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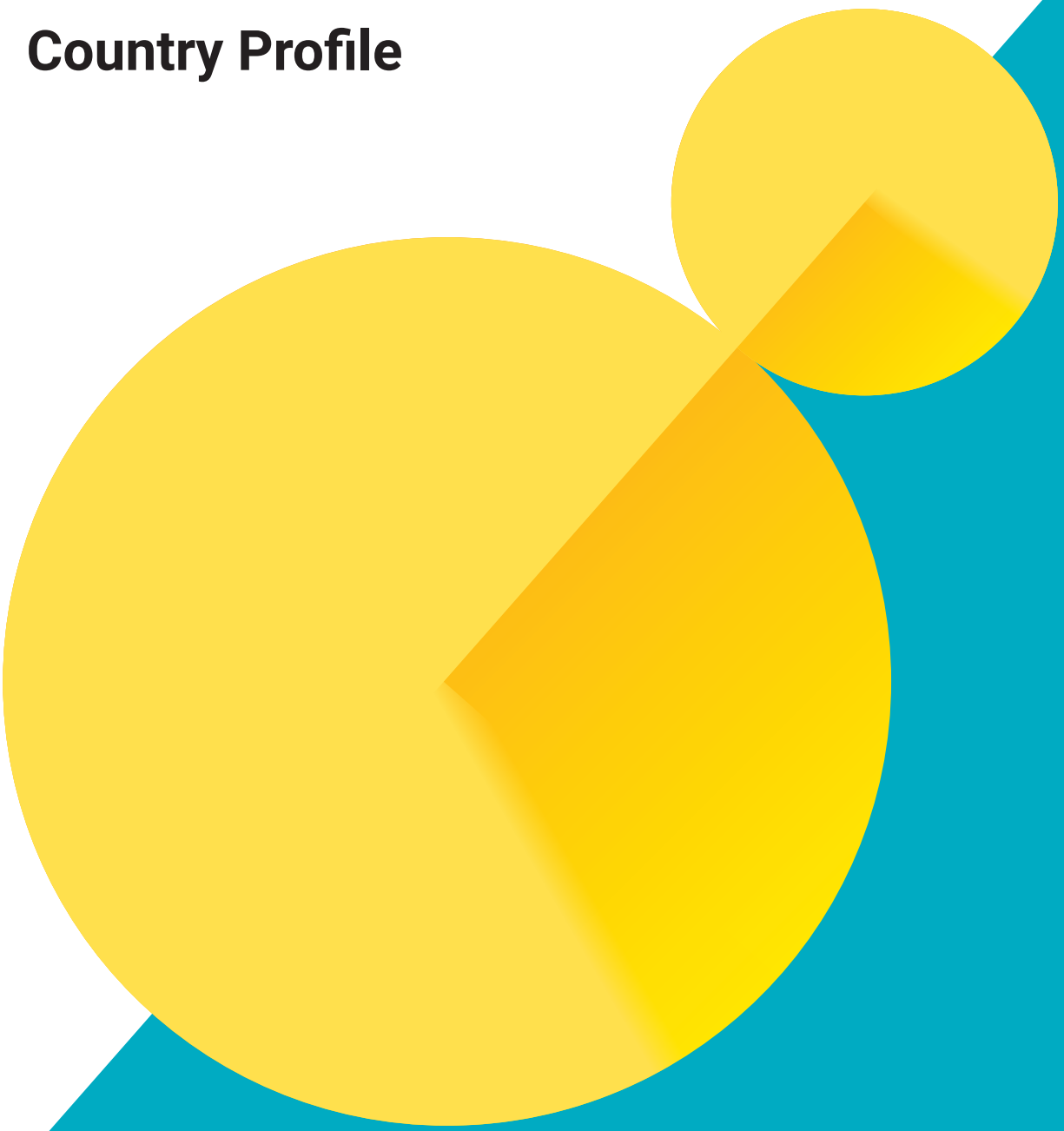
PLASTIC POLICIES IN KAZAKHSTAN

Country Profile



Acknowledgements

This Country Profile on plastic policies in Kazakhstan was prepared on behalf of the EU SWITCH-Asia Policy Support Component (PSC) by Maro Luisa Schulte and Per-Olof Busch under the supervision of Cosima Stahr and Dr Zinaida Fadeeva, Team Leader, SWITCH-Asia Policy Support Component.

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Abbreviations

CDW	Construction and demolition waste
EPR	Extended producer responsibility
ESG	Environmental, social, and governance
GDP	Gross domestic product
IEA	International Energy Agency
INC	Intergovernmental negotiation committee
JSC	Joint stock company
MWR	Market wide research
PET	Polyethylene terephthalate
PPPs	Public-private partnerships
PRO	Producer responsibility organisation
STEAR	Strategic Think Tank for Environmental and Resource management
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

1. Context

In Kazakhstan, roughly 730,000 tonnes of plastic waste were generated in 2023, the equivalent of 37.2 kg per capita (EA 2024). This is more than the global average of almost 32 kg per capita per year, and almost twice as much as the average in SWITCH-Asia countries of roughly 20 kg per capita per year (EA 2024) (Figure 1).

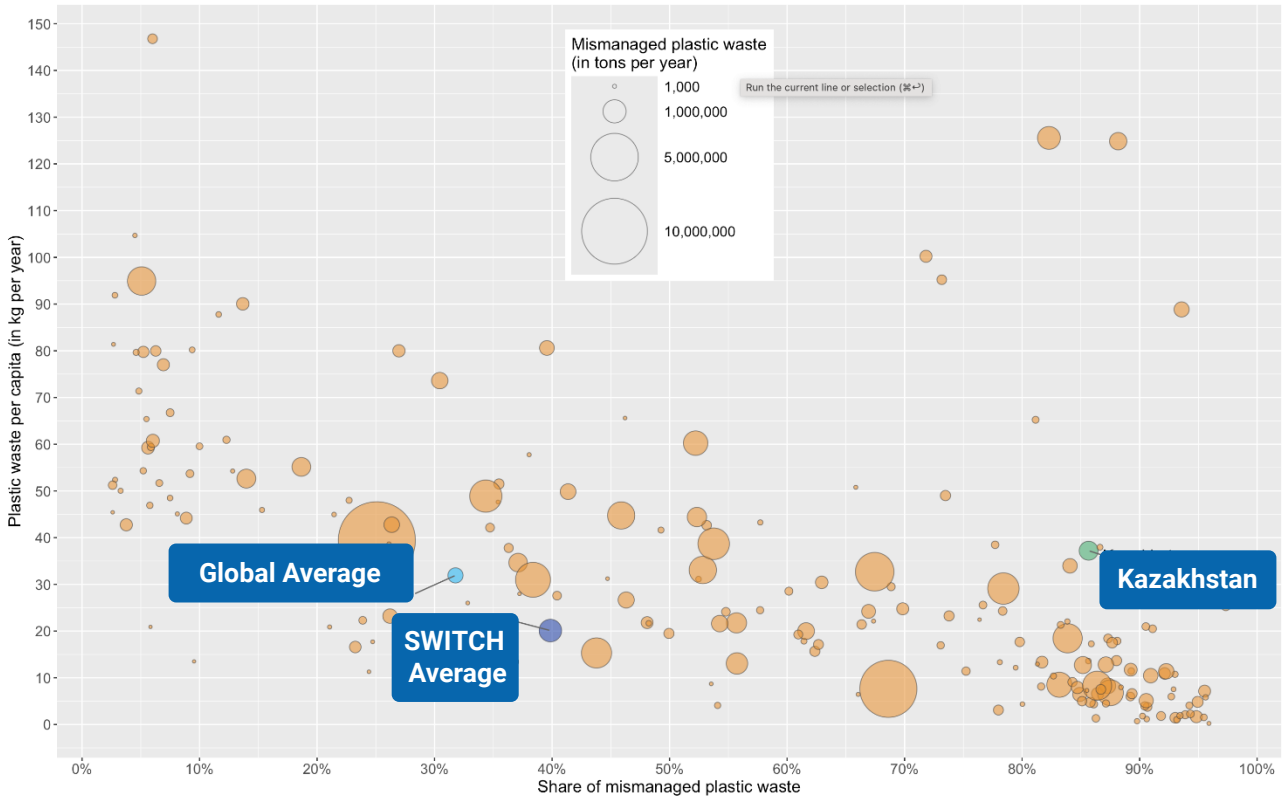

Figure 1. Plastic waste in Kazakhstan in 2023

Source: Earth Action 2024 data

Kazakhstan mismanages almost 86% of the plastic waste generated, which comes to 625,000 metric tonnes. The share of mismanaged plastic waste lies 53 percentage points higher than the global average, and 45 percentage points higher than the average share in SWITCH Asia countries. With a negligible 1000 metric tonnes of plastic waste imported in 2022, Kazakhstan is not a recipient country for plastic waste (UNCTAD data).

Rank of Kazakhstan in global comparison (out of 192)	
Plastic waste in metric tonnes	**149**
Plastic waste per capita (kg/year)	**123**
Mismanaged plastic waste in metric tonnes	**172**
Mismanaged plastic waste per capita (kg/year)	**182**
Share of mismanaged plastic waste	**141**

Overall, in 2022, Kazakhstan's trade volume of plastic-related products and goods amounted to USD 4.2 billion, which is 3.1% of Kazakhstan's overall trade volume in products and 0.15% of the global trade volume, according to UNCTAD data (Figure 2). With the negligible exception of feedstocks and precursors used in plastics and plastic waste, Kazakhstan is a net importer of all plastic-related goods and products with an overall import value of USD 3.7 billion and plastic-related exports of USD 475 million. In particular, Kazakhstan imports much more final manufactured plastic goods than it exports and has a negative trade balance of almost USD 1.8 billion in 2022. Overall, this suggests that most imports are used to satisfy domestic demand.

Figure 2. Plastic-related trade in Kazakhstan in 2022

Source: UNCTAD data

In 2020, the oil and gas industries, along with related sectors, contributed 17% to Kazakhstan's GDP. Oil is the primary driver of the country's export earnings and the main source of government revenue (EIA 2022). Despite the extent of the oil and gas industry, Kazakhstan does not seem to be a major producer or exporter of either plastics in primary forms or of intermediate or final manufactured plastic goods. However, an integrated gas-chemical complex in Atyrau is currently constructed by KazMunayGas in collaboration with SIBUR and Sinopec. It has a production capacity of 1.25 million tonnes of polyethylene per year (KazMunayGas 2025). The production is likely to increase the production of primary polymers in the future and reduce Kazakhstan's dependence from plastic imports.

2. Policy landscape

The plastic policy landscape in Kazakhstan is centred around one encompassing policy document, the **Environmental Code of the Republic of Kazakhstan**, which is updated regularly. The first Code was published in 2007, with the latest, greatly improved and extended version in 2021. The focus on plastics-related laws and regulations in the Code concentrates on the waste management stage of the lifecycle, although it does also include provisions on the overall trade of single-use products, including plastics. The Code does not address the issue of plastics and waste plastic as an individual issue, but refers to plastics as part of municipal and other wastes.

Plastic policy provisions are part of the Code, which aims to establish legal grounds, tasks, principles, and mechanisms for implementing a unified state environmental policy. The objectives include ensuring high levels of environmental protection, providing a favourable environment for human life and health, promoting sustainable development, and contributing to global climate change mitigation efforts. They also seek to create an effective public management system for environmental protection, encourage 'green' investments, ensure transparency and public participation in environmental issues, and protect, preserve, and rehabilitate the environment. The Code is organised into 24 Sections and 418 Articles, which cover various aspects of environmental protection and management.

Prior to the publication of the new Environmental Code in 2021, the only specific mention of plastics was found in the context of prohibiting the discharge of plastic materials from ships. Specifically, Article 267 stated:

> 'Ships must be equipped with equipment that prevents the pollution of ship decks with oil products and the discharge of polluted wastewater into water bodies. It is prohibited to discharge oil, harmful substances and waters containing them, food waste, household garbage, and all types of plastics into water bodies from ships.'

Since plastic waste generation from ships is not likely to be Kazakhstan's main source of plastic pollution, the regulations on overall solid waste management are of greater importance for Kazakhstan's policy framework on plastic pollution.

Indeed, several sections in the **New Environmental Code of the Republic of Kazakhstan (2021)** address plastics as part of waste management efforts and outline comprehensive regulations and requirements for the handling, processing, and disposing of waste, including plastics.

Regarding the **legal (i.e. command and control) responsibilities for waste management**, local executive bodies are tasked with implementing measures to reduce waste generation and increase waste recovery, incentivising businesses to adopt waste-reducing technologies, encouraging the collection and preparation of waste for recovery, supporting the construction of waste recovery facilities, promoting the production of waste recovery equipment and providing financial support for initiatives that reduce waste and increase recovery rates (Article 341).

Further responsibilities include regulating the flow of municipal waste, promoting measures to reduce waste volume, and enhancing reuse and recycling efforts, often in collaboration with public-private partnerships. Local executive bodies approve and develop tariffs for waste services and manage their distribution among service providers. Furthermore, they are charged both with organising eco-friendly waste collection systems and with ensuring that the infrastructure supports waste sorting, recovery, and removal. Importantly, the local bodies aim to meet environmental quality targets in waste management, promote the sorting and composting of organic waste, and provide necessary information to organisations involved in waste processing. They also play a crucial role in educating the public about sustainable waste

management practices and facilitate the collection and transport of waste for energy recovery facilities.[1] This comprehensive regulatory approach ensures a sustainable and efficient management of municipal waste, aligning with broader environmental goals. Furthermore, the Code clearly lays out a hierarchy for waste management (Article 329), which prioritises preventive measures over reuse, processing, recycling and finally removal. The hierarchy does not specifically mention plastic waste, but it can be assumed that plastics are implied (Article 365).

In addition, Article 351 states that plastic waste is not to be accepted in landfills. Oversight of the acceptance procedures lies with the owners of the landfills (see Article 354).

Regarding **market-based mechanisms**, the Environmental Code outlines extended producer responsibilities (EPR) in several articles, which were further specified in later versions of the Code in 2016 and 2021. The articles include provisions for the extended obligations of producers and importers. They include obligations to bear financial and operational responsibilities for waste management (Article 285-6[2]) and to develop and implement waste management programmes aimed at gradually reducing waste volumes (Article 288). More specifically, the Code establishes EPR as one of the economic mechanisms for environmental protection and natural resource management (Article 95). Producers and importers are subject to extended obligations for organising the collection, transportation, processing, neutralisation, use and/or disposal of waste generated once products and packaging are no longer suitable for consumer use (Article 285-5). They must also either: i) enter into a contract with the EPR operator (which is more generally labelled the Producer Responsibility Organisation, PRO) for waste management services and pay the associated fees, or ii) have their own system for collecting, processing and disposing of waste from their products (Article 285-7). The PRO is responsible for accumulating and spending the fees paid by producers/importers on waste management activities in accordance with established procedures (Articles 285-4, 285-6). At the same time, local executive bodies, together with the PRO, develop and approve tariffs for waste collection, transportation, disposal etc. and determine their distribution among relevant entities (Article 20-1). The mandate, on the other hand, is held by the environmental protection authority so as to 1) approve the rules for implementing EPR, 2) control the activities of producers/importers subject to EPR (Article 17), and 3) to access data from producers/importers to calculate disposal fees (Article 285-4). Lastly, producers/importers and the PRO are subject to penalties for non-compliance with EPR obligations as established by the laws of Kazakhstan (Articles 285-5, 285-4).

Chapter 31 of the new Environmental Code from 2021 provides more specific definitions and procedures for EPR.

Regarding implementation methods, the new version explicitly mentions two ways of fulfilling extended producer responsibility: an operational EPR where each obliged producer is responsible for the management of its waste itself or a financial EPR where obliged producers contract and pay an independent entity to manage their waste, typically labelled *Producer Responsibility Organisation* (PRO). In addition, the new version introduces a clearly defined concept of 'recycling fee' (Article 386).

It furthermore specifies exemptions and applicability, adding cable and wire products to the list of items to be exempted from the requirement of having their own waste management system, as well as providing more detailed exemptions for food staples (Article 386). Exemptions relating to plastics concern only those products that are not produced or imported for the domestic market.

Regarding the PRO's legal status and powers, the new version gives the government the right to create the PRO as shareholder or to buy shares in the PRO (Article 387) and expands its powers, including the function of refunding overpaid amounts and issuing documents for recycling vehicles (Article 389).

Furthermore, the new version provides a more extensive list of areas where recycling fees can be used, including financing waste-to-energy facilities and other projects to improve environmental conditions in the manufacturing industry (Article 388).

1 This important role of the local executive bodies has been reiterated in the national strategic document "The Concept for the Development of Environmental Culture" for the years 2024 to 2029.

2 Specific Articles mentioned here relate to the version of the Code from 2016

In order to improve transparency and reporting, the 2021 Code requires the PRO to obtain approvals on their development strategy and investment policy, and to submit annual reports (Article 391).

Overall, the new version provides more detailed regulations, expands the scope of extended producer responsibility, and introduces more specific mechanisms for implementation and oversight.

In 2022, the tasks of the previously privately governed PRO were transferred to Zhasyl Damu JSC, thus becoming state property (Bigazin et al 2023), which, according to Lindhqvist and Orazbekov (2022), has led to a suspension of financial support for plastic waste management processes in Kazakhstan. This in turn has resulted in a demise of waste operators such as collectors, processors and plastic waste traders in the waste management and recycling industry.

Regarding **trade regulations**, the Code outlines specific rules for the import and export of waste (implicitly including plastic waste) and for single-use products under certain conditions. Firstly, importing waste for burial and neutralisation is prohibited, and import and export of waste for utilisation or processing (e.g. recycling) require a license from the authorised government body. Secondly, importing single-use products may be restricted or banned if disposal poses high environmental risks or is economically unfeasible (Article 346). In particular the latter provision offers an entry point for reducing importation and use of single-use plastics.Additionally, in 2022, Kazakhstan implemented a 6-month ban of exports of waste from bottles (particularly PET), presumably in order to keep the high-value material available for recyclers within the country (Kamin 2022).

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Finally, regarding **information requirement measures**, the Code mandates the continuous monitoring of waste generation volumes and the implementation of measures and economic incentives to reduce waste volumes, increase recycling rates, and minimise landfill disposal (Article 14).

In addition, Kazakhstan's 2021 **green taxonomy**[3] encompasses several provisions related to plastic and circular economy principles, demonstrating a comprehensive approach to environmental sustainability. The taxonomy recognises 'collection, treatment and disposal of waste along with materials recovery' as a green economic activity, which directly addresses plastic waste management and recycling efforts. Furthermore, it actively promotes the transition to a circular economy by emphasising the importance of 'extending product life cycles, reuse and recycling,' principles that are particularly relevant to plastic products and packaging. The taxonomy also covers the 'manufacture of products, details, and equipment for environmental protection and resource efficiency,' potentially encouraging the production of more sustainable plastic alternatives or recycling equipment. In its commitment to pollution prevention, the taxonomy includes activities that 'prevent and control pollution,' which would potentially apply to efforts aimed at reducing plastic pollution in the environment, though plastics are not specifically mentioned in this regard. Lastly, the taxonomy's focus on 'increasing resource efficiency' aligns with global efforts to reduce plastic use and improve plastic recycling rates. Through these interconnected provisions, Kazakhstan's green taxonomy creates a framework that addresses the plastic issue from multiple angles, fostering a more sustainable approach to plastic production, use, and disposal within the country's economic activities (Government of Kazakhstan 2021b). The Astana International Financial Centre (AIFC) and its Green Finance Centre have been at the forefront of developing and promoting the green taxonomy. They have initiated discussions on its application and are working to create a comprehensive regulatory framework for green finance (Green Finance Platform 2019; AIFC Green Finance Centre 2021). This institutional backing is vital for encouraging bank participation in green finance initiatives.

In terms of **national plans, programmes, or roadmaps**, several sources report that in 2014 the Ministry of Environment and Water Resources had issued a **modernisation programme of the municipal solid waste**

3 A green taxonomy is a classification system that defines and categorises economic activities that are considered environmentally sustainable, or 'green.' It serves as a tool to help investors, companies, and policymakers identify and develop sustainable economic activities.

management from 2014 to 2050 (see D'Agata 2023 or Suleimenova et al. 2020). However, the fact that this ministry was dismantled in a nationwide governmental reform in the same year, and its responsibilities regarding waste management were transferred to the Ministry of Energy (see Government of Kazakhstan 2017), may be one reason why neither this particular plan nor precise information about its content can be found in any official policy databases.

Last but not least, Kazakhstan is member of the Eurasian Economic Union (EAEU) and therefore obliged to comply with its Technical Regulation "On the Safety of Packaging" (TR TS 005/2011, Ministry of Justice 2011) and transpose it into national regulations. The Technical Regulation establishes mandatory requirements for packaging materials, including plastic packaging, of which some also aim at reducing plastic pollution. The regulation defines sanitary and hygienic standards that indirectly contribute to environmental protection by constraining the release of harmful substances. Furthermore, the regulation mandates labelling of packaging to facilitate its recycling, aligning with environmental objectives. The label indicates the material (e.g., "PET," "PP") and the product's recyclability. Finally, the regulation requires a conformity assessment of products. In combination with the other elements, this assessment can be used to let only such plastic products into Kazakhstan that meet the environmental and health standards.

Table 1. Overview of plastic-related policies in Kazakhstan

Source: Authors' own representation

	Production (primary polymers)	Manufacturing (plastic products)	Consumption	Waste management/ End-of-life	Trade
COMMAND AND CONTROL					
Mandatory performance/outcome standards (incl. targets)					Environmental Code of the Republic of Kazakhstan (2021)
Mandatory process standards (incl. targets)				Environmental Code of the Republic of Kazakhstan (2021)	
Technological standards (incl. targets)					
Prohibitions/bans (incl. phaseout)				Environmental Code of the Republic of Kazakhstan (2021)	• Environmental Code of the Republic of Kazakhstan (2021) • 6-month ban on exports of mainly PET bottles and other bottles
MARKET-BASED					
Taxes/levies		Green Taxonomy (2021)	Green Taxonomy (2021)	Green Taxonomy (2021)	
Subsidies/grants/tax reductions					
Public procurement			National Policy on Green Procurement 2023)		
EPR/deposit refund schemes	Environmental Code of the Republic of Kazakhstan (2021)	Environmental Code of the Republic of Kazakhstan (2021)		Environmental Code of the Republic of Kazakhstan (2021)	
Liability schemes					

	Production (primary polymers)	Manufacturing (plastic products)	Consumption	Waste management/ End-of-life	Trade
INFORMATION					
Taxonomies					
Data collection, reporting and disclosure				Environmental Code of the Republic of Kazakhstan (2021)	
Labels					
Awareness raising/ capacity development					
GOVERNANCE/COORDINATION					
Roadmaps, plans and strategies					
Inter-ministerial coordination					
Public-Private partnerships	While there are no specific examples of public-private partnerships addressing plastic pollution in Kazakhstan, the country appears to have a solid foundation for PPPs in general (Ruiz Rivadeneira 2019). Given the global trend towards using such partnerships to tackle environmental issues, including plastic pollution, there may be opportunities for Kazakhstan to develop similar initiatives.				
SPECIAL FOCUS SECTOR: TOURISM					
	The Kazakh construction sector exhibits low circularity, with a predominant reliance on primary raw materials and minimal use of secondary materials. Most construction and demolition wastes (CDW) are landfilled, and recycling rates remain undocumented. However, sector-specific regulations and initiatives, such as the **Nurly Zher housing programme**, demonstrate potential for enhancing circularity. This programme aims to boost domestic production of building materials, establish a register of best available technologies, and encourage the use of recycled and recovered materials from local industries. Additionally, **the 2021 Environmental Code** prohibits the landfilling of construction materials and incorporates circular economy principles (World Bank 2024)				

3. Private-sector innovations

In Kazakhstan, the private sector has been actively involved in addressing plastic pollution through several innovative strategies and initiatives.

One notable effort is led by Kazakhstan's Packaging Association, which has proposed a closed-cycle strategy for processing used plastic bottles. This strategy emphasises the collection of all plastic waste by domestic recyclers, reprocessing it, and reinvesting the earnings into infrastructure and the promotion of cleaner environmental practices. This initiative aims to increase the recycling rate of plastic bottles, which currently stands at 5%, by stimulating the sale of used plastic bottles to domestic recyclers as well as enhancing cooperation with the PRO of the EPR (The Astana Times 2021).

Another notable effort is KazWaste Exchange, which is an online platform for buyers and suppliers of various types of waste in Kazakhstan and the neighbouring countries (https://waste-ex.kz/). Its main idea is to provide a convenient interface for selling and buying waste for individuals and legal entities. In order for suppliers to inform about the waste that they intend to sell, they only need to register on the platform and then to specify the waste volume, price, region and to upload a photo. Buyers can then see and respond to the offer that are organized along different types of waste, including plastic.

Additionally, the United Nations Environment Programme (UNEP) and Halyk Bank have collaborated on the 'Reuse, Recycle, Reduce' initiative, which includes events like sustainable fashion shows and art installations made from recycled materials. This initiative aims to raise awareness and inspire action against plastic pollution by showcasing the potential of both sustainable fashion and art to contribute to environmental conservation. Halyk Bank has also been proactive in promoting environmental responsibility by publishing an environmental, social, and governance (ESG) report and providing financing under the Green Lending Agreement (United Nations Kazakhstan 2023).

Furthermore, guidance from the SWITCH-Asia Programme highlights the importance of transitioning towards a circular economy for plastics in Kazakhstan. This involves promoting sustainable consumption and production patterns, enhancing waste management practices, and encouraging the adoption of eco-friendly technologies and business models (see Lindhqvist and Orazbekov 2022).

4. Challenges

Kazakhstan's plastic pollution crisis is influenced by a complex interplay of geographical and climatic conditions, industrial activities, and policy enforcement capabilities. Understanding these factors is crucial for devising effective strategies to mitigate plastic pollution.

Firstly, Kazakhstan's geographical and climatic conditions play a significant role in shaping the country's plastic pollution challenges. As the 9th-largest country in the world in geographical size, Kazakhstan's vast landscapes present unique difficulties in managing and controlling plastic waste and resulting pollution. The country consists predominantly of desert and semi-desert regions, which potentially make waste collection and management particularly challenging (Poberezhskaya & Bychkova 2021). The harsh climate conditions in Kazakhstan, characterised by extreme temperature variations and arid regions, also exacerbate the plastic pollution problem. These conditions may accelerate the breakdown of plastics into microplastics, which are then easily dispersed by the wind across the vast steppes and deserts, making containment and clean-up efforts even more difficult (Wei et al 2024). Moreover, the uneven distribution of a relatively small population of approximately 18 million people, with most inhabitants concentrated in the south, further complicates efforts to implement comprehensive plastic waste management systems across the entire nation (Poberezhskaya & Bychkova 2021). The geographical dispersion of the population and industrial centres adds to the difficulty of monitoring and regulating plastic waste management practices consistently.

Secondly, in Kazakhstan there is great potential to improve waste management by enhancing waste-processing capacity, expanding recycling infrastructure, and redirecting waste from illegal to legal and environmentally sound landfills. The Ministry of Ecology and Natural Resources has reported that of the approximately 4 million tonnes of municipal waste generated in 2023, 24% was sorted and processed, which is in line with other Central Asian countries. However, the actual figure might be lower, with the remainder being either dumped or buried. In 2023, over five thousand illegal dumping sites were documented. Furthermore, only 20% of authorised landfills meet environmental standards that would align with international good practice. Currently, 8 recycling facilities are modernized and 37 recycling facilities are newly constructed. This provides also an opportunity to improve the environmental performance of these facilities, e.g. in terms of meeting air and water pollution.

Kazakhstan's government, acknowledging these challenges, announced in March 2024 a plan to build 37 new waste processing plants and upgrade 8 existing ones. These projects aim to boost the country's annual waste processing capacity to 1.5 million tonnes. In light of the projected growth rates for the plastics industry and the increased generation of plastic waste that can be anticipated from them, these efforts could be further extended in the future. Furthermore, it remains unclear to what extent these new facilities will address the treatment of plastic waste specifically. Nonetheless, the government will support these efforts through preferential financing provided by the Industrial Development Fund, a joint stock company established by President Tokayev in 2020 to modernise infrastructure and expand industrial capacity. Nearly USD 450 million will be available in loans, with 3% interest rates and loan terms ranging from 3 to 15 years (International Trade Administration 2024). This approach is an important first step in improving overall waste management in Kazakhstan. Future efforts may wish to link the development of waste processing infrastructure to the policies mentioned above, in particular those regarding EPR.

Thirdly, Kazakhstan's industrial activities contribute significantly to plastic pollution challenges. The country's economy is heavily reliant on oil and gas extraction, which not only contributes heavily to climate change, but could also potentially generate substantial amounts of plastic with resulting waste. Currently, while oil and gas is extracted predominantly for export (World Bank 2024), it may well be that, as with many other oil- extracting countries, Kazakhstan will eventually decide to produce primary plastic polymers or related products at home, like the current construction of a plastic producing complex in Atyrau suggests (see section on context). Kazakhstan's latest contribution to the Intergovernmental Negotiation Committee

to develop the global plastic agreement (INC), indeed suggests such a move (Government of Kazakhstan 2024). Even if Kazakhstan manages to improve its waste management capacities, it is unlikely that these would suffice to handle the vast amount of plastic waste that increased plastic production would cause.

In terms of enforcement capacities, Kazakhstan needs to address corruption, a serious concern permeating multiple sectors and institutions, along with both the public and the private sphere. The widespread nature of corruption makes it a complex issue to deal with effectively (Council of Europe 2022). In their simulations of scenarios for non-technological solutions to tackle mismanagement of plastic waste, Cordier and colleagues (2021) were able to confirm that corruption has a significant negative effect on plastic pollution. Framed more positively, stringent anti-corruption laws may improve plastic waste management by 28% within a business-as-usual scenario. The observed effect on a reduction of mismanaged plastic waste was more than twice as high as that of increased GDP per capita. The President's revised anti-corruption policy might prove as step in the right direction. Yet, it does not specifically address corruption in plastic waste management (Ministry of Justice 2022).

In addition, Kazakhstan faces resource constraints in terms of funding, technology, and the expertise required to implement comprehensive climate change control measures (Poberezhskaya & Bychkova 2021), which suggests a similar – if not worse – situation for measures to tackle plastic pollution. The country's environmental policies and enforcement mechanisms may not yet be fully developed or adequately resourced enough to tackle the scale of plastic pollution problem effectively.

Finally, Kazakhstan's governance framework to address plastic pollution is heavily concentrated within the Ministry of Ecology and Natural Resources, while other ministries that govern sectors contributing to plastic pollution have been only occasionally involved in the formulation, adoption and implementation of plastic-related policies.

In conclusion, Kazakhstan's challenges in addressing plastic pollution are intricately linked to the country's unique geographical and climate conditions, oil- and gas-focused economy, and policy-enforcement capabilities.

5. Way forward

To address these challenges, Kazakhstan should consider a multifaceted approach to policy improvements and focus areas. Firstly, strengthening an extended producer responsibility (EPR) system is crucial. While Kazakhstan has established an EPR system within its Environmental Code, the recent transfer of the PRO tasks to state ownership has led to a suspension of financial support for plastic waste-management processes. The government should reinstate and enhance financial support for these processes, develop clear guidelines and incentives for producers and importers to implement effective waste management programmes, and ensure transparency and accountability in the operation of an EPR system.

Improving waste-management infrastructure is another critical focus area. As outlined above, the Kazakhstani government's plans to build 37 new waste-processing plants and upgrade 8 existing ones is a first step. However, the impact of these plans with regards to tackling plastic pollution could be maximised, if the government would prioritise the development of plastic waste recycling capabilities within these new facilities, implement advanced sorting and processing technologies to increase recycling rates, and ensure equitable distribution of waste-management facilities throughout the country, considering its vast geography. In the interests of industry, both innovation and technology could be further supported. Investing in new technologies that can recycle plastics more efficiently and at a lower environmental cost is crucial. At the same time, Kazakhstan could profit from an increased sharing of innovation and technology, as it is currently foreseen in the Global Plastic Treaty.

Strengthening policy enforcement in Kazakhstan is crucial given the challenges resulting from its vast territory and resource constraints. The government should increase funding and resources for environmental enforcement agencies, implement technology-driven monitoring systems to track plastic waste management across the country, and establish stricter penalties for non-compliance with plastic waste management regulations. In addition, by enabling stricter enforcement, stringent anti-corruption laws are likely to contribute positively to the overall reduction of plastic pollution.

Kazakhstan's policy approach to plastic pollution would also benefit from more coordination and clearer allocation of responsibilities between ministries that govern those sectors that contribute to plastic pollution. For example, assigning greater responsibility to ministries such as the Ministry of Industry and Construction, National Economy, Agriculture, Energy, Transport, Tourism and Sports, and others, might yield a more impactful approach than the current approach where the Ministry of Ecology and Natural Resources largely bears the responsibility for preventing and reducing plastic pollution.

Promoting circular economy principles is another vital aspect of addressing plastic pollution. Kazakhstan's 2021 green taxonomy includes several provisions related to plastic and circular economy principles. Building on this foundation, the government should develop incentives for businesses to adopt circular economy practices in plastic production and use, encourage research and development in sustainable materials and packaging alternatives, and implement green public procurement policies that prioritise products with recycled content or sustainable packaging.

Addressing plastic pollution in specific sectors, such as construction, is also important. The construction sector in Kazakhstan exhibits low circularity, with minimal use of secondary materials. In combination with the existing green taxonomy, the government could expand on initiatives like the Nurly Zher housing programme to boost the use of recycled materials in construction, implement regulations mandating minimum recycled content in construction materials, and develop guidelines and standards for sustainable construction practices to minimise plastic waste.

D'Agata (2023) argues that Kazakhstan in particular needs to invest in public education and raise awareness regarding proper and environmentally sound (plastic) waste management. In this regard, public awareness about the impact of plastic pollution and the importance of recycling should be increased in order to drive

behavioural change. Beyond a mere focus on waste management practices, educational campaigns should also focus on reducing plastic use and increasing plastic re-use. In this regard, collaborating with schools, universities, and community organisations to integrate plastic pollution awareness into curricula and community programmes would be beneficial. Furthermore, using social media and digital platforms can help reach a wider audience with targeted awareness messages.

Enhancing international cooperation could play a crucial role in addressing Kazakhstan's plastic pollution challenges. The government should actively participate in global initiatives and agreements on plastic pollution reduction, seek technical assistance and knowledge transfer from countries with successful plastic management policies, and collaborate with neighbouring countries on regional plastic pollution reduction strategies.

Lastly, improving data collection and monitoring is essential for informed policy-making. The Environmental Code mandates continuous monitoring of the volume of waste generated. To enhance this, the government should develop a comprehensive national database on plastic production, consumption, and waste generation, implement regular reporting requirements for businesses on their plastic use and waste management practices, and utilise this data to inform policy decisions and track progress towards plastic pollution reduction goals. To this end the existing EPR could be used to adopt new requirements for producers and importers to provide the necessary data.

In conclusion, addressing plastic pollution in Kazakhstan will require a comprehensive approach that considers the country's unique geographical, economic, and social context. Although Kazakhstan has already undertaken important steps with their Environmental Code, particularly with the latest version dated 2021 and its promotion of waste processing plants, by implementing the policy improvements outlined in the report above and focusing on various stages of the plastic lifecycle, further significant strides in reducing plastic pollution and moving towards a more sustainable future can be made as well. The success of these initiatives will depend on sustained commitment from the government, active participation from the private sector, and increased awareness and engagement from the public.

How could the Global Plastics Treaty help?

- Offer guidance regarding most favourable design options for EPR systems
- Set up a level playing field through the introduction of EPR in other countries through provision of and guidance on EPR
- Provide funds for investments in waste management (including infrastructure) by raising financial resources through the treaty's financial mechanisms
- Foster international collaboration with the provisions on international cooperation, information exchange and technology transfer
- Enhance capacities and strengthen regulatory frameworks through the support for capacity-building initiatives and technical assistance the treaty provides
- Enrich the principles of green taxonomy through additional definitions and international agreements on environmentally friendly products and materials
- Stimulate awareness-raising, education and research through treaty provisions on these issues
- Facilitate data collection through the provision on transparency, tracking, monitoring and labelling

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