort, which translates strategies and initiatives into action-oriented measures that address all priority areas (Chapter 3). As shown in the next chapter, this could be achieved by expanding and deepening reform initiatives in resource utilization, energy production and consumption and waste management.

4. CHALLENGES TO TAJIKISTAN'S TRANSITION TO A CIRCULAR ECONOMY

To gain a deeper understanding of the broader context influencing circularity within the garment and footwear sector, this chapter discusses key issues surrounding Tajikistan's transition to a circular economy. To do this, it embraces a dynamic perspective of the economy as intertwined with the environment in a multifaceted relationship like the one observed among biological organisms.⁶²

It therefore examines the Tajik economy from the prism of its dependence on the environment, particularly the steady supply of natural resources. The aim is to discern the impact of economic activities on the availability of natural resources and the environment, highlighting the extent to which resources are reintroduced into the environment as waste, emissions and other pollutants.

The chapter uses the material flow analysis indicators (annex 3), which trace the utilization of raw materials (namely, biomass, fossil fuels, metal ores and non-metallic minerals) across domestic and global supply chains from extraction to production and consumption. These indicators are complemented by insights into land and water utilisation using environmental performance indicators and data on the country's energy production and consumption patterns.

The chapter shows that Tajikistan's circular economy transition is complicated by inefficient use of natural resources, unsustainable energy production and consumption patterns, and an under-developed solid waste management system. The chapter shows that these shortfalls cannot be understood in isolation from the structural challenges and the financing gap facing the Government.

4.1 Structural challenges

Tajikistan's ability to achieve sustainable development has been consistently impeded by its mountainous terrain, landlocked position and climate vulnerability. Each factor adds layers of complexity to the Government's efforts to balance the need for economic diversification and social development with environmental protection and biodiversity conservation.

⁶² This perspective draws on the concept of industrial metabolism. For a detailed discussion of this concept, see, for example, R.U. Ayres (1994), "Industrial metabolism: Theory and policy", in: R.U. Ayres and U.K. Simonis (Eds.), *Industrial Metabolism: Restructuring for Sustainable Development*, United Nations University Press, Tokyo, pp. 3–20; and Marco A. Janssen et al. (2001), "Changing industrial metabolism: Methods for analysis". *Population and Environment*, 23(2), 139–156.

Landlocked position

Tajikistan's landlocked position places it at a significant disadvantage in terms of connectivity. The lack of direct sea access necessitates the use of ports in neighbouring countries, which undermines the efficiency and competitiveness of national supply chains considering the longer distance; the multiple border crossings, each with its own customs and bureaucratic procedures; and the logistical complexities, with the multiple countries and transportation modes increasing the risk of delays and damage. These factors inflate production and trade costs, creating a disincentive to investment in industrial upgrading and in new economic activities.

Mountainous terrain

Mountains cover about 93 per cent of Tajikistan's surface area, with glaciers making up for 6 per cent of this area.⁶³ While the dominance of mountains offers opportunities for harnessing renewable energy, particularly hydropower and geothermal energy, it poses significant challenges to sustainable development. In addition to rendering the country inherently vulnerable to climate change, the resulting geographic discontinuity increases production and transaction costs for enterprises, while making it difficult to develop the required basic utility infrastructures for universal access to waste management and other social services.

Climate vulnerability

Tajikistan ranks among the most climate-vulnerable countries in Central Asia.⁶⁴ Available statistics show the number of natural disasters (including landslides, avalanches, and glacial lake outburst floods) on the rise, from 213 in 2020 to 359 in 2021, with losses in life compounded by nearly Somoni 1.5 billion (approximately \$253.7 million) in economic losses.⁶⁵

The country is likely to experience an escalation in climate-induced disasters over the coming years, with annual mean temperatures projected to reach up to 6.3°C higher by 2080 compared to 1986-2005.⁶⁶ The resulting changes in rainfall patterns will reduce the quantity and timing of river runoff and increase reservoir evaporation, thereby undermining the availability of drinking water as well as energy and food security.⁶⁷

4.2 Inefficiencies in resource utilization

Material flow analysis data shows Tajikistan as registering significant progress in decoupling economic growth from environmental impacts.

⁶³ Regional Environment Center for Central Asia (2020), "Climate change in Tajikistan: Illustrative summary", available at <https://zoinet.org/wp-content/uploads/2018/01/TJK-climate-summary-en.pdf>.

⁶⁴ World Bank, "Climate Change Knowledge Portal: Tajikistan", available at <https://climateknowledgeportal.worldbank.org/country/tajikistan/vulnerability>.

⁶⁵ Government of Tajikistan (2023), National Voluntary Review, available at <https://hlpf.un.org/sites/default/files/vnrs/2023/VNR%202023%20Tajikistan%20Report.pdf>.

⁶⁶ GIZ (2020), "Climate Change Profile: Tajikistan", available at https://www.landuse-ca.org/wp-content/uploads/2019/04/2020_GIZ-Climate-Profile-Tajikistan_EN.pdf.

⁶⁷ For a detailed account of risks associated with climate change, see the country's Third National Communication under the United Nations Framework Convention on Climate Change (2014).

It has already achieved relative decoupling,⁶⁸ with GDP surging by 153 per cent over the period 1992-2019, outpacing the increase in material productivity, which grew by 122 percent.⁶⁹ This means that the country has become more efficient in its use of raw materials over time, which is essential for reducing environmental impacts.

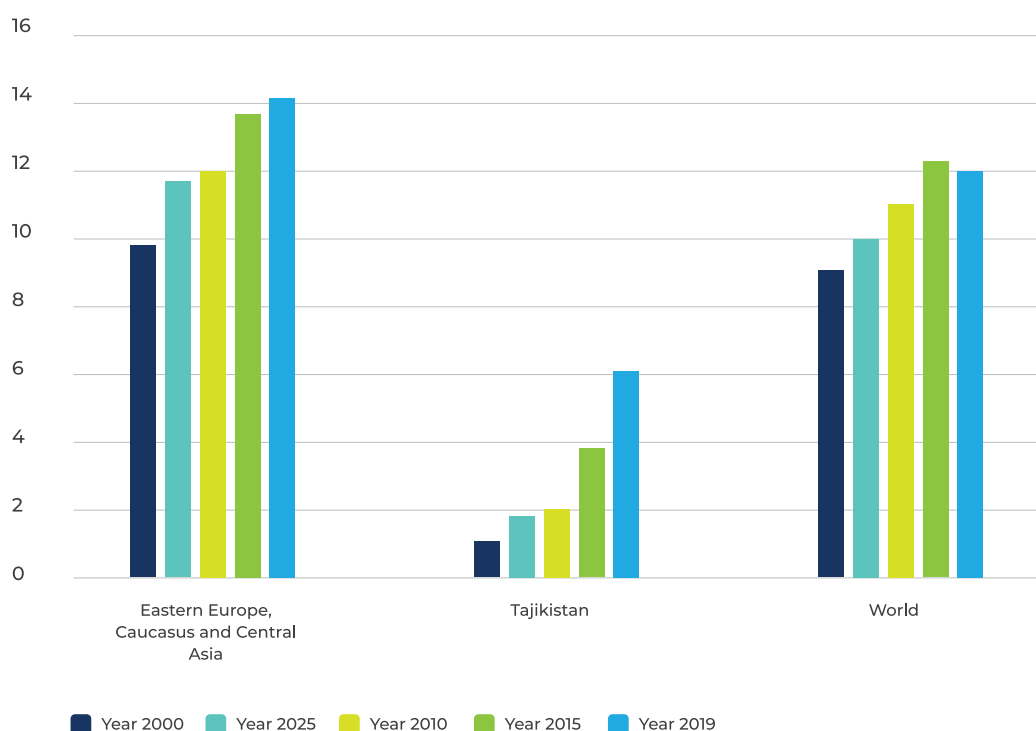
Achieving absolute decoupling, crucial for lowering the pressures on the environment and achieving circularity, requires boosting raw material productivity. It was estimated at \$0.3 per kg in 2021, which is 60 per cent below the global average of \$0.8 per kg.⁷⁰ Further, as demonstrated throughout this section, more needs to be done to improve the efficiency of land and water use.

Raw materials

Increased domestic material consumption

Tajikistan's domestic material consumption (DMC) per capita, which measures domestically extracted and imported raw material used by producers and consumers, increased by over 300 per cent over the period 2000-2019 from 1.52 to 6.39 tons. While considerably below the levels observed in Eastern Europe, Central Asia and the Caucasus region and globally (Figure 11), this figure is likely to increase, unless the Tajikistan takes steps to transform domestic production and consumption patterns.

Figure 11. Comparative analysis of Tajikistan's domestic material consumption per capita (Tons)



Source: The Material Flow Analysis Portal, based on the UN International Resource Panel (IRP) Global Material Flows Database.

⁶⁸ The Material Flow Analysis Portal, "Decoupling material use and economic performance", available at <https://www.materialflows.net>. Relative decoupling is achieved when economic growth exceeds growth in material use; absolute decoupling is achieved when economic growth is underscored by decreased material use. Both are driven by greater efficiency in raw material utilization.

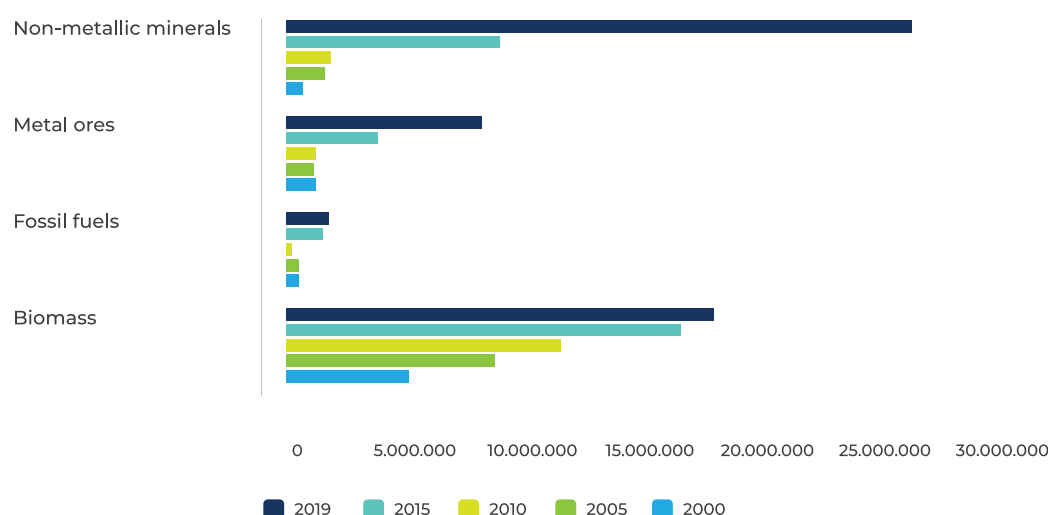
⁶⁹ Ibid.

⁷⁰ Ibid.

As shown in figure 12, the country's consumption patterns exhibited increased dependence on non-metallic minerals over the period 2000-2019. The most substantial surge in DMC occurred in non-metallic minerals along with metal ores, driven by the expansion in construction⁷¹ and industrial activities. The same period registered an increase in the DMC of fossil fuels during the same period. The increase was modest and is unlikely to spike, in view of the country's significant investments in hydroelectric power.

Figure 12 also shows positive patterns in DMC. In particular, the uptick in the DMC of biomass, which recorded the second-largest growth during the same period, reflecting its increased importance as a viable source of renewable energy. However, this pattern carries challenges that need to be addressed, particularly the potential harmful impacts on food security, since growing biomass might divert agricultural land away from food production. Further, if biomass production involves replacing forests and if crops are treated with chemical fertilizers and pesticides, and refined with coal, then the resulting biofuel could result in greater emissions and loss of carbon sinks.

Figure 12. Tajikistan's domestic material consumption, 2000-2019 (tons)



Source: The Material Flow Analysis Portal.

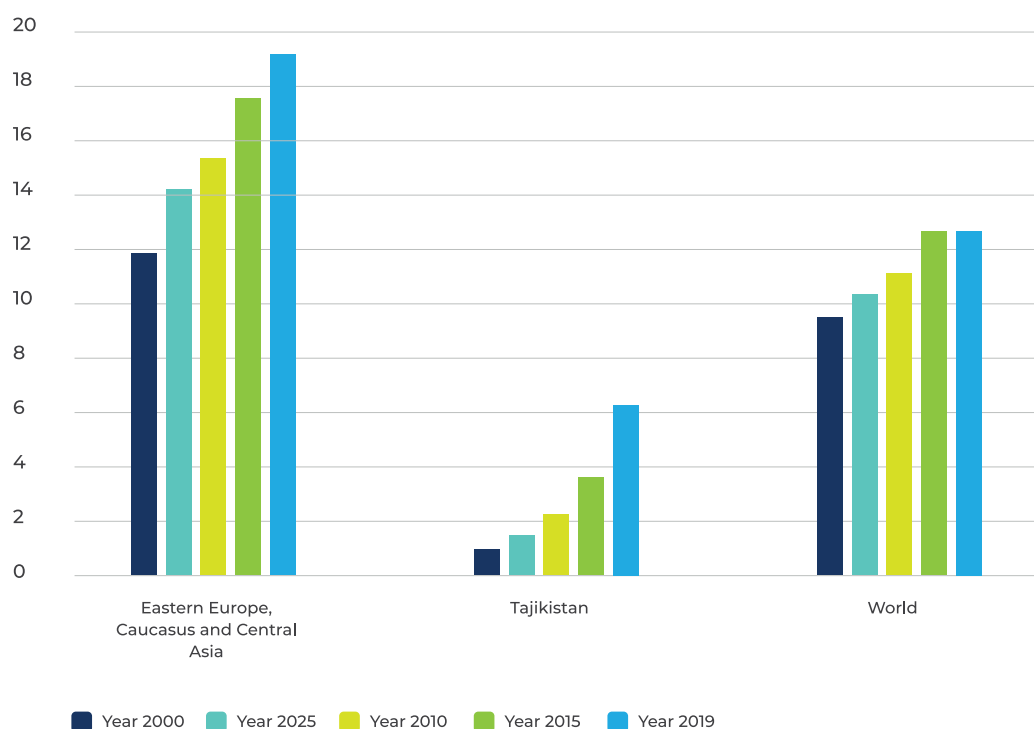
Increased domestic material extraction

Mirroring the rise in DMC, the past two decades have seen Tajikistan register a noticeable uptick in domestic extraction (DE) across all raw material categories, with DE per capita increasing from 1.37 tons in 2000 to 6.08 in 2019.⁷² While considerably below the levels observed in Eastern Europe, Central Asia and the Caucasus region and globally (Figure 13), DE is likely to maintain an upward trend in view of the current patterns of DMC.

⁷¹ See Agency on Statistics under the President of the Republic of Tajikistan (2018), "Tajikistan in figures", available at <https://www.stat.tj/>.

⁷² UN International Resource Panel (IRP) Global Material Flows Database.

Figure 13. Comparative analysis of Tajikistan's domestic extraction per capita (tons)

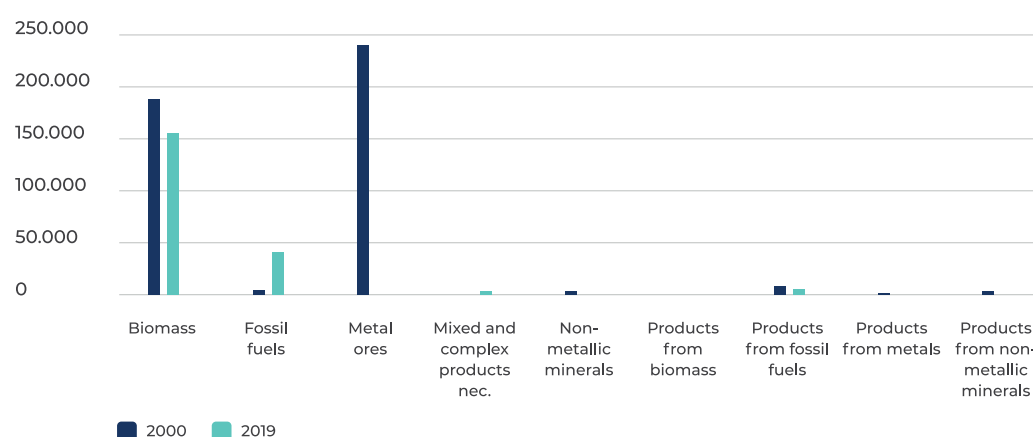


Source: The Material Flow Analysis Portal.

Decreased exports of raw materials

Tajikistan's increased DE has been underscored by a shift towards greater self-sufficiency. This is reflected in declining exports of raw materials, which fell by 41.6 per cent during 1992 - 2019.⁷³ As shown in figure 14, this trend is primarily due to the reduced exports of metal ores. Previously dominating the country's raw material exports, these registered the steepest decline (falling to zero in 2019). In contrast, exports of fossil fuels increased.

Figure 14. Tajikistan's direct exports of raw materials by category, 2000-2019 (tons)



Source: The Material Flow Analysis Portal.

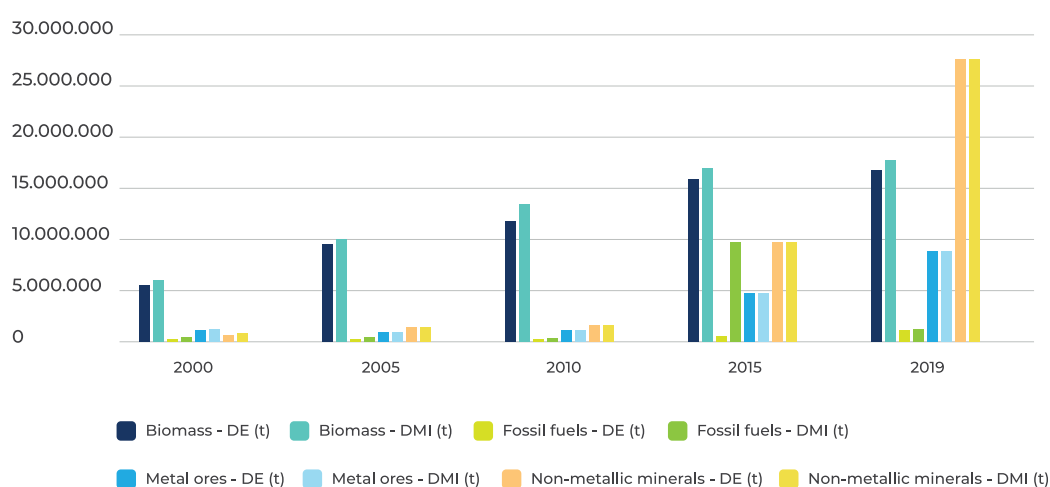
⁷³ The Material Flow Analysis Portal.

Tajikistan's raw material equivalent of exports of metal ores and non-metallic minerals show a significant rise, particularly from 2013 onwards. Metal ores saw a rise from 983,784 tons in 2005 to 5.9 million in 2021, and non-metallic minerals increased from 575,426 tons to 11.3 million in the same period. Biomass exports fluctuated, peaking in 2016 at 1.9 million tons, while fossil fuels remained relatively low, with a slight increase in 2021 to 220,485 tons.⁷⁴ This indicates an intensified focus on mining activities, with negative consequences for resource preservation and the environment, such as habitat destruction and pollution, highlighting the need for sustainable practices and economic diversification.

Increased dependence on imported raw materials

Despite the rise in DE and the decline in exports, Tajikistan has become increasingly reliant on importing raw materials to satisfy domestic demand. This trend is illustrated in figure 15, which shows the country as registering a consistent increase in direct material input (DMI) across all categories of raw materials since 2000. This increase has been driven by non-metallic minerals, followed by biomass with the DMI for biomass surpassing the levels of DE, reflecting greater reliance on imports. Aside from domestic supply shortages, this indicates cost saving concerns and producers' prioritization of access to better-quality materials.

Figure 15. Evolution of domestic extraction and domestic material input in Tajikistan (tons)

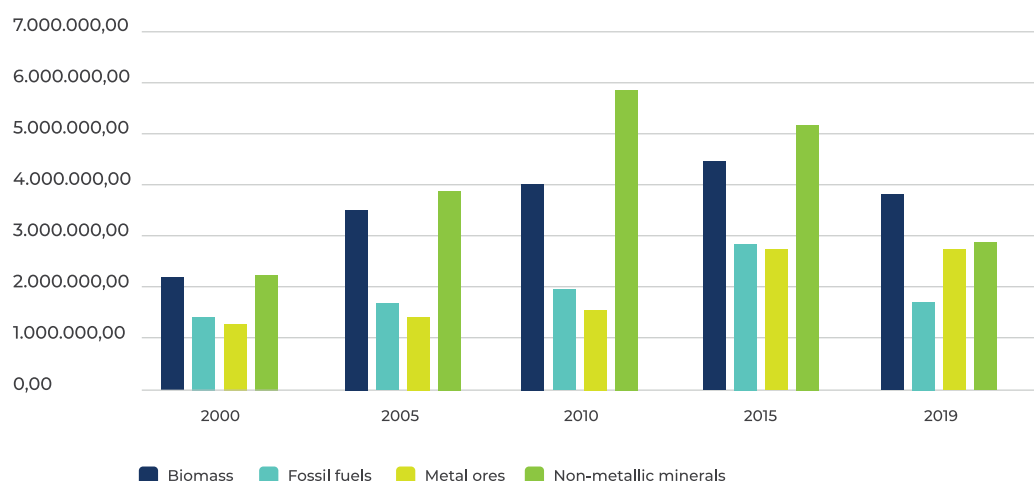


Source: The Material Flow Analysis Portal.

Tajikistan has also registered an uptick in indirect material inflows across all categories since 2000, measured in terms of the amount of raw material equivalents of imports (RME-IMP). As shown in figure 16, while the amounts for non-metallic minerals, biomass and fossil fuels have been declining trend since 2015, they remain above their 2000 levels.

⁷⁴ Ibid.

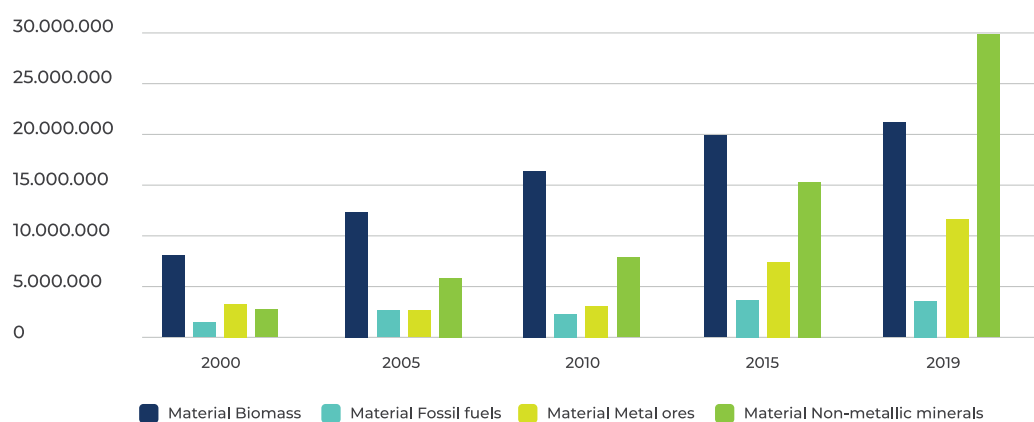
Figure 16. Tajikistan's raw material equivalents of imports, 2000-2019 (tons)



Source: The Material Flow Analysis Portal.

The country's increased dependence on raw materials for both production and consumption is further evidenced by the surge in raw material input (RMI), which comprises DE and RME-IMP used in domestic supply chains. As shown in figure 17, RMI has experienced an uptick across all categories of raw materials since 2000, with non-metallic materials and biomass registering the most substantial increases.

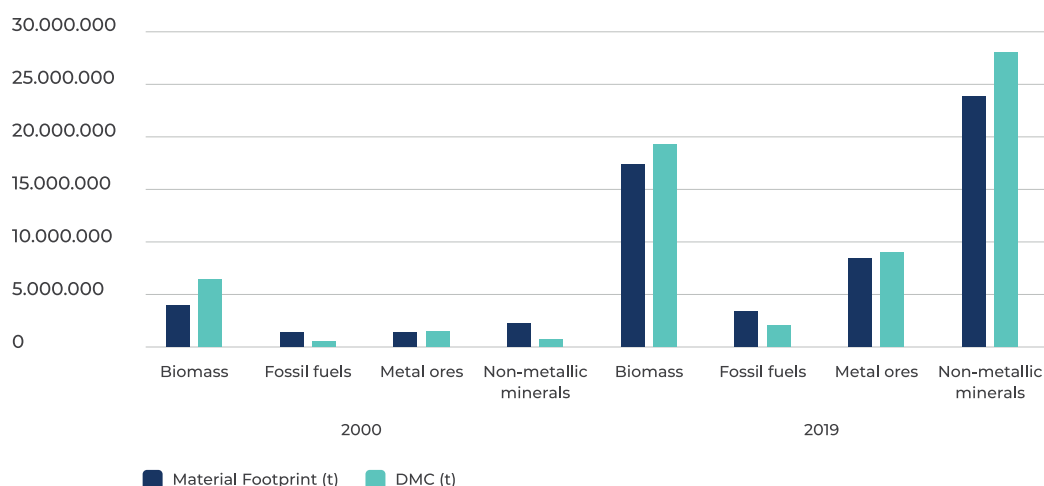
Figure 17. Evolution of raw material input in Tajikistan (tons)



Source: The Material Flow Analysis Portal.

The growing imports of raw materials have resulted in DMC exceeding the material footprint, particularly for non-metallic products and biomass (Figure 18), indicating that the environmental impact of domestic consumption is largely assumed by the supplying countries. In 2021, Tajikistan's material footprint was estimated at 40.2 million tons, whereas its DMC was higher at 51.3 million tons.⁷⁵

Figure 18. Evolution of Tajikistan's DMC and material footprint (tons)



Source: The Material Flow Analysis Portal.

Thus, Tajikistan's DMC per capita rose by over 300 per cent during the period 2000-2019. Although still below the levels observed in Eastern Europe, Central Asia, and the Caucasus region, it carries harmful environmental impacts since it is driven by increased consumption of non-metallic minerals and metal ores due to expansion in construction and industrial activities. Further, the country's shift towards biomass poses challenges to food security and the environment.

At the same time, the rise in DE has been accompanied by an increased reliance on importing raw materials to meet domestic demand, with DMI and RME-IMP increasing across all categories since 2000. This growing dependence on imports has led to DMC exceeding the material footprint, indicating that the environmental impact of Tajikistan's consumption is largely borne by the supplying countries.

Land

Tajikistan's mountainous terrain, coupled with its climate vulnerability, have rendered a situation whereby about 35 per cent of the land (141,379 km² in 2021) is allocated for agriculture, with a mere 6 per cent suitable for cultivation.⁷⁶

⁷⁵ The Material Flow Analysis Portal, "Country Profile for Tajikistan", available at <https://www.materialflows.net/visualisation-centre/country-profiles/>.

⁷⁶ UNECE (2021), Third Environmental Performance Review of Tajikistan.

Forests account for only 3 per cent of the country's land surface⁷⁷, with the remaining 62 per cent used for other purposes, including industrial activities, energy, transportation, and housing.⁷⁸ This pattern of land use complicates striking a balance between the various needs of the country, with negative consequences for the achievement of sustainable development:

Economic sustainability

- **Agricultural capacity:** With only 6 per cent of the land suitable for cultivation, there is a significant constraint on agricultural productivity, undermining food security while aggravating food import dependency and vulnerability to global market fluctuations.
- **Industrial and transport infrastructure:** The allocation of land for transport and industrial activities in a country with limited flat and buildable terrain is challenging.

Social sustainability

- **Poverty:** Low-income households, which spend a significant portion of their income on staple foods, might be unable to afford food when prices surge, so that they experience chronic undernourishment or malnutrition.
- **Housing and basic infrastructure development:** The mountainous terrain undermines the government's ability to ensure adequate housing and basic utility services for all, with negative consequences for the quality of life.

Environmental sustainability

- **Climate vulnerability:** The mountainous terrain makes the country particularly susceptible to natural disasters, including landslides, avalanches, and glacial lake outburst floods.
- **Deforestation and biodiversity loss:** The country's limited endowments of forests and arable lands render it difficult to ensure biodiversity conservation and ecological balance. Both resources are crucial for carbon sequestration, soil conservation, and water regulation, all of which are vital for environmental sustainability.

At the same time, despite improvements, the country's agricultural practices continue to undermine environmental sustainability. Unsustainable farming practices, involving heavy reliance on fossil fuels for machinery and irrigation as well as the use of chemical pesticides and fertilizers, are contributing to air and water pollution and leading to loss of soil fertility and land degradation.⁷⁹

⁷⁷ United Nations Development Programme (2020), Human Development Report.

⁷⁸ Calculated on the basis of data from the Committee on Electronic Information Communication, available at <https://www.ceicdata.com/en/tajikistan/environmental-land-use-non-oecd-member-annual/land-use-total-area>.

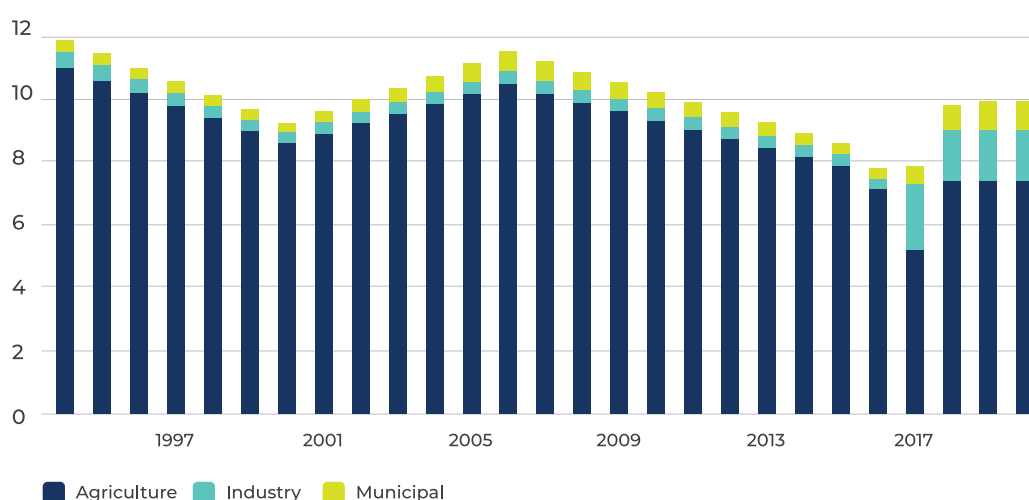
⁷⁹ Asian Development Bank (2021), Key Indicators for Asia and the Pacific, available at <https://www.adb.org/publications/key-indicators-asia-and-pacific-2021>; Food and Agriculture Organization (2021), Sustainable Development Goals available at: <https://www.fao.org/sustainable-development-goals/en/Strategy-for-the-Development-of-the-Green-Economy-in-the-Republic-of-Tajikistan-for-2023-2037>, available at <http://www.portali-huquqi.tj/>; and Ministry of Energy and Water Resources of the Republic of Tajikistan, "Water resources", available at https://www.mewr.tj/?page_id=390.

As shown below, overuse of water for irrigation is among the main factors contributing to the country's water stress, affecting the availability of freshwater for drinking, ecological sustenance and other uses.

Water

Tajikistan is abundant in water resources. It is home to over 13,000 glaciers with a combined volume of 845 km³ and 1,000 rivers that run a total of 28,500 km.⁸⁰ However, the country has long grappled with water stress, with freshwater withdrawal estimated at 70 per cent in 2020⁸¹, driven by the demands of the agriculture sector (Figure 19). The severity of the country's water stress is further reflected in the downward trend in renewable internal freshwater resources per capita, from 10,934 cubic meters in 1994 to 6,650 in 2020.⁸²

Figure 19. Water withdrawal by sector (km³ per year)



Source: UNEP, "Tajikistan: Pillar Data Visualization/Water", available at <https://wesr-cca.unepgrid.ch/cca/tajikistan/water#section-pressures>.

The stress on the country's water resources highlights the escalating effects of climate change, with 6 per cent of water basins monitored in 2020 experiencing rapid changes in surface water extent as a result of flooding and droughts.⁸³ For a country already suffering water stress, even a seemingly minor percentage of affected water basins could carry significant implications for local water and energy supply. Further, estimates point to low levels of water use efficiency, with the value added per cubic meter of used water estimated at \$1 in 2020.⁸⁴

⁸⁰ Strategy for the Development of the Green Economy in the Republic of Tajikistan for 2023-2037, available at <http://www.portali-huquqi.tj/>; and Ministry of Energy and Water Resources of the Republic of Tajikistan, "Water resources", available at https://www.mewr.tj/?page_id=390.

⁸¹ UN Water, "Tajikistan", available at <https://sdg6data.org/en/country-or-area/ea/Tajikistan>.

⁸² World Bank, World Development Indicators.

⁸³ UN Water, "Tajikistan", available at <https://sdg6data.org/en/country-or-area/Tajikistan>.

⁸⁴ Ibid.

The strain on water resources is likely to intensify, with the growing domestic demand from agriculture, industries and households compounded by the anticipated rise in temperatures. In addition, the issues surrounding transboundary water connections in Central Asia pose significant challenges. Most of the river flows feeding the region's shared water resource – the Aral Sea Basin – originate in the highlands of Tajikistan and the Kyrgyz Republic (Table 2), while the bulk of withdrawals take place in the plains of southern Kazakhstan, Turkmenistan and Uzbekistan.

Seasonal demands often clash, making it difficult to meet the unique water needs of individual countries.⁸⁵ The region exhibits excessive diversion of water for agriculture and urbanization, which, together with the effects of climate change, have significantly reduced the size of the Aral Sea Basin. This has resulted in severe environmental and ecological damages, including the loss of fisheries, increased salinity, and the degradation of arable land.⁸⁶

TABLE 2.		Transboundary waters in the Aral Sea	
Basins/ rivers	Total area (km ²)	Recipient	Riparian countries
Amu Darya	612,000	Upstream	Afghanistan, Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan
Surkhan Darya	13,500	Amu Darya	Tajikistan, Uzbekistan
Kafirnigan	11,590	Amu Darya	Tajikistan, Uzbekistan
Vakhsh	39,100	Amu Darya	Kyrgyzstan, Tajikistan
Pyanj	113,500	Amu Darya	Afghanistan, Tajikistan,
Pamir	10,000	Pyanj	Afghanistan, Tajikistan
Bartang	24,700	Pyanj	Afghanistan, Tajikistan
Syr Darya	782,600	Mid-stream	Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan
Naryn	59,900	Syr Darya	Kyrgyzstan, Tajikistan
Kara Darya	28,630	Syr Darya	Kyrgyzstan, Uzbekistan
Chirchik	14,240	Syr Darya	Kazakhstan, Kyrgyzstan, Uzbekistan
Chatkal	7,110	Chirchik	Kyrgyzstan, Uzbekistan
Zeravshan	41,800	Desert sink	Tajikistan, Uzbekistan

Source: Adapted from UNECE (2007), Our Waters: Joining Hands Across Borders. First Assessment of Transboundary Rivers, Lakes and Groundwaters.

⁸⁵ During the Soviet era, the Kyrgyz Republic and Tajikistan released water to downstream countries for summer irrigation. In return, Kazakhstan, Turkmenistan, and Uzbekistan provided coal, natural gas, and electricity in the winter. After the break-up of the Soviet Union, this reciprocal water-energy arrangement has become difficult to follow, weakening cooperation and resulting in negative developmental impacts. See UNECE (2022), Renewable Energy and Energy Efficiency Status Report 2022, available at: https://www.ren21.net/wp-content/uploads/2019/05/REN21_UNECE2022_FullReport.pdf.

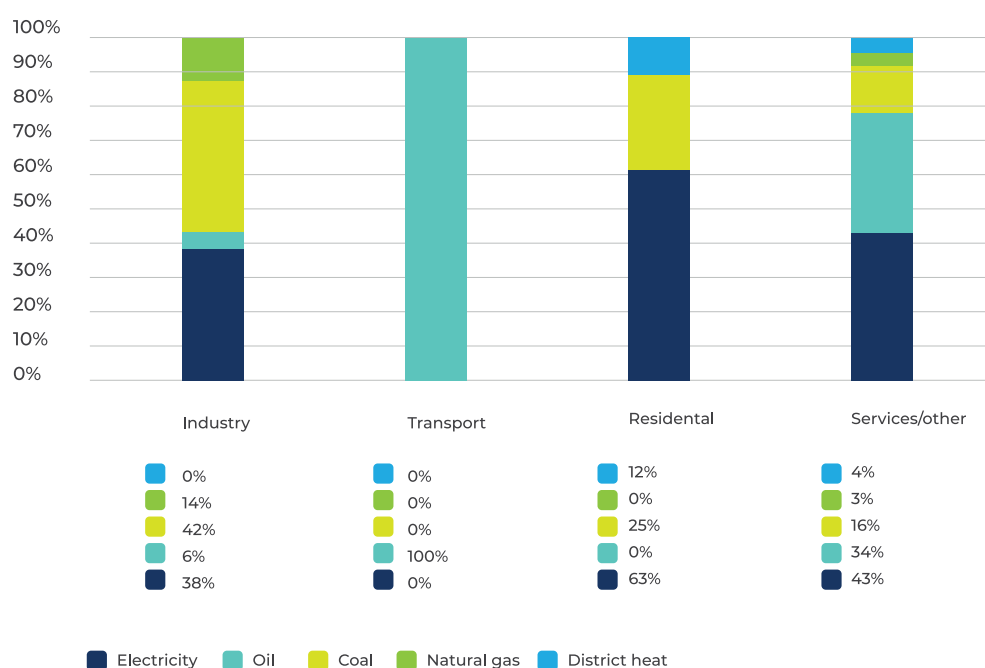
⁸⁶ See data from the National Aeronautics and Space Administration (NASA) Earth Observatory, available at <https://earthobservatory.nasa.gov/world-of-change/AralSea>.

4.3 Unsustainable energy production and consumption patterns

Tajikistan's energy sector is based almost solely on hydropower, which accounted for 87.6 per cent of the country's electricity generation in 2022,⁸⁷ thanks to abundant water resources that positioned it as a key player in the global hydropower sector. The country is the largest hydropower supplier in the Commonwealth of Independent States after the Russian Federation⁸⁸, and the eighth globally, with an estimated hydropower potential of 527 billion kilowatts-hours (kWh) per year.⁸⁹

However, as shown in figure 20, hydropower is mainly used for the electrification of the residential sector and, to a lesser extent, commercial and public facilities, with both the industrial and transport sectors heavily reliant on fossil fuels (particularly coal). The residential sector made up the largest portion of total final consumption at 27.5 per cent in 2021. Yet this figure is modest when compared with the combined shares of the industrial and transport sectors, at an estimated 44 per cent (the share of industry was 24 per cent, while that of transport stood at 20 per cent). Services and agriculture contributed to 6.6 and 5.8 per cent of total final consumption, respectively, with agricultural consumption dropping by 28 per cent since 2010.⁹⁰

Figure 20. Tajikistan's total final energy consumption by source and usage, 2020 (percentage shares)



Source: IEA Databank.

⁸⁷ Government of Tajikistan (2020), Tajikistan Health and Pollution Action Plan (2020), available at <https://gahp.net/wp-content/uploads/2021/01/Tajikistan-HPAP-final.pdf>.

⁸⁸ Ibid.

⁸⁹ IEA (2022), Tajikistan 2022: Energy Sector Review, available at <https://iea.blob.core.windows.net/assets/ab8f5f01-4b54-4636-b2e8-7818e2ed55a8/Tajikistan2022.pdf>.

⁹⁰ IEA Databank, "Tajikistan: Energy supply", available at <https://www.iea.org/countries/tajikistan/energy-mix>.

This slow progress towards electrification, a key requisite for reducing GHG emissions, is occurring against a backdrop of underutilized hydropower resources. Tajikistan is exploiting only 4 per cent of its hydropower capacity,⁹¹ and suffers chronic energy shortages. In 2021, total final consumption reached 128,708 terajoules, exceeding primary energy production (107,537 terajoules),⁹² thereby expanding the country's energy trade deficit (Figure 21).

Figure 21. Tajikistan's trade in energy (terajoules)



Source: IEA Databank.

These conditions of chronic energy shortages and under-exploitation are mainly attributed to climate-induced disasters and the difficulties in transboundary water management. These have been causing supply interruptions, particularly in winter when national peak demand occurs. The country's aging hydropower plants (HPPs)⁹³ is another contributing factor, along with capacity shortfalls within OJSC Barki and the electricity system's limited connectivity to the Central Asia power grid (Box 2), all of which hinder the optimisation of hydropower resources.

BOX 2.

Tajikistan's connectivity to the Central Asian power grid

Historically, Tajikistan compensated for its seasonal electricity deficits by importing from its neighbouring Central Asian countries through the Central Asian Power System (CAPS). However, in 2009, it was disconnected from the system. This changed in 2018 when Tajikistan re-joined CAPS in the context of cooperation arrangements with Uzbekistan that facilitated bilateral electricity trading. In 2022, Tajikistan exported about 1,583-million kWh of electricity to Afghanistan, Kyrgyzstan and Uzbekistan, and imported 2.2 million kWh from Kyrgyzstan.^a

In 2024, efforts were underway to fully reconnect Tajikistan to CAPS. These involve the modernization of the relay protection system and the establishment of new interconnection points with Uzbekistan, with a view to synchronizing the country's electricity systems with those of Uzbekistan and, by extension, fully integrating it into CAPS^b

⁹¹ IEA (2022), Tajikistan 2022: Energy Sector Review.

⁹² IEA Databank, "Tajikistan: Energy supply".

⁹³ As of January 1, 2022, Tajikistan had 307 hydroelectric power stations.

Government of Tajikistan, Strategy for the Development of the Green Economy in the Republic of Tajikistan for 2023-2037.

BOX 2.

Tajikistan's connectivity to the Central Asian power grid

Tajikistan is connected to neighbouring electricity systems through 13 power transmission lines, including two 500 kilovolt (kV) power lines, six 220 kV power lines, four 110 kV power lines and one 35 kV power line, with a total capacity of 4,570 megawatts (MW). Of these, 3,500 MW are between Tajikistan and Uzbekistan, 570 MW between Tajikistan and Afghanistan, and 500 MW between Tajikistan and Kyrgyzstan.^a

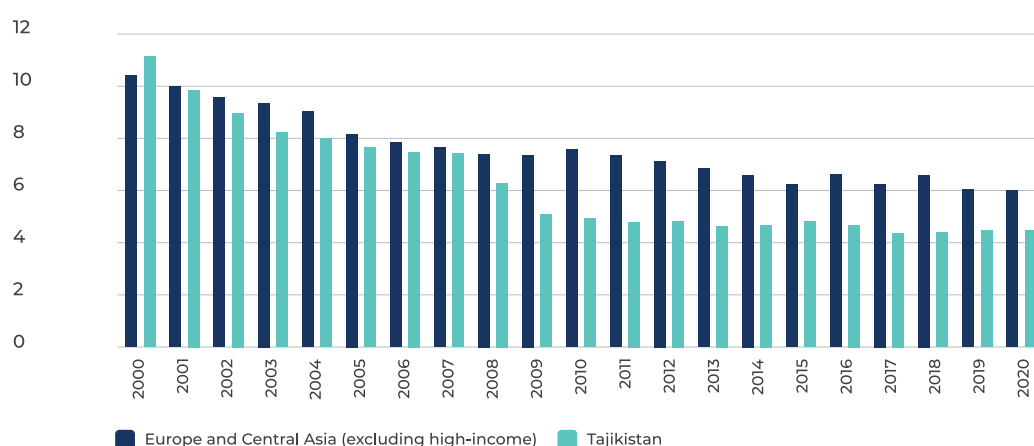
^a Ministry of Energy and Water Resources of the Republic of Tajikistan, "Export-Import", available at https://www.mewr.tj/?page_id=566.

^b Asian Development Bank (2024), "Tajikistan: Reconnection to the Central Asian Power System Project", available at <https://www.adb.org/projects/52122-001/main>.

^c Ministry of Energy and Water Resources of the Republic of Tajikistan, "Export-Import", available at https://www.mewr.tj/?page_id=566.

Tajikistan's limited ability to optimize its hydropower resources is reflected in its lower energy intensity levels as compared with those of Central Asia and Europe (Figure 22), reflecting electricity losses throughout the transmission and distribution systems. Estimates by the International Energy Agency (IEA) show these losses as averaging 15.5 per cent of total supply over the past two decades, compared with less than 7 per cent in IEA member countries.⁹⁴

Figure 22. Comparative analysis of energy intensity in Tajikistan (megajoules per dollar, 2017 PPP GDP)



Source: IEA Databank.

Funding shortfalls have been undermining the implementation of national development strategies and initiatives. Further, progress towards renewable energy and improved energy efficiency have been paralleled by a scaling-up of coal production, following the National Development Strategy of the Republic of Tajikistan for the period until 2030 and the Concept of the Development of the Coal Industry in the Republic of Tajikistan until 2040 (adopted in 2019).⁹⁵

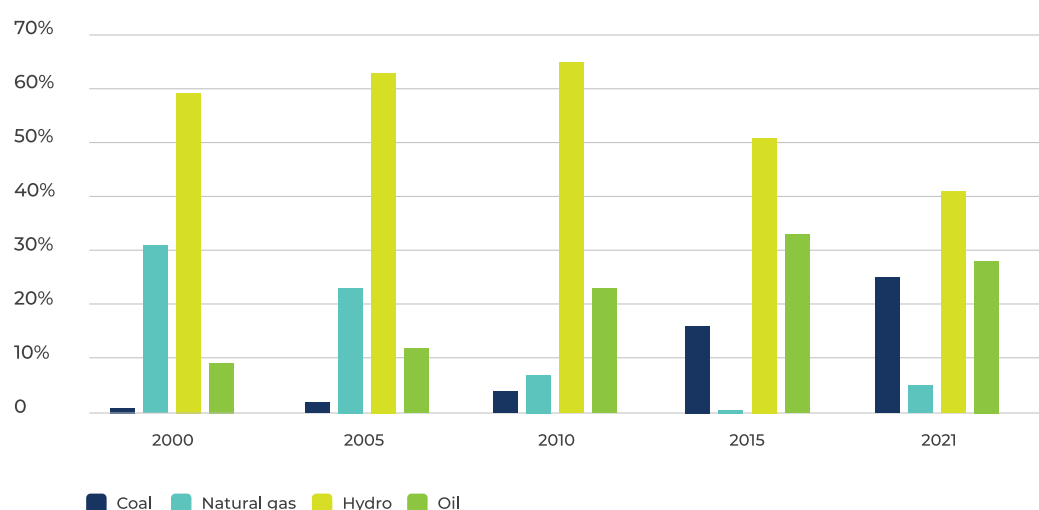
⁹⁴ IEA (2022), World Energy Statistics and Balances (database).

⁹⁵ Tajikistan has relatively small reserves of fossil fuels, comprising 18 oil and gas deposits and about 40 coal deposits. For further details, see Government of Tajikistan (2020), Tajikistan Health and Pollution Action Plan (2020).

These set ambitious targets of increasing coal production to 10.4 million tonnes by 2030, five times higher than the average annual production between 2019 and 2022, and to 15 million tonnes by 2040.

As a consequence, the share of hydropower in total energy supply declined slightly over the past few years, while that of coal has increased (Figure 23), reaching 25 per cent in 2021 (up from 1 per cent in 2000).⁹⁶ In contrast, the share of oil, which is imported from Kazakhstan and the Russian Federation, increased from 9 per cent in 2000 to 33 per cent in 2015, before dropping to 28 per cent in 2021. Similarly, Tajikistan has reduced its reliance on natural gas, which is mainly sourced from Uzbekistan;⁹⁷ its share in total energy supply has decreased from 31 per cent in 2000 to 5 per cent in 2021. Wind, solar, geothermal and other non-hydro renewable energy sources contributed 2 terajoules, accounting for less than 0.5 per cent of total energy supply.⁹⁸

Figure 23. Evolution of Tajikistan's energy supply by source (percentage shares)



Source: IEA Databank.

Evidence also points to increased reliance on coal-fired power plants, with the share of hydropower in total electricity generation decreasing from 98 per cent in 2000 to 93 per cent in 2021.⁹⁹ While coal production registered a tenfold increase in relation to 2010, at 2.1 million tonnes in 2020,¹⁰⁰ it remains below the envisaged target for 2030, something which cannot be understood in isolation of demand dynamics. A recent UNECE assessment indicates that coal demand is expected to stay low, with industrial demand, primarily driven by cement production, unlikely to register notable growth. Further, demand from other sectors, including households and public institutions, is projected to remain largely unchanged by 2050 compared to 2021 levels.¹⁰¹

⁹⁶ Coal mining production was estimated at 2.1 million tons in 2020, which represents a tenfold increase in relation to 2010. See, IEA, "Energy system of Tajikistan", available at <https://www.iea.org/countries/tajikistan>.

⁹⁷ Over 99 per cent of domestic demand for natural gas is met through imports from Uzbekistan. UNECE (2022), In-Depth Analysis of Coal Demand Dynamics in Tajikistan until 2050, available at <https://unece.org/depth-analysis-coal-demand-dynamics-tajikistan-until-2050>.

⁹⁸ IEA Databank.

⁹⁹ IEA Databank.

¹⁰⁰ IEA Databank.

¹⁰¹ UNECE (2022), In-Depth Analysis of Coal Demand Dynamics in Tajikistan until 2050.

4.4 Under-developed solid waste management systems

Tajikistan's lacks the required infrastructure for the collection, treatment, and disposal of solid waste. The country's industrial waste management system is under-developed.¹⁰² In agreement with the road maintenance units, enterprises transport their waste to the municipal disposal sites, where it is disposed of together with household waste.

As regards the municipal waste¹⁰³ management system, it remains in a nascent stage. The implementation of separate waste collection systems for various types of solid household waste, such as paper, packaging, glass, and organic waste, is still limited. The current system only involves pre-sorting materials before they are disposed of.¹⁰⁴ Further, as in many Central Asian countries, waste collection is heavily reliant on the informal sector, i.e., individuals and unregistered micro-enterprises, who collect, sort, and recycle waste, including in urban areas where formal waste services are inadequate. The expansion of the informal waste management sector has significant repercussions for the industry, as it places registered enterprises at a cost disadvantage. This competitive imbalance discourages these enterprises from investing in modernizing and expanding their services, impacting the industry's overall innovation and growth.¹⁰⁵

Estimates show waste collection coverage as relatively high for urban areas at 70-85 per cent and very low for rural areas – below 10-15 per cent – even though less than 30 per cent of the population lives in cities.¹⁰⁶ This means a low municipal waste collection rate, estimated at 38 per cent in 2017 or less than 100 kg per person in 2017.¹⁰⁷ Collected waste is transported to designated municipal landfills, of comprised only 69 were official landfills as of 2021.¹⁰⁸

Under such conditions, open dumping has become a common practice in the country, enabled by the mushrooming of informal landfills in cities and villages.¹⁰⁹ The growing presence of landfills near residential areas poses serious health risks from infectious diseases and harms the environment, highlighting the urgent need for effective solutions.¹¹⁰

¹⁰² There is little information on industrial waste, because regular reporting is not carried out.

¹⁰³ As defined by the Organisation for Economic Co-operation and Development (<https://data.oecd.org/waste/municipal-waste.htm>), municipal waste refers to waste collected and treated by or for municipalities. It covers waste from households, including bulky waste, similar waste from commerce and trade, office buildings, institutions and small businesses, as well as yard and garden waste, street sweepings, the contents of litter containers, and market cleansing waste if managed as household waste. The definition excludes waste from municipal sewage networks and treatment, as well as waste from construction and demolition activities.

¹⁰⁴ Government of Tajikistan (2023), National Voluntary Review, available at <https://hlpf.un.org/sites/default/files/vnrs/2023/VNR%202023%20Tajikistan%20Report.pdf>

¹⁰⁵ United Nations Environment Programme, International Solid Waste Association and Technology for Environment (2017), Central Asia Waste Management Outlook, available at <https://wedocs.unep.org/20.500.11822/30977>

¹⁰⁶ Only 28 per cent of the population lived in cities in 2022, according to World Bank estimates. World Bank Development Indicators, available at <https://data.worldbank.org/country/tajikistan>.

¹⁰⁷ United Nations Environment Programme, International Solid Waste Association and Technology for Environment (2017), Central Asia Waste Management Outlook.

¹⁰⁸ Government of Tajikistan (2023), National Voluntary Review.

¹⁰⁹ Data provided by the State Unitary Enterprise Housing and Public Utilities.

¹¹⁰ State Unitary Enterprise Housing and Public Utilities.

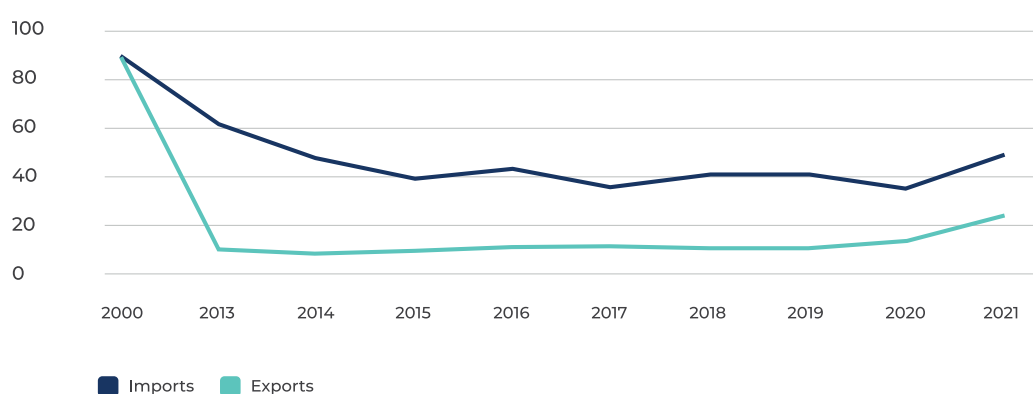
The challenges extend beyond gaps in infrastructure. For example, the system of charges on pollutants, including emissions, water pollutants and industrial waste, has not undergone significant change since 2010. This places a strain on government resources, especially considering the cumulative inflation, with generated revenues falling short of covering the costs of pollution reduction. At the same time, while there are established criteria and requirements, non-compliance remains an issue, largely due to inadequate monitoring.¹¹¹

Another significant concern is the lack of public awareness and cultural understanding regarding waste handling in households. Despite repeated efforts by the Tajik authorities to educate the public on proper trash handling and waste sorting, localized and fragmented initiatives have not significantly altered attitudes. Residents dispose of items such as bottles, bags, textiles, and other rubbish in informal landfills. In formal landfills, waste is often disposed of without sorting.¹¹²

4.5 Financing gap

Tajikistan has made notable strides in improving its fiscal condition. Recent projections show the country as maintaining a fiscal deficit between 2 to 2.5 percent of GDP throughout 2024-2026, reflecting persistent improvements in revenues and tax handling.¹¹³ However, the country remains incapable of generating enough resources for financing development. Domestic tax revenues accounted for 19.5 per cent of GDP in 2022, despite being the main source of revenues (about 80 per cent). Further, with exports consistently lagging imports (Figure 24), the government is faced with a persistent trade deficit. This deficit constituted 33.4 per cent of GDP in 2022, resulting in significant financial leakage.¹¹⁴

Figure 24. Evolution of Tajikistan's exports and imports of goods and services (share in GDP)



Source: World Bank, World Development Indicators.

¹¹¹ UNECE (2017), Third Environmental Performance Review of Tajikistan.

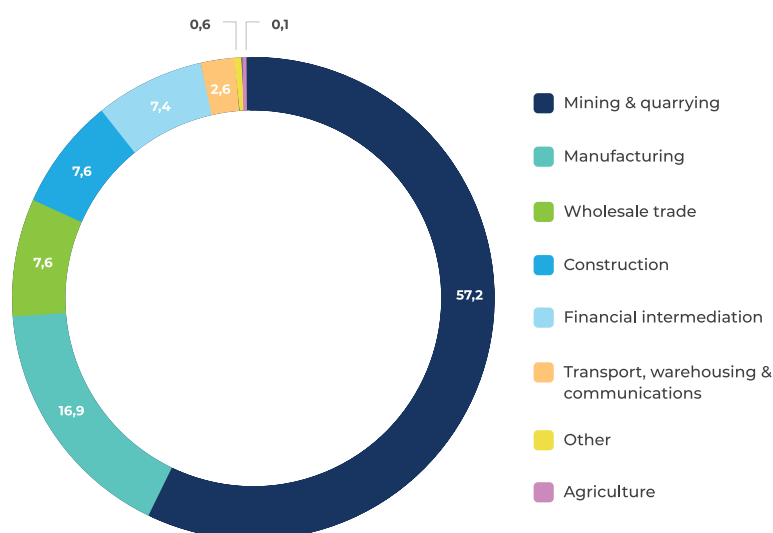
¹¹² State Unitary Enterprise Housing and Public Utilities.

¹¹³ World Bank (2024) "Europe and Central Asia: Macro Poverty Outlook". For an overview of national investment policy reforms, see UNCTAD (2023), "Report on the Implementation of the Investment Policy Review: Tajikistan".

¹¹⁴ National Bank of Tajikistan, available at https://nbt.tj/en/payments_balance/key_indicators.php.

Despite reforms, net FDI inflows accounted for only 1.7 per cent of GDP in 2022.¹¹⁵ Further, FDI remains heavily concentrated in mining and quarrying (Figure 25), making it difficult to finance circular economic diversification and infrastructure development, including greening transport, energy and basic utilities. The country's limited ability to attract investments cannot be understood in isolation of the uncertainty surrounding policy legislation and weaknesses in the rule of law, especially in relation to transparency and dispute settlement.¹¹⁶

Figure 25. Breakdown of foreign direct investment inflows by sector, 2022 (percentage share)



Source: State Committee on Investment and State Property Management of the Republic of Tajikistan.¹¹⁷

Hence, a significant reliance on loans for financing development, causing a persistent public debt that constituted 34.6 per cent of GDP in 2022.¹¹⁸ Further, the Government is struggling to ensure balanced fiscal spending, with the energy sector accounting for the lion's share. The sector received 60 per cent of total public expenditures in 2022. Social spending accounted for 30 per cent, of which education received about one-third. Agriculture and industry were allocated the remaining 10 per cent.¹¹⁹ The challenge of improving fiscal spending is compounded by the increase in climate-induced disasters. These emergencies are likely to divert resources from long-term planning efforts, such as the transition to a circular economy, as immediate disaster response needs take precedence.

4.6 Policy implications

This chapter shows that Tajikistan's current resource utilization patterns pose significant challenges to circularity, with agricultural and industrial expansion involving unsustainable extraction and use of raw materials and natural resources.

¹¹⁵ World Bank Development Indicators, available at <https://data.worldbank.org/country/TJ>.

¹¹⁶ See, for example, UNCTAD (2023), "Report on the Implementation of the Investment Policy Review: Tajikistan"; United Nations Development Programme, UNDP (2021), Survey on Access to Justice in Tajikistan; World Bank (2020), "Doing Business in Tajikistan", available at <https://archive.doingbusiness.org/en/data/exploreconomies/tajikistan>.

¹¹⁸ State Statistical Committee of the Republic of Tajikistan.

¹¹⁹ UN Resident Coordinator's Office in Tajikistan (2022), "Tajikistan: Common country analysis", available at https://tajikistan.un.org/sites/default/files/2023-07/Tajikistan_CCA_2022_Public_Version_Final.pdf.

Combined with the lack of robust solid waste management systems, these patterns risk depleting the country's resources, harming the environment and undermining ecological stability. These pressures are compounded by the country's unsustainable energy production and consumption, with hydropower supply struggling with inefficiencies and water stress, thereby making it difficult to fully decarbonise energy production and consumption. Further, Tajikistan's ability to reverse these patterns is undermined by the lack of financial resources.

These gaps are all addressed in the national Strategy for the Development of the Green Economy. Moving forward, the government could consider furthering reforms with an emphasis on strengthening resource management. Chapter 6 provides detailed recommendations for complementing planned regulatory and policy reforms, with a view to ensuring simultaneous improvements in the following areas:

- **Resource utilization:** Improve efficiency in material usage across all resource categories—including land, water, and raw materials—to optimize supply, minimize waste and reduce environmental impacts.
- **Sustainable energy:** Extend reforms beyond the decarbonization of the energy system to ensure carbon neutrality, while ensuring that the resulting benefits are equitably shared.
- **Monitoring and evaluation:** Develop a comprehensive system for measuring and tracking the environmental impact of resource use from extraction to processing and end-use.
- **Investment financing:** Promote innovative financing mechanisms and scale up FDI attraction to provide the capital flows necessary for investment in green infrastructures and technologies, while ensuring more balanced fiscal spending.

5. ADVANCING CIRCULARITY IN THE GARMENT AND FOOT-WEAR SECTOR

The previous chapter shows that the transition of the Tajik garment and footwear sector to circularity is complicated by overuse of resources, unsustainable energy production consumption patterns and lack of adequate waste management systems. Circular economy principles and business models offer a solution to these challenges.

These principles and models require enterprises to overhaul their entire supply chains. This means, among others, transitioning to regenerative agriculture when sourcing fibres and materials, along with shifting to cleaner production methods to improve resource utilisation efficiencies and minimize emissions and waste.

Enterprises must also transform product design, seeking durability over short-term profits by prioritizing repairability, recyclability and non-toxicity.

This chapter explores issues surrounding the sector's transition to circularity to support the Government in its efforts to promote sustainable diversification within the sector towards increased specialisation in upstream activities with higher value-added. It draws on the results of face-to-face interviews with enterprises exhibiting adherence to circular economy principles. The chapter shows that although enterprises have integrated some of these principles, their ability to achieve complete circularity is undermined by their weak technological capabilities and by regulatory gaps and capacity shortfalls within government institutions.

5.1 Outlook on the sector's growth potential

Tajikistan's garment and footwear sector is slated for significant growth. Estimates¹²⁰ show the garment industry as poised to generate about \$81 million in domestic revenues in 2024, with a projected annual growth rate of 0.61 per cent. About 98 per cent of these revenues are attributed to non-luxury and traditional clothing, with women's apparel constituting the largest contributor (approximately \$32 million). This suggests that affordability, practicality, and cultural heritage play a significant role in the preferences of Tajik consumers.

¹²⁰ Statista, "Apparel – Tajikistan", available at <https://www.statista.com/outlook/cmo/apparel/tajikistan>.

The footwear industry is also poised for growth. It generated about \$22.11 million in domestic revenues in 2023, with a projected annual growth rate of 5.88 per cent. About 97 per cent of these revenues are attributed to non-luxury items, with textile footwear standing as the largest contributor (approximately \$11.24 million), signifying a preference for versatile and comfortable footwear.¹²¹ Further, the sector's exports have been on the rise, amounting to \$299 million in 2022, marking a 60 per cent surge from 2017.

However, the sector's exports constitute less than 1 per cent of the country's total exports.¹²² In addition, the enterprises are yet to diversify their exports, which remain concentrated in raw materials and limited to a few trade partners. Belarus, Iran, PRC, the Russian Federation, Türkiye, Ukraine are the main outlets for yarn, while Italy, Lithuania, Poland, Romania and the United Arab Emirates are the main outlets for fabrics. Ready-made clothes are exported to Croatia, Italy, Kazakhstan and the Russian Federation.¹²³ Exports also comprise secondary materials, especially silk and cotton waste (Table 3), which are mainly sold in Kazakhstan, followed by Türkiye and the Russian Federation.

TABLE 3. Tajikistan's trade in secondary textiles and footwear, 2022	
Product	Value
Exports	
Silk waste, carded or combed	255,000
Cotton waste, except garneted stock	220,000
Human hair, unworked, and waste of human hair	137,000
Worn clothing and other worn articles	80,000
Used or new rags, scrap twine, cordage, rope and cables and worn-out textile materials - unsorted	75,000
Imports	
Woven fabrics containing 85% or more by weight of silk or of silk waste other than noil silk	44,000,000
Worn clothing and other worn articles	19,000,000
Cotton waste, except garneted stock	586,000
Cotton yarn waste (including thread waste)	165,000
Vegetable fibre nes, processed not spun, tow and waste	18,000

Source: Chatham House (<https://circulareconomy.earth/>), based on UN Comtrade data.

¹²¹ Statista, "Footwear – Tajikistan", available at <https://www.statista.com/outlook/cmo/footwear/tajikistan>.

¹²² Union of Private Sector Development of Tajikistan (2022), presentation at the First National Policy Dialogue - Circular Economy in Tajikistan - Improving Traceability of Products Along International Value Chains, available at <https://unece.org/trade/events/1st-national-policy-dialogue-circular-economy-tajikistan-improving-traceability>.

¹²³ Ibid.

The sector's performance reflects limited productive capacity. As shown in table 4, textile and garment manufacturing are dominated by upstream operations, with hosiery, cotton fibre, yarn and fabrics accounting for the lion's share of total outputs. In 2022, the industry comprised 119 enterprises, of which 6 specialized in vertically integrated operations, 12 in spinning process, 6 in knitting and hosiery and 95 in producing readymade clothes.¹²⁴ As regards the footwear industry, it remains small, producing 1.2 million pairs of shoes in 2021.¹²⁵

Under such conditions, Tajikistan relies on imports to meet domestic demand. Available statistics show imports of textiles and footwear as increasing by 60 per cent over the period 2017-2022. These imports also comprised secondary materials, especially woven fabrics and worn clothing imports (Table 4), which are sourced mainly from Uzbekistan, followed by the Russian Federation and Kazakhstan. Further, imports of secondary textiles appear to be assuming an increasing trend, standing at \$63.7 million in 2022 compared to \$14.7 million in 2016. In contrast, exports of secondary textiles have plummeted from an estimated \$3.5 million to about \$791,000 over the same period, lending further evidence to supply shortages.¹²⁶

TABLE 4.

Garment and footwear sector outputs, 2017-2021

Product	Unit of measurement	2017	2018	2019	2020	2021
Cotton						
Raw	Thousand tons	386.5	300.3	403	396	388.8
Fibre	Thousand tons	112.3	98.2	102.7	101.9	100.3
Yarn	Tons	17211	20740	20912	17866	21535
Fabrics	Thousand square meters	3358	7512	6998	7378	8183
Hosiery						
	Thousands of couples	3782	5687	4 124	7 807	15 409
Ready-to-wear						
	Million somoni (TJS)	231.1	267.2	251	285.8	340.8
Knitwear						
	Thousand pieces	101.3	1 22.4	139.9	160.8	145.4
Knitted fabric						
	Tons	9	10.5	8.5	44.5	55
Leather shoes						
	Thousand pairs	116	114	118	256	566
Rubber shoes						
	Thousand pairs	684	700	759	776	662

Source: Union of Private Sector Development of Tajikistan (2022), presentation at the First National Policy Dialogue – Circular Economy in Tajikistan – Improving Traceability of Products Along International Value Chains; available at <https://unece.org/trade/events/1st-national-policy-dialogue-circular-economy-tajikistan-improving-traceability>.

¹²⁴ Union of Private Sector Development of Tajikistan (2022), presentation at the First National Policy Dialogue – Circular Economy in Tajikistan – Improving Traceability of Products Along International Value Chains.

¹²⁵ There are no published data on the number of enterprises engaged in the footwear industry.

¹²⁶ Chatham House, based on UN Comtrade data.

Industry stakeholder interviews conducted as part of this assessment suggest that while the growing demand for secondary textiles reflects consumer budgetary concerns, it also points to the risk, observed in other countries, of new garments being reported by enterprises (in their customs clearance declarations) as used clothing to avoid the higher import duties on new clothing. In addition to hampering domestic revenue generation, this practice stifles the sector's growth, with enterprises struggling to lower their prices to remain competitive.¹²⁷

With the global textile and garment sector considered among the most polluting (Chapter 6), the government is focused on decoupling the sector's growth from environmental impacts. Efforts are focused on promoting sustainable practices among cotton growers in the context of the Government's long-standing partnership with BCI. Tajikistan was the first Central Asian country to collaborate with BCI, which launched a special programme to train farmers on implementing BCI principles and sustainable agricultural practices. The programme, which commenced in earnest in 2013, also offers financial support to farmers seeking to become licensed Better Cotton.

The farmers, almost 2000 as of May 2024, grew 14,000 metric tonnes in the 2021-2022 cotton season,¹²⁸ thereby, becoming instrumental in elevating the sector's sustainability. For example, the 2019-2020 cotton season witnessed reduced use of synthetic fertilizer among the Better Cotton farmers (62 per cent lower than non-certified farmers) and improved yields (15 per cent higher than comparison farmers).¹²⁹

To further promote sustainable practices in the cotton sector, the Government signed a memorandum of understanding with the BCI in 2023¹³⁰ and partnered with BCI's strategic partner, SAROB (Box 3). A national non-profit cooperative, SAROB helped almost 18,000 farms (covering 18,000 hectares) meet BCI standards since its establishment in 2011.¹³¹ Through these partnerships, the Government is focused on improving its outreach, particularly to small-scale farmers and textile producers,¹³² with a view to extending sustainable practices across at least 50 per cent of the country's cotton-growing areas over the next five years.¹³³

¹²⁷ Government of Tajikistan (2023), National Strategy for the Development of Production, Cotton Processing, and Textile Industry Action Plan for 2024-2040.

¹²⁸ Better Cotton, "2021 Annual Report", available at <https://bettercotton.org/wp-content/uploads/2022/06/Better-Cotton-2021-Annual-Report.pdf>.

¹²⁹ BCI Impact report, available at <https://bettercotton.org/field-level-results-impact/demonstrating-results-and-impact/farmer-results/>.

¹³⁰ Better Cotton (2023), "Better Cotton strengthens ties with Tajikistan", 31 March, available at <https://bettercotton.org/better-cotton-strengthens-ties-with-tajikistan/>.

¹³¹ Better Cotton, "2021 Annual Report". Information on SAROB's partnership with BCI is available at <https://bettercotton.org/where-is-better-cotton-grown/better-cotton-in-tajikistan/>.

¹³² BCI Membership fees, set at approximately €2,000 per year, present a financial challenge for many small-scale farmers and cotton producers (UNECE interview with SABOR).

¹³³ UNECE interview with SABOR.

BOX 3.

SAROB Cooperative

SAROB provides agricultural advice and support to cotton farmers through its network of 300 self-employed agronomists. The agronomists work directly with Better Cotton farmers to help them develop and implement sustainable farming practices, such as precision irrigation and soil moisture testing. The cooperative's methodology is based on implementing water measurement devices that are easily constructed and are of low cost to farmers.

SAROB joined the BCI programme upon its launch in 2013 to help cotton farmers meet international standards, including BCI and Fairtrade standards, as a crucial requirement for accessing and competing in global markets. Its support services combine theoretical training sessions with practical, in-the-field demonstrations, all aimed at helping farmers integrate new technologies and machinery into their practices. The cooperative also helps ginneries and textile producers implement the Global Organic Textile Standard (GOTS) and the Organic Content Standard.

Source: UNECE interview with SAROB.

The Government's persistent focus on improving the cotton sector's sustainability and emphasis on leveraging national and international partnerships sets an inspiring example to follow. As shown in chapter 6, BCI and SAROB are also heavily engaged in promoting traceability and transparency throughout the textile sector and are important partners in realizing the National Strategy for the Development of Production, Cotton Processing, and Textile Industry Action Plan for 2024-2040 and its associated action plan. The Strategy, which was adopted in 2023, features several circular economy-aligned measures, including a focus on promoting the use of international standards among manufacturers and building their technological and IT capacities (Box 4).

Further, the government supported the now completed International Trade Center global program "Networking and knowledge management for the textile and clothing sector" over the period 2017-2021, which helped Tajik textile producers, particularly SMEs, modernise their machinery equipment and access global markets.

BOX 4.**Key measures advanced in the National Strategy for the Development of Production, Cotton Processing, and Textile Industry and Action Plan**

- Conversion of wastelands (i.e., unused or barren land) into agricultural land for growing cotton.
- Revitalization of idle State-owned enterprises through investment attraction.
- Legislative reforms, including amendments and new laws, to improve seed farm operations.
- Preferential electricity tariffs to reduce textile processing costs.
- Implementation of international standards in the context of a phased approach (20 per cent, 50 per cent, and ultimately 100 percent of primary cotton processing enterprises by 2040).
- Support for technical and technological modernization of textile enterprises for the final processing of cotton.
- Technology parks dedicated to the textile industry.
- Increase the online presence of textile enterprises through website creation.
- Formation of the Cotton-Textile Association, with private sector engagement, for improved management from cotton cultivation to final product processing.

Through these efforts, the Government aims to enable enterprises to capitalize on emerging export opportunities. This includes the growing demand for sustainable, eco-friendly products in the top five global importers of apparel and textiles, namely China, the European Union (EU), Japan, the Republic of Korea, and the United States (Table 5).

TABLE 5.**Top five global importers of apparel and textiles, 2021**

Country/region	Import value (\$ billion)	Global market share
European Union	180	34.1
United States	98	18.5
China	45	8.5
Japan	30	5.7
Republic of Korea	20	3.8

Source: World Trade Organisation (2022) World Statistical Review 2022.

Tajikistan's reforms align with the EU's Green Deal, which aims at making Europe climate-neutral by 2050 through transition to circular economy and renewable energy, with significant emphasis on sustainable textiles.¹³⁴ Tajikistan enjoys preferential market access conditions to the region. It has been a beneficiary of the EU Generalised Scheme of Preferences (GSP) since January 2014, enabling garment and footwear producers to scale up their exports to the region. Recent estimates show these exports as increasing by 35 per cent in 2023 in relation to 2020, reaching about \$20.4 million.¹³⁵

Similarly, the United States is home to eco-friendly fashion brands, all of which offer Tajik enterprises with important opportunities for value chain integration. China, a main trading partner, is another promising market, with its Green Supply Chain Initiative¹³⁶ offering new export opportunities. Japan's Sound Material-Cycle Society concept launched in 2000 to support the transition to circularity, and the Republic of Korea's eco-labeling initiative¹³⁷ provide niches for Tajikistan's environmentally sustainable garment and footwear.

Tajik garment and footwear producers also have opportunities to thrive in the neighboring Central Asian countries of Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan. These countries are at different stages of transitioning to a green economy, making sustainable, eco-friendly products from Tajikistan attractive. Kazakhstan has a comprehensive "Concept on Transition towards Green Economy until 2050," which aims to optimize resource use, increase efficiency in environmental protection activities and establish green infrastructure¹³⁸ while Kyrgyzstan has adopted a "Green Economy Development Programme for 2019-2023".¹³⁹ Turkmenistan is working on developing a national strategic environmental assessment system to support its transition to a green economy,¹⁴⁰ while Uzbekistan has adopted a "Plan of Action for Transitioning to a Green Economy and Ensuring Green Growth until 2030".¹⁴¹

Both Kazakhstan and Kyrgyzstan are among the top five importers of textiles in Asia (Figure 26), and together with the remaining Central Asian countries have registered impressive income growth over the past two decades. The aggregate GDP of the four Central Asian countries increased fourfold in real terms, reaching approximately \$400 billion in 2023.¹⁴² They have also experienced steady population growth, reaching about 80.8 million in 2023, with the average population growth rate projected at 1.1 per cent until 2040.¹⁴³

¹³⁴ European Council and Council for the European Union, "European Green Deal", available at <https://www.consilium.europa.eu/en/policies/green-deal/>.

¹³⁵ Eurostat, "European Union, trade with Tajikistan", available at https://webgate.ec.europa.eu/isdb_results/factsheets/country/details_tadjikistan_en.pdf.

¹³⁶ See, for example, R. Arai, M. Calisto Friant and W.J.V. Vermeulen (2023), "The Japanese circular economy and sound material-cycle society policies: Discourse and policy analysis". Circular Economy and Sustainability (2024) 4:619–650.

¹³⁷ KEITI (Korea Environmental Industry and Technology Institute), "Eco label & green consumption", available at <https://www.keiti.re.kr/site/eng/02/1022000000002020092205.jsp>.

¹³⁸ "Kazakhstan: Concept on Transition towards Green Economy until 2050", available at <https://policy.asiapacificenergy.org/node/133>.

¹³⁹ An overview of the programme is available at <https://www.switchtogreen.eu/wp-content/uploads/2021/03/Module-KyrgyzVF.pdf>.

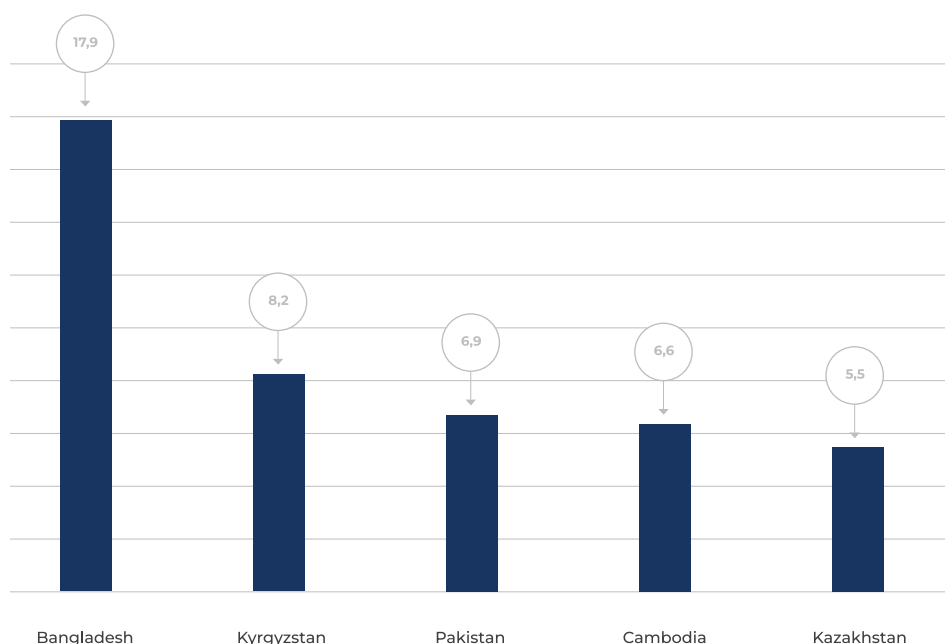
¹⁴⁰ "Turkmenistan Action Plan to prepare for introducing and developing a national strategic environmental assessment (sea) system", available at: https://unece.org/sites/default/files/2024-01/Turkmenistan_SEA_action_plan_final_ENG_Nov21_clean.pdf.

¹⁴¹ See <https://faolex.fao.org/docs/pdf/uzb219338.pdf>.

¹⁴² In 2023, the GDP of Kazakhstan was projected to be \$261.0 billion, that of Kyrgyzstan \$13.9 billion, that of Turkmenistan \$45.2 billion and that of Uzbekistan's \$80.4 billion. World Bank, World Development Indicators.

¹⁴³ In 2023, the population of Kazakhstan was estimated at 19.8 million, that of Kyrgyzstan at 6.7 million and that of Turkmenistan at 15.1 million. Uzbekistan had the largest population, estimated at 35.6 million. United Nations Department of Economic and Social Affairs (2024), Revision of World Population Prospects.

Figure 26: Top 5 importers of textiles in Asia , 2022 (\$ billion)



Source: Observatory of Economic Complexity.

5.2 Circular economy practices in the sector

To help the government foster circularity and traceability within the sector, this section provides insights into the circular economy practices of Tajik garment and footwear manufacturing enterprises. It is based on the results of face-to-face interviews with 12 privately-owned enterprises from across the country,¹⁴⁴ with proven records in integrating circular economy practices into their activities. They were selected following a phone screening process and comprised small, medium and large enterprises¹⁴⁵, of which three were women owned and operated in mountainous regions. Most were well established (having been founded in 1988, 2003, and 2008).

The enterprises were predominantly involved in manufacturing final products. The products comprised various fabrics (fluffy fabric, lint, cotton fibre, and calico); clothing and footwear items for women, men and children (denim and 100 per cent cotton as well as uniforms made entirely of cotton); wool felt slippers and house shoes; and carpets (artisanal handmade wool carpets and machine-made wool carpets). Mirroring the national trend, most of the enterprises (58 per cent) were inward-looking and operated exclusively within their respective regions (none of them had branches). Export-oriented enterprises sold their products in a limited number of countries, including Belarus, Croatia, Italy, Iran, PRC, the Russian Federation, Türkiye and Uzbekistan.

¹⁴⁴ Most of the enterprises were located in Khatlon and Sughd, two major agricultural regions known for their extensive cotton cultivation. Each accounted for 33 per cent of the interviewed enterprises, followed by Gorno-Badakhshan Autonomous Province (17 per cent), and the Districts under Republican Subordination (8 per cent) and Dushanbe (8 per cent).

¹⁴⁵ According to the Agency for Statistics under the President of the Republic of Tajikistan, small enterprises employ up to 30 employees; medium-sized, between 31 and 200 employees; and large ones, more than 200 employees. Small enterprises constituted 50 per cent of the enterprises interviewed, followed by medium and large enterprises (33 and 17 per cent, respectively).

Consistent with the circular economy principles and business models, this section examines the enterprises' production activities from the prism of longevity, focusing on product design, material usage, manufacturing processes, packaging, and end-of-life management. All the enterprises interviewed are still at the early stages of transitioning to circularity. They have adopted circular economy practices based on their own initiative, driven by the Government's targeted tax incentives and programmes to develop the sector over the past few years¹⁴⁶. Further, all the enterprises reported ensuring fair labor practices and safe working conditions for their employees as per established law. However, they lacked the required expertise skills, management information systems and financial resources to further advance their circular transition.

Design

As previously mentioned, the starting point for ensuring circularity is designing products that are durable to reduce the frequency of replacement. This means using modular designs that extend the lifecycle of products, ensuring that clothing could be easily taken apart for creating multiple styles, repairing and repurposing of materials at the end of the products life cycle.¹⁴⁷

The results of the interviews suggest a lack of familiarity with the concept of durable design among Tajik enterprises, with the majority equating it solely with the utilization of sustainable raw materials. This understanding overlooks the broader scope and principles underlying durable design, which encompass not only the materials used but also factors such as repairability and adaptability.

Only two enterprises used modular designs, and both produce clothes for men, women and children. The designs were geared towards repair and reuse, commonly referred to as design for disassembly, which is among the most prevalent concepts in the industry worldwide.¹⁴⁸ Both were large enterprises and operated in the context of joint ventures with a European company, which provided the design and sold the products globally under its brand. The enterprises practices focus on extending the product lifecycle, citing an alignment of production to ensure the following design features:

- Replaceable components: For example, buttons that can be screwed on and off instead of sewn, so that they can be easily replaced if they break, or if the user wants to change the style.
- Detachable parts: For example, jackets with detachable hoods, which can be replaced if damaged.

¹⁴⁶ For an overview of previous development plans and programmes targeting this sector, see the International Trade Center (2016), Textile and clothing industry development strategy of Tajikistan 2016-2025.

¹⁴⁷ The Manufacturing Revolution: Remanufacturing, Refurbishment, Repair and Direct Reuse in the Circular Economy, available at: <https://www.resourcepanel.org/reports/re-defining-value-manufacturing-revolution>.

¹⁴⁸ L. Forst (2020), "Textile design for disassembly: A creative textile design methodology for designing detachable connections for material combinations", available at <https://doi.org/10.13140/RG.2.2.33225.06249>.

- Standardized parts: For example, standardized zippers across different product lines so that they can be easily swapped out if they fail, without requiring a completely new garment.
- Adjustable features: For example, adjustable hems and cuffs in children's clothing, which can be let out or taken in to extend the garment's lifecycle.

Material usage

All the enterprises used renewable, biodegradable and recyclable materials. They also prioritized domestic sourcing and indicated smaller environmental footprint owing to reduced transportation. However, their responses point to discrepancies in terms of the sustainability of the raw materials sourced as follows:

- Domestically sourced cotton dominated the raw material used by garment producers and those involved in upstream operations, putting these enterprises at an advantage, since cotton is renewable, biodegradable and recyclable.
- Some reported sourcing eco cotton, without precising as to whether it was grown in alignment with sustainable practices, and a few considered organic cotton synonymous with sustainable cotton. Although organically grown cotton is more sustainable than conventionally grown cotton, dispensing with the use of chemicals (synthetic pesticides and fertilizers) and reducing water usage (organic cotton is often rain-fed), it is not fully aligned with sustainable farming practices. As previously mentioned, true sustainability requires integrating a range of practices for enhancing, among others, soil health, conserving water and promoting biodiversity.¹⁴⁹
- Only one enterprise sourced sustainable cotton. It was engaged in producing cotton fibre, lint-free and fluffy fabrics, and sourced cotton from licensed Better Cotton farmers.
- Wool dominated the raw material used by producers of carpet and wool felt slippers, who purchased from domestic farmers through standing orders. However, while wool is renewable, recyclable and biodegradable, sustainable wool involves addressing the issues surrounding, among others, animal welfare, overgrazing and chemical use in wool processing.¹⁵⁰
- Textile waste, comprising post-consumer and post-manufacturing materials, was used by producers of carpet and wool felt slippers. They sourced locally from weaving mills, clothing producers and textile waste collecting companies. However, the enterprises lacked a coherent system for sourcing textile waste, noting that they adapt flexibly to available sources and opportunities and work closely with the Chamber of Commerce and Industry to identify suppliers.

¹⁴⁹ See the BCI principles and criteria, available at <https://bettercotton.org/what-we-do/defining-better-our-standard/>.

¹⁵⁰ See, for example, the principles and criteria advanced by the International Wool Textile Organisation, available at <https://iwto.org/sustainability/>.

- Imported fabrics derived from fossil fuels (e.g., polyester and spandex) were used by garment producers along with dyes, which were used by some enterprises, in contradiction to the principles of circularity.
- Imported and domestically sourced plant-based fabrics (e.g., linen) were used by garment producers. None of the enterprises reported taking steps to ensure that the fabrics were grown and processed following sustainable practices.

Manufacturing processes

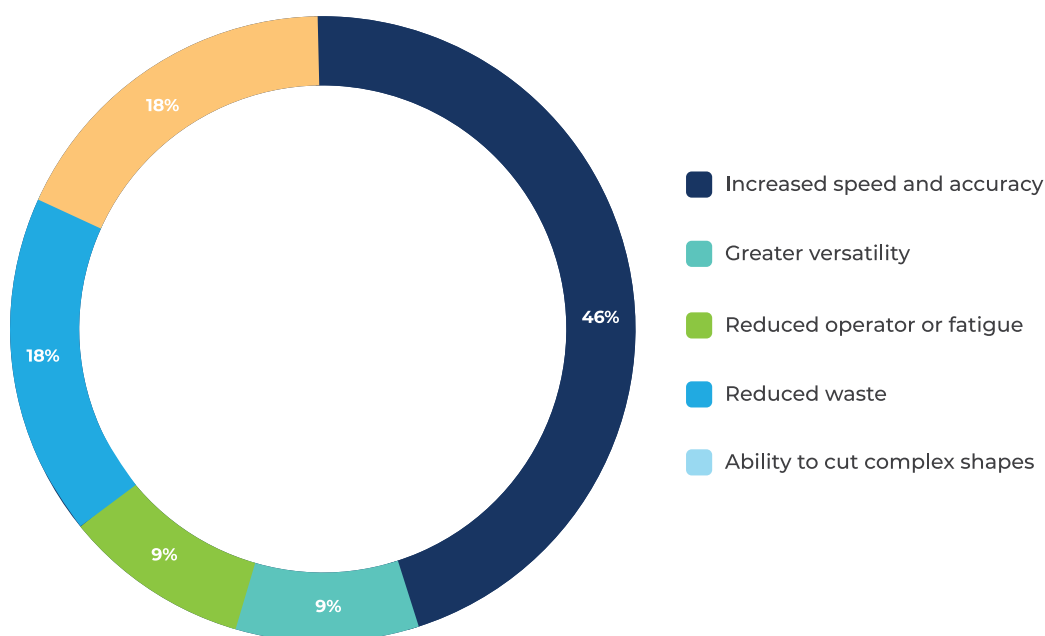
Manufacturing processes are sustainable if designed to maximize the efficiency of resource use; minimize waste and pollution; and protect the safety and health of employees, communities and consumers. The results of the interviews suggest that more needs be done to help enterprises advance in this area:

- Raw material efficiency: The enterprises were resource efficient (i.e., used a limited range of raw materials) by virtue of producing cotton and woolen products. Further, producers of carpet and wool felt slippers used remnants from their manufacturing processes as part of their raw materials.
- Energy use: About 60 per cent of the enterprises reported using electric machines, including fabric laser cutters and computerized sewing machines. These machines conform to energy efficiency criteria, as they are fitted with automated devices for optimizing electricity consumption. However, most of the enterprises using electric machines reported having a mix of old and modern machines.
- Emission reduction: None of the enterprises reported using cleaner production techniques or pollution control equipment to minimize GHG emissions and the release of pollutants into the atmosphere.
- Water use: None of the enterprises reported implementing water-saving technologies or closed-loop water systems to reduce water consumption.

It is worth noting that the enterprises singled out energy-saving machines as the most significant contributor to improving their production capacity. They cited tangible benefits in the form of reduced waste and fatigue; increased speed and accuracy, and greater versatility (Figure 27). Further about 40 per cent of those using electric machines appear to be following a circular economy compliant approach to maintaining their machines. They sourced their machines from abroad, in particular from Germany, Italy, Japan, the Netherlands, the Russian Federation and Switzerland as well as other countries in Europe.

Many highlighted repair and technical support as integral elements of after-sales services provided by suppliers. Such services also involved the provision of spare parts, thereby minimizing the disposal and replacement of machines.

Figure 27. Advantages of using electric, energy-saving machines (percentage of responses)



Source: UNECE interviews.

In contrast, enterprises sourcing machines domestically noted that they purchase what is available on the market and indicated that they have a limited range of choices. They also lamented the lack of spare parts available domestically, and the majority do not benefit from after-sales support.

Packaging

Packaging, particularly plastic packaging, is a major contributor to environmental degradation and biodiversity loss. Its production consumes significant natural resources and energy, exacerbating resource depletion and air pollution. Further, the disposal of plastic packaging, often through landfilling, generates air pollution, including GHGs, and harmful emissions such as mercury and lead. This waste is also transboundary, with billions of plastic particles ending up in oceans, floating on the surface and settling on the ocean floor, harming marine life and ecosystems.¹⁵¹

¹⁵¹ For further details on plastic pollution, see, for example, data from the International Union for Conservation of Nature, available at <https://www.iucn.org/story/202207/plastic-pollution-crisis>.

Ensuring sustainable packaging through the use of biodegradable materials and circular production is, therefore, a critical element in the transition to circularity. The Government is taking steps in this direction, banning the import and use of ethylene polymer bags as of January 2025.¹⁵² However, of the enterprises interviewed, only four were on track to sustainable packaging. One enterprise used packaging from cotton waste, which it produced internally from the remnants of manufacturing processes, while the rest used cardboard packaging.

When asked about their reluctance to use biodegradable packaging, the enterprises cited the additional costs involved compared with plastic packaging. Further, several noted that manufacturing eco-friendly packaging from biodegradable or recycled materials requires substantial investment.

End-of-life management

End-of-life management refers to practices aimed at maximizing both the product's lifecycle (through, for example, repair) and lifespan (through reuse). The enterprises interviewed exhibited a limited focus on extending the lifecycles of their products. Only one, in the garment industry, reported offering repair services. Further, as previously mentioned, only two enterprises integrated reparability and adaptability concerns into product design, both in the garment industry.

In addition, the enterprises equated end-of-life management with waste management. However, almost 85 per cent lamented having inadequate waste management systems, while 25 per cent said that they dispose of their textile waste. Enterprises involved in waste management showed a preference for upcycling, but their practices were limited to:

- Internal post-manufacturing waste collection systems for the purpose of reusing the materials
- Partnerships with “textile waste collecting companies” and textile manufacturers for the purpose of selling post-manufacturing waste
- Partnerships with farmers, other garment producers, and textile waste collecting companies for the purpose of purchasing textile waste
- Partnerships with the hospitality industry and tourism agencies for the purpose of purchasing textile waste generated from visitors.

Many of the enterprises lamented difficulties in obtaining textile waste, which they described as essential for avoiding supply shortages. However, none of the enterprises reported plans to develop in-house recycling capabilities, given the high upfront costs involved, even though they primarily use renewable resources such as cotton, wool, silk, and leather.

¹⁵² National News Agency of Tajikistan, <https://khovar.tj/rus/2023/07/s-2025-goda-v-tadzhikistane-zapretyat-vvoz-i-ispolzovanie-paketov-iz-polimerov-etilena/>.

though they primarily use renewable resources such as cotton, wool, silk, and leather. Large enterprises, which are better placed to invest in such facilities, explained that they do not see business prospects for such investments, despite the potential long-term benefits. These benefits include reduced raw material costs, enhanced brand image, and compliance with growing regulatory demands for sustainability. In-house recycling facilities could, for example, enable an enterprise to offer a return or take-back program for worn-out products, which could be disassembled for reuse or recycling.

5.3 Challenges to full circularity

The results of the interviews revealed that the enterprises' ability to adopt circular economy practices is undermined by a range of factors. In addition to the lack of financial resources – a major obstacle reported by all the enterprises, these factors range from low domestic demand for durable goods to limited familiarity with circular economy-related regulatory requirements in domestic and global markets, which affect all aspects of supply chain activities.

- **Low domestic demand:** The enterprises highlighted low demand for durable products as a disincentive to furthering their transition to circularity.
- **Limited engagement in global sourcing and partnerships:** Most enterprises reported challenges in sourcing machinery and equipment, citing concerns about prices and difficulties in selecting the appropriate technologies. They also experience difficulties in identifying potential buyers and negotiating favourable terms.
- **Limited engagement with consumers:** Many enterprises exhibited limited engagement with their communities, which is critical for both raising awareness and identifying areas for improvement.
- **Skills shortages:** None of the enterprises had direct experience in creative design. Further, the majority struggled with labour shortages, given the skills mismatches in the Tajik labour market, which are exacerbated by migration. Small enterprises appear to be assuming the brunt. For example, one of the enterprises saw the number of employees decrease from 15 in 2012 to 8 in 2024, representing a nearly 50 per cent decline.
- **Lack of modern waste management systems:** SMEs reported that their production volume is too low to merit investments in waste recycling systems, while large enterprises noted that they do not see the long-term benefits of such investment.

- **Limited familiarity with circular economy-related legislative requirements:** Large enterprises were familiar with national regulatory requirements on waste management and those applicable to environmental protection and exports. In contrast, SMEs noted that they have only partial knowledge of these requirements. Further, many reported difficulties in navigating regulatory requirements in global markets.

Addressing these challenges is complicated by the lack of robust technical regulations, standards and institutions for facilitating industry compliance and ensuring consumer safety, given the weaknesses in Tajikistan's quality infrastructure (QI) system, including technical regulations, standardization, quality assurance and metrology. Despite improvements, the system remains constrained by structural and capacity shortfalls, with a centralised supervision residing primarily in one agency, the Agency of Standardisation, Metrology, Certification and Trade Inspection (TajikStandard), which lacks experts and modern infrastructure. The same applies to line ministries responsible for developing technical regulations as well as conformity assessment bodies operating alongside TajikStandard.¹⁵³

These gaps cannot be understood in isolation from the complexities surrounding the modernization of the QI system. Until 2013, the date Tajikistan acceded to the WTO, the system was characterized by a restrictive quality control regime of mandatory standards inherited from the pre-independence period. The transition from this regime to one that aligns with international norms and WTO requirements has been complex, involving substantial reforms and adjustments.¹⁵⁴ The Agency lacks the resources required to accelerate its reforms. For example, it is still a correspondent member of the International Organization for Standardization (ISO) and participates as an observer in only 10 Technical Committees.¹⁵⁵ Further, although TajikStandard is a full member of regional standardization and metrology bodies¹⁵⁶, its involvement in standard-setting processes is limited to participating as a standards taker, not a standards maker.¹⁵⁷

The gaps in the system's regulatory and enforcement capacities deter foreign investment in circularity and undermine the uptake of circular economy-related standards among Tajik enterprises, particularly SMEs. This is reflected in the results of the interviews, with only two enterprises having implemented such standards. Both implemented ISO 14001 on Environmental Management Systems, capitalizing on their joint ventures with European clothing manufacturers and their size. Their partnerships with European enterprises motivated them to implement internationally recognized standards. They also had the financial resources to invest in the necessary infrastructure, training, and associated processes because they are large.

¹⁵³ For a concise assessment of Tajikistan's QI system, see WTO (2021), Trade Policy Review: Tajikistan.

¹⁵⁴ UNECE (2014), Regulatory and Procedural Barriers to Trade in the Republic of Tajikistan: Needs Assessment.

¹⁵⁵ ISO, TajikStandard, <https://www.iso.org/member/371281.html>.

¹⁵⁶ TajikStandard is a full member of the Commonwealth of Independent States Inter-State Council for Standardization, Metrology and Certification; the Euro-Asian Cooperation of National Metrological Institutions; the Inter-regional Association of Standardization; and the Special Working Group on cooperation in the sphere of implementing technical regulations, standards and conformity assessment procedures of the Shanghai Cooperation Organization.

¹⁵⁷ UNECE (2014), Regulatory and Procedural Barriers to Trade in the Republic of Tajikistan: Needs Assessment.

The remaining enterprises were unfamiliar with such standards, with many citing their application of ISO 9001 on Quality Management Systems as a testament to the sustainability of their products.

5.4 Challenges facing women-owned enterprises

The three women-owned enterprises interviewed as part of this study reported facing additional challenges, many of which are associated with their size, date of establishment and location (since they operate in mountainous regions). As shown in box 5, while the three enterprises were “necessity driven”, their owners embraced change¹⁵⁸ and ventured into the production of eco-friendly products. Their experience exemplifies the ingenuity in the face of modest resources, community support, and entrepreneurship needed to sustain and grow local economies in Tajikistan's mountainous regions.

BOX 5.

Circular economy driving women entrepreneurship in Tajikistan's mountainous regions

Wool waste has become a valuable resource for handicraft artisans, particularly women in the Gorno-Badakhshan Autonomous Region and other mountainous areas of Tajikistan. Among these artisans is a pensioner who, driven by her modest pension, began to gather wool waste from her village and neighboring communities, acquiring it through purchases or donations. She meticulously cleans and hand-spins the wool, using a locally crafted spinning wheel and yarn racks. With the help of her family, she creates traditional felt rugs (namads) and woolen decorations, supplying them to local markets and occasionally selling in bulk to exhibition centres. The proceeds are reinvested into buying more wool and dyes, responding to the growing demand for custom namad orders.

Another women-owned enterprise ventured into making traditional floor coverings (tarkduzi), often used at weddings, from textile waste. They are sewn by hand because of the frequent power outages. In the third enterprise, the women entrepreneur ventured into producing eco-bags from domestically sourced calico in 2022, operating as a sole proprietor. Starting with one sewing machine and expanding with grant support, she has overcome the lack of a formal office space and is holding master classes to teach other women about green economy initiatives. Her eco-bags are sold domestically, and there is a significant demand from Tajik and international organizations. Among her main customers is the Aarhus Center in her region, which procures eco-bags on a regular basis with a standing purchase order.

Source: UNECE interview with SAROB.

Lack of financial resources is a major concern, with women entrepreneurs taking loans that are difficult to repay, especially in view of the burdensome tax regime. Yet, they remain determined, with dreams of expanding their operations and entering into partnerships with large domestic and international enterprises to acquire materials or co-manufacture products.

Enabling women-owned enterprises – and enterprises operating in mountainous regions in general – to realize their potential requires targeted support. The interviews revealed that although there is some engagement with the principles of the circular economy, significant work remains to deepen understanding and implement practices that fully realize its benefits:

¹⁵⁸ For an informative discussion of necessity-based entrepreneurs, see, for example, R. W. Fairlie and F.M. Fossen (2018), “Opportunity versus necessity entrepreneurship: Two components of business creation”, IZA – (Institute of Labor) Economics Discussion Paper No. 11258. The definition of opportunity-driven entrepreneurs was coined by Peter Drucker, who argued that “Entrepreneurs see change as the norm and as healthy. Usually, they do not bring about the change themselves.

But – and this defines entrepreneur and entrepreneurship – the entrepreneur always searches for change, responds to it, and exploits it as an opportunity”. P. Drucker (1985), *Innovation and Entrepreneurship: Practice and Principles* (New York: Harper & Row), p. 28.

- The enterprises' use of domestic waste is focused on generating income and employment, with less emphasis on the principles of circular economy. Quality and environmental impacts are often secondary considerations, as the enterprises do not prioritize eco-friendly or biodegradable materials when collecting waste.
- There seems to be a gap in product lifecycle management. Many items are produced without plans for future recyclability or ease of disassembly, as the focus is on generating immediate income.
- In more remote regions, enterprises rely on small-scale producers, who often operate without formal patents or registration, relying instead on their reputation in local communities that continue to purchase their goods, irrespective of potential flaws or recyclability. Such producers typically steer clear of bank loans given the high interest rates to avoid debts. Instead, they use personal resources, and some benefit from grants. However, these funds are often not enough to fully support productivity improvement.
- Consumer awareness of the circular economy concept is relatively basic. Although international organizations have conducted isolated training sessions, there has been little to no momentum in implementing relevant laws or establishing sustainable production systems.

5.5 Policy implications

This chapter shows that the garment and footwear sector's transition to circularity is undermined by **enterprises' weak technological capabilities**. They lack the knowledge, skills and financial resources to achieve efficient specialization in technology-intensive production processes, to extend and deepen these processes, and to draw selectively on other technologies to complement existing capabilities.¹⁵⁹

This means that enterprises are not capable of integrating circular economy principles. As shown in box 6, integrating these principles requires the utilisation of advanced technologies throughout the product lifecycle from raw material sourcing through manufacturing, distribution, and end-of-life management (whether disposal or recycling).¹⁶⁰ The National Strategy for the Development of Production, Cotton Processing, and Textile Industry provides a strong basis for supporting the sector's transition into circularity, prioritizing the modernization of the sector's supply chains by building enterprises' technical and technological capacities.

¹⁵⁹ For a concise discussion of this concept, see S. Lall (1992), "Technological capabilities and industrialization", *World Development*, 20, 2: 165–186.

UNEP (2009), "Life cycle management: How business uses it to decrease footprint, create opportunities and make value chains more sustainable".

¹⁶⁰ UNEP (2009), "Life cycle management: How business uses it to decrease footprint, create opportunities and make value chains more sustainable".

BOX 6.

Examples of successful circular economy practices
in the garment and footwear sector

- **Garment collection programmes:** Implementing programmes in which customers can return unwanted clothing for recycling or repurposing. By doing so, customers not only contribute to sustainability but also receive a reward in the form of a discount on their next purchase.
- **Use of innovative materials:** Utilizing materials such as organic cotton, recycled polyester, vegan leather and other eco-friendly fabrics.
- **Repair and resale schemes:** Encouraging customers to repair damaged items and offering platforms for buying and selling used products. Through such programmes, customers can trade in used gear and receive store credit worth a percentage of the resale value. These initiatives not only promote sustainability but also reward customers for extending the life of their products.
- **Zero waste goals:** Striving for zero carbon and zero waste in production through recycling programmes, which transform used garments and footwear into materials for new products.
- **Collaborative platforms:** Industry stakeholders have created collaborative platforms to share best practices, resources and innovations. These platforms facilitate the exchange of information on sustainable practices and help companies adopt circular economy principles more effectively.

Source: UNECE (2021), "Mapping of garment and footwear sector ecosystem". Enhancing the Transparency and Traceability of Sustainable Value Chains in the Garment and Footwear Sector Project, available at https://unece.org/sites/default/files/2021-05/Ecosystem_report-April2021.pdf.

To ensure successful implementation, the Government needs to consider complementing the strategy with targeted measures that encompass all aspects of the circular economy. Chapter 7 provides detailed recommendations for the Government's consideration. These are aligned with the Strategy for the Development of a Green Economy and are aimed at:

- **Equipping enterprises with the technological capabilities required** for specializing in durable products and engaging in recycling activities, while improving their access to finance drawing on successful experiences in innovative financing mechanisms (Box 7).
- **Promoting sustainability and social responsibility** within enterprises and across their value chains to ensure transparency (Chapter 6).
- **Developing the domestic market for secondary textile materials**, as an essential element in improving resource utilization efficiency, reducing dependence on imports, and bolstering industrial symbiosis for abiotic materials.¹⁶¹
- **Transforming consumption patterns** by encouraging individuals and households to engage in recycling, choose durable products and prioritise enterprises that engage in sustainable practices (e.g., waste management and sustainable sourcing)
- **Developing the national QI** as a critical element in establishing a conducive environment that supports circularity and ensures compliance.

¹⁶¹ Inspired by natural ecosystems, industrial symbiosis involves the sharing of resources among industries, where the waste or by-product of one process becomes the raw material for another. This inter-industry collaboration helps create a closed-loop system for abiotic materials, enhancing resource efficiency and reducing reliance on virgin materials.

BOX 7.

Examples of innovative financing mechanisms
for supporting circularity among enterprises

- **Green bonds:** These fixed-income instruments are earmarked for climate and environmental projects. In the textile sector, green bonds can be used to fund projects that enhance circularity, such as recycling facilities or sustainable textile production processes.
- **Blended finance:** This approach combines several sources, including public and private finance, to reduce investment risks and attract private capital. An example is the Green Financing Facility launched by the Government of North Macedonia with the support of the United Nations Joint SDG Fund and UNECE, to provide affordable financing options for SMEs (as well as underserved households) to invest in renewable energy and energy efficiency solutions.^a
- **Sustainability-linked loans:** These offer borrowers lower interest rates if borrowers meet specific sustainability targets. In the textile sector, these targets could include reducing waste, increasing the use of recycled materials or improving supply chain transparency.
- **Impact investing:** This approach provides capital to companies, organizations and funds with the intention to generate social and environmental impact. In the textile industry, impact investors might focus on enterprises that are developing innovative recycling technologies or that have strong commitments to sustainable practices.
- **Circular economy funds:** These provide the capital necessary for start-ups and established enterprises working on circular solutions, such as recycling or sustainable material innovations.
- **Pay-for-success models:** These involve private investors funding projects upfront and being repaid by public or philanthropic sources only if projects meet predefined outcomes. In the textile sector, this model could be used to fund projects that aim to reduce textile waste or improve traceability.

^a The Facility is funded by the Government of North Macedonia, the United Nations Joint SDG Fund, local commercial banks and the European Bank for Reconstruction and Development. It has a total value of \$46 million and will be implemented until April 2026. UNECE provided technical assistance and capacity-building on renewable energy and energy efficiency technologies for SMEs and underserved households, as well as for project and verification consultants. It also developed an updated list of eligible technologies to develop energy efficiency and renewable energy projects and monitor and verify project performance. Further details are available UNECE (2023), "New 'green' loan options for SMEs and underserved individuals in North Macedonia", 8 November.

Source: UNECE (2022), Mobilizing Financing for the Circular Economy; UNEP (2020), Financing Circularity: Demystifying Finance for the Circular Economy.

6. ENSURING A ROBUST INSTITUTIONAL FRAMEWORK FOR TRACEABILITY IN THE GARMENT AND FOOTWEAR SECTOR

Advancing the garment and footwear sector's transition to circularity should be complemented by targeted efforts to support traceability within the sector, understood as the ability to track and trace the movement of products and related information throughout the entire supply chain, from the point of origin to, manufacturing, distribution, placement on the markets and end-of-life management (disposal or recycling). This includes capturing and recording relevant data such as product identification, batch or lot numbers, manufacturing and processing information, transportation details, and any relevant certifications and documentation.¹⁶²

Traceability enables transparency and accountability, major requirements for competing in global markets, considering the global trends driving the demand for transparency and accountability in the textile and garment industry.

It is also critical for strengthening supply chain resilience, enabling actors to quickly identify inefficiencies and address risks, while creating a robust data infrastructure for tracking and measuring progress towards circularity. Moreover, traceability empowers consumers to make informed choices by providing them with accurate information about the origins and lifecycle of products, thereby fostering a culture of sustainability and accountability.

This chapter examines the requirements for establishing a robust institutional framework for promoting traceability in the sector, including essential laws and capacities for implementation. It shows that, despite progress, Tajik enterprises struggle to meet traceability requirements in global markets due to weaknesses in the national regulatory framework and capacity shortfalls in State agencies and enterprises. The challenge is how best to leverage the Government's commitment to greening the economy and the sector's supply chain advantages to help enterprises leapfrog ahead.

¹⁶² Based on ISO 9000 on Quality Management.

6.1 The global demand for transparency and accountability in the textile and garment industry

This section offers insights into the main drivers influencing the global demand for traceability in the textile and garment industry. Using the EU framework for promoting corporate responsibility and associated reporting requirements, the section highlights the potential ramifications for Tajik manufacturers, including both opportunities and challenges.

Rising consumer demand for sustainable products

In recent decades, global demand for garments, footwear and other accessories has surged, leading the sector to register a significant uptick in revenues. Revenues soared by \$160 billion from 2022 to 2023, benefiting from online sales, and are anticipated to exceed \$2 trillion by 2027.¹⁶³ Driving these revenues is the rise and eventual dominance of fast fashion, characterized by affordability, speed, trendiness, and mass production. Garments produced under this model are cheap, produced in mass in short time to keep up with consumer preferences.¹⁶⁴

However, garments produced under the fast fashion model not only are challenging to repair, but also involve labor exploitation, including low wages, unsafe working conditions, and child labor.¹⁶⁵ Additionally, the environmental impact is substantial. In 2019, garments and accessories ranked as the second most polluting industry worldwide, responsible for 8 per cent of global carbon emissions and 20 per cent of global wastewater.¹⁶⁶ They also account for approximately 9 per cent of annual microplastic pollution in the oceans.¹⁶⁷ Globally, the consumption of poor-quality products, coupled with inadequate recycling, is generating \$500 billion in economic losses annually due to the disposal of unsold textile in landfills or through incineration.¹⁶⁸

In some countries, the sector has taken over vast swathes of land for waste disposal. For example, in Chile, the Atacama Desert has become the dumping ground for imported textile waste.¹⁶⁹

¹⁶³ Statista, "Fashion and accessories, Market size", available at <https://www.statista.com/markets/423/topic/463/fashion-accessories/#statistic1>.

¹⁶⁴ See the Commonwealth Human Ecology Council, "The Ultimate Guide to Fast Fashion in 2022", available at: <https://www.chcecinternational.org/news/the-ultimate-guide-to-fast-fashion-in-2022>.

¹⁶⁵ Ibid.

¹⁶⁶ UNEP (2019), "United Nations Alliance for Sustainable Fashion addresses damage of 'fast fashion'", 14 March, available at <https://www.unep.org/news-and-stories/press-release/un-alliance-sustainable-fashion-addresses-damage-fast-fashion>.

¹⁶⁷ UN Alliance for Sustainable Fashion, at <https://unfashionalliance.org/>.

¹⁶⁸ UNEP estimates from UNEP (2019), "The environmental costs of fast fashion", 24 November.

¹⁶⁹ Economic Commission for Europe and Economic Commission for Latin America and the Caribbean (2023), "Improving the sustainability of used clothing: Global, European and Chilean perspectives", available at <https://unece.org/media/documents-download/events/377991>.

Popularization of circular fashion and accessories

These erosive trends have sparked global demand for a departure from fast fashion. Consumers are increasingly demanding eco-friendly products as well as decent labour conditions and ethical sourcing. This includes fair wages and safe working conditions across the industry's global supply chains.¹⁷⁰ Further, many consumers are switching to used fashion items to reduce material consumption, evidenced by the surge in the global market for second-hand apparel from an estimated \$197 billion in 2023 to \$350 billion by 2028, driven by online sales.¹⁷¹

The harmful impacts of the fast fashion model have also put the sector at the forefront of Governments' sustainable development agendas. Many have adopted roadmaps for guiding the sector's transition to circularity, with targeted measures to ensure that enterprises adopt sustainable practices and provide decent working conditions for their labour force in developing countries.¹⁷² The push for circularity has replaced fast fashion with slow fashion models, emphasizing sustainable practices,¹⁷³ and consumers worldwide are increasingly willing to pay for sustainable products,¹⁷⁴ which usually entail a higher price tag. These dynamics have given rise to innovative trends, including:

- **Personalisation and customisation:** Digital solutions have enabled customization with made-to-order models, reducing overproduction and waste.¹⁷⁵
- **Functional fashion:** Demand is rising for fashion that combines style with practicality, such as clothing with ultraviolet protection or moisture-wicking properties.¹⁷⁶
- **Sustainable materials:** Innovations in sustainable materials, such as bio-fabricated leather, recycled fabrics and organic textiles, are becoming more prevalent.
- **Intricate designs:** 3D printing technology has enabled the creation of intricate designs and custom pieces with reduced waste.¹⁷⁷

¹⁷⁰ See, for example, the Commonwealth Human Ecology Council (<https://www.checinternational.org>) and Greenpeace (<https://www.greenpeace.org/international/act/detox>).

¹⁷¹ Statista, "Sustainable fashion worldwide – statistics & facts", available at <https://www.statista.com/topics/9543/sustainable-fashion-worldwide/#topicOverview>.

¹⁷² See, for example, the EU strategy and associated circular economy roadmap for sustainable textiles, available at: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12822-EU-strategy-for-sustainable-textiles_en.

¹⁷³ For a concise overview of this model, see, for example, S. Sarokin and B. Nancy (2024), "Pursuing profitability in slow fashion: Exploring brands' profit contributors", *Journal of Cleaner Production*, 444, 141237.

¹⁷⁴ See, for example, the 2015 Nielsen Global Survey of Corporate Social Responsibility and Sustainability, which involved the participation of more than 30,000 consumers in 60 countries throughout Asia-Pacific, Europe, Latin America, the Middle East, Africa and North America. The survey results are summarized at <https://ashtonmanufacturing.com.au/66-of-consumers-willing-to-pay-more-for-sustainable-goods-nielsen-report-reveals/>.

¹⁷⁵ S. Kwon and N. Kim (2024), "What is the future of fashion retailing with generative AI? Understanding consumer response through Twitter data", *International Textile and Apparel Association Annual Conference Proceedings* 80(1).

¹⁷⁶ M. Li and F. Rong (2022), "The application of practical clothing design method in the teaching of clothing specialty", *Advances in Multimedia*, available at <http://dx.doi.org/10.1155/2022/7387218>.

¹⁷⁷ T. Vieira et al. (2021), "Chatbot design approaches for fashion E-commerce: an interdisciplinary review", *International Journal of Fashion Design Technology and Education* 15(2).

Environmental, social, and governance frameworks for ensuring transparency and accountability

Although many consumers are undeterred by the premium prices of sustainable products, they often encounter false sustainability claims. Many producers engage in greenwashing, asserting circularity without implementing substantial changes to their supply chain operations. The prevalence of greenwashing has prompted governments across the globe to develop a new generation of corporate social responsibility frameworks, the ESG frameworks. These are closely aligned with the principles of the circular economy, providing a structured approach with indicators to verify sustainability claims across the three pillars of sustainability:

- **Environmental**, including efficient resource use, waste reduction, and sustainable production methods, all core principles of the circular economy
- **Social**, including fair labor practices, community engagement, and respect for human rights
- **Governance**, including transparency, accountability, and ethical behaviour.

These frameworks carry immediate consequences for the Tajik garment and footwear sector, affecting enterprises' access to global markets. A notable example is the EU's ESG regulatory framework, which prioritises the textile and clothing industry through a combination of horizontal and sector-specific directives (Table 6). Adhering to these directives is crucial for producers to further benefit from the preferential market access conditions granted under the EU GSP.

TABLE 6. EU environmental, social, and governance regulatory requirements applicable to the Tajik garment and footwear sector		
Legislation	Scope and objective	Key requirements
Regulations		
The Eco-design for Sustainable Products Regulation Expected to enter into force in 2025	Scope • Various sectors, including textiles and apparel. Objective • Provide a framework to set eco-design requirements for products, focusing on greater durability, recyclability, repairability, and recycled content. • Implement a ban on the destruction of unsold goods. • Impose stricter control on substances of concern in products.	• Mandates the use of digital product passports to ensure traceability, transparency and compliance with the EU reporting requirements.

TABLE 6.

EU environmental, social, and governance regulatory requirements applicable to the Tajik garment and footwear sector

Legislation	Scope and objective	Key requirements
Regulations		
The revised textile Labelling Regulation Expected to be considered by the Commission in 2025	Objective Promote transparency and consumer protection by standardizing the labelling requirements across the EU.	- Textile products must be labelled with their fibre composition, specifying the percentage of each fibre present. - Labels must indicate the presence of non-textile parts of animal origin (e.g., leather, fur). - Labels must be provided in the official language(s) of the EU country where the product is being sold.
Waste Shipment Regulation Entered into force in May 2024	Scope - Various sectors, including textiles and apparel. - Applies to shipments within the EU, as well as imports and exports to non-EU countries. Objective - Ensure environmentally sound management of waste during transport and to prevent illegal shipments	- Shipments of waste garments require notification to and consent from the relevant authorities in the countries of dispatch, destination, and transit before the shipment can proceed. - Garments must be classified according to the European Waste Catalogue codes and Basel Convention Annexes. - Exporters must provide financial guarantees or equivalent insurance to cover costs related to transport, recovery, and disposal. - Labels must include the waste classification, European Waste Catalogue code, and handling instructions.
Directives		
Corporate Sustainability Reporting Directive Entered into force in January 2023	Scope - All large companies and SMEs. Objective - Expands sustainability reporting requirements for EU and non-EU companies, enhancing the consistency and comparability of sustainability information.	- Mandates detailed disclosures on social, economic and environmental performance. - Requires detailed disclosure on how businesses identify and address sustainability-related risks and opportunities. - Requires independent assurance, through external audits, of reported information. - The European Sustainability Reporting Standards outline information and ESG metrics enterprises need to report to comply with the directive.

TABLE 6.

EU environmental, social, and governance regulatory requirements applicable to the Tajik garment and footwear sector

Legislation	Scope and objective	Key requirements
Directives		
Green Transition and Green Claims Directive Entered into force in March 2024	Scope • Various sectors, including textiles and apparel. Objective • Set requirements for product design, production, and lifecycle management to minimize environmental impacts.	• Environmental claims must be substantiated with verifiable data and clear documentation (e.g., “made with 50 per cent recycled polyester” rather than vague terms such as “eco-friendly”). • Where applicable, claims should be verified by independent third parties to ensure credibility.
Corporate Sustainability Due Diligence Directive Expected to come into force in 2025	Scope • Applies to EU companies exceeding the stipulated financial threshold and non-EU companies that have significant operations within the EU. This encompasses entities beyond the threshold size and includes ultimate parent companies of groups, ensuring that the directive's reach is comprehensive yet focused. Objective • Establish a one-size-fits-all approach, removing the emphasis on high-risk sectors to ensure broad applicability across diverse industries through a nuanced definition of supply chain operation.	• Sets the compliance threshold at a net worldwide turnover of €450 million. • Specific mandates relate to climate change plans and the provision for civil claims, allowing Member States the latitude to tailor enforcement and compliance mechanisms effectively.
Amendments to the Waste Framework Directive Adopted in 2025	Scope • Various sectors, including textiles and apparel. Objective • Complements the regulation on waste shipments. It ensures that waste management is carried out in a sustainable manner by integrating, among others, waste prevention, recycling, and re-use.	• Introduces mandatory extended producer responsibility schemes for textiles in all EU Member States. Producers cover costs of collecting, transporting, sorting, preparing for reuse, recycling, other recovery operations, and disposal of textiles. • Producers placing textile products on the market for the first time are required to appoint an authorized representative, including in partner countries.

TABLE 6.

EU environmental, social, and governance regulatory requirements applicable to the Tajik garment and footwear sector

Legislation	Scope and objective	Key requirements
Recommendations		
Product Environmental Footprint Category Rules In its transition phase until end 2024	Scope • Various sectors, including textiles and apparel. Objective • Provide a harmonized methodology for measuring the environmental performance of products throughout their life cycle.	• Detailed collection of data across the entire life cycle of a product, from raw material extraction to production, distribution, use, and end-of-life disposal. • Implementation of robust traceability systems to ensure accurate tracking of sustainability metrics across supply chains and operations. In addition, reporting on how traceability systems are used to collect and verify data.

Source: : Compiled by UNECE. The Directives are published on the European Commission's website at https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en and https://environment.ec.europa.eu/strategy/textiles-strategy_en.

6.2 Implications for Tajik manufacturers

The ESG frameworks provide a comprehensive approach for fostering innovation and building resilient supply chains. Thus, Tajik enterprises that meet ESG requirements can gain a competitive edge in export markets, appealing to environmentally and socially conscious consumers and enhancing their brand reputation.

However, maintaining a traceability system is costly, requiring significant upfront investment in expertise skills and advanced technologies. In this context, enterprises have a variety of technologies (Table 7) as well as tried and tested traceability models to choose from to jump-start their sustainability efforts and operational efficiencies. Below are the most widely used models within the textile and garment sector, with each involving a unique approach and ICT requirements:

- **Identity preservation:** Ensures that certified materials remain strictly separate and identifiable at every stage of the supply chain from source to final product and does not allow for mixing certified materials. Implementing this model is particularly costly due to the need for detailed record-keeping and regular audits, which requires investment in advanced technologies. Further, managing separate supply chains for certified and non-certified materials adds complexity to logistics and operations, increasing the need for meticulous planning and coordination. This model is used by the Organic Trade Association.

- **Product segregation:** Ensures that certified materials are physically separated from non-certified materials at all stages of the supply chain. In contrast to the previous model, it allows for mixing certified materials from different producers if they all comply with the same certification standards. Detailed records are maintained to track the certified materials, and each batch of certified material is assigned a unique identifier. This model is used by BCI and Textile Exchange.
- **Mass balance:** Ensures the chain of custody for the overall volume of products entering and exiting the supply chain, rather than tracking the specific journey of individual materials. It also allows for mixing of certified and non-certified materials with sustainability claims asserted in terms of the percentage of certified ingredients in the product. While this model does provide a detailed level of traceability, it is globally acceptable when backed with robust documentation, clear reporting, and comprehensive verification processes to ensure that sustainability claims are accurate and verifiable. It is used by BCI for establishing the chain of custody after a cotton bale is broken and split into yarn.¹⁷⁸

TABLE 7.

Advanced technologies for supporting traceability

Advanced technologies	Supporting role in traceability and transparency
Artificial intelligence and machine learning systems	Can use the data from traceability systems for risk analysis, optimizing value chains and operating processes, and for tracking textile waste.
Blockchain technology	Provides enhanced data reconciliation and tracing; trustworthy, real-time data updating; access to the same information by multiple stakeholders (thus providing the same “truth” for everyone); and improved confidence in the trustworthiness of data.
Internet cloud services	Allows multiple parties to share common software services and to access and update the same data sources.
Distributed databases and data pipelines	Allows access to data stored in multiple locations, using tools like those for accessing a single source of data, thus avoiding some of the problems of central database administration while offering the user an experience that is similar.
Internet of Things	Increases automation in data collection. As low-energy and sensor technologies for Internet of Things devices advance, they allow for the automated collection of new data (such as the temperature inside containers and other logistics units or the use of water or chemicals by manufacturing machinery).
Advanced product labelling (quick response codes, physical tracer technologies, radio-frequency identification and near-field communications labels)	Allows the attachment of additional data to traceable assets and the automated collection of higher-quality track-and-trace information. These labelling technologies, which include both digital and physical markers, when used together with other technologies such as blockchain and AI, can also provide greater accuracy in tracing physical raw material through multiple product transformations, as well as higher speed and automation, and lower costs in tracking data attached to products.

Source: UN/CEFACT (2022), Recommendation 46 – Enhancing transparency and traceability of sustainable value chains in the garment and footwear sector, Table 5, page 34, available at <https://unece.org/trade/publications/recommendation-no46-enhancing-traceability-and-transparency-sustainable-value>.

¹⁷⁸ ISEAL, “ISEAL Guidance: Chain of custody models and definitions”, available at <https://www.isealliance.org/get-involved/resources/iseal-guidance-chain-custody-models-and-definitions>.

Moving forward, at issue is how best to address the challenges to traceability in the Tajik garment and footwear sector. The lack of financial resources and expertise skills aside (Chapter 5), enterprises have limited access to advanced technologies owing to issues surrounding copy rights, and available solutions are expensive. Furthermore, data sharing between supply chain actors can be difficult, owing to concerns about data privacy and proprietary information. The evolving global regulatory environment presents another challenge, making it difficult for producers to keep up with applicable and planned regulations. In addressing these challenges, the emphasis should be on leveraging the ICT infrastructure for traceability in the sector.

6.3 Advancing traceability in the garment and footwear sector

Tajikistan has a foundation for advancing traceability in the sector. Garment and footwear producers enjoy a significant advantage, given the nature of their supply chains. These are relatively shorter and more dependent on domestic sources, making the coordination and integration of traceability easier to manage. Fewer supply chain actors reduce the complexities associated with data sharing, monitoring and auditing, and there is already a community of licensed Better Cotton farmers, ginneries and textile producers who are integrated into a homegrown traceability system.

Developed by SABOR, the system involves a chain-of-custody with elements of identity preservation and segregation. As shown in table 8, it spans from the farms to ginneries (31) and textile producers (3), ensuring that the data collected at each stage are meticulously recorded, monitored, and verified to maintain the integrity and traceability of Better Cotton throughout the entire supply chain. The data are uploaded to BCI's online platform, enabling it to track progress in implementing its programme while offering transparency to major textile companies sourcing from the country.

However, given the varied data processing capabilities of the supply chain actors involved, the system uses a basic ICT infrastructure for data collection. As such, it is labour-intensive and often susceptible to errors. To address this, SAROB is transitioning to an online traceability system, a step that is also meant to ensure compliance with the BCI's updated reporting requirements, which involve complete traceability.

The system will use QR codes to tag each bale of cotton fibre with its own unique identity, enabling easy tracking of the journey of each bale through the supply chain—from the farm where the cotton was grown, through the ginnery where it is processed and onwards as it moves towards manufacturing and sale. Starting with a pilot project at one ginnery, the system will be further developed, addressing efficiency and effectiveness challenges, before it is implemented on a larger scale. On its part, BCI is developing a smartphone application to digitize the field-level data collection process, enabling farmers to input data directly into the system.¹⁷⁹

¹⁷⁹ UNECE interview with SABOR.

TABLE 8.

Overview of the SABOR traceability system, 2024

Supply chain actor	Data collected	Description of process
Cotton farmer	• Weight of crop • Weight of seeds • Type of seed • Date of activities (manual activities and machinery activities – such as when was crop planted, fields prepared, irrigated, fertilised, etc.) • Volume of fuel, water usage, pesticides, fertilisers (organic and mineral) • Costs of all inputs	1. The data are initially registered in the farmer's "field book template". Farmers are provided initial support from SAROB to understand what data to record and when. 2. The data are then transcribed into excel sheets by SAROB. 3. The sheets are then sent to BCI for logging into the online portal. 4. To trace the flows from the farmers to the ginneries, SAROB asks farmers which ginneries their cotton goes to and records this. 5. SAROB also utilizes the data to assess the efficiency of inputs and productivity between cotton produced using Better Cotton methods and cotton produced using other methods.
Ginnery	• Volume of Better Cotton seed received • Better Cotton license number of cotton seed received (each group of farmers is assigned a license number) • Volume of cotton fibres produced • Unique number assigned to each cotton fibre bale, linked to unique number of ginneries • Volume of lint produced after ginning process • An online sales declaration form completed by the ginnery that specifies which bales of Better Cotton fibre are sold to which buyer (international or domestic)	1. SAROB checks which ginneries are receiving cotton seed from registered Better Cotton farmers. SAROB attempts to build a partnership with non-registered ginneries and helps them submit formal applications to register with the BCI platform. 2. Once a ginnery registers, SAROB supplies it with a list of farmers intending to deliver cotton seed. This ensures that the Better Cotton seed is stored separately from other cotton seeds at the ginnery, maintaining bulk commodity segregation. 3. SAROB's specialists monitor and audit at the ginnery level, ensuring that registered seed is stored and processed separately. 4. Every 15 days, ginneries upload the data to BCI's online platform. Some receive support from SAROB specialists.
Textile producers	• Volume (weight) of Better Cotton fibre received • Total amount of yarn produced	1. Buyers who want to source Better Cotton fibre must register with BCI. 2. When buyers receive a delivery from a ginnery, they are required to log the total amount received on BCI's portal through their online "storehouse", ensuring a clear chain of custody. 3. The buyer then produces yarn and records the amount online. 4. Only three Tajik producers are registered with BCI (two of which are integrated into European supply chains). SAROB specialists help the producers with their Better Cotton applications and train them on the use of the system.

Source: Provided by SABOR

As previously mentioned, the Government is working closely with BCI in the context of a long-standing partnership and has reached out to SAROB to extend sustainable practices across cotton-growing farms. This will enable them to upscale their services, while ensuring sustainability.

6.4 Key requirements for a robust institutional framework

Supporting traceability in the garment and footwear sector necessitates a multifaceted effort to consolidate a robust governance framework that addresses immediate needs, while providing the flexibility required to keep in tune with the continuous advancements in technologies and digital solutions. Table 9 provides an overview of steps taken in this direction, highlighting key strategies and laws that offer a solid basis for promoting traceability. These are organized in nine action areas, taking into account successful experiences in supporting the twin objectives of promoting both circularity and traceability in supply chains.¹⁸⁰

The table shows that Tajikistan has registered progress in various action areas. It has developed key legislation and policies for promoting digitalization, innovations in ICT technologies, ICT skills through the education system and sectoral plans. It has also achieved some progress in developing the legislative and policy framework required for promoting cybersecurity, trade facilitation and innovative financing mechanisms. Further, it is in the early stages of developing the framework required for promoting producer responsibility and transparency.

TABLE 9.		Tajikistan: Progress toward a robust legislative and policy framework for traceability	
Action area	Description	Level of progress	Description
Digitalization	Framework for promoting digital transition	Significant progress	The Concept for Digital Economy sets ambitious goals for transforming the economy from a rural, agricultural one to a modern, digital and service-based system. It stipulates the development of data centres, platforms and digital systems capable of establishing the foundation of a digital economy.

¹⁸⁰ See UNIDO and Chatham House (2024), National circular economy roadmaps: A global stock take for 2024, available at https://www.unido.org/sites/default/files/unido-publications/2024-05/UNIDO_National%20circular%20economy%20roadmaps_v07.pdf. The publication organizes actions taken by Governments for promoting the transition to a circular economy. The table adopts those categories of relevance to traceability that are prioritized by many of the countries covered in the publication. This includes fiscal instruments, producer requirements, education and skills, sectoral plans, and research and innovation.

TABLE 9.

Tajikistan: Progress toward a robust legislative
and policy framework for traceability

Action area	Description	Level of progress	Description
Innovation	Framework for promoting innovation in IT and digital solutions	Significant progress	The National Innovation Strategy for the Period up to 2030 provides a strong basis for promoting digital innovation, including through IT parks, research and development, the development of technology transfer networks, and systems of expertise, certification, standardization and accreditation. Furthermore, the Government's Concept of Innovative Development of the Agribusiness Sector of the Republic of Tajikistan emphasizes the promotion of digital technologies in the sector. In 2023, the Government adopted a national strategy for the development of AI, which will be championed by an AI Council. The strategy focuses on establishing the regulatory framework required for promoting AI, along with encouraging AI companies to set up in the country. ¹⁸¹
Education and skills	Framework for developing the country's digital skills	Significant progress	National Road Map on Education System Digital Transformation was adopted in 2023, featuring a special emphasis on curriculum development and teacher training to develop digital skills in youth and prepare them for the demands of the digital age.
Sectoral plans	Sector specific plans for promoting transparency in supply chains	Significant progress	The National Strategy for the Development of Cotton Production, Processing and Textile Industry for 2024–2040 features a special emphasis on building enterprises' technical capacities and stipulates the establishment of technological technology parks dedicated to the textile industry.
Cybersecurity	Framework for addressing cyber security issues	Some progress	The Criminal Code features specific provisions to guarantee information security. Tajikistan also adopted various laws that are fundamental to cybersecurity. These include the laws "On security", "On electronic signature", "On electronic document", "On data protection", "On copyright and related rights", "On information" and "On Electronic Commerce". ¹⁸² However, Tajikistan does not have any officially approved national or sector-specific framework for implementing internationally recognized cybersecurity standards. ¹⁸³

¹⁸¹ Oxford Insights (2023), Government AI Readiness Index 2023, available at <https://www.digdir.no/sites/sogn/files/2024-03/GovernmentAIReadinessIndex2023.pdf>.

¹⁸² These laws are published at <http://www.adlia.tj/index.fwx>.

¹⁸³ ITU, "Cyberwellness profile, Republic of Tajikistan", available at https://www.itu.int/en/ITU-D/Cybersecurity/Documents/Country_Profiles/Tajikistan.pdf.

TABLE 9.

Tajikistan: Progress toward a robust legislative
and policy framework for traceability

Action area	Description	Level of progress	Description
Financing mechanisms	Fiscal incentives and financing solutions	Some progress	The textile sector benefits from tax exemptions. In addition, MSMEs and retailers have access to the Innovation Fund as well as climate finance through the local currency green bond (issued in February 2024). Furthermore, the new law “On Public Procurement” prioritizes providers that demonstrate corporate and social responsibility. Yet, current tax exemptions are not linked to corporate social responsibility, and financing mechanisms lag the demand for investment loans.
Trade facilitation	Framework for promoting trade openness and facilitating trade	Some progress	A WTO member since 2013, Tajikistan has ratified the Agreement on Trade Facilitation and has implemented all its commitments under the agreement. ¹⁸⁴ Its Trade Portal ¹⁸⁵ and Single Window facility constitute significant steps towards transitioning to digital trade, involving the digitalization of information exchange and the simplification of customs clearance and at-the-border inspection procedures. These also constitutes major steps in realizing the national “Concept of the Formation of E-Government”. However, challenges remain with regard to interoperability.
Producer requirement	Requirements extending the producer's responsibilities	Limited progress	While the national legislative framework integrates circular economy principles, Tajikistan does not have laws that promote extended producer responsibility, whereby producers are made significantly responsible, whether financially or physically, for minimizing environmental impacts throughout the product life cycle.
Transparency and accountability	Reporting requirements	Limited progress	Although the national legislative framework integrates circular economy principles, enterprises are only expected to demonstrate compliance with domestic and international regulatory requirements for ensuring consumer's safety and protecting the environment (through conformity certificates). Many enterprises publish these certificates along with quality certificates online. However, these do not reflect enterprises' sustainability practices.

Source: Compiled by UNECE.

¹⁸⁴ <https://www.tfadatabase.org/en/members/tajikistan>¹⁸⁵ Ministry of Economic Development and Trade of the Republic of Tajikistan, “Step-by-step guide to trade procedures”, Tajikistan Trade Portal, available at <https://tajtrade.tj/?l=en>.

The limited progress in producer responsibility and transparency underscores the need to complement the green economy agenda with a focus on holding producers accountable for the environmental impacts of their supply chain operations throughout the life cycles of their products. Integrating accountability would ensure a more holistic and effective transition to the development of sustainability.

The table also suggests that promoting traceability requires scaling up efforts to ensure a level playing field, a goal that is complicated not only by weaknesses in the QI system (Chapter 5), but also by the lack of adequate IT capacities for facilitating trade. The benefits of the national Single Window facility (Box 8) have not yet been fully realized due to challenges in achieving interoperability among the various information systems used by the Single Window agencies. For example, data exchange practices in the tax and identification systems are done on a bilateral basis and subject to memorandums of understanding between institutions.¹⁸⁶

BOX 8.**Tajikistan's Single Window facility**

Tajikistan's Single Window facility corresponds to the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) Recommendation 33,^a whereby all parties involved in pre-clearance, clearance and post-clearance formalities, including payment of customs duties and taxes, are interconnected through a single platform, the Single Window Information System. The platform provides the following services:

- Information services, including up-to-date information on normative and legal documents
- Communication services, including automated submission and transmission of documents and route submissions in a timely manner to relevant State agencies for their consideration; online monitoring of requests processing and the status of documents; and message exchange
- Statistical services, including the provision of up-to-date statistical data on export and import activities, including volume of trade, main exports and imports, trading partners and so on.

Source: UNECE (2014), Regulatory and Procedural Barriers to Trade in the Republic of Tajikistan: Needs Assessment.

^a UN/CEFACT (2005), "Recommendation No. 33 – Recommendation and Guidelines on establishing a Single Window".

Under these conditions, officials are left with limited choice but to rely on paper-based procedures, with traders required to submit 45 support documents as part of customs clearance procedures.¹⁸⁷ This causes data fragmentation, inconsistencies, more errors and reduced visibility into the supply chain, making it difficult to accurately and efficiently track the flow of goods. Addressing these interoperability issues is essential for improving the efficiency, transparency, and reliability of traceability records throughout the sector's international supply chains as well as ensuring compliance with regulatory requirements.

The lack of expertise skills is also a major factor in limiting the Government's ability to improve cyber security. The country does not have an officially

¹⁸⁶ UNECE (2014), Regulatory and Procedural Barriers to Trade in the Republic of Tajikistan: Needs Assessment.

¹⁸⁷ Ministry of Economic Development and Trade of the Republic of Tajikistan, "Export of garments/textiles by road (full procedure)", Tajikistan Trade Portal, available at <https://tajtrade.tj/procedure/127?l=en>.

recognized computer incident response team, nor does it have an established framework for the certification and accreditation of national agencies and public sector professionals in cybersecurity. It also lacks a coherent cybersecurity strategy and organizational capacity, with no central agency for cybersecurity.¹⁸⁸

Furthermore, supporting traceability remains difficult in the current conditions of digital connectivity. Issues of Internet access and affordability persist, especially in rural areas, where more than 70 per cent of the population resides. In particular, issues include the lack of adequate infrastructure; the telecommunication sector's market dynamics, dominated by the State-owned telecommunication company; and the high tax margins. These factors have hiked prices, which remain among the highest globally, despite limited access and low speeds. Without expanding high-speed Internet, Tajikistan cannot achieve digital transformation and advance e-government services.¹⁸⁹

6.5 Policy implications

This chapter shows that Tajikistan has a strong foundation to enhance traceability in its garment and footwear sector. There is a community of licensed Better Cotton farmers, ginneries, and textile producers who are already part of a locally developed traceability system. This established infrastructure provides a robust platform for advancing traceability efforts, and the sector's relatively short supply chains minimizes complexities related to data sharing, monitoring, and auditing.

Yet, for enterprises, establishing traceability systems is a challenging undertaking, irrespective of the traceability model. At issue are not only the high costs, but the complexity of this undertaking, which implies the need to:

- Develop and implement effective and responsive due diligence strategies of their operations and supply chains to identify, prevent, and mitigate adverse socio, economic and environmental impacts.
- Develop a robust traceability system to track, document, and verify ESG performance, ensuring compliance with regulations in domestic and export markets.
- Ensure that they stay current with evolving ESG reporting requirements in domestic and export markets.
- As mentioned in chapter 5, enabling enterprises to rise to this task requires expanding and deepening the support services available to the sector and improving access to finance. It also requires integrating producer requirements and transparency requirements into the legislative framework, as well as ensuring a level playing field through a

¹⁸⁸ ITU, "Cyberwellness profile, Republic of Tajikistan", available at https://www.itu.int/en/ITU-D/Cybersecurity/Documents/Country_Profiles/Tajikistan.pdf.

¹⁸⁹ Asian Development Bank (2023), Asian Development Outlook, April 2023 and J.-P. Olters (2021), "In Tajikistan, a digital future as an alternative to unemployment or migration", 21 March, World Bank.

strengthened QI system and improved data interoperability between the Single Window agencies.

However, without concerted efforts to improve digital connectivity, and particularly the issues of access and affordability, enterprises will not be able to establish and maintain traceability systems. Furthermore, they will remain hesitant to disclose information about their supply chain operations until cybersecurity issues are adequately addressed. Fear of data breaches, cyberattacks and unauthorized access to sensitive information creates a significant barrier to transparency.

7. CONCLUSION AND RECOMMENDATIONS

This study explored issues surrounding Tajikistan's circular economy transition, with a focus on the garment and footwear sector, identified by the Government as among the priority sectors for achieving inclusive sustainable growth. In so doing, the study placed the entire analysis within the broader context of the country's green economy agenda, as envisaged in the national Strategy for the Development of the Green Economy for 2023–2030. It also provided an assessment of the institutional requirements for supporting traceability in the sector, as an essential requirement for improving supply chain transparency and fostering supply chain resilience.

The study showed how Tajikistan's successive environmental reforms have propelled the country forward on its path toward a circular economy. These involved the integration of circular economy-aligned principles into national development strategies and legislations as essential drivers for achieving sustainability, enabling the country to register relative decoupling.

However, advancing the circular transition requires transforming production and consumption patterns. The current patterns of agricultural and industrial expansion involve unsustainable extraction and use of raw materials, compounded by the lack of adequate solid waste management systems. This situation is placing a strain on the country's resources, including raw materials, land and water, while aggravating environmental degradation and biodiversity loss. Additionally, Tajikistan's energy production, primarily based on hydropower, suffers from inefficiencies and water stress, making it difficult to fully decarbonize the energy sector, ensure sustainable energy and affordability. Action in any of these areas requires addressing potential trade-offs, including:

- **Agricultural expansion and water availability:** Ensuring that agricultural expansion, essential for food security, does not come at the expense of ensuring drinking water for all.
- **Sustainable energy and industrial transformation:** Ensuring that sustainable energy, which involves substantial investments in power grids and renewable energy, does not at the expense of transforming production, including digitalisation waste management infrastructures.
- **Access to finance and better the quality of life:** Ensuring that improving access to finance for the disadvantaged groups (e.g., small-scale farmers and MSMEs) does not come at the expense of investments in education, healthcare, and other basic social services.

At the same time, the garment and footwear sector's transition to circularity is hindered by enterprises' weak technological capabilities. Enterprises lack the knowledge, skills, and financial resources needed for integrating circular economy principles, which require advanced technologies throughout the product lifecycle. Limited awareness of circular economy principles among consumers and enterprises and weakness in the national QI system create additional challenges, acting as disincentives to investment in circular economy technologies. This lack of awareness indicates a limited demand for durable products and price-based competition, while the lack of an adequate QI system implies that standards and enforcement mechanisms are insufficient to ensure compliance with circularity principles.

Furthermore, traceability in the sector faces several challenges. The enterprises' weak ICT infrastructure and technological capability undermine their ability to deal with the high costs and complexity of establishing traceability systems. The current issues surrounding digital connectivity and cybersecurity create additional complexities, increasing the costs for enterprises and their reluctance to disclose supply chain information.

Many of these challenges are not unique to Tajikistan; they confront many developed and developing countries and require considerable time to effectively address. Ensuring a balanced treatment necessitates an integrated approach that considers the complex interdependencies between the various national objectives and their implications for the achievement of the SDGs.

UNECE is helping the Government develop **proactive, forward-looking green and circular economy-aligned policies and laws** for addressing transboundary issues, and bolstering synergies between national and regional development efforts in the following areas:

- **Circular economy:** Tajikistan is a member of the UNECE Circular STEP, which is a multistakeholder network for supporting the circular economy transition through exchange of experience, capacity-building and analytical work.¹⁹⁰ In addition to government representatives, Circular STEP convenes representatives from the private sector, academia, research institutions and civil society as well as other actors from UNECE's 56 Member States. It also has partnerships with other UN initiatives (e.g., One Planet Network, Issue-Based Coalition on Sustainable Food Systems).

¹⁹⁰ Detailed information on UNECE Circular STEP is available at <https://unece.org/trade/CE-ECTD-circularstep>.

- **Regional cooperation and sustainable trade:** Tajikistan participates in the United Nations Special Programme for the Economies of Central Asia (SPECA),¹⁹¹ the UNECE joint programme with the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) assumed the chairmanship in 2024. SPECA provides an effective platform for the Central Asian countries, along with Azerbaijan and Afghanistan, to collaborate on a range of concerns, including water management, the rational use of energy resources, sustainable transport, trade, innovation, gender equality and stronger statistical capacity for monitoring progress. Collaboration involves joint initiatives, which are developed by participating States with the support of UNECE and ESCAP. In 2019, the participating States adopted common Principles of Sustainable Trade.¹⁹² UNECE is helping the Government of Tajikistan develop a policy paper for integrating these principles into future sustainable development plans.
- **Digitalization of trade and transport corridors:** UNECE is helping Tajik public and private experts, along with their counterparts in SPECA participating States, utilize the UN/CEFACT semantic schemas, standards and reference data models to support the digitalization of data and document exchange along the Trans-Caspian trade and transport corridor. This effort was envisaged in the Road Map for Digitalization of Multimodal Data and Document Exchange along the Trans-Caspian Corridor, developed with the UNECE in consultation with the SPECA participating States and adopted by their Presidents in November 2023.¹⁹³ Digitalization will ensure interoperability and efficient data exchange, reducing waste and redundancy in trade processes while enabling traceability. Furthermore, the Government is in discussion with UNECE to include Tajikistan in the eTIR international system, launched by UNECE to ensure full and complete automation of data exchange under the Customs Convention on the International Transport of Goods under Cover of TIR Carnets (TIR Convention). This inclusion will enable Tajikistan to further secure the exchange of data under the TIR Convention and generate important cost-saving benefits for supply chain actors.¹⁹⁴
- **Innovation for sustainable development:** UNECE is helping the Tajik Government build the required knowledge and expertise skills to promote innovation and technological transformation, including innovation for the circular economy and sustainable business practices, in accordance with the SPECA Innovation Strategy for Sustainable Development, developed by the UNECE in consultation with the SPECA participating States.¹⁹⁵ UNECE is also helping the Government, along with its counterparts in SPECA participating States, develop collaborative initiatives for supporting the implementation of the Strategy.¹⁹⁶ Further, in 2024, UNECE developed a New Innovation Policy for Transition Economies in the SPECA Subregion, jointly with SPECA participating States.¹⁹⁷

¹⁹¹ SPECA was launched in 1998 to strengthen subregional cooperation in Central Asia and facilitate the region's integration into the world economy. The participating States are Afghanistan, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. UNECE and UNESCAP jointly provide overall support and coordination to the programme on the principle of annual rotation. A detailed overview of SPECA is available at: <https://unece.org/speca>.

¹⁹² UNECE and ESCAP (2019), "Principles of sustainable trade", Fourteenth Session of the SPECA Governing Council, available at <https://unece.org/info/SPECA/events/20176>.

¹⁹³ UNECE (2023), "SPECA States agree on a dedicated multi-partner trust fund and adopt a roadmap for digitalization of the Trans-Caspian Transport Corridor", 24 November.

¹⁹⁴ Tajikistan acceded to the TIR Convention on 11 September 1996.

- **Sustainable transport:** Tajikistan will be among the countries covered in the upcoming UNECE comprehensive assessment Climate Change Impacts and Adaptation for International Transport Networks.¹⁹⁸ The assessment evaluates resilience using a matrix of methodologies, including stress tests, rapid adaptation pathway analysis, vulnerability and risk assessments, and threshold analysis. It proposes action-oriented recommendations and case studies to help countries enhance the resilience of their transport systems to climate change.
- **Sustainable energy:** In the context of SPECA, UNECE is helping Tajikistan and its neighbouring SPECA participating States develop an integrated and interconnected energy system to ensure a sustainable and affordable energy supply.¹⁹⁹ The envisaged system encompasses electricity and gas grids and focuses on enabling the transport and trade of low-carbon and green hydrogen, as critical elements for deep decarbonization and more effective integration of scaled renewable energy capacity into the energy system
- **Sustainable use of critical raw material:** UNECE is helping Tajikistan implement the United Nations Framework Classification for Resources and its derivative, the United Nations Resource Management System,²⁰⁰ to ensure the environmental and socioeconomic viability and technical feasibility of projects aimed at improving the supply of critical raw materials. Consistent with the principles of the circular economy, the system is based the concept of resource servitization.²⁰¹ It emphasizes principle-based solutions that allow for recovering otherwise unused by-products from mining and reducing the environmental and social impact of the raw materials used, while increasing customer loyalty and creating new revenue streams for the country. UN/CEFACT is in the process of developing a comprehensive framework for supporting traceability, transparency and sustainability in extractive, critical raw material supply chains. This framework will support interoperability between reporting platforms on critical raw materials, ensuring reliability and increasing trust international data exchange.
- **Sustainable environment:** UNECE is carrying out the fourth Environmental Performance Review of Tajikistan, which will provide action-oriented recommendations developed in consultation with the Government. The review measures progress and considers challenges in the areas of air quality, water management, biodiversity, soil protection, waste and

¹⁹⁵ UNECE and ESCAP (2019), "SPECA Innovation Strategy for Sustainable Development", Fourteenth Session of the SPECA Governing Council, available at <https://unece.org/info/SPECA/events/20176>.

¹⁹⁶ See UNECE and ESCAP (2021) "Draft Action Plan for implementing the SPECA Innovation Strategy for Sustainable Development", Sixteenth Session of the SPECA Governing Council, available at <https://unece.org/info/SPECA/events/359263>.

¹⁹⁷ See UNECE (2024), New Innovation Policy for Transition Economies in the SPECA subregion, available at <https://unece.org/economic-cooperation-and-integration/publications/new-innovation-policy-transition-economies-speca>; and, UNECE (2023), Supporting Innovative High-Growth Enterprises in the SPECA sub-region, available at <https://unece.org/economic-cooperation-and-integration/publications/supporting-innovative-high-growth-enterprises-0>.

¹⁹⁸ The previous edition is UNECE (2020), Climate Change Impacts and Adaptation for Transport Networks and Nodes.

¹⁹⁹ UNECE and ESCAP, "Programme on energy connectivity in Central Asia and the Caucasus".

²⁰⁰ UNECE, "Sustainable resource management".

²⁰¹ UNECE Committee on Sustainable Energy, "Resources as a service: A catalyst to accelerate the energy transition, safeguarding climate action targets within the circular economy – Draft for discussion", ECE/ENERGY/2022/7. Prepared by the United Nations Resource Management System Sub-group of the Expert Group on Resource Management.

chemicals management, and greening the economy. It also examines the country's environmental data, information and observation systems; the extent to which international environmental agreements and commitments are implemented; and recommended activities for addressing climate change.

- **Sustainable environment:** UNECE is carrying out the fourth Environmental Performance Review of Tajikistan, which will provide action-oriented recommendations developed in consultation with the Government. The review measures progress and considers challenges in the areas of air quality, water management, biodiversity, soil protection, waste and chemicals management, and greening the economy. It also examines the country's environmental data, information and observation systems; the extent to which international environmental agreements and commitments are implemented; and recommended activities for addressing climate change.
- **Innovative financing mechanisms:** UNECE has been supporting Tajikistan in strengthening its legislative framework for public-private partnerships (PPPs) and in implementing the UNECE "PPPs for the SDGs" approach in its legislation. Work is underway on assessing PPP infrastructure projects, using the UNECE PPP and Infrastructure Evaluation and Rating System against the SDGs. Work has also started on training public officials and PPP practitioners on the use of the system.

Moving forward, the study demonstrates that the Government needs to complement its green economy agenda with targeted measures to promote circular economy transition. The emphasis should be on developing the necessary horizontal regulations and policies for decoupling production and consumption from environmental harm and biodiversity losses, while also building the Government's capacity for coherent planning and enforcement.

These regulations and policies will provide a unified cross-sectoral framework for integrating sustainable practices into everyday production and consumption, ensuring consistency and reducing fragmentation. This will make it easier for enterprises to adopt sustainable practices. This will also enable the Government to address emerging issues in an efficient manner and develop sectoral policies and regulations.

Tables 10 and 11 provide two sets of interlinked recommendations for the Government's consideration.²⁰² They support a whole-of-government approach, comprising horizontal, cross-sectoral and sector-focused recommendations targeting garment and footwear supply and value chains. They correspond to the ambitious objectives set in the national Strategy for the Development of the Green Economy, drawing on the UNECE norms, standards and best practices in sustainable energy, waste management,

²⁰² The approach and structure of these recommendations were developed in close consultation with the Government to ensure alignment with national policies and priorities and support the successful implementation of the national Strategy for the Development of the Green Economy.

TABLE 10.

Proposed recommendations for consolidating a proactive, forward-looking circular economy governance framework

HORIZONTAL, CROSS-SECTORAL POLICIES AND REGULATIONS

Sustainable energy

Recommendation: Focus on achieving carbon neutral (i.e. net zero emissions) and resilient energy systems, an essential requisite for transforming energy production and consumption across all activities. This means going beyond reducing the carbon intensity of energy supply (decarbonization) to ensuring effective offsetting of emissions by equivalent amounts of removals.^a

Details	Contribution to goals of Strategy for the Development of a Green Economy
Conduct awareness campaigns to educate the public on the concept of carbon neutrality and resilient energy systems. Time frame: Short term	9.1.9. Involving relevant government bodies and public organizations in the development of regulations related to the green economy process
Invest in low- and zero-carbon technologies and advanced energy storage technologies that leverage national resources and typology to better address seasonal electricity deficits in winter. Examples: • Pumped hydroelectric storage • Thermal energy storage • Gravity-based energy storage Time frame: Short to medium term	1.1.1. Improvement and development of regulatory legal acts and programme documents on the efficient use of green energy and energy saving
Improve end-use energy efficiency and productivity in households, industries, commercial sectors and transportation. Relevant resources: • UNECE, Joint Task Force on Energy Efficiency Standards in Buildings (2019), Compendium of Best Practices on Standards and Technologies for Energy Efficiency in Buildings in the UNECE Region • UNECE, “Energy efficiency in buildings” Time frame: Short to medium term	1.1.6. Introduction of modern systems and technologies to reduce commercial and technological losses in the energy sector 2.1.6. Introduction of “green” standards for enterprises in the mining industry to create a favourable ecosystem. 2.1.8. Transfer of industrial production processes to energy-saving and environmentally friendly technologies and equipment 5.1.8. Training of highly qualified personnel to implement the principles of the green economy in the field of architecture and construction. 10.1.10. Developing methods to ensure effective energy management in hotels, campsites and other ecotourism infrastructure. 12.1.10. Support the creation of “green” jobs in industry, energy, agriculture, transport, tourism, construction, housing and communal services and waste management.
Invest in total system efficiency to reduce losses in transformation, transmission and distribution. Examples: • Use combined-cycle power plants and high-voltage direct current transmission to enhance power generation and reduce transmission losses. • Upgrade transmission lines with high-temperature, low-sag conductors. • Implement smart-grid technologies; promoting distributed generation to minimize distribution losses. Time frame: Medium term	1.1.6. Introduction of modern systems and technologies to reduce commercial and technological losses in the energy sector.

TABLE 10.

Proposed recommendations for consolidating a proactive, forward-looking circular economy governance framework

HORIZONTAL, CROSS-SECTORAL POLICIES AND REGULATIONS

Sustainable energy

Details	Contribution to goals of Strategy for the Development of a Green Economy
Capture emissions through faster deployment of carbon capture technologies, including direct air capture systems and carbon capture and storage technologies. Time frame: Short to medium term	1.1.1. Improvement and development of regulatory legal acts and programme documents on the efficient use of green energy and energy saving 7.1.3. Implement standards to prevent increases in greenhouse gas emissions in industry, transport and other sectors.
Recommendation: Integrate sustainable hydrogen development as part of the overall energy strategy. While this involves substantial costs, including capital investments, regulatory frameworks and safety measures, hydrogen offers Tajikistan a strategic opportunity for using its rich hydropower resources to enhance energy security	
Details	Contribution to goals of Strategy for the Development of a Green Economy
Establish regulatory frameworks and safety standards for sustainable hydrogen production, storage and distribution. Time frame: Short to medium term	1.1.1. Improvement and development of regulatory legal acts and programme documents on the efficient use of green energy and energy saving 1.1.3 Electricity production from other renewable energy sources (solar, wind and bioenergy) in mountainous and favourable areas
Develop a skilled workforce through training programmes and certifications in hydrogen technologies and safety procedures. Time frame: Short to medium term	12.1.10. Support the creation of “green” jobs in industry, energy, agriculture, transport, tourism, construction, housing and communal services and waste management
Develop infrastructure for hydrogen storage and distribution, such as underground storage tanks, pipelines and transport systems (e.g. trucks equipped for hydrogen transport). Time frame: Medium and long term	1.1.3. Electricity production from other renewable energy sources (solar, wind and bioenergy) in mountainous and favourable areas
Recommendation: Anchor renewable energy development in a just transition framework, a fundamental principle of the Paris Agreement on Climate Change.	
Details	Contribution to goals of Strategy for the Development of a Green Economy
Develop a just transition framework to govern the move away from coal-based energy systems, based on UNECE's Just Transition concept. Time frame: Short term	12.1.10. Support the creation of “green” jobs in industry, energy, agriculture, transport, tourism, construction, housing and communal services and waste management

TABLE 10.

Proposed recommendations for consolidating a proactive, forward-looking circular economy governance framework

HORIZONTAL, CROSS-SECTORAL POLICIES AND REGULATIONS

Sustainable energy

Recommendation: Keep up to date with successful experiences in the water-energy nexus for sustainable hydropower, environmental sustainability and biodiversity conservation.

Details

Contribution to goals of Strategy for the Development of a Green Economy

Engage in activities under transboundary and international conventions:

- 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and 1997 Convention on the Law of the Non-navigational Uses of International Watercourses, which support achievement of SDG targets 6.5 and 14.c.
- 1991 Convention on Environmental Impact Assessment in a Transboundary Context and its 2003 Protocol on Strategic Environmental Assessment, enables integration of environmental considerations in national development plans and projects to support achievement of SDG 12.

Time frame: Continuous

7.1.4. Completion of the transition of water management to the basin management method (from administrative to hydrological)

Waste management

Recommendation: Update the pollutant charge system.

Details

Contribution to goals of Strategy for the Development of a Green Economy

Revise the pollutant charge system to account for inflation.

Time frame: Short term

6.1.1. Improving legal acts, standards, regulations for the implementation of the principles of the green economy in the field of housing and communal services and waste management

Recommendation: Ensure complete alignment of laws with circular economy principles.

Details

Contribution to goals of Strategy for the Development of a Green Economy

Establish a secondary law articulating procedures for implementing the circular economy principles provided in the laws on waste management.^b

Time frame: Short term

6.1.1. Improving legal acts, standards, regulations for the implementation of the principles of the green economy in the field of housing and communal services and waste management

9.1.7. Introducing amendments to regulatory legal acts on industrial and household waste in order to economically stimulate activities in the field of waste management

TABLE 10.

Proposed recommendations for consolidating a proactive, forward-looking circular economy governance framework

HORIZONTAL, CROSS-SECTORAL POLICIES AND REGULATIONS

Waste management

Details

Participate in meetings and dialogues organized under the UNECE Convention on Industrial Accidents., which provides a robust framework for supporting circularity, emphasizing safety, risk management in industrial processes and regulatory harmonization. Tools developed under the Convention help countries and operators contain the negative impact of raw materials extraction, such as through the safe management of mine tailings.

Relevant resources: UNECE, “Industrial accidents”

Time frame: Continuous

Contribution to goals of Strategy for the Development of a Green Economy

2.1.6. Introduction of “green” standards for enterprises in the mining industry to create a favourable ecosystem

9.1.7. Introducing amendments to regulatory legal acts on industrial and household waste in order to economically stimulate activities in the field of waste management

Recommendation: Foster regional and international cooperation to address transboundary waste management issues.

Details

Use UN/CEFACT Standards for the Transboundary Movement of Waste, which offer an internationally recognized framework for tracking and tracing the transboundary movement of waste and its disposal, ensuring compliance with the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal. This framework also applies to non-hazardous waste, promoting overall transparency, accountability and regulatory compliance in the management of all types of waste.

Time frame: Short to medium term

Contribution to goals of Strategy for the Development of a Green Economy

9.1.7. Introducing amendments to regulatory legal acts on industrial and household waste in order to economically stimulate activities in the field of waste management

TABLE 10.

Proposed recommendations for consolidating a proactive, forward-looking circular economy governance framework

HORIZONTAL, CROSS-SECTORAL POLICIES AND REGULATIONS

Quality infrastructure

Recommendation: Develop the technical regulations required for promoting circularity across sectors.

Details	Contribution to goals of Strategy for the Development of a Green Economy
Develop the technical regulations required for guiding enterprises, while ensuring regulatory harmonization to avoid technical barriers to trade. Follow the UNECE International Model for Transnational Regulatory Cooperation Based on Good Regulatory Practice, in which technical regulations must reference international standards. Relevant resources: Circular economy standards • ISO 59004:2024 Circular Economy – Vocabulary, Principle and Guidance for Implementation • ISO 59010:2024 Circular Economy – Guidance on the Transition of Business Models and Value Networks • ISO 59020:2024 Circular Economy – Measuring and Assessing Circularity Performance Circular economy – related standards: • ISO 14001 Environmental Management Systems • ISO 14006 Environmental Management Systems – Guidelines for Incorporating Eco-design • ISO 14040 Environmental Management – Life Cycle Assessment – Principles and Framework • ISO 14064 Greenhouse Gases – Part 1: Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals • ISO 50001 Energy Management Systems Internationally recognized traceability standards: • ISO 9000:2015 – Quality Management Systems – Fundamentals and Vocabulary • ISO 8402:1994 – Quality Management and Quality Assurance Vocabulary UN/CEFACT digital standards semantic schemas. Time frame: Short to medium term	3.1.3 Attracting domestic and foreign capital for the implementation of green investment projects in agriculture. 7.1.3. Implement standards to prevent increases in greenhouse gas emissions in industry, transport and other sectors 8.1.1. Strengthening the institutional framework to attract investment for the development of a green economy in various sectors. 9.1.6. Introducing changes to some regulatory legal acts in terms of improving the standardization system in the field of green economy and introducing measures to encourage business entities to implement the best technologies

TABLE 10.

Proposed recommendations for consolidating a proactive, forward-looking circular economy governance framework

HORIZONTAL, CROSS-SECTORAL POLICIES AND REGULATIONS

Cybersecurity

Recommendation: Consolidate a robust system for cybersecurity.

Details	Contribution to goals of Strategy for the Development of a Green Economy
Establish an institutional framework: • National cybersecurity agency to oversee and coordinate all cybersecurity efforts • Computer incident response team to provide real-time responses to cybersecurity incidents • Partnerships with international cybersecurity organizations and agencies to share information and best practices Develop policies and laws: • National cybersecurity strategy • Updated legislation with data protection and a more comprehensive definition of cybercrime Develop systems: • Framework for certification and accreditation of national agencies and public sector professionals in cybersecurity • System for national benchmarking to measure cybersecurity development Time frame: Short to medium term	8.1.1. Strengthening the institutional framework to attract investment for the development of a green economy in various sectors

Sustainable trade and supply chain digitalization

Recommendation: Ensure a conducive environment for promoting sustainable trade and further improving trade facilitation conditions.

Details	Contribution to goals of Strategy for the Development of a Green Economy
Strengthen traceability and transparency provisions in trade agreement with neighbouring countries to promote trade in durable and second-hand garments and footwear items. Time frame: Short to medium term	8.1.1. Strengthening the institutional framework to attract investment for the development of a green economy in various sectors 9.1.6. Introducing changes to some regulatory legal acts in terms of improving the standardization system in the field of green economy and introducing measures to encourage business entities to implement the best technologies
Enhance interoperability among the information systems used by the Single Window agencies in the context of a comprehensive framework encompassing legal and regulatory aspects, institutional roles, technological standards and platforms, and semantic elements such as unique identifiers and naming conventions for proper data linkage, following UNECE UN/CEFACT recommendations. Time frame: Short term	9.1.6. Introducing changes to some regulatory legal acts in terms of improving the standardization system in the field of green economy and introducing measures to encourage business entities to implement the best technologies

TABLE 10.

Proposed recommendations for consolidating a proactive, forward-looking circular economy governance framework

HORIZONTAL, CROSS-SECTORAL POLICIES AND REGULATIONS

Sustainable transport

Recommendation: Improve the inland transport system's resilience to climate change.

Details	Contribution to goals of Strategy for the Development of a Green Economy
Develop a national strategy for mitigating climate change impacts on the transport sector following UNECE's Strategy for Reducing Greenhouse Gas Emissions from Inland Transport, which focuses on aligning the sector with green and circular economy principles.¹ Time frame: Short to medium term	2.1.7. Creation of enterprises in the field of production and assembly of electric transport (electric cars, electric mopeds, trolleybuses and electric locomotives) 4.1.5. Regular transition to electric vehicles in public transport 4.1.7. Introduction of mechanisms to reduce greenhouse gas emissions in the transport sector 4.1.8. Introduce methods to encourage the use of bicycles as an alternative and environmentally friendly mode of transport in small towns and for short and medium distance trips

Sustainable consumption

Recommendation: Promote regenerative consumption patterns.

Details	Contribution to goals of Strategy for the Development of a Green Economy
Develop a national strategy for mitigating climate change impacts on the transport sector. Relevant resources: • UNECE Strategy for Reducing Greenhouse Gas Emissions from Inland Transport, on aligning the sector with green and circular economy principles • UNECE, Inland Transport Committee (2024), "Draft Inland Transport Committee Strategy on Reducing Greenhouse Gas Emissions from Inland Transport" Time frame: Short to medium term	2.1.7. Creation of enterprises in the field of production and assembly of electric transport (electric cars, electric mopeds, trolleybuses and electric locomotives) 4.1.5. Regular transition to electric vehicles in public transport 4.1.7. Introduction of mechanisms to reduce greenhouse gas emissions in the transport sector 4.1.8. Introduce methods to encourage the use of bicycles as an alternative and environmentally friendly mode of transport in small towns and for short and medium distance trips

TABLE 10.

Proposed recommendations for consolidating a proactive, forward-looking circular economy governance framework

INSTITUTIONAL CAPACITIES FOR EFFECTIVE GOVERNANCE

Capacities for coherent planning

Recommendation: Equip relevant State agencies with the knowledge and management information systems required.

Details

Contribution to goals of Strategy for the Development of a Green Economy

Develop training programmes for equipping agencies with advanced skills and expertise on the circular economy principles and traceability and their role in advancing the transition to a green economy.

Time frame: Short term

11.11. Improving curricula in relevant areas of higher, secondary and primary vocational education with the introduction of the fundamentals of a “green” economy, the introduction of renewable energy sources, “clean” development of transport and energy saving, as well as the inclusion of topics on the basics of a “green economy” in the relevant curricula of secondary school establishments

Recommendation: Foster inter-agency coordination.

Details

Contribution to goals of Strategy for the Development of a Green Economy

Assign the role of coordinating reforms for supporting circular economy and traceability in the sector to a single agency.

Time frame: Short term

9.19. Involving relevant government bodies and public organizations in the development of regulations related to the green economy process

Capacities for successful implementation

Recommendation: Develop the capacities required to enforce regulatory requirements in the fields of circular economy and traceability.

Details

Contribution to goals of Strategy for the Development of a Green Economy

Prioritize achieving international recognition of national conformity assessment results by testing, certification and inspection bodies.

Scale up TajikStandard’s participation in interlaboratory comparisons for ensuring accuracy, reliability and traceability in measurements.

Time frame: Short term

9.16. Introducing changes to some regulatory legal acts in terms of improving the standardization system in the field of green economy and introducing measures to encourage business entities to implement the best technologies

Recommendation: Develop robust systems to track and report progress towards circularity.

Relevant resources: UNECE-OECD guidelines for measuring the circular economy (<https://unece.org/media/press/389204>)

They support the development of internationally comparable statistics, providing a common definition and clarity on what needs to be measured.

Time frame: Short to medium term

9.14. Development and implementation of mechanisms for mandatory assessment of the impact of planned activities of economic entities on the environment

TABLE 10.

Proposed recommendations for consolidating a proactive, forward-looking circular economy governance framework

INNOVATIVE FINANCING MECHANISMS

Access to finance

Recommendation: Promote green and sustainability-linked loans to help enterprises transition to circular economy business models.

Details	Contribution to goals of Strategy for the Development of a Green Economy
Promote the establishment of funds dedicated to providing SMEs with access to funds to invest in renewable energy and energy efficiency technologies. Time frame: Short to medium term	8.1.8 Creation of specialized public and private financial institutions (organizations) to finance green projects

Fiscal policy

Recommendation: Introduce environmental pricing.

Details	Contribution to goals of Strategy for the Development of a Green Economy
Implement carbon pricing mechanisms, such as carbon taxes or cap-and-trade systems, to reflect the environmental cost of emissions and encourage investment in green technologies. Time frame: Medium term	8.1.4. Creation of a mechanism for the sale of greenhouse gas emission quotas with the contribution of Tajikistan to leading global companies

Public-Private Partnerships

Recommendation: Accelerate reforms to enhance public-private partnerships (PPPs) for financing infrastructure projects

Details	Contribution to goals of Strategy for the Development of a Green Economy
Intensify efforts to incorporate the UNECE “PPPs for the SDGs” approach and “PPP and Infrastructure Evaluation and Rating System against the SDGs” into national legislation, to leverage private sector innovation, share risks, and enhance the quality and efficiency of public services. Time frame: Short term	6.1.2. Creation of housing and communal services enterprises based on public-private partnerships and increasing their efficiency 10.1.9 Implementation of the concept of public-private partnership in the field of eco-tourism to introduce mechanisms to stimulate the private sector in this area, in particular to ensure the development of mountain tourism, including sanatorium-resort, excursion, environmental, mountaineering and skiing.

Source: UNECE.

^a The Government can choose from several non-exclusive action-oriented measures to achieve carbon neutrality. The detailed recommendations involve technologies that need to be assessed and adapted to the Tajik context. For details, see UNECE, “Carbon neutrality toolkit”.

^b The secondary law needs to:

- Provide detailed rules on waste collection, recycling rates, reporting requirements and penalties for non-compliance
- Develop mechanisms for involving local communities in defining and implementing waste management practices, ensuring they are practical and culturally appropriate

- Define mechanisms for integrating informal waste collection and recycling activities into a formal system to enhance efficiency and compliance
- Introduce extended producer responsibility through provisions that mandate producers to take financial and/or physical responsibility for the collection, recycling and disposal of their products at the end of their life cycles
- Encourage design improvements for reuse and recycling
- Define types of financial support to help enterprises engage in extended producer responsibility (e.g. deposit-refund schemes, grants and subsidies).

TABLE 11.

Proposed recommendations for supporting circularity and transparency in the garment and footwear sector

POLICIES AND REGULATIONS

Circular and transparent garment and footwear supply and value chains

Recommendation: Develop the required regulations for promoting circularity and transparency across the garment and footwear supply and value chains.

Details	Contribution to goals of Strategy for the Development of a Green Economy
Promote sustainability and social responsibility within enterprises and across their value chains by making adherence to ESG principles a regulatory requirement, in a phased manner. Time frame: Short to medium term	3.1.3 Attracting domestic and foreign capital for the implementation of green investment projects in agriculture 9.1.3. Development of standards, regulations and other by-laws regulating the principles of the green economy in Tajikistan
Establish traceability regulations using UNECE UN/CEFACT recommendations: • Recommendation 46 on Enhancing Traceability and Transparency of Sustainable Value Chains in the Garment and Footwear Sector, which provides recommendations for governments to develop, implement and enforce policies and legislation that support traceability and transparency in the garment and footwear sector. It references relevant standards, highlights the role of advanced technologies (e.g. blockchain and Internet of things), identifies key areas within the supply chain where sustainability challenges are most prevalent and provides guidance for addressing these hotspots. • Recommendation 43 on Sustainable Procurement, which promotes the implementation of traceability systems to verify the sustainability credentials of products and suppliers, ensuring that procurement decisions are based on reliable and transparent information. Time frame: Short to medium term	3.1.3 Attracting domestic and foreign capital for the implementation of green investment projects in agriculture 9.1.3. Development of standards, regulations and other by-laws regulating the principles of the green economy in Tajikistan 9.1.6. Introducing changes to some regulatory legal acts in terms of improving the standardization system in the field of green economy and introducing measures to encourage business entities to implement the best technologies
Encourage BCI Licensed farmers and enterprises to join the UNECE Sustainability Pledge, which brings together textile producers from across the globe in commitments to enhance transparency and traceability in their supply chains. Time frame: Short to medium term	3.1.3 Attracting domestic and foreign capital for the implementation of green investment projects in agriculture
Recommendation: Adopt UNECE UN/CEFACT digital standards, semantic schemas and models for structuring data exchange in the garment and footwear supply and value chains, which foster transparency throughout supply and value chains while enabling alignment with international ESG frameworks and traceability standards (including the new BCI standards).^a	

TABLE 11.

Proposed recommendations for supporting circularity and transparency in the garment and footwear sector

POLICIES AND REGULATIONS

Circular and transparent garment and footwear supply and value chains

Details	Contribution to goals of Strategy for the Development of a Green Economy
UNECE UN/CEFACT standards, schema and models: • Business Requirements Specification (BRS) for Traceability and Transparency in the Textile and Leather Sector, Part 1: High-Level Process and Data Model, which provides guidelines on the data structures and processes necessary to connect pre-consumption phases (such as manufacturing) with post-consumption phases (such as recycling and disposal), aligning with global initiatives such as the EU Digital Product Passport. • BRS for Traceability and Transparency in the Textile and Leather Sector, Part 2: Use Cases and CCBDA Data Structures provides use cases and data models for sharing information across the value chain, from raw materials to finished products, and outlines how traceability events and additional sustainability-related information should be exchanged among business partners. • BRS for Product Circularity Data Use Case: Extension of BRS Traceability and Transparency in the Textile and Leather Sector, Part 2 focuses on enhancing circularity within the supply chain by detailing the processes, actors involved and data exchange models necessary for supporting circular business models. Time frame: Short to medium term	3.1.3 Attracting domestic and foreign capital for the implementation of green investment projects in agriculture 9.1.3. Development of standards, regulations and other by-laws regulating the principles of the green economy in Tajikistan 9.1.6. Introducing changes to some regulatory legal acts in terms of improving the standardization system in the field of green economy and introducing measures to encourage business entities to implement the best technologies
Recommendation: Establish a blockchain strategy to ensure the accuracy, consistency and integrity of data throughout the garment and footwear supply chains.	
Details	Contribution to goals of Strategy for the Development of a Green Economy
Relevant resources: • UNECE report on the Blockchain Pilots Project for the Garment and Footwear Sector⁶, which: • Details the implementation of blockchain technology for enhancing traceability and transparency in textile and leather value chains. • Highlights the role of blockchain for ensuring immutable data storage and traceability and improved collaboration across the supply chain. • Identifies challenges and offers recommendations for scaling the technology across various platforms. Time frame: Short to medium term	8.1.1. Strengthening the institutional framework to attract investment for the development of a green economy in various sectors 9.1.3. Development of standards, regulations and other by-laws regulating the principles of the green economy in Tajikistan

Source: UNECE. The approach and structure of these recommendations were developed in close consultation with the Government to ensure alignment with national policies and priorities and support the successful implementation of the national Strategy for the Development of the Green Economy.

TABLE 11.

Proposed recommendations for supporting circularity and transparency in the garment and footwear sector

POLICIES AND REGULATIONS

Innovation for circularity and traceability in the garment and footwear sector

Recommendation: Promote transformative innovation for circularity.

Details

Join the UNECE Transformative Innovation Network (ETIN), which brings together public and private sector stakeholders to harness transformative innovation for sustainable development.⁶ ETIN focuses on radical and disruptive innovation, spurred by multiple and mutually reinforcing processes (e.g. new technologies, ideas, business models and partnership arrangements) to bring about fundamental changes to the way we consume, produce and create societal value, with a view to simultaneously addressing the three pillars of sustainability.

Time frame: Short term

Contribution to goals of Strategy for the Development of a Green Economy

2.1.5 Conversion of existing production facilities and existing industrial infrastructure to the principles of a “green” economy through the introduction of standards

12.1.10. Support the creation of “green” jobs in industry, energy, agriculture, transport, tourism, construction, housing and communal services and waste management

Recommendation: Promote research and development for circularity.

Details

Facilitate collaboration between companies, academia and research institutions to harness the education system for driving innovations in circular economy technologies and for supporting skills development across sectors.

Examples:

- Promote mentorship and support for students and researchers who want to commercialize their innovations.
- Co-create educational programs and courses that address the unique requirements of each sector.

Time frame: Continuous

Contribution to goals of Strategy for the Development of a Green Economy

11.11. Improving curricula in relevant areas of higher, secondary and primary vocational education with the introduction of the fundamentals of a “green” economy, the introduction of renewable energy sources, “clean” development of transport and energy saving, as well as the inclusion of topics on the basics of a “green economy” in the relevant curricula of secondary school establishments

Recommendation: Promote accelerators and incubators for circularity.

TABLE 11.

Proposed recommendations for supporting circularity and transparency in the garment and footwear sector

POLICIES AND REGULATIONS

Innovation for circularity and traceability in the garment and footwear sector

Details	Contribution to goals of Strategy for the Development of a Green Economy
• Leverage the State Business Incubator of Tajikistan to support circularity in key sectors, including the garment and footwear sector, by expanding its services to include training on circular economy principles and business models, advice and mentorship. • Promote the development of accelerators and incubators in cities and rural areas for supporting circularity in key sectors, including the garment and footwear sector, offering funding and inspiration to start-ups and post-investment technical assistance, following UNECE best practice recommendations.^e • Leverage the UNECE SPECA Network of Business Incubators and Accelerators for Sustainable Development to promote circularity. Launched in 2022, the network offers a platform for dialogue on best practices on innovative entrepreneurship, business incubators and accelerators in the subregion, drawing on UNECE best practice guides.^f	2.1.5 Conversion of existing production facilities and existing industrial infrastructure to the principles of a “green” economy through the introduction of standards 12.1.10. Support the creation of “green” jobs in industry, energy, agriculture, transport, tourism, construction, housing and communal services and waste management
Recommendation: Leverage the free economic zones (FEZs) to support the circular economy transition.	
Details	Contribution to goals of Strategy for the Development of a Green Economy
Evaluate FEZ regulations to identify gaps or inconsistencies related to circular economy principles: • Ensure that FEZ laws explicitly include circular economy principles and sustainable practices. • Introduce incentives (tax breaks, grants) for encouraging circular practices among enterprises operating in FEZs. • Emphasize that FEZs must be equipped with the infrastructure required for circularity, including waste separation facilities, recycling centres and spaces for repair and remanufacturing. • Provide provisions for dedicated zones within FEZs to serve as incubators for circular economy start-ups and innovation centres focused on developing new business models and technologies for circularity. • Emphasize renewable energy systems (solar, hydropower) to power FEZ operations, aiming for net zero energy consumption. • Emphasize energy-efficient buildings within FEZs to reduce energy consumption. Time frame: Short to medium term	12.1.10. Support the creation of “green” jobs in industry, energy, agriculture, transport, tourism, construction, housing and communal services and waste management 12.1.11. Introduce incentive mechanisms for foreign enterprises to create green jobs

TABLE 11.

Proposed recommendations for supporting circularity and transparency in the garment and footwear sector

CAPACITIES FOR CIRCULARITY AND TRACEABILITY IN THE GARMENT AND FOOTWEAR SECTOR

New-generation enterprise support services

Recommendation: Promote deepening and expanding enterprise support services.

Details	Contribution to goals of Strategy for the Development of a Green Economy
- Promote the development of services to: - Equip enterprises with the knowledge and skills necessary to choose and master appropriate technologies for designing and manufacturing durable products. The focus should be on helping them adopt a life-cycle approach that prioritizes extending the life cycle (biotic) and lifespan (abiotic) of their products by considering the potential environmental impacts of supply chain operations—from raw material extraction, processing and manufacture through distribution, use, maintenance and end-of-life management (disposal, upcycling or recycling). - Help enterprises implement internationally recognized circular economy-related standards, as these ensure compliance with regulatory requirements in export markets and provide guidance on organizing production processes. - Strengthen capacities in the private sector, academia and civil society organizations to develop and implement innovative business models and modern technologies to decarbonize hard-to-abate sectors (e.g. fertilisers) based on the concept of carbon neutrality. - Enable enterprises to reconfigure their supply chains by leveraging e-commerce, creating sector-specific market intelligence services to help enterprises identify new suppliers and export opportunities, organizing study tours and helping enterprises participate in international trade fairs. - Help enterprises obtain eco-labels and certifications for improving market access and enhancing consumer trust in their products. - Help enterprises determine sustainability claims that align with their corporate objectives, based on value chain risk analysis and access to data using UNECE-UN/CEFACT Business Process Analysis methodology.⁹ - Provide marketing assistance to help enterprises effectively communicate their sustainability efforts to consumers and partners and navigate e-commerce laws and ESG reporting requirements. - Help enterprises develop bankable business plans for investment in energy- and water-efficient machinery and equipment and skills development. - Support national initiatives (e.g. SAROB) for helping enterprises develop a holistic approach for implementing traceability systems, combining technology (e.g. data collection tools, data storage and data sharing through blockchain), compliance (with BCI standard and ESG criteria), stakeholder engagement and continuous improvement (e.g. KPI monitoring).	2.1.2. Creation of industrial and agricultural clusters using waste-free technology in the regions of the country 2.1.5 Conversion of existing production facilities and existing industrial infrastructure to the principles of a “green” economy through the introduction of standards 2.1.8. Transfer of industrial production processes to energy-saving and environmentally friendly technologies and equipment 12.1.10. Support the creation of “green” jobs in industry, energy, agriculture, transport, tourism, construction, housing and communal services and waste management

Time frame: Short to medium term

TABLE 11.

Proposed recommendations for supporting circularity and transparency in the garment and footwear sector

CAPACITIES FOR CIRCULARITY AND TRACEABILITY IN THE GARMENT AND FOOTWEAR SECTOR

Waste management

Recommendation: Develop the domestic market for secondary garments and footwear.

Details	Contribution to goals of Strategy for the Development of a Green Economy
- Promote the development of multipurpose recycling facilities in major cities and rural areas that specialize in collecting and recycling old, discarded textiles from both consumers and manufacturers, transforming them into new fibres or other products. - Support initiatives for developing the technological capabilities of recycling enterprises, with a special emphasis on helping them implement relevant internationally recognized standards. Time frame: Short to medium term	2.1.10. Creation of waste processing enterprises and workshops in all cities and regions 2.1.12. Creation of collection points for renewable material resources and development of infrastructure for their processing and sale (collection of solid waste for further processing) 6.1.3. Creation of waste processing plants in cities and regions with modern technologies 12.1.10. Support the creation of “green” jobs in industry, energy, agriculture, transport, tourism, construction, housing and communal services and waste management

EMPOERING WOMEN-OWNED GARMENT AND FOOTWEAR ENTERPRISES

Mainstream gender dimensions into policies and reform initiatives

Recommendation: Promote gender-responsive standards.

Details	Contribution to goals of Strategy for the Development of a Green Economy
Consider joining UNECE Gender-Responsive Standards Initiative, which encompasses 86 standard-setting agencies from the UNECE region and beyond. Time frame: Short term	12.14. Develop and adopt gender-sensitive green jobs standards

Recommendation: Ensure consistent participation of women's organizations and business associations in policymaking.

Details	Contribution to goals of Strategy for the Development of a Green Economy
- Accord a clear role to women's organizations and business associations in policymaking processes, to ensure effective integration of enterprises' needs. This would not only enable policymakers to gain clarity about the specific needs of women in business but would also help build up knowledge on success stories and good practices in supporting women-owned MSMEs. - Develop mechanisms for building up knowledge on the successful experiences of women-owned enterprises and on good practices for addressing the challenges they face in transitioning to circularity. These mechanisms could include qualitative surveys and case studies, with data gathering and analysis assigned to research institutions working closely with women's and enterprise support organizations that target women-owned enterprises. Time frame: Short term	9.1.4. Development and implementation of mechanisms for mandatory assessment of the impact of planned activities of economic entities on the environment 11.1 Ensure sustainable development, including through environmental education and gender equality (SDG 4.7)

TABLE 11.

Proposed recommendations for supporting circularity and transparency in the garment and footwear sector

EMPOERING WOMEN-OWNED GARMENT AND FOOTWEAR ENTERPRISES

Ensure that women-owned enterprises are not left behind

Recommendation: Promote targeted support to help women entrepreneurs and enterprise owners develop the capacities required for the circular economy transition.

Details	Contribution to goals of Strategy for the Development of a Green Economy
- Equip women's and enterprise support organizations that target women-owned MSMEs with the knowledge, skills and financial resources required to launch a new generation of support services to help garment and footwear producers transition to circularity and implement traceability systems. - Scale up lending schemes that target women-owned MSMEs, so as to enable them to invest in the technologies required for producing durable goods and engaging in recycling. To facilitate owners' access, consider providing these loans in the context of guaranteed schemes in collaboration with women's organizations. Time frame: Short to medium term	11.1 Ensure sustainable development, including through environmental education and gender equality (SDG 4.7)

Source: UNECE. The approach and structure of these recommendations were developed in close consultation with the Government to ensure alignment with national policies and priorities and support the successful implementation of the national Strategy for the Development of the Green Economy.

^a UNECE, "Traceability for Sustainable Garment and Footwear".

^b Launched in 2020, this project involved 95 entities from 23 countries, aiming to test the ECE traceability standard using blockchain systems.

^c UNECE, "UN-ECE Transformative Innovation Network (ETIN)": <https://unece.org/eci/icp/ETIN>.

^d The incubator provides a space for entrepreneurs, start-ups and small businesses. It offers coworking facilities, networking opportunities and a productive environment for work. Further details are published on the Incubator's website at <https://bizincubator.tj/en/home>.

^e UNECE (2021), Business Incubators for Sustainable Development in the SPECA Sub-region.

^f See UNECE (2024), New Innovation Policy for Transition Economies in the SPECA Subregion and UNECE (2023), Supporting Innovative High-Growth Enterprises in the SPECA Subregion, UNECE Policy Handbook.

^g UNECE, "Traceability for Sustainable Garment and Footwear".

ANNEX 1. OVERVIEW OF KEY FOUNDATIONAL CIRCULAR ECONOMY-ALIGNED LEGISLATION IN TAJIKISTAN

Legislation	Purpose	Scope and key provisions related to the circular economy
Use of natural resources		
Law No. 23 Land Code of the Republic of Tajikistan Dated 13 Dec. 1996 Last amended 20 Feb. 2004	Create the necessary conditions for the rational use and protection of land.	Scope • All aspects of land management and protection Key provisions • Land users to provide for (excerpts): ◦ Restoration of soil, increase of soil fertility and improvement of other soil characteristics ◦ Protection of soil against water and wind erosion, mud flows, hoods, swamping, compaction, making soil greasy, pollution with waste products, chemical and radioactive materials and against other destructive processes ◦ Protection against overgrowing of farming lands with coppice and against other processes that deteriorate cultural and technical state of land ◦ Recultivation of destroyed lands, restoration of soil fertility and of other useful properties of land, well-timed involvement of lands into agricultural turnover ◦ Removal, utilization and conservation of the fertile soil layer during soil restoration works • Planned projects, including buildings and structures, to comply with ecological, sanitary, hygienic and other special land conservation requirements • Prohibition of new technologies that could harm the land, without measures to ensure land protection • Authorized State bodies to conduct regular monitoring of soil
Law No. 555 On Soil Protection Dated 16 Oct. 2009	Create the necessary conditions for the rational use of soil, improvement of soil fertility and soil protection.	Scope • All aspects of soil management and protection Key provisions • Basic principles of State policy: ◦ Rational soil management and soil conservation ◦ Application of soil protection technologies and prevention of soil degradation ◦ Rehabilitation of degraded soil ◦ Access to information related to the state of soil ◦ Liability for soil deterioration • Regular State monitoring of soil by authorized State bodies

Use of natural resources

Law No. 761
Forest Code of the Re-
public of Tajikistan

Dated
2 Aug. 2011

Create the necessary conditions for the rational use and protection of forests.

Scope

- All aspects of forest management and protection

Key provisions

- Principles of forestry management, including preservation of biodiversity, sustainable forest management and compensation for damage to the forest and hunting resources due to legal infringements
- Establishment of a unified national forest fund, encompassing public forest land, unforested land, forest resources and beneficial properties of forests irrespective of land tenure
- Protection of forests, including against fires, felling, hunting, pests and other harmful elements
- Guidelines for afforestation, reforestation and improvement of forest productivity

Law No. 1688
Water Code of the Re-
public of Tajikistan

Dated
2 April 2020

Repeals No. 34 of 2000

Create the necessary conditions for the rational use of and protection of water resources in line with the principles of integrated water resources management.

Scope

- All aspects of groundwater and surface water management and protection

Key provisions

- Licensing and permissions for special water use involving the use of technical equipment
- Water protection against pollution and depletion, targeting various areas of water use (such as agriculture, industrial and hydroelectric purposes, water and air transport, fisheries, hunting and recreational purposes)
- Integrated water resources management (surface, underground and returnable) and land resources
- Any form of water management is possible: State, private (private entrepreneurs and limited liability companies) and community
- Clear definition of liabilities for infringement of water legislation
- Water conservation and emergency measures for addressing disasters, such as floods
- Prohibits privatization of water infrastructure with a "special strategic purpose".

International conven-
tions and agreements

Ensure regulatory harmonization collaboration and concerted action in tackling common challenges, and active engagement in global efforts.

United Nations conventions

- Convention to Combat Desertification
- Convention on Biological Diversity
- Convention Concerning the Protection of the World Cultural and Natural Heritage
- Convention on International Trade in Endangered Species of Wild Fauna and Flora

International conventions

- Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat
- Bonn Convention on the Conservation of Migratory Species of Wild Animals

Environmental protection

Law No. 1177
On the Code of Administrative Offences

Dated
31 Dec. 2008

Last amended
4 Jul. 2020

Protect individual and legal entity rights against administrative offenses, and ensure prompt and accurate handling of administrative offense cases.

Scope

- Aspects of administrative responsibility, including intentional and unintentional offenses related to public health, environmental protection and labour legislation, each accompanied by specific guidelines for determining the nature of the offense, responsibility and appropriate response, including penalties

Key provisions:

- Violations of sanitary and epidemiological requirements, such as improper handling of potable water, in cases where they do not constitute a criminal offense, subject to fines
- Illegal cultivation of prohibited crops containing narcotic substances, in cases where they do not constitute a criminal offense, subject to fines
- Violations of land and subsoil rights (i.e. unauthorized use or transactions), in cases where they do not constitute a criminal offense, subject to fines
- Soil pollution with harmful substances (e.g. chemicals and waste), in cases where they do not constitute a criminal offense, subject to fines
- Violation of water use regulations, including using water in excess of established norms, unauthorized water use and non-compliance with the rules for water quality control
- Illegal logging and resource exploitation such as unauthorized use of logging areas, removal of timber and unauthorized use of natural resources without a special permit
- Non-compliance with environmental protection standards, rules and regulations

Law No. 760
On Environmental Protection

Dated
2 Aug. 2011

Finds root in the Concept of Environmental Protection (Government Decree No. 645, 3 Dec. 2008)

Last amended
8 Jun. 2022

- Protect the environment from harmful impacts of economic activities.
- Promote rational use of natural resources.
- Ensure ecological safety.

Scope

- Land, subsoil and soils
- Surface and underground water
- Atmospheric air and the ozone layer of the Earth
- Fauna and flora, including forests; all species of biodiversity, as well as genetic fund thereof

Key provisions

- Environmental standards and regulations as the basis for limiting the use of natural resources, emissions of pollutants and permissible anthropogenic loads on the environment
- Establishment of protected natural territories
- Environmental control and monitoring to prevent, identify and address violations
- Environmental impact assessments of planned economic activities that may have adverse consequences for the environment
- Targeted measures for the protection and restoration of the natural environment, integrating legal, economic, social, technological, educational and international cooperation
- State support for entrepreneurial, innovative activities involving the utilization of secondary resources and recycling

Environmental protection

**Law No. 707
About Environmental
Monitoring****Dated**
25 Mar. 2011**Last amended**
26 Jul. 2014

- Forecast changes of the state of the environment.
- Ensure reliability of information about adverse environmental effects.

Scope

- Sources of anthropogenic impact
- Atmospheric air, waters, subsoil, soils, forest and other natural objects, especially protected natural territories
- National groups having a negative impact on the environment

Key provisions

- Regular environmental monitoring and data collection to be carried out to assess the condition and functional integrity of natural ecosystems and public health.
- Estimates shall be made of changes in conditions and programmes to be developed to mitigate the consequences of adverse environmental impacts.

**Law No. 785
On Environmental
Audit****Dated**
26 Dec. 2011

Create a mechanism for monitoring and enforcing environmental regulations.

Scope

- Economic activities
- Regulatory documents
- Housing construction, reconstruction and conservation programmes and projects
- Land acquisition projects

Key provisions

- Environmental audits to focus on assessing environmental impacts of economic activities and ensuring compliance with regulations applied for environmental protection and natural resources
- Statutory audits required and carried out according to decisions by public authorities
- Businesses permitted to carry out environmental audits on their own initiative
- Audits carried out by certified ecological auditors and environmental auditing organizations

**Law No. 292
On Environmental
Expertise****Dated**
29 Mar. 2012

Provide the principles and procedures for conducting environmental assessments.

Scope

- Planned economic activities that are likely to raise environmental risks

Key provisions

- The following activities and projects are subject to environmental assessments:
 - Drafts of State programmes and pre-planning, pre-design and design documentation for economic development
 - Regional and sectoral development programmes
 - Spatial and urban planning, development and design
 - Environmental programmes and projects
 - Construction and reconstruction of objects, various types, regardless of ownership rights
 - Draft environmental quality standards and other regulatory, technological and methodological documentation regulating economic activities
 - Existing enterprises and economic entities
- Environmental assessments must be scientific, comprehensive and objective and must lead to conclusions in accordance with the law.
- Databases will be maintained on the state of the environment and environmental impact assessments.

Environmental protection

**Law No. 818
On Environmental
Assessment****Dated
16 Apr. 2012****Repeals No. 20 On
Ecological Expertise
of 2003**

Prevent the negative environmental impacts of planned economic activities.

Key provisions

- Principles of State policy for environmental assessment:
 - Presumption of ecological danger of the planned economic and other activity
 - Obligation of conducting the State environmental assessment
 - Complexity of environmental impact assessment of the planned economic and other activity
 - Obligation of accounting for ecological safety when conducting examination
 - Reliability and completeness of information provided on environmental assessment
 - Independence of experts of environmental assessment
 - Scientific justification, objectivity and legality of expert opinions
 - Publicity, participation of public organizations and accounting of public opinion
 - Responsibility of participants of environmental assessment and concerned parties for the organization, conduct and quality of environmental assessment
- Risk categories: I – high risk, II – medium risk, III – low risk, IV – low risk with only local impact

Products and activities subject to environmental assessment are provided in Government Decree No. 253, On the List of Facilities and Types of Activities for which Development of Environmental Impact Assessment Documents is Mandatory, dated 3 Jun. 2013.

**Law No. 915
On Protection of the
Atmospheric Air****Dated
28 Dec. 2012**

- Protect and improve the quality of atmospheric air.
- Ensure ecological security.

Scope

- Activities of individuals and legal entities resulting in the release of pollutants, including hazardous chemicals, physical and biological contaminants

Key provisions

- Protection of the atmospheric air embedded in the national development strategy
- An integrated approach aimed at protection and sustainable use of the atmospheric air, building institutional capacities and promoting technology development for control, prevention and abatement of pollution
- Establishment of a system for monitoring and managing emissions from various sources
- Payment for excess emissions of harmful substances into the atmosphere as well as emergency emissions determined in a double amount, based on the costs of eliminating the harmful consequences of released substances
- Implementation of comprehensive measures for prevention of transboundary air pollution in line with international treaties on protection of the environment

Environmental protection

Law No. 1214
On Ensuring the Environmental Safety of Road Transport

Dated
8 Aug. 2015

Prevent environmental pollution from road transport.

Scope

- All aspects pertaining to the producers of vehicles and use of road transport

Key provisions

- Integrated control of environmental pollution in the production, operation and utilization of road transport, as well as of emissions, discharges, waste and other negative impacts of road transport
- Use of environmental standards for vehicle emissions and maximum permissible levels of noise, vibration and other harmful physical effects of vehicles
- Targeted measures and programmes to ensure the environmental safety of vehicles, as an integral part of environmental protection programmes and target programmes in the development of road transport

Law No. 1844
Tax Code

Dated
23 Dec. 2021

Last amended
15 Mar. 2023

Modernize the tax regime, with a view to streamlining taxes, simplifying administrative procedures and increasing transparency in tax policy and administration.

Scope

- Corporate taxes

Key provisions

- Extraction royalty rates for subsoil users increased to
 - 8 per cent for oil and gas
 - 6 per cent for radioactive materials
 - 10 per cent for other natural resources
- Introduction of export rent on metal concentrates at 2 per cent during 2023–2024 and 4 per cent from 2025 onward
- Temporary corporate income tax exemptions for enterprises engaged in innovative and technological activities, as determined by the Government
- Temporary corporate income tax exemptions for enterprises engaged in construction of hydroelectric power stations
- Exemptions from value added tax and customs duties for imported modern equipment destined for use in innovative and technological activities

Government Decree No. 355
About banning import of vehicles manufactured before 2013

Dated
2 Aug. 2023

- Protect the environment.
- Ensure consumer safety.
- Protect public health.

Scope

- Vehicles other than railway or tramway rolling stock, and parts and accessories thereof (HS Code 87)

Key provisions

- Ban on imports of vehicles classified under HS Code 87 and manufactured before 2013

Environmental protection

International conventions and agreements

Ensure regulatory harmonization, collaboration and concerted action in tackling common challenges, and active engagement in global efforts.

UN conventions and agreements

- Kyoto Protocol to the United Nations Framework Convention on Climate Change, which extends the 1992 United Nations Framework Convention on Climate Change and commits the parties to reduce greenhouse gas emissions
- Paris Agreement for greenhouse gas- emissions mitigation, adaptation and finance
- Vienna Convention for the Protection of the Ozone Layer, aimed at promoting international cooperation on scientific research, monitoring and information exchange regarding the ozone layer and the substances that may cause its depletion
- Montreal Protocol on Substances that Deplete the Ozone Layer, aimed at phasing out production and consumption of ozone-depleting substances; also the Protocol's Kigali Amendment, aimed at phasing down production and consumption of hydrofluorocarbons worldwide

UNECE conventions and agreements

- Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention), which sets out obligations to assess the environmental impact of certain activities at an early stage of planning and to notify and consult with affected parties regarding transboundary impact
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention), which grants the public rights regarding access to information, participation in policy decisions and access to justice in environmental matters
- Convention on Long-range Transboundary Air Pollution (CLRTAP), which aims to limit and gradually reduce and prevent air pollution
- European Agreement Concerning the International Carriage of Dangerous Goods by Road

International conventions

- Stockholm Convention on Persistent Organic Pollutants, which aims to minimize and, where feasible, eliminate production and use of chemicals that are highly durable, bioaccumulate in ecosystems and pose significant risks to human health and the environment
- Minamata Convention on Mercury, which encompasses numerous measures to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds, including reduction of mercury use and emissions in various industries, phase-out of specific mercury-added products, and special controls on artisanal and small-scale gold mining to mitigate mercury pollution

Industrial activities

**Law No.72
On Consumer Protec-
tion****Dated
9 Dec. 2004****Last amended
22 Jun. 2023**

Ensure consumer protection.

Scope

- Production, use, storage, transportation and disposal of products
- Processes associated with the provision of services

Key provisions

- Establishes consumers' rights to information on goods (works, services) as well as their manufacturers (performers, sellers), safety of goods (works, services), free choice of goods (works, services), proper quality of goods (works, services), compensation in full amount of losses (damages) caused as a result of deficiencies of goods (works, services), appeal to the court or other State bodies for the protection of their rights and interests, establishment of public associations of consumers and submission of proposals to the manufacturer (seller) to improve the quality of goods (works, services)
- Obligations of manufacturers and service providers to ensure the safety of goods (work, services) for the life and health of the consumer and the environment, as well as the prevention of damage to the property of the consumer, as established by law
- Procedure for ensuring consumer protection in the process of selling of goods
- Procedure for consumer protection in the process of performance of works (services)
- Government responsibilities, including monitoring and removal of non-complying products and services from circulation in domestic markets

**Government Decree
No. 264
On the Ban on Import,
Manufacturing and
Sale of Mercury Lamps
in the Republic of
Tajikistan****Dated
28 May 2022**

Improve waste management pursuant to the Law on Waste Production and Consumption.

Scope

- Mercury lamps (HS Code 8539322001)

Key provisions

- Imports of mercury lamps prohibited as of 1 June 2022
- Ministry of Industry and New Technologies and the State Committee for Investments and State Property Management to adopt measures to enhance production of environmentally friendly, energy-saving, light-emitting diode lamps

**International conven-
tions and agreements**

Ensure regulatory harmonization; collaboration and concerted action in tackling common challenges; and active engagement in global efforts

International conventions

- Stockholm Convention on Persistent Organic Pollutants, which aims to minimize and, where feasible, eliminate production and use of chemicals that are highly durable, bioaccumulate in ecosystems and pose significant risks to human health and the environment

Sustainable energy

**Law No. 33
On Energy****Dated
29 Nov. 2000****Last amended
19 Jul. 2022**

• Develop the energy sector, ensuring reliable and high-quality energy supply and environmental protection.

Scope

- Energy production, management and sustainability

Key provisions

- Promotes the introduction of advanced technologies, energy conservation and the use of renewable energy sources
- Encourages research and regulatory activities focused on increasing the use of renewable energy sources
- Liberalization of the energy sector, with an emphasis on FDI attraction

Sustainable energy

Law No. 587**On the Use of Renewable Energy Sources****Dated 12 Jan. 2010**

- Integrates renewable energy into the national energy system.

Scope

- Production of renewable energy, including biomass
- Consumption of renewable energy in waste

Key provisions

- Procedures for registration, transportation and distribution of renewable energy
- Incentives for production from renewable energy sources:
 - Technical conditions to connect to public grid/networks for free before completion of construction and commissioning of the facility
 - Mandatory connection to the common power grid, subject to compliance with technical specifications for connection
 - Electrical losses while transmitting electricity from renewable energy facilities to the joining point to be covered by power supply organizations
 - Electrical and thermal meters for electricity and heat energy to be installed by power supply organizations
 - Electricity tariff set in accordance with the project's cost of electricity and heat, approved by the Antimonopoly Service
 - In case of delay of payment for supplied electricity, a daily fine to be imposed on power supply organizations
 - Independent power producers of small energy up to 30 MW exempted from the water tax (water royalty tax)
- System operators must purchase renewable electricity

Law No. 1018**On Energy Saving and Energy Efficiency****Dated****19 Sept. 2013****Last amended****19 Jul. 2022**

- Improve energy efficiency across all sectors and end uses by 20 per cent by 2030.
- Decrease energy intensity.

Scope

- Production of energy resources
- Consumption of energy by legal entities and individuals for industrial activities, provision of basic services and consumption purposes

Key provisions

- Regulation on energy saving and energy efficiency to be based on five principles:
 - (i) efficient and rational use of energy resources, taking into account production, technological, environmental and social conditions
 - (ii) support and stimulation of the use of energy-saving and energy-efficient technologies, materials and equipment
 - (iii) consistency and complexity of energy-saving and energy efficiency measures
 - (iv) planning energy saving and energy efficiency
 - (v) participation of natural persons and legal entities in the implementation of energy-saving and energy efficiency measures
- Emphasis on development and implementation of efficient technologies for the extraction, production, processing, storage, transportation, conversion, distribution and consumption of fuel and energy resources and products, as well as efficient types of fuel and energy-consuming equipment and installations, metering devices, control and regulation of energy consumption
- Guidelines for the standardization, certification and labelling of energy-saving equipment, materials, construction sites, vehicles, other energy-using products and facilities

Sustainable energy

- New buildings and buildings that have undergone a major retrofit to comply with energy efficiency requirements, including metering equipment and energy passports
- Energy efficiency requirements for buildings to be updated every five years
- Public authorities to conduct energy audits of their facilities
- Establishment of the Interagency Consultative Committee on Energy under the Ministry of Energy to improve energy regulatory systems, to comprise representatives of relevant ministries, local executive bodies, energy agencies, scientific and research organizations, energy-producing enterprises and consumers
- Establishment of a dedicated fund for financing energy efficiency among enterprises and households
- Enterprises, offices and organizations with annual consumption of more than 300 tons of fuel equivalent per annum to be subject to an essential energy investigation

**Law No. 1845 About
the Use of Atomic
Energy**

**Dated
23 Dec. 2021**

- Ensure the safety of atomic energy production and use.
- Improve nuclear non-proliferation and safety

Scope

- Operation of nuclear facilities, nuclear and radiation safety, waste disposal and issues related to the life cycle of atomic energy

Key provisions

- Four categories of radiation hazard:
 - category 1 - installations, in the event of an accident, radiation exposure to population outside their controlled zone is possible.
 - category 2 - installations in which, in the event of an accident, the radiation impact is limited to the territory of their controlled zone.
 - category 3 - installations, in which the radiation impact is limited to their site accommodation.
 - category 4 - installations, in which the radiation impact is limited only to premises or workplaces where work related to activities using nuclear energy is carried out.
- Owners of nuclear installations of radiation hazard categories 1 and 2 may be only legal entities.
- Activities related to management of radioactive waste are regulated by the laws of the Republic of Tajikistan "On Radioactive Waste Management" and "On Environmental Protection".
- A comprehensive nuclear safeguards regime in line with national obligations under the Agreement on the Non-Proliferation of Nuclear Weapons.

Waste management

Law No. 736
On Production and
Consumption Waste

Dated
10 May 2002

Last amended
28 Jun. 2011

- Mitigate the negative impacts of waste on the environment and human health.
- Promote the recycling of waste as an additional source of raw materials.

Scope

- Applies to all physical persons and legal entities dealing with domestic and industrial waste and covers the entire process of waste management (including generation, collection, storage, transportation, utilization and disposal of waste)

Key provisions

- Definition of waste as substances, materials and objects formed during human activities that no longer have use at their point of generation and need to be disposed of or utilized
- Waste as an object of property rights, transferable according to the legislation (A waste producer owns the waste from the moment of its generation until it is transferred to another person or processed or completely disposed of. Once disposed, ownership is automatically transferred to relevant local authorities, which are to assess its hazard level and organize its management in compliance with national legislation.)
- Principles of waste management: environmental protection, economic and ecological balance, use of low-waste technologies, use of secondary resources
- Safety requirements for different types of waste.

Government Decree
No. 279
On the Procedure,
Conditions and Meth-
ods of Collection, Use,
Decontamination,
Transportation, Stor-
age and Disposal of In-
dustrial and Household
Waste in the Republic
of Tajikistan

Dated
2 Jun. 2011

Establish the procedure for handling industrial and household waste.

Scope

- Industrial and household waste

Key provisions

- Special areas to be allocated for placing containers; areas to be paved, illuminated, have a device for water drainage and be convenient for transport access and residents
- Placement of waste collection and storage sites, containers and sites for containers to be determined by architecture and urban planning authorities (The distance from the site to residential buildings, children's playgrounds, sports grounds and recreational areas must be at least 20 meters, and the distance from the site to the most remote entrance to the building no more than 100 meters.)
- The number of installed containers to be determined by calculations of waste accumulation in accordance with standards approved by self-government bodies of towns and villages
- Prohibited to burn garbage in containers and trash cans, to burn fallen leaves and to overfill containers

Government Decree
No. 626
About the Procedure
for Identifying and
Recording Abandoned
Waste

Dated
2 Nov. 2012

Establish the institutional framework for identifying and registering abandoned waste.

Scope

Abandoned waste in towns and villages pursuant to Article 4(2) of the Law on the Production and Consumption of Waste

Key provisions

- Local authorities and self-government bodies to create permanent commissions to identify and register abandoned waste. Commissions should comprise deputy chairmen of cities or districts, self-government bodies of towns and villages, representatives of the Committee for Environmental Protection, the State Sanitary and Epidemiological Surveillance Service, the Committee for Emergency Situations and Civil Defence, the Main Directorate of the State Fire Service and other bodies
- Commissions to convene regular meetings at least once a month and extraordinary meetings as needed
- Commission to determine the quantity, composition, properties, cost of orphan waste

Waste management

Law No. 1002 About the Treatment of Radioactive Waste**Dated****22 Jul. 2013****Last amended****30 May 2017**

Protect public health and the environment.

Scope

- Applies to all physical persons and legal entities dealing with radioactive waste whose activities result in the generation of such waste

Key provisions

- Radiation safety standards for protecting the life and health of personnel, the public and the environment
- Long-term State programme for implementing State policy on radioactive waste management
- Mandatory State registration of radioactive waste, radioactive waste disposal sites and temporary storage facilities of radioactive waste
- International cooperation on radioactive waste management
- Clear procedures for regulating the export, import and transit of radioactive waste

Government Decree No. 362**On the Procedure for Movement of Radioactive Waste through Frontier Abroad and in the Republic of Tajikistan****Dated****30 May 2015**

Implement article 5 of the Law of the Republic of Tajikistan About the Treatment of Radioactive Waste.

Scope

- Export, import and cross-border movement of radioactive waste

Key provisions

- Export of radioactive waste to be subject to permissions and forbidden to countries that are not party to the International Atomic Energy Agency Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
- The list of checkpoints for movement to be determined by the authorized body concerning customs affairs in coordination with several agencies, including the Agency for Nuclear and Radiation Safety and the Committee for Environmental Protection
- Radioactive waste owners to report information for registry updates
- Illicit cross-border movement to result in waste returning to the exporting State
- Disputes to be resolved according to national and international agreements recognized by Tajikistan, and violators are subject to administrative and/or criminal charges

International conventions and agreements

Ensure regulatory harmonization; collaboration and concerted action in tackling common challenges and active engagement in global efforts.

- International Atomic Energy Agency Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
- Commonwealth of Independent States (CIS) Agreement on Control of Transboundary Movements of Hazardous and Other Wastes
- CIS Agreement on the coordination procedure for sanitary evaluation of potentially hazardous products imported to CIS countries

Source: UNECE.

Note: Legislative acts are published at <http://mmk.tj> and <http://www.portali-huquqi.tj>. English versions are available at <https://cis-legislation.com>. According to the Law on Normative Legal Acts, unless otherwise stated, legislation enters into force on the day of its official publication.

ANNEX 2. OVERVIEW OF KEY CIRCULAR ECONOMY-ALIGNED INITIATIVES IN TAJIKISTAN

National priority areas until 2022

Additional priorities advanced in national Strategy for the Development of the Green Economy

Latest key initiatives and programmes

Initial natural resource extraction

- Restoring saline lands, wetlands and previously unused irrigated lands for agricultural use
- Expanding protected natural areas
- Ensuring equitable and sustainable distribution of land for essential agricultural crops
- Optimizing land utilization
- Developing integrated water management resources system, which promotes transboundary cooperation and adoption of both advanced technologies to reduce water usage in resource extraction and proper treatment of wastewater
- Creating a unified State system for monitoring environmental performance and the use of natural resources

- Promoting the use of advanced technologies to ensure the protection and sustainable use of natural resources and reducing greenhouse gas emissions
- Stabilizing the extraction of natural resources to prevent depletion and deforestation
- Maintaining the ecological balance
- Reducing the environmental impact of the mining industry

- In the process of establishing an irrigation and land reclamation development strategy by the Agency of Land Reclamation and Irrigation
- Adoption in 2022 of the State Programme for the Development of New Irrigated Land and the Restoration of Land Disposed of from Agricultural Use for the period 2022–2027, aimed at developing new irrigated lands and rehabilitating temporarily fallowed lands resulting from crop rotation as critical requisites for improving land management and optimizing water utilization^a
- Adoption of the Water Sector Reform Programme for the period 2016–2025 for creating an IWRM system on a river basin basis^b
- Beneficiary of the Central Asia Water and Energy Program, which focuses on fostering regional policy dialogues, developing regional institutions, promoting integrated approaches for joint water-energy management and incorporating climate change considerations, covering both adaptation and mitigation strategies, in water and energy management practices (donor funded)^c
- RESILAND CA+ Programme for landscape restoration, sustainable use of natural resources and climate change mitigation practices (donor funded)^d
- Climate Change Adaptation and Mitigation in the Aral Sea Basin initiative (donor funded)^e
- Global Water Initiatives of the President of the Republic of Tajikistan (launched in 2000)^f

^a As reported by the Government (<https://www.alri.tj/tj/state-program-for-the-development-of-new-irrigated-land>). Examples of water management projects: Strengthening Water and Irrigation Management Project, launched in 2023 with the support of the World Bank and the European Union; see World Bank Group (2023), "Water and Irrigation Management Project Kicks Off in Tajikistan, 19 April.

^b Climate Change Laws of the World, "Governmental Decree No. 791 validating national Water Sector Reform Program for the period 2016–2025".

^c World Bank Group, "Central Asia Water & Energy Program".

^d World Bank Group, "RESILAND CA+ Program: Tajikistan Resilient Landscape Restoration Project", available at <https://projects.worldbank.org/en/projects-operations/project-detail/P171524>.

^e World Bank Group, "Climate Adaptation and Mitigation Program for Aral Sea Basin", available at <https://projects.worldbank.org/en/projects-operations/project-detail/P151363>.

^f Government of the Republic of Tajikistan, Land Development and Irrigation Agency, "International initiatives of the President of the Republic of Tajikistan in the field of water", available at <https://www.alri.tj/tj/global-water-documents-of-the-president-of-the-republic-of-tajikistan>, and Dushanbe Water Process, "Tajikistan water sector reform".

Resource utilization in production and basic services

- **Rehabilitating irrigation and drainage systems to ensure efficient water supply for agriculture and the reclamation of saline lands**
- **Promoting the use of hydropower and other renewable energy sources**
- **Promoting the use of environmentally friendly and affordable local raw materials**
- **Promoting domestic production of environmentally friendly boxes, containers, packaging materials and bags**
- **Introducing new vocational training programmes on energy efficient, clean technologies.**
- **Developing and implementing a public procurement policy targeting enterprises engaged in manufacturing eco-friendly products and using production methods that comply with the principles of sustainable development**
- **Developing comprehensive environmental monitoring and reporting systems**
- Supporting the development and use of clean, energy-efficient technologies by enterprises engaged in key sectors, including agriculture, mining, manufacturing (with priority to promoting domestic production of environmentally friendly boxes, containers, packaging and bags), transport, construction and tourism
- Developing and promoting implementation of standards to support the application of green economy principles in key sectors
- Developing the legislative and institutional capacities required for transitioning to ecological tourism
- Greening the transport system by introducing public electric transport in all cities, promoting the use of electric vehicles and developing the required infrastructure
- Modernizing water supply and sewerage treatment systems in cities and districts, and ensuring that future systems align with the principles of green economy
- Modernizing the stock of housing units, aligning them with the principles of the green economy
- Engaging the private sector in housing and communal services through public-private partnerships
- Gradual restrictions on the use of plastic bags and promoting the use of environmentally friendly bags
- Redistribution of land from State and collective farms to individual households and dehqan farms⁹
- Initiatives for enhancing land tenure security in rural areas, with a view to ensuring equitable agricultural growth^h
- Tax incentives for stimulating sustainable investments in priority sectors, including the textiles industryⁱ
- Initiatives for improving the enterprises' access to climate finance, including the donor funded Green Economy Financing Facility Programme^j and Accelerate Prosperity^k
- Partnership, since 2013, with the Better Cotton Initiative, offering training on BCI principles as well as financial support to help cotton growers adopt sustainable farming practices
- Membership, since 2023, in the United Nations Early Warnings for All Initiative, which aims to help countries build comprehensive early warning systems by 2027, significantly reducing the risks and impacts of natural disasters^l

⁹ LandLinks, "Tajikistan".

^h Examples include Feed the Future Tajikistan Agriculture and Land Governance Activity, which takes a market systems approach to deepening resilience among vulnerable populations and improving nutrition in rural communities, particularly in Khatlon Province. For details, see <https://www.usaid.gov/tajikistan/fact-sheets/feed-future-agriculture-and-land-governance-activity>.

ⁱ https://moliya.tj/wp-content/uploads/2023/10/perechen-predostavlyaemyh-nalogovyh-i-tamozhennyh-igotov_ru.pdf.

^j GEFF (Green Economy Financing Facility), European Bank of Reconstruction and Development, "The Facility", available at <https://ebrdgeff.com/tajikistan-agri/the-programme/the-facility>.

^k Accelerate Prosperity, "Accelerate Prosperity in Tajikistan", available at <https://tj.accelerateprosperity.org>.

^l World Meteorological Organization (2023), "Early Warnings for All gains ground with launch in Tajikistan", 30 August.

Energy production and consumption

• **Developing oil, gas and coal capacities as a short-term solution for addressing supply shortages^m**

• **Modernizing hydro and thermal power plants and constructing new ones**

• **Developing non-hydro renewables, including solar, wind, biological, geo-thermal**

• **Establishing an effective risk management system for improving energy security**

• **Developing smart energy management systems and energy-saving technologies**

• **Restructuring the national electric utility to operate more efficiently**

• **Adopting market-based energy efficiency laws and tariff frameworks^p**

• **Achieving energy connectivity and effective cross-border trade, particularly through complete integration into the Central Asian power grid**

• Furthering the development and implementation of technical norms and rules to enhance energy saving and energy efficiency

• Expanding the use of wind and solar energy while decreasing renewable energy costs

• Significant financial restructuring of the electricity transmission, distribution and retail service, with the creation of distinct legal entities for both transmission and distribution network operators except in Gorno-Badakhshan Autonomous Oblast. In 2021, registration of the heads of these entities as OJSC Shabaqahoi Intiqoli Barq for transmission and OJSC Shabaqahoi Taqsimoti Barq for distributionⁿ

• Adoption of a national Energy Efficiency Framework, which provides sovereign-guaranteed debt facilities for modernizing and strengthening the country's electricity networks (donor funded)^o

• Programme for Deployment of Renewables and Construction of Small Hydropower Plants 2015–2020, acknowledging the potential of wind and solar energy and its importance for residential last-mile electrification

• Rehabilitation of hydroelectric power plants, including the Nurek plant, the largest in the country and one of the tallest dams in the world,^q and the Golovnaya plant^r

• The Rogun plant development project on the Vakhsh River, with a planned capacity of 3.6 GW, making it the largest hydropower station in Central Asia upon completion^s

• Active participation in regional initiatives benefiting both Central and South Asian countries, aimed at facilitating energy connectivity and increasing cross-border electricity trading through regulatory harmonization and development of regional infrastructure projects for optimizing resource use, such as power grids and pipelines^t

^m The National Development Strategy of the Republic of Tajikistan for the period until 2030 envisages a two-pronged approach, with the first involving the development of oil, gas and coal capacities and the second focused on enabling greater use of renewable energy sources.

ⁿ OJSC Barki Tojik continues to oversee electricity generation, as well as export and import of electricity. In the Gorno-Badakhshan Autonomous Oblast, the Pamir Energy Company, a partnership established in 2002 between the public and private sectors, manages the local generation, transmission and distribution system.

^o European Bank for Reconstruction and Development, "Tajikistan Energy Efficiency Framework".

^p An overview of the electricity tariffs for 2022–2023 is available at https://www.mewr.tj/?page_id=2914.

^q International Hydropower Association, "South and Central Asia", Region Profile.

^r ADB, "Tajikistan : Golovnaya 240-Megawatt Hydropower Plant Rehabilitation Project".

^s For up-to-date information on this project, see the Rogun HPP website at <https://rogunges.tj/en/home-en/>.

^t The Ministry of Energy and Water Resources of the Republic of Tajikistan maintains a list of main regional initiatives and reform measures at https://www.mewr.tj/?page_id=552.

Waste management

- **Using modern technologies for processing and reusing industrial waste, in particular waste from the mining industry, construction and households**
- **Establishing an inventory of formal and informal landfills**
- **Commissioning the construction of industrial waste processing plants in major cities and districts**
- **Commissioning the construction of standard landfills for municipal solid waste in major cities and districts.**
- **Creating collection points for solid household waste for further processing**
- **Commercializing the waste recycling sector in the country**
- **Imposing progressive restrictions on use of plastic bags**
- Implementing second and third cycles of waste processing, deepening and diversification of raw materials processing
- Improving waste collection, with priority to the introduction of unified standards for installation and use of sorted waste bins in all cities and regions
- Developing the waste management sector (in particular, commercialization of the waste recycling sector, with a special emphasis on promoting the creation of enterprises for processing plastic and rubber materials for reuse)
- Establishment of a regional waste management centre in Dushanbe⁴

Source: Compiled by UNECE.

⁴ Internet Portal CIS (2023), "Regional waste management center to open in Dushanbe", 30 September, available at <https://e-cis.info/news/567/112430>.

ANNEX 3. MATERIAL FLOW ANALYSIS: DEFINITION AND MAIN INDICATORS

The material flow analysis brings into focus the flow of raw materials across domestic and global supply chains from extraction and production to final use within an economy.²⁰³ In so doing, as shown in table A3.1, it sheds light on:

- The total supply of raw materials within an economy, including domestically extracted and imported materials
- The intermediate utilization of materials for manufacturing products destined for domestic consumption and exports
- The final use of raw materials within an economy, i.e. raw material consumption
- Performance indicators for measuring resource efficiency.

TABLE A3.1.		Material flow analysis: Main indicators
Flow	Indicator	Description
Supply of raw materials		
Raw materials available for use in production processes	Domestic extraction	Total amount of raw materials extracted from the domestic environment
	Direct imports of raw materials	Total amount of raw materials sourced from international markets
	Direct material input	Sum of domestic extraction and direct imports of raw materials

²⁰³ For a detailed account, see P.H. Brunner and H. Rechberger (2004), Practical Handbook of Material Flow Analysis (Boca Raton, FL: Lewis

TABLE A3.1.

Material flow analysis: Main indicators

Flow	Indicator	Description
Intermediate utilization of raw materials		
Production	Raw material equivalents of imports (RME-IMP)	Total amount of raw material content embodied in imports, including indirect or hidden materials; comprises the total amount extracted in foreign countries for producing and transporting the imported goods, such as energy, water and ancillary materials (i.e. chemicals, materials used for producing the machinery used for production)
	Raw material equivalents of exports (RME-EXP)	Total amount of raw material content embodied in exports, including indirect or hidden materials; comprises raw materials extracted domestically to produce and transport goods destined for exports, such as energy, water and ancillary materials
	Raw material input (RMI)	Total amount of raw materials used in domestic and global production processes; comprises the sum of domestic extraction and RME-IMP.
	Direct exports of raw materials	Total amount of domestic raw materials sold in international markets
Final use of raw materials		
Domestic consumption	Domestic material consumption	Total amount of raw materials used in an economy by producers (along all supply chains) and by individuals and households (consumption of final goods); comprises the sum of domestic extraction and imported raw materials, minus exports of raw materials.
	Material footprint ^a	Overall environmental impact of raw material consumed by households and individuals (including domestically produced and imported goods)
Performance indicator of raw material use		
Resource efficiency	Material productivity	Ratio of output (GDP) to domestic material consumption.

Source: UNECE, based on The Material Flow Analysis Portal (<https://www.materialflows.net>) and P.H. Brunner and H. Rechberger (2004), Practical Handbook of Material Flow Analysis (Boca Raton, FL: Lewis Publishers, CRC Press LLC).

^a Another indicator for measuring material consumption is raw material consumption (RMC), which comprises the sum of domestic extraction and RME-IMP used in production processes, minus RME-EXP. This indicator does not figure in the database at the Material Flow Analysis Portal. The material footprint is a more comprehensive measure.

Circular Economy for the Sustainable Use of Natural Resources in the Republic of Tajikistan

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