

SpringerBriefs in Climate Studies

SpringerBriefs in Climate Studies present concise summaries of cutting-edge research and practical applications. The series focuses on interdisciplinary aspects of Climate Science, including regional climate, climate monitoring and modeling, palaeoclimatology, as well as vulnerability, mitigation and adaptation to climate change. Featuring compact volumes of 50 to 125 pages (approx. 20,000–70,000 words), the series covers a range of content from professional to academic such as: a timely reports of state-of-the art analytical techniques, literature reviews, in-depth case studies, bridges between new research results, snapshots of hot and/or emerging topics


Author Benefits: SpringerBriefs in Climate Studies allow authors to present their ideas and readers to absorb them with minimal time investment. Books in this series will be published as part of Springer’s eBook collection, with millions of users worldwide. In addition, Briefs will be available for individual print and electronic purchase. SpringerBriefs books are characterized by fast, global electronic dissemination and standard publishing contracts. Books in the program will benefit from easy-to-use manuscript preparation and formatting guidelines, and expedited production schedules. Both solicited and unsolicited manuscripts are considered for publication in this series. Projects will be submitted to editorial review by editorial advisory boards and/or publishing editors. For a proposal document please contact the Publisher.


Rahat Sabyrbekov · Indra Overland ·
Roman Vakulchuk
Editors


Climate Change in Central Asia

Decarbonization, Energy Transition
and Climate Policy

Editors

Rahat Sabyrbekov 
Organization for Security and Cooperation
in Europe (OSCE) Academy in Bishkek
Bishkek, Kyrgyzstan

Indra Overland 
Norwegian Institute of International
Affairs (NUPI)
Oslo, Norway

Roman Vakulchuk 
Norwegian Institute of International
Affairs (NUPI)
Oslo, Norway



ISSN 2213-784X ISSN 2213-7858 (electronic)
SpringerBriefs in Climate Studies
ISBN 978-3-031-29830-1 ISBN 978-3-031-29831-8 (eBook)
<https://doi.org/10.1007/978-3-031-29831-8>

© The Editor(s) (if applicable) and The Author(s) 2023. This book is an open access publication.

Open Access This book is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this book are included in the book's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the book's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Contents

Introduction to Climate Change in Central Asia	1
Rahat Sabyrbekov, Indra Overland, and Roman Vakulchuk	
Climate Research on Central Asia: State of the Art	
Climate Change: A Growing Threat for Central Asia	15
Anne Sophie Daloz	
Climate Change Science and Policy in Central Asia: Current Situation and Future Perspectives	23
Alisher Mirzabaev	
Central Asian Decarbonisation Pathways and Carbon Pricing	
Central Asian Climate Policy Pledges Under the Paris Agreement: Can They Be Fulfilled?	35
Rahat Sabyrbekov, Indra Overland, and Roman Vakulchuk	
Decarbonisation Opportunities and Emerging Carbon Pricing Instruments in Central Asia	51
Gulim Abdi, Nurkhat Zhakiyev, and Shynar Toilybayeva	
Energy Transition in Central Asia	
Energy Transition in Central Asia: A Systematic Literature Review	69
Burulcha Sulaimanova, Indra Overland, Rahat Sabyrbekov, and Roman Vakulchuk	
A ‘Steppe’ into the Void: Central Asia in the Post-oil World	83
Morena Skalamera	
Towards a Geoeconomics of Energy Transition in Central Asia’s Hydrocarbon-Producing Countries	95
Yana Zabanova	

Local Climate Change Impacts and Adaptation in Central Asia

The Dual Relationship Between Human Mobility and Climate Change in Central Asia: Tackling the Vulnerability of Mobility Infrastructure and Transport-Related Environmental Issues 111
Suzy Blondin

A Gendered Approach to Understanding Climate Change Impacts in Rural Kyrgyzstan 123
Karina Standal, Anne Sophie Daloz, and Elena Kim

Climate Change Awareness, Norms and Stakeholders in Central Asia

The Institutionalisation of Environmentalism in Central Asia 137
Filippo Costa Buranelli

The Importance of Boosting Societal Resilience in the Fight Against Climate Change in Central Asia 149
Fabienne Bossuyt

The Culture of Recycling, Re-use and Reduction: Eco-Activism and Entrepreneurship in Central Asia 161
Aliya Tskhay

Editors and Contributors

About the Editors

Rahat Sabyrbekov is an environmental economist who specializes in decarbonization, climate change and energy transition. Rahat is a Postdoctoral Fellow at OSCE Academy and Visiting Fellow at Davis Center at Harvard University. He obtained his PhD from School of Economics and Business at Norwegian University of Life Sciences. He received his Master's degree from University of Birmingham, the United Kingdom. He teaches Economics of Sustainable Management of Mineral Resources course at the OSCE Academy. His recent publications include *Putting the Foot Down: Accelerating EV Uptake in Kyrgyzstan* (2023), *Know Your Opponent: Which Countries might Fight the European Carbon Border Adjustment Mechanism?* (2022), *Fossil Fuels in Central Asia: Trends and Energy Transition Risks* (2022).

Indra Overland is Research Professor and Head of the Research Group on Climate and Energy at the Norwegian Institute of International Affairs (NUPI). He previously headed the Russia and Eurasia Research Group at NUPI and has worked on Central Asia since 2001. He completed his Ph.D. at the University of Cambridge, followed by a three-year post-doctoral project on Central Asia and the South Caucasus. He has carried out fieldwork in all Central Asian states and has been responsible for cooperation between the OSCE Academy in Kyrgyzstan and NUPI since 2007. Every year he teaches M.A. students from all Central Asian countries on energy issues and hosts 4-5 Central Asian students in Norway. He is (co)author of *Caspian Energy Politics* (Routledge), *China's Belt and Road Initiative through the Lens of Central Asia* (Routledge), *Kazakhstan: Civil Society and Natural Resource Policy in Kazakhstan* (Palgrave) and *Renewable Energy Policies of the Central Asian Countries* (CADGAT). He is a contributing author to the IPCC's Sixth Assessment Report (Working Group II).

Roman Vakulchuk is Senior Researcher at the Norwegian Institute of International Affairs (NUPI) in Oslo and holds a Ph.D. degree in Economics from Jacobs University

Bremen in Germany. He specializes in Central Asia and Southeast Asia and his main research interests are economic transition, trade, energy, climate change and investment policy. Vakulchuk has served as project leader in research projects organized by the Asian Development Bank (ADB), the World Bank, the Global Development Network (GDN), the Natural Resource Governance Institute (NRGI) and others. In 2018, he worked as governance expert for OECD's mission in Kazakhstan and advised the government on privatization reform. In 2013, Vakulchuk was awarded the Gabriel Al-Salem International Award for Excellence in Consulting. Recent publications include *Seizing the Momentum. EU Green Energy Diplomacy towards Kazakhstan* (2021), *Discovering Opportunities in the Pandemic? Four Economic Response Scenarios for Central Asia* (2020) and *Renewable Energy and Geopolitics: A Review* (2020).

Contributors

Gulim Abdi Astana IT University, Astana, Kazakhstan

Suzu Blondin University of Neuchâtel, Neuchâtel, Switzerland

Fabienne Bossuyt Department of Political Science, Ghent University, Ghent, Belgium

Filippo Costa Buranelli University of St Andrews, St Andrews, Scotland, UK

Anne Sophie Daloz CICERO, Oslo, Norway

Elena Kim American University of Central Asia, Bishkek, Kyrgyzstan

Alisher Mirzabaev Institute of Food and Resource Economics (ILR), University of Bonn, Bonn, Germany

Indra Overland Norwegian Institute of International Affairs (NUPI), Oslo, Norway

Rahat Sabyrbekov Organization for Security and Cooperation in Europe (OSCE) Academy in Bishkek, Bishkek, Kyrgyzstan

Morena Skalamera Leiden University, Leiden, The Netherlands;
Belfer Center, Harvard Kennedy School, Cambridge, MA, USA

Karina Standal CICERO, Oslo, Norway

Burulcha Sulaimanova Organization for Security and Cooperation in Europe (OSCE) Academy, Bishkek, Kyrgyzstan

Shynar Toilybayeva CAREC Country Office, Astana, Kazakhstan

Aliya Tskhay University of St Andrews, St Andrews, Scotland, UK

Roman Vakulchuk Norwegian Institute of International Affairs (NUPI), Oslo, Norway

Yana Zabanova Research Institute for Sustainability (RIFS)—Helmholtz Centre, Potsdam, Germany

Nurkhat Zhakiyev Astana IT University, Astana, Kazakhstan

The Culture of Recycling, Re-use and Reduction: Eco-Activism and Entrepreneurship in Central Asia



Aliya Tskhay 

Abstract While national governments are setting net-zero targets and drawing up strategies to reduce CO₂ emissions and meet their Paris Agreement commitments, local entrepreneurs are putting words into action. This paper reviews the waste management situations and national strategies across Central Asian countries in addition to the various enterprises which have sought to improve their local environment and change people's behaviour and attitudes towards the environment through waste-management initiatives. The case studies include a zero-waste grocery store; the collection, recycling and re-purposing of waste; and the organisation of events to encourage the reduction of consumption and associated waste. These enterprises combine their business models with social awareness programmes to promote more sustainable lifestyles and environmentally friendly habits. The micro-level focus provides an opportunity to see how entrepreneurs and activists in Central Asian cities are filling the gap left by national governments in promoting sustainability.

Keywords Eco-activism · Eco-entrepreneurship · Central Asia · Waste management · Climate change

1 Introduction

Good waste management is integral to environmental protection and climate change mitigation. In Central Asia, this issue has not received much attention or priority (Vakulchuk et al. 2022). For instance, Kyrgyzstan does not have an institutional structure for waste processing and recycling, and this complicates political change and the implementation of relevant policies (Vorotnikov 2018). Moreover, with a growing population in the region, especially in urban centres, the amount of waste is also growing. Thus, waste management is set to become an even more acute environmental problem in Central Asian countries. The waste accumulated in landfills

A. Tskhay (✉)
University of St Andrews, St Andrews, Scotland, UK
e-mail: at99@st-andrews.ac.uk

© The Author(s) 2023
R. Sabyrbekov et al. (eds.), *Climate Change in Central Asia*,
SpringerBriefs in Climate Studies,
https://doi.org/10.1007/978-3-031-29831-8_13

produces the greenhouse gases CO₂ and methane which are responsible for air pollution and climate change. Air pollution from landfill incineration and water contamination from landfills also result in increased dangers to public health, sanitation and wellbeing (United Nations Environment Programme 2017). It is therefore crucial to address the topic of waste management in this edited volume on climate change and Central Asia.

This chapter looks at the issue of household solid waste management—an area where Central Asian governments have progressed quite slowly in implementing change. At the same time, a wide variety of local initiatives by eco-activists, eco-entrepreneurs and environmentally conscious businesses have spread and provide services for waste recycling and utilisation, while also promoting a culture of environmental awareness in the region. These initiatives are the focus of this paper and can be categorised as recycling, processing and/or social awareness initiatives.

The chapter provides an overview of national policies and strategies for waste management in Central Asian countries and discusses related issues. It then presents case studies of local initiatives led by eco-activists and eco-entrepreneurs to fill gaps in government provisions based on public reports and online information sources such as the websites of the companies, open-access reports or documentary films. The material gathered for this chapter is from secondary sources, and the case examples were picked to conform with the focus on waste management, education and zero waste initiatives.

The chapter seeks to demonstrate that waste collection, recycling and re-use, and associated behavioural change, are possible through bottom-up initiatives, despite the considerable gap in government action on waste management at the national level across the region. As governments struggle with funding and institutional bases for the promotion of waste management, local initiatives pave the way to bring innovative solutions to waste issues, especially in urban areas.

2 Central Asian States and Waste Management

Waste management is not a new concept in the Central Asian states. Indeed, during the Soviet era, waste collection and recycling were encouraged and incentivised. The collection of metal, paper, glass and even food waste was widespread, with centralised strategies and infrastructure (United Nations Environment Programme 2017). After the collapse of the Soviet Union, this fell apart, collection and recycling centres closed down, and the culture of waste utilisation was lost.

Current household waste management systems usually involve the collection of waste in non-segregated bins, with disposal at landfills on the outskirts of municipal centres.¹ The growing urbanisation and population growth in Central Asian countries have put further strain on waste management systems. For instance, in Bishkek alone,

¹ This is related to household waste only. The management of industrial waste is administered through a different system, and is beyond the scope of this chapter.

1,000 tonnes of waste are collected daily, and this figure is growing by 20% annually (United Nations Development Programme 2021). In 2018, Uzbekistan recycled only 20% of its solid waste, with the remainder going into landfills and total waste in that year amounting to 80 million tonnes (Eurasianet 2021).

There are two categories of landfill in Central Asia: legal (publicly organised) and illegal (sporadic and unorganised). It is important to underline such a distinction as it also indicates part of the problem in waste management. Recycling is mostly done by private companies and the collection of recyclable waste is limited across Central Asia (United Nations Environment Programme 2017). Several issues need to be highlighted to better illustrate the current situation.

First, the limited national policies and strategies, or lack thereof, present the first challenge to sustainable waste management. The approach to waste management at the national policy level differs between the Central Asian states, which have varied capacities and legislative bases for waste management. In Kyrgyzstan, waste management (both household and industrial) is featured in some legislative acts but without concrete targets, goals or quotas for waste recycling, which has brought criticism from some activists that the government has not seriously considered this issue (Eurasianet 2021). In Kazakhstan, waste management has been acknowledged and is covered in the Environmental Code, which came into force on 2 January 2021 (Ministry of Ecology 2021). The Law on industrial and consumption waste from 2005 regulates Tajikistan's waste management (Majilisi Oli 2011). Uzbekistan has a range of normative acts and laws that regulate the management of industrial and household waste (President of the Republic of Uzbekistan 2020). Turkmenistan is currently developing a national strategy for waste management together with international donors (EBRD and UNDP) (United National Development Programme 2021a).

Second, official data on the numbers of landfills, waste volumes and recycling rates is very limited or non-existent (Wood 2019). This prevents more comprehensive waste management planning, but more importantly, obscures the picture of the range of challenges faced by governments and citizens. In addition, the lack of information and awareness thwarts efforts to educate the public on waste problems. The absence of any baseline data also challenges the monitoring of recycling rates.

Third, the organisation of waste collection is facing numerous issues in Central Asian states. With the lack of segregated bins for different types of waste, household waste goes to common bins, which are then emptied into landfills. The lack of funding for waste collection is an issue, as it is operated at the municipal level. For instance, the Bishkek authorities lack the capacity to organise separate waste collection (Wood 2019). This is also coupled with the social issues arising from unregulated waste collection. Thus, for example, in Kyrgyzstan hundreds of people gain their livelihood from regularly scavenging through urban bins and landfills for plastic, metals and recyclable materials (Rickleton 2010; Eurasianet 2021). The health hazards of this occupation are highly concerning. In addition, criminal groups also organise a waste collection to profit from the black market for such materials as metals and electronics.

Fourth, Central Asian states have limited capacity, knowledge and funding to modernise their waste management systems, and thus rely on cooperation and support

from international donors. Regional states cooperate with a range of partners, from UN institutions to international financial institutions—including the World Bank, the Asian Development Bank (ADB) and the European Bank for Reconstruction and Development (EBRD)—and various civil society organisations. Such cooperation is especially targeted to improve policies, bring in knowledge, support infrastructure and provide funding (United Nations Environment Programme 2017). International financial institutions are working on waste management in all five Central Asian republics, which demonstrates that waste management is a problem shared by the entire region.

The above-listed issues demonstrate the profound nature of the waste management problem in the region. The limitations of government approaches to the waste problem are indicative of the amount of work that is required. In other words, there is a critical gap in waste management efforts.

3 National Policies on Waste Management in Central Asia

In general, the approach to waste management in Central Asia is best described as ‘out of sight, out of mind’. Waste is dumped on land close to the cities, with some landfills operating beyond their lifespan. The United Nations Environment Programme (UNEP) also acknowledges the poor organisation of landfills, ‘with inadequate planning and engineering, no waste sorting or inventories and lacking in modern measures to make them safer’ (2017, 16).

National policies on waste management are, however, evolving around the three principles of recycling, reduction and re-use. This requires sufficient infrastructure to support the collection of segregated waste and its further recycling, as well as using recycled materials as part of a circular economy while educating the population to reduce waste through various behavioural changes. These actions are in line with international waste management practices.

In 2013, the President of Kazakhstan signed the ‘Concept on the Transition to a Green Economy’, a policy document that sets out the vision and direction for the transformation of the economy towards environmentally conscious solutions and programmes (Decree of the President of the Republic of Kazakhstan 2013). The division of waste into categories for the collection was legally stipulated in 2016, and the new Ecological Code of 2021 further defines the categories of waste into wet (food, organic and other waste) and dry (paper and carton, glass, plastic), with bins labelled accordingly. Yet, although the legislation in Kazakhstan matches international standards on waste management, the infrastructure to support it is poor or obsolete (United Nations Environment Programme 2017). Local municipalities are slow to introduce the required waste bins and provide the necessary training to local populations in major cities (2021).

In Kyrgyzstan, the National Development Strategy for 2040 has a provision on waste management and the minimisation of environmental impacts from local

businesses (Independent Eco-Expertise). Thus, waste management has been picked up by the government's 'green' agenda. The country receives significant support from international financial institutions and donors for the improvement of solid waste management. The EBRD has been operating a range of programmes since 2013, through loans to support education, infrastructure and development of a legislative base for waste recycling in Bishkek and Osh (European Bank for Reconstruction and Development 2013; Usov 2020). Notably, the EBRD set out to establish the first landfill in Bishkek that would comply with EU standards. However, corruption and misallocation of resources have been reported in connection with this project (Barvinskaya 2019; Wood 2019).

Tajikistan has a similar situation, with a lack of infrastructure, funding and capacity for waste collection and recycling. The EU and the EBRD are providing assistance to the government to facilitate recycling and improve landfill infrastructure (Kukula 2018). The country is also experiencing a problem with the utilisation of chemical waste, such as from lithium batteries (Karimov 2021). Together with UN institutions, Tajikistan's government is taking steps to improve the situation, and in doing so to comply with international conventions, such as the Rotterdam Convention relating to international trade in hazardous chemicals and the Minamata Convention on Mercury (United Nations Environment Programme 2019).

Turkmenistan is to improve its waste management through a joint programme with UNDP called 'Sustainable Cities in Turkmenistan: Integrated Green Urban Development in Ashgabat and Awaza' (United National Development Programme 2021). As part of this programme, the country is working with its partners to develop a national waste management strategy. The goals of the programme are to expand recycling and reduce waste (UNDP in Turkmenistan 2016).

Urban solutions to the waste management problem are also acknowledged as necessary in Uzbekistan. In 2020, the law on solid and construction waste management in Tashkent was introduced, providing a gradual introduction of household waste bins and the segregation of recyclable and non-recyclable waste (UZDaily 2020). This follows the implementation of the Strategy for solid waste management during the 2018–2019 period (President of the Republic of Uzbekistan 2020). This legislation notably provides the foundation for private businesses to operate recycling services in the country, which will be discussed in the next section.

In sum, the Central Asian states are facing very similar issues in addressing waste management. Limited financial capacities, obsolete and poor infrastructure, and a lack of legislation, capacity and knowledge all challenge the functioning of sustainable waste management systems and, thus, endanger public health and the environment across the region. It is not surprising that the international donor community is currently playing a prominent role in filling these gaps. This has been the case since the 1990s when environmental cooperation between donors and local NGOs also provided capacity building programmes on waste management (Weinthal and Watters 2010).

4 Eco-Activists and Eco-Entrepreneurs in Central Asia

Although national policies and strategies in Central Asia are targeted at improving waste management, they have only been introduced in the past ten years and lack swift implementation. Support from the international donor community has helped to reduce the bureaucratic and financial limitations that governments face. At the same time, civil society and entrepreneurs have been actively promoting the culture of reducing, recycling and re-using household waste and facilitating waste management. This section will describe some of the initiatives in Central Asia that are dedicated to the three dimensions (reduce, recycle and re-use), while also educating communities on waste sorting. It is helpful to define who is included under eco-activists and eco-entrepreneurs. Eco-activists are people who campaign to promote sustainable lifestyles and support non-profit organisations dedicated to environmental causes. Eco-entrepreneurs are people who are involved in commercial projects with an environmental agenda, such as recycling businesses. Eco-entrepreneurs can also be eco-activists, especially if they participate in social projects dedicated to environmental issues.

This chapter uses the initiatives below as example cases. What is important to illuminate is the space that these initiatives occupy and the role they are playing in promoting sustainable and environmentally friendly lifestyles. The initiatives cover three key areas—educational projects, social (not-for-profit) projects, and commercial projects—and there is some overlap between these areas.

In order to have a well-functioning waste management system, especially for household waste, educational programmes are particularly important in explaining the correct way to recycle materials. In this respect, eco-activists in Central Asia have developed various projects to explain and assist the general public with waste recycling. An interesting educational tool is the Tazar app for mobile phones in Kyrgyzstan, which was developed by eco-activist Aynura Sagyn. The app provides a map showing the nearest recycling centres in Bishkek, Osh, Karakol, Naryn and Talas. The user can also book waste collection from their home via the app. The app also explains various recycling labels, thus serving as an educational tool for the users to learn more about various types of waste and their proper recycling methods. Sagyn first launched the application for plastic waste collection, but it currently also includes information on glass, paper and clothes recycling (Eurasianet 2021). At its core, the Tazar app facilitates more sustainable lifestyles by connecting consumers with waste recyclers.

In Tajikistan, a student-led initiative called Green Community, founded by eco-activist Anisa Abibulloeva, has partnered with USAID to publish a series of books with short stories on the environment and sustainable living (University of Central Asia 2019). The books will be used in local elementary schools to teach children about climate change and environmental protection. This is a significant step, as climate change and environmentalism are not officially part of the curriculum.

Eco-entrepreneurship is on the rise in Central Asia, and with countries' green agendas and commitments to carbon emissions reduction, waste recycling is

becoming a viable business model. The development of relevant legislation and investment from international donors have also stimulated the development of a recycling culture. Yet, the ventures of Central Asia's eco-entrepreneurs are far more progressive than government recycling programmes and were launched long before waste management was on government agendas. For example, 'Fluid' a company that processes organic waste into biogas and fertiliser has been operating in Bishkek since 2002 (2022). The company is not only the first organic waste collector in Kyrgyzstan, but also the first one to utilise waste for recycling and conversion into biogas, which is then used for heating purposes. This venture is reducing emissions locally and, on a national scale, can contribute to Kyrgyzstan's Paris Agreement. 'Fluid' also participates in knowledge and technology sharing with other countries in Eurasia and advises the government of Kyrgyzstan and international organisations. The company's founder admits that proper separation of organic waste by local businesses (such as restaurants) remains a challenge (Eurasianet 2021).

Waste management and concerns about the environment unite different businesses and bring them together to find solutions. Kazakhstan Waste Recycling (KWR) is the largest recycling company in Kazakhstan. Aside from its recycling business of glass, plastic, paper and aluminium, KWR partners with other leading companies to facilitate a recycling culture. It partners with the grocery delivery service [Arbuz.kz](#), construction materials and furniture seller Leroy Merlin, and a restaurant chain Parmigiano Group for the collection of recyclable waste (KWR 2022). KWR is also participating in educational projects to explain to the local population about different types of waste and how to recycle these through its social media channels and its recycling collection points. Similar partnerships can be observed as part of the Hasharweek project in Uzbekistan which engages with local businesses, such as vendors and restaurants, to popularise and encourage recycling (Hashar 2020).

Initiatives to reduce waste are also being developed in Central Asia. Shops such as HelloEco in Kazakhstan and LaLavande in Uzbekistan are demonstrating how it is possible to sell household products with zero-waste packaging, meaning that customers bring their own refillable containers to shop in these stores (Ybysheva 2022).

5 Conclusion

Waste management is a serious issue in Central Asia and poses multiple threats to public health and the environment. The growing population of the region is generating more waste that in general accumulates in landfills. The poor management of landfills creates a string of environmental issues, such as land, water and air pollution, and an increase in methane and CO₂ emissions.

The Central Asian states recognise the problem that waste management poses for the future of the wellbeing of their populations. Multilateral and bilateral projects and programmes have been set up with international financial institutions and donors to tackle the issue and improve waste management. These programmes set out to fill

the gap and build the capacity of local governments to operate sustainable waste management systems. All Central Asian states are pursuing national strategies to improve waste management. However, they are experiencing various degrees of success and depths of implementation.

Waste management is currently dominated by private initiatives, led by eco-activists and/or eco-entrepreneurs. The initiatives cover such areas as waste recycling, waste collection and re-purposing, as well as educating people about waste reduction and the benefits of recycling. These initiatives also demonstrate that recycling is a potential industry for development in Central Asia. The eco-activists use various techniques, from social awareness week programmes to the use of social media and mobile phone apps, to familiarise the public with the issue of waste management and its implications for the environment. These initiatives are indicative of societal shifts and greater preparedness to tackle more prominent environmental issues. While governments still have to take big steps towards reducing their carbon footprints and improving air and water quality, at the local level eco-entrepreneurs and activists are already contributing to this by taking action.

This chapter presented the local initiatives that demonstrate that waste collection, recycling and reduction are possible and doable in Central Asia. Moreover, with educational programmes to raise awareness about the importance of recycling, the correct ways of doing it, and the location of recycling points, the local initiatives are contributing to behavioural change and establishing the heading for a more environmentally conscious Central Asia.

References

- Barvinskaya M (2019) Чиновники мэрии Бишкека так и не начали строить новую свалку. Прокуратура возбудила на них уголовное дело. Клоор. <https://kloop.kg/blog/2019/01/11/chinovniki-merii-bishkeka-tak-i-ne-nachali-stroit-novuyu-svalku-prokuratura-vozbudila-na-nih-ugolovnoe-delo/>. Accessed 28 Feb 2022
- Decree of the President of the Republic of Kazakhstan (2013) On the concept for transition to “green economy” of the Republic of Kazakhstan. <https://adilet.zan.kz/rus/docs/U1300000577>. Accessed 2 Aug 2022
- Eurasianet (2021) Film explores a dirty problem in Kyrgyzstan and Uzbekistan . <https://eurasianet.org/film-explores-a-dirty-problem-in-kyrgyzstan-and-uzbekistan>. Accessed 1 Feb 2022
- European Bank for Reconstruction and Development (2013) Bishkek solid waste. <https://www.ebrd.com/work-with-us/projects/psd/bishkek-solid-waste.html>. Accessed 28 Feb 2022
- Hashar (2020) Hasharweek RU. <http://hasharweek.uz/#program>. Accessed 2 Aug 2022
- Independent Eco-Expertise Processes in Kyrgyzstan—comprehensive analysis of the current situation of the management system of solid waste. <http://eco-expertise.org/sovershenstvovanie-eko-logicheskoy-pol/stranovye/>. Accessed 2 Aug 2022
- Karimov N (2021) Bury and forget: how people “struggle” with growth of landfills in Tajikistan. Cabar. <https://cabar.asia/en/bury-and-forget-how-people-struggle-with-growth-of-landfills-in-tajikistan>. Accessed 28 Feb 2022
- Kukula K (2018) Cleaning up Tajikistan’s second largest city. <https://www.ebrd.com/news/2018/cleaning-up-tajikistans-second-largest-city-.html>. Accessed 1 Feb 2022
- KWR (2022) Projects. <https://www.kwr.kz/en/projects/>. Accessed 28 Feb 2022

- Majlisi Oli (2011) Law of the Republic of Tajikistan on industrial waste and consumption Ministry of Ecology Geology and Natural Resources of the R of K (2021) Environmental code of the Republic of Kazakhstan. <https://www.gov.kz/memleket/entities/ecogeo/documents/details/adilet/K210000400?lang=ru>. Accessed 2 Aug 2022
- President of the Republic of Uzbekistan (2020) Decree of the President of the Republic of Uzbekistan on measures to improve activities in the field of handling with household and construction waste in the city of Tashkent. https://nrm.uz/contentf?doc=645282_postanovlenie_prezidenta_respubliki_uzbekistan_ot_15_12_2020_g_n_pp-4925_o_merah_po_sovershenstvovaniyu_deyatelnosti_v_sfere_obrashcheniya_s_bytovymi_i_stroitelnyimi_othodami_v_gorode_tashkente&products=1_vse_zakonodatels. Accessed 2 Aug 2022
- Rickleton C (2010) Kyrgyzstan: Bishkek confronts a waste management dilemma. Eurasianet. <https://eurasianet.org/kyrgyzstan-bishkek-confronts-a-waste-management-dilemma>. Accessed 28 Feb 2022
- UNDP in Turkmenistan (2016) Sustainable cities in Turkmenistan: Integrated green urban development in Ashgabat and Awaza. <https://www.tm.undp.org/content/turkmenistan/en/home/projects/sustainable-cities.html>. Accessed 28 Feb 2022
- United National Development Programme (2021) UNDP assists with the development of the Waste Management Strategy | UNDP in Turkmenistan. <https://www.tm.undp.org/content/turkmenistan/en/home/presscenter/pressreleases/2021/undp-assists-with-the-waste-management-strategy.html>. Accessed 28 Feb 2022
- United Nations Development Programme (2021) Let's clean Kyrgyzstan's waste—the results of UNDP's eco-competition announced. <https://www.undp.org/kyrgyzstan/news/lets-clean-kyrgyzstan-s-waste-results-undp-s-eco-competition-announced>. Accessed 2 Aug 2022
- United Nations Environment Programme (2017) Waste management outlook for Central Asia
- United Nations Environment Programme (2019) Tajikistan: taking strides in chemicals and waste management. <https://www.unep.org/news-and-stories/story/tajikistan-taking-strides-chemicals-and-waste-management>. Accessed 28 Feb 2022
- University of Central Asia (2019) UCA and USAID partner to improve reading skills in Tajikistan. <https://ucentralasia.org/news/2019/october/uca-and-usaid-partner-to-improve-reading-skills-in-tajikistan>. Accessed 2 Aug 2022
- Usov A (2020) EBRD, EU and EIB help improve solid waste services in Kyrgyz Republic. <https://www.ebrd.com/news/2020/ebd-eu-and-eib-help-improve-solid-waste-services-in-kyrgyz-republic-.html>. Accessed 28 Feb 2022
- UZDaily (2020) Uzbekistan introduces a system of separate waste collection. <https://www.uzdaily.uz/ru/post/57782>. Accessed 2 Aug 2022
- Vakulchuk R, Daloz AS, Overland I, Sagbakken HF, Standal K (2022) A void in Central Asia research: climate change. *Cent Asian Surv*: 1–20. <https://doi.org/10.1080/02634937.2022.2059447>
- Vorotnikov V (2018) Can Kyrgyzstan sort it out? *Recycling Waste World*. <https://www.recyclingwasteworld.co.uk/in-depth-article/can-kyrgyzstan-sort-it-out/115704/>. Accessed 23 May 2022
- Weinthal E, Watters K (2010) Transnational environmental activism in central Asia: the coupling of domestic law and international conventions. *Env Polit* 19:782–807. <https://doi.org/10.1080/09644016.2010.508311>
- Wood C (2019) Bishkek's bright bins: recycling comes to the Kyrgyz capital. *The Diplomat*. <https://thediplomat.com/2019/07/bishkeks-bright-bins-recycling-comes-to-the-kyrgyz-capital/>. Accessed 1 Feb 2022
- Ybysheva K (2022) Uzbekistan confronts its environmental challenges. International Finance Corporation. https://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/news/insights/uzbekistan-confronts-its-environmental-challenges?cid=IFC_TT_IFC_EN_EXT. Accessed 2 Aug 2022
- (2021) Astana residents are trained in separate waste collection. *Kazakhstanskaya pravda*. <https://kazpravda.kz/n/astanchan-obuchayut-razdelnomu-sboru-othodov/>. Accessed 2 Aug 2022
- (2022) Fluid—biogas technologies <http://www.fluid-biogas.com/>. Accessed 2 Aug 2022

Aliya Tskhay is a Research Fellow at the School of Management at the University of St Andrews, United Kingdom. She holds a PhD in International Relations from the University of St Andrews. Dr Tskhay's research focuses on the study of the global energy sector with the focus on the net-zero targets, carbon-negative technologies, and energy transition. She also studies regional integration processes in Eurasia and provides extensive commentaries on the international cooperation in the region.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

