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PLASTICS USE AND MANAGEMENT

An analysis of the current status in Kyrgyzstan, Maldives, Nepal, Pakistan and Sri Lanka

Background

Plastic pollution is an ever faster growing problem that requires timely and far-reaching action. This was acknowledgment at the fifth session of the United Nations Environment Assembly (UNEA 5.2) in Nairobi, when states issued a resolution to start an intergovernmental negotiation committee (INC), with the aim to negotiate a global legally binding agreement to end plastic pollution. During the INC process, which is scheduled to be concluded by December 2024, states will need to decide how best to design an agreement that tackles the entire lifecycle of plastics to prevent pollution.

While the decision by UNEA was widely celebrated, the actual work still lies ahead: after the Ad hoc Open-Ended Working Group to prepare for the intergovernmental negotiating committee on plastic pollution (OEWG) established the rules of procedure, states will work out the details of how best to design a strong treaty that is able to account for different national circumstances.

How different such national circumstances can be is shown in this collection of country profiles, which illustrates the diversity of the Asian region. Some challenges, such as the lack of data, insufficient monitoring of plastic flows, knowledge gaps or the access to financial resources and technology, shorelines polluted with plastic waste and ineffective and largely informal plastic waste management systems are broadly shared across Asian countries.

Other challenges or circumstances, including a country's geography (island vs land-rimmed; mountainous vs flat), the amount of plastic it produces or consumes or to what extent the production, use, end of life or recycling approaches are regulated, can greatly vary across countries in Asia.

This collection of country profiles sets out to highlight those aspects that are most important to consider in tackling plastic pollution. As such, the profiles illustrate the starting points of the five example countries:

1) **Kyrgyzstan**, as a land-rimmed country with a highly polluted capital and a strong informal waste management sector;
2) **The Maldives**, as an Island state that imports all of the plastics it consumes and that is currently developing an extended producer responsibility (EPR) scheme;
3) **Nepal**, as a mountainous country that has tried to ban plastic bags for years but suffers from a lack of enforcement as much as from tourists who transport vast amounts of plastic waste the popular Mount Everest.
4) **Pakistan**, as a country with insufficient solid waste management that promotes oxo-biodegradable products and materials
5) **Sri Lanka,** an island state where several single-use plastic items are banned and which has developed a National Action Plan on Plastic Waste Management, though implementation and enforcement remain challenging.

Factors that are considered in each country profile are:

The countries' geography, an overview of whether and how much plastic is produced and manufactured, the way that plastic waste is managed, how much of plastic waste is produced per capita, the overall solid waste management, collection rates, estimates about the size and importance of the informal waste sector; the extend of recycling and waste exports; existing policies, national action plans, or bans, and to what extent there are (plans for) EPR schemes.

Kyrgyzstan

Geography: The Kyrgyz Republic (hereafter: Kyrgyzstan) is a land-rimmed country, sharing borders with Kazakhstan in the North, Uzbekistan, Tajikistan in the Southwest and China in the Southeast (Oznobikhina, 2022). Mountain ranges as well large valleys shape the scenery, together with nearly 2,000 lakes and many kilometres of waterways, the longest of which (Naryn River) being 535- km long (Oznobikhina, 2022). Bishkek is the world's third most polluted city (after Lahore and Delhi) (Siddiqi, 2021).

Plastic producers / manufacturers: Manufacturing, plastic waste collection and recycling businesses have been constantly growing in Kyrgyzstan during the past decades. As an example, the demand of Kyrgyzstan's domestic market for plastic bottles is 150 million units per year, which is about 30 plastic bottles per resident in Kyrgyzstan (Financial Portal Akchabar №1, 2019). In terms of polyethylene bags, 3,000 tonnes are imported from China annually (Samat, 2020), and a similar amount is being produced by 20 companies domestically (Mamataliev, 2020; Baltabaev, 2020).

Plastics **production and processing** companies are mainly concentrated in the capital, with Bishkek and Issyk-Kul Region being the most waste intensive (National Statistical Committee of the Kyrgyz Republic, 2021). At least one company exports produced bottle preforms to Kazakhstan, Tajikistan, and Uzbekistan (55%), importing its plastic pellets for further manufacturing from China (Financial Portal Akchabar №1, 2019).

Overall solid waste management: Of the approximately 400 landfills in Kyrgyzstan, most have developed out of informal dumpsites that have then be declared official landfills by the local authorities. They occupy more than 600 hectares of land (Asanakuniva, 2022). The number of unofficial landfills and dumpsites keeps growing, and in the capital Bishkek alone it is four times that of the official ones. The problems with unregulated and unmanaged waste disposal are manifold, starting with the fact that hazardous substances are disposed of together with the regular municipal solid waste (Oznobikhina, 2022). In 2019, 22 million Euros from international grants and the European Bank for Reconstruction were dedicated to building and running a new processing and sorting facility and a new sanitary landfill close to Bishkek that have not been built to date (July 2022). Because of the Covid-19 pandemic and for political reasons, the construction of the new landfill and the closing and burying of the old one are now planned to be completed by 2025 (Oznobikhina, 2022).

Per capita production of (plastic) waste: Each resident of Kyrgyzstan on average produces and disposes of 211 kilograms of waste per year by various estimates. There is no accurate data on the amount of waste due to the lack of a system for registering the waste removed and disposed of in landfills. In the landfills of large settlements in the country, 20% of the waste is plastic (The Ministry of Economy of the Kyrgyz Republic, n.d.) and around 40-50% of the volume of waste in Bishkek is packaging materials (Liven. Living Asia, n.d.).

Plastic waste management: Persisting hindrances to successful waste management are missing infrastructure, low separation rates, low public awareness and an ever-increasing mass of plastic waste. Medical waste and waste from personal protective gear, most of which consists of polymers, has added an additional burden on Kyrgyzstan's already malfunctioning waste management system (Patricia Bi Yi Wong).

Collection: The recyclable waste collection chain, including that of plastics, often begins with primary collection by destitute people, in municipal waste containers or in landfills. The collected material is further sold to intermediaries - informal waste collection points that are not registered and do not pay taxes. In 2018, according to unofficial data, there were about 100 non-registered waste collection points in Bishkek alone. Waste is then bought by collectors, who deliver it to recycling companies. Collection and sorting of municipal waste is also done by employees of the municipal enterprise for sanitary cleaning of the city, forming an additional source of income (Abduvaitova, 2018). Overall, about 700-1000 people are involved in collection of recyclable waste at the dumpsite serving Bishkek each year (CEMI, 2012). Cooperation between the HoReCa

(Hotel, Restaurant, Catering) segment and plastic recycling companies has also been observed, such as the Inon Foundation's Sota project, which currently serves 20-30 businesses, mostly hotels and restaurants, and collects various types of waste. In addition, some waste collection companies have installed containers to collect plastic bottles, such as the Begrin Company.

Informal sector: The informal sector plays a major role in collection and further processing of recyclables. Though the informal waste workers live under precarious conditions – oftentimes on or in close proximity to the vast landfills and thus exposed to health hazards – they are not willing to hand over their jobs to the municipalities. Reasons for this are that most of the informal waste pickers are uneducated and would not easily find another living but also that it is lucrative to skim through the debris for valuable materials, at least compared to other jobs that would not require an education (Rickleton, 2010).

Recycling: Many plastic processing companies recycle PET bottles into flakes, which are then exported to other countries. Besides this, recycling companies also produce solar collectors, building materials for heating systems, sacks, pipes, basins and buckets needed in households, hangers, etc. for the domestic market (Asanakuniva, 2022).

Waste imports / exports: After China has closed their markets for plastic waste imports, Kyrgyzstan has become one of the major importers of plastic waste. It is expected that much of this waste is openly burned (WECF, 2019). Recycled material in the form of flakes is exported to countries such as Russia, Kazakhstan and Uzbekistan (Financial Portal Akchabar №1, 2019; Abduvaitova, 2018).

Policy: Despite the existing number of policies, such as the Law of the Kyrgyz Republic On Production and Consumption Waste, the Procedure for Production and Consumption Waste Management in the Kyrgyz Republic, the Presidential Decree of March 19, 2021 "On measures to ensure environmental safety and climate sustainability" and the Program of Development of the "green" economy of the country for 2019-2023 aimed at regulating waste management, Kyrgyzstan has no specific national policy on solid municipal waste management and measures (Oznobikhina, 2022). Therefore, more than 70% of waste suitable for recycling and disposal is still dumped in landfills (The Ministry of Economy of the Kyrgyz Republic, n.d.). One of the latest parliamentary initiatives is a draft approved in the first reading on a ban on the production and import of plastic bags by 2024. The law introduces a fine for importing and production of polyethylene bags (Mamataliev, 2022).

National action plan: There is no national action plan for plastic (waste) management in Kyrgyzstan.

Bans on single-use plastics: News agencies have reported that there is an idea floating of a ban on thin (<20 microns) plastic bags. It has to date neither been confirmed nor implemented (Eurasianet, 2019).

EPR: The country has no special law on Extended Producer Responsibility (EPR). However, the EPR is reflected in the program of "Green" Economy Development as a goal in the introduction of modern economic mechanisms of waste management into the regulatory legal framework. It is planned to be carried out through changes and amendments in the legislation for the development of:

i. A system of tax incentives and preferences to stimulate environmental entrepreneurship and environmental protection activities;
ii. A system of preferential credits to support business plans of investment projects related to waste management and recycling;
iii. State/municipal order for products from secondary raw materials and is to be implemented by the fourth quarter of 2023 (The Ministry of Economy of the Kyrgyz Republic, n.d.; The ministry of economy of the Kyrgyz Republic).

References

Abduvaitova, A. 2018, August 24. *Миллионы в мусорных баках. Как в Бишкеке зарабатывают на отходах, не доводя до полигона [Millions in waste garbage cans. How Bishkek makes money on waste without taking it to a landfill].* https://kaktus.media/doc/378749_milliony_v_mysornyh_bakah._kak_v_bishkeke_zarabatyvaut_na_othodah_ne_dovodia_do_poligona.html

Asanakuniva, S. 2022, June 13. *В Кыргызстане обсуждают значимость утилизации отходов [The importance of waste utilization is discussed in Kyrgyzstan]*. Retrieved from Anadolu Agency.

Baltabaev, R. 2020, January 6. Сокращение потребления одноразового пластика в Кыргызстане [Reducing the consumption of disposable plastic in Kyrgyzstan]. *Radio Ayattyk*. (A. Samat, Interviewer). https://rus.azattyk.org/a/plastic_kyrgyzstan_blog/30362635.html

CEMI. 2012, October. *Kyrgyz Republic: Bishkek Solid Waste - Feasibility Study. Environmental and Social Impact Assessment.* Central European Management Intelligence, Bishkek. https://www.ebrd.com/documents/environment/esia-41712-esia.pdf

Eurasianet. 2019, April 17. Kyrgyzstan: Officials float idea of plastic bag ban. *Eurasianet*. https://eurasianet.org/kyrgyzstan-officials-float-idea-of-plastic-bag-ban

Financial Portal Akchabar №1. 2019, September 26. *Кто и как производит в Кыргызстане пластиковые бутылки? [Who produces plastic bottles in Kyrgyzstan and how?]*. https://www.akchabar.kg/ru/article/business/kto-i-kak-proizvodit-v-kyrgyzstane-plastikovye-butylki/

Liven. Living Asia. No Date. *LIVEНЬ | БИШКЕК, ДЕНЬ ПЕРВЫЙ | СОРТИРОВКА МУСОРА [LIVEN | BISHKEK; Day One | Waste separation]*. (Л. L.-o. ecomagazine, Producer). https://livingasia.online/portfolio/live_sortirovka_musora_bishkek/

Mamataliev, M. 2020, February 14. В КР один покупатель использует около 180 пакетов в год [One customer in the Kyrgyz Republic uses about 180 bags a year]. *Television and radio broadcasting company "NTS"*. https://www.youtube.com/watch?v=56t2V1tLmbI

Mamataliev, M. 2022. Повсюду пакеты. Получится ли отказаться от пластика? (видео) [Bags everywhere. Will we be able to give up plastic? (video)]. *Television Channel NTS*. http://ru.nts.kg/povsudu-pakety-poluchitsya-li-otkazatsya-ot-plastika-video/

National Statistical Committee of the Kyrgyz Republic. 2021. *Окружающая среда в Кыргызской Республике. Статистический сборник 2016-2020 [Environment in the Kyrgyz Republic. Statistical Digest 2016-2020].* http://www.stat.kg/media/publicationarchive/3b14c243-e1c2-43d8-a647-46bf65fad902.pdf

Oznobikhina, L. A. 2022. Analysis of indicators of the ecological state of the Kyrgyz Republic. *IOP Conference Series: Earth and Environmental Science. Sci. 1045 012041* . doi:10.1088/1755-1315/1045/1/012041

Rickleton, C. 2010, November 9. Kyrgyzstan: Bishkek confronts a waste management dilemma. *Eurasianet*. https://eurasianet.org/kyrgyzstan-bishkek-confronts-a-waste-management-dilemma

Samat, A. 2020, January 6. *Сокращение потребления одноразового пластика в Кыргызстане [Reducing the consumption of disposable plastic in Kyrgyzstan]*. Radio Ayattzk. https://rus.azattyk.org/a/plastic_kyrgyzstan_blog/30362635.html

Siddiqi, K. 2021, December 27. World's most polluted city. *The Express Tribune*. https://tribune.com.pk/story/2335760/worlds-most-polluted-city

The ministry of economy of the Kyrgyz Republic. No Date. *План мероприятий по реализации Программы развития «зеленой» экономики в Кыргызской Республике на 2019-2023 годы [Action Plan for the implementation of the Green Economy Development Program in the Kyrgyz Republic for 2019-2023]*. Kyrgyzstan. https://mineconom.gov.kg/froala/uploads/file/846f0735815d5771d13eb7b401026eeed9e0fe43.pdf

The Ministry of Economy of the Kyrgyz Republic. No Date. *Программа развития «зеленой» экономики в Кыргызской Республике на 2019-2023 годы [«Green» economy development program in the Kyrgyz Republic for 2019-2023]*. Kyrgyzstan. https://mineconom.gov.kg/froala/uploads/file/91827e3f83f5a04a78e2dc827b7ef37f9a69b383.pdf

WECF. 2019, May 9. Was hat Gender mit Chemikalien zu tun? [What does gender have to do with chemicals?]. https://www.wecf.org/de/was-hat-gender-mit-chemikalien-zu-tun/

Maldives

Geography: Maldives is an island state southwest of India in the Indian Ocean. The Maldives are comprised of 1,992 islands scattered in the ocean, covering an area of 90,000 square kilometres (Maldives Planet, n.d.). The dry land, which comprises only 298 square kilometres, can be grouped into 26 ring-shaped atolls consisting of several small islands (visitmaldives, n.d.). Only 187 islands are inhabited, of which 180 islands are designated as tourist resorts (Ministry of Tourism Maldives, 2021).

Plastic producers/manufacturers: In the Maldives, polyethylene terephthalate (PET) bottles are the only type of packaging manufactured locally. All other packaging, both in the form of semi-finished products and finished products (packaged goods), is imported by Fast Moving Consumer Goods (FMCG) wholesalers and retailers. Manufacturers based in the country include *Malé* Aerated Water Company (MAWC), *Malé* Water and Sewerage Company (MWSC Pvt. Ltd), Island Beverages Maldives (IBM), Happy Market Pvt. Ltd and Handy Water.

Plastic waste management: The total plastic waste generated constitutes an estimated 43,134 tonnes per year (MOPA, 2021). The majority of this waste, together with other non-separated household waste, is collected by the state-owned Waste Management Cooperation (WAMCO) and shipped to Thilafushi, an artificial island created in the 1970s for disposal of waste (Hawwa, 2016). Only a minimal amount of plastic waste is collected separately and sent for recycling. Parley for the Ocean1 is the only NGO covering this waste disposal stream. This lack of management of plastic waste results in an estimated loss of US$700,000 per year for WAMCO, which could make a profit, for example, by adequately collecting and recycling high quality recyclable PET bottles (MOPA, 2021).

Per capita production of (plastic) waste: On the one hand, waste is generated by the local population and, on the other hand, waste is also produced by the tourists. While local households from the *Malé* area generate 1.7 kg per person per day and people from other inhabited islands account for much less, the waste generated by tourists is estimated at about 3.5 kg per guest per night (Moosa, 2021). Plastic waste accounts for 10% of household waste and 5% of resort and hotel waste in the Maldives. In contrast, organic waste makes up the bulk (80%) of the waste generated in the country (ibid.).

Overall solid waste management: The small size of the islands and their geographical distribution make the search for a sustainable solution to waste management particularly challenging. Uncontrolled open burning and the dumping of organic components, therefore, continue to be the main strategies of waste disposal (Ministry of Environment and Energy, 2016). Currently, waste management in the Maldives is designated in seven zones. The government plans to develop an Island Waste Management Centre (IWMC) or an Island Resource Management Centre (IRMC) in each island (Ministry of Environment, Energy and Water, 2008; Moosa, 2021). Consequent plans also include the development of regional waste management or sorting facilities at a regional level for multiple zones. The local councils manage the waste generated on the local islands in the Maldives. Settlements with large populations (over 10,000 inhabitants) have been designated as cities, in which the waste management responsibility has been handed over to the Waste Management Cooperation. Although regulations for resorts require them to have waste treatment equipment, such as a bottle crusher, metal compactor and incinerator, many resorts still ship their unsegregated waste to Thilafushi because they have insufficient capacity to deal with the volume of waste, and recycling is not economically viable (Hawwa, 2016).

Collection rate: In Maldivian cities, only about 1% of all plastics are collected separately from other waste streams, by NGOs or other organisations involved with cleaning (MOPA, 2021). This leads to a large proportion of plastic, especially the highly recyclable PET bottles, ending up in the marine environment.

1 https://www.maldives.parley.tv/

Informal sector: Prior to 2015, the Maldives had an informal sector where expatriate workers engaged in the collection of household waste. After 2015 that practice was outlawed and WAMCO was given the monopoly for waste management in the capital and other cities. There used to be trash pickers who picked out recyclables, such as high value metals, from the dump site in Thilafushi but that practice too was stopped by the government after WAMCO was given the operational responsibility of managing the Thilafushi dump site (Ministry of Environment and Energy, 2016).

Recycling: In the absence of an in-country material recovery or recycling facility, the recycling rates for waste being generated in the Maldives are very low. Paper is not recycled, and only small fractions of valuable plastics and other solid waste are shipped to India (Kapmeier & Gonçalves, 2018).

Waste imports: No waste is imported by the Maldives from other countries as the country itself cannot manage its own waste volumes. Instead, it has to export recyclables as there is not enough space on the Maldivian islands to build large sorting and recycling facilities.

Waste exports: Nearly 100% of the demand for recyclable waste is located abroad as the Maldives lacks sorting and reprocessing industries. Export destinations for recyclables are Sri Lanka, India, Republic of Korea, Malaysia, Taiwan and China. However, it cannot be guaranteed that these will remain the main export regions after China and India have already taken tough regulatory measures regarding plastic imports, making export to these countries more complicated or even impossible. The state has so far not supported the export of recyclable materials, which is why the recycling industry in the Maldives remains a private-sector led business to this day. In general, it is difficult to export recyclables from the Maldives and make a profit, as there exist major bottlenecks in logistics, and transporting waste from one island to another is very costly. Nevertheless, of the country's total exports in 2019, which were an equivalent of US$3.03 billion, the export of plastics and rubber accounted for about US$251,628 (MOPA, 2021). The fact that only 488 tonnes of the 43,134 tonnes of plastic waste generated in the year was exported shows how inefficiently the export of plastic products is managed (MOPA, 2021). The export of plastics is largely limited to valuable materials such as PET, and is mainly carried out by the local organisation Parley for the Oceans Maldives.

Policy: Waste management regulations began in 1993 with the promulgation of the Environmental Protection and Preservation Act (EPPA) (Government of Maldives, 1993), which establishes an overarching framework for environmental protection and preservation. Additionally, the National Waste Management Policy issued in 2015 (Ministry of Environment, Climate Change and Technology, 2015; Ministry of Environment, Energy and Water, 2008) sets out the responsibilities of local authorities, provides a plan for the establishment of regional waste management centres, and includes 10 waste management principles aimed at raising awareness on plastic segregation and incorporating the 3Rs (reduce, reuse, recycle) concept. While there appears to be a solid foundation of regulations and policies for waste management, there is currently a lack of clear delineation of roles and responsibilities, which is a major problem on the way to a more sustainable waste management behavior.

National action plan: The Strategic Action Plan 2019-2023 (Government of Maldives, 2019) sets out key development goals and priorities for the Maldives, including a chapter on "Waste as a Resource". It identifies four key actions related to waste management, including promoting waste as a valuable resource, improving chemical and hazardous waste management practices, reducing plastic pollution by phasing out single-use plastic (SUP), and instilling environmental values in society.

Bans on single-use plastics: The Single-use Plastic Phase-out Plan 2020-2023 (Ministry of Environment, 2020) aims to reduce and phase out the use and impact of SUP in the Maldives through a mix of policy instruments including bans, taxes and incentives, and extended producer responsibility (EPR). Under the phase-out plan, the first effective ban on several SUP items took effect in July 2021, when eight items were banned from entering the country via imports. Further production and import bans will be implemented until 2023.

EPR: The country drafted its first waste management bill in January 2021, which includes the principles of Extended Producer Responsibility. Although Article 15 of the Waste bill states that "the management of waste generated from products imported and produced in the Maldives must be responsibility of the manufacturer" (Ministry of Environment, Climate Change and Technology, 2022), it still leaves room for the definition of items covered by EPR, the type of responsibility to be borne by producers and importers, and the definition of parties who will be held accountable under the regulation. In order to implement an effective EPR system, a clear deadline for implementation still needs to be established, and the roles and responsibilities of each party need to be clearly defined.

References

Government of Maldives. 1993. Environmental Protection and Preservation Act of Maldives. http://extwprlegs1.fao.org/docs/pdf/mdv18342.pdf

Government of Maldives. 2019. *Strategic Action Plan 2019-2023*. https://storage.googleapis.com/presidency.gov.mv/Documents/SAP2019-2023.pdf

Hawwa, N. 2016. Implementing a deposit refund system for P.E.T bottles in the Maldives: An ex-ante analysis of political feasibility based on the models of Kiribati and Palau. PhD thesis, The International Institute for Industrial Environmental Economics, Sweden. https://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=8895457&fileOId=8895458

Kapmeier, F., & Gonçalves, P. (2018). Wasted paradise? Policies for Small Island States to manage tourism-driven growth while controlling waste generation: The case of the Maldives. *System Dynamics Review*, *34*(1-2), 172–221. https://doi.org/10.1002/sdr.1607

Maldives Planet. no date. *Geographical facts about Maldives*. https://www.maldivesplanet.com/about/maldives-geography

Ministry of Environment. (2020). *Single-use Plastic Phase-Out Plan: 2020-2023*. https://mymaldiveshome.environment.gov.mv/storage/2021/06/20210425-pub-single-use-plastic-phase-out-plan.pdf

Ministry of Environment and Energy. 2016. *Second National Communication of Maldives to the United Nations Framework Convention on Climate Change*. https://www.environment.gov.mv/v2/wp-content/files/publications/20161030-pub-second-national-comm-oct2016.pdf https://doi.org/10.4135/9781452218564.n706

Ministry of Environment, Climate Change and Technology. 2015. *National Waste Management Policy*. http://www.environment.gov.mv/v2/wp-content/files/publications/20151104-pub-natl-waste-mgmnt-policy-2015.pdf

Ministry of Environment, Climate Change and Technology. (2022). *Waste management bill - for public comments*. http://www.environment.gov.mv/v2/wp-content/files/2022/comments/20220127-waste-management-bill-for-public-commenting.pdf

Ministry of Environment, Energy and Water. 2008. *National Solid Waste Management Policy for the Republic of Maldives*. https://www.mvlaw.gov.mv/pdf/gavaid/minHousing/28.pdf#:~:text=This%20Solid%20Waste%20Management%20Policy%20has%20been%20developed,industrial%20and%20commercial%20activities%20undertaken%20in%20the%20Maldives.

Ministry of Tourism Maldives. 2021. *Tourism Yearbook 2021*. https://www.tourism.gov.mv/dms/document/2f11c02edec48b0fa37014122e7c39e6.pdf

Moosa, L. (2021). *Maldives National Waste Accounts 2018 & 2019*. National Bureau of Statistics Maldives.

MOPA. 2021. Socio-economic impact assessment of the use of PET in the Maldives. Maldives Ocean Plastics Alliance. https://mopa.mv/wp-content/uploads/2021/02/PET_use_SocioEconomic_impact_Maldives.pdf

visitmaldives. no date. *Geography*. https://visitmaldives.com/en/maldives/geography

Nepal

Geography: Nepal is a land-rimmed country with densely populated tropical lowlands and hills (with an altitude range from 610 to 4,876 metres), and scarcely populated mountains. Mount Everest is also located in Nepal. More than 6,000 rivers make up a 45,000-km network of waterways, fed by glacial snow-melt in the Himalayas as well as from monsoon rains (WEPA, 2022).

Plastic producers / manufacturers: According to the Centre for Environmental Justice (CEJ, 2021), plastic producing industries in Nepal are negligible, and those that exist focus on producing plastic bags. An estimate by the Government of Nepal from 2019 suggests there were close to 240 plastic-related businesses. Import of plastics increased by 60% between 2017 and 2021, with import value rising from of US$372,239 to US$627,959. During the same time, exports remained the same (ITC, 2022a), although both imports and exports decreased considerably during the Covid-19 pandemic in 2020 and 2021.

Per capita production of (plastic) waste: The World Bank estimated in 2019 that Nepalis, on an average, generate 0.3 kg of solid waste per day, of which plastics are 13% (World Bank, 2020).

Overall solid waste management: Solid waste management differs between rural and urban areas. Rural areas manage to separate biodegradable waste from non-biodegradable waste, burying, composting or directly feeding it to their animals. Non-biodegradable solid waste is often recycled at the source and reintroduced in the market (World Bank, 2020). Meanwhile, three-quarters of urban municipalities in Nepal do not undertake separation of solid waste into the different waste streams (UNDP-NP, 2020). To the contrary, urban waste is predominantly dumped in the open and not controlled, let alone brought to a landfill site. Reasons are that there are not sufficient or adequate sites for disposal, paired with a simultaneous lack of financial capacity to improve the situation (ibid.). Tourism also poses a challenge to several rural areas that find themselves unable to cope with the additional brought-in waste streams.

Plastic waste management: According to the UNDP Accelerator Lab Nepal, plastic waste accounts for 11-16% of overall Nepalese solid waste. While many municipalities see a need for separate management of plastic waste, only a few of them have separate plans, policies or programmes (ibid.). Often plastics, like paper, are burnt in backyards or on the streets, thereby releasing toxins and greenhouse gases (World Bank, 2020)

Collection rate: Overall, most mountain areas of Nepal lack collection of solid waste. As mentioned, only a quarter of municipalities undertake a separate collection of plastic waste. Most of the separation takes place at the collection points in separate garbage containers. Lumbini Province separates more than average. Some mountain regions have started to implement door-to-door collection systems or to collect solid waste on-time. Such practices are organised largely by the private sector or in partnership with local governments.

Informal sector: As is common in most developing countries, the collection, sorting, and trading of waste is largely undertaken by informal waste workers who earn low wages, have poor working conditions and a very low standing in society despite their extensive and important service to settlements and the environment. Estimates by the World Bank suggest that the Kathmandu Metropolitan City, most of the more than 15,500 waste workers are from the informal sector.

Recycling: Recycling activities take place at the municipal level, predominantly in the provinces of Lumbini and Bagmati. Overall, only 40 of the 285 surveyed Nepalese urban municipalities reported that they engage in recycling. These activities are undertaken in partnership with a) the private sector, b) other government entities, or seldom c) with NGOs (UNDP-NP, 2020). Since there is usually no municipal-level recycling system, households separating their recyclables usually sell them directly to the informal sector (World Bank, 2020).

Waste imports / exports: The Nepalese Government has banned the import of recycled plastic pellets, plastic scrap and second-hand goods through the Export and Import (Control) Act, 1957 (CEJ, 2021). Nonetheless,

small amounts of waste, parings and scrap of plastics are still imported from India, China and Thailand, and exported to India (ITC, 2022b).

Policy: Several laws in Nepal govern solid waste management, including plastics:

- Solid Waste Management Act 2011
- Solid Waste Management Rules 2013
- Local Government Operation Act 2015 (LGO Act)

A new act on solid waste management is under development (World Bank, 2021).

Furthermore, the National Environment Policy and Environment Protection Act 2019 (EPA) aims at preventing harmful impacts on the environment and biodiversity (UNDP-NP, 2020).

Unfortunately, like in other developing countries, enforcement and implementation of laws, policies and regulations remain insufficient (World Bank, 2020).

Ban on single-use plastics: While the Plastic Bag Regulation and Control Directive 2011, prohibits the production of thin plastic bags, in 2015 Nepal also banned the "import, storage, sale, distribution and use of plastic bags up to 20x35 inches in size" (CEJ, 2021, p. 5) of 40 microns thickness or less. However, there seems to be an inconsistency between national and regional regulations, as different municipalities have divergent rules on the colours or thickness of plastic bags they still allow or ban (Bharadwaj, 2016). There are signs that the plastic ban is repeatedly not implemented or enforced (Online Khabar, 2022).

Extended Producer Responsibility: There is no direct EPR scheme for plastics but the Industrial Enterprise Act (IEA) from 2016 requires businesses to direct 1% of their profits annually to corporate social responsibility. These need not be related to plastics.

References

Bharadwaj, B. 2016. Plastic bag ban in Nepal: Enforcement and effectiveness. Working Paper. https://www.researchgate.net/publication/306039486_Plastic_Bag_Ban_in_Nepal_Enforcement_and_Effectiveness

CEJ. 2021. *Breaking the plastic cycle in Asia: Asia Pacific regional case study*. Centre for Environmental Justice. https://foeasiapacific.org/wp-content/uploads/2021/08/Breaking-the-Plastic-Cycle-in-Asia.pdf

ITC. 2022a. Trade map: List of importing markets for a product exported by Nepal. Product: 39 Plastics and articles thereof. [Link]

ITC. 2022b. Trade map: List of importing markets for a product exported by Nepal. Product: 3915 Waste, parings and scrap, of plastics. [Link]

Onlinekhabar. 2022. Failing to implement the plastic bag ban repeatedly, govt warns of action once again. 26 July 2022. https://english.onlinekhabar.com/plastic-bag-ban-warns-of-action.html

UNDP-NP. 2020. Exploring the avenues of plastic waste management. United Nations Development Programme, Nepal. https://www.undp.org/nepal/publications/exploring-avenues-plastic-waste-management

WEPA. 2022. *Nepal: State of Water Resources*. Water Environment Partnership in Asia. http://www.wepa-db.net/policies/state/nepal/state.htm

World Bank. 2020. *Assessment of SWM services and systems in Nepal: Policy advisory note*. https://openknowledge.worldbank.org/bitstream/handle/10986/34680/Strategic-Assessment-of-Solid-Waste-Management-Services-and-Systems-in-Nepal-Policya-Advisory-Note.pdf?sequence=1&isAllowed=y

Pakistan

Geography: The Islamic Republic of Pakistan is a densely populated country in South Asia. It shares its borders with Iran, Afghanistan, India and China, and its more than 1,000-km-shoreline runs along the Arabian Sea and the Gulf of Oman. With the Indus Basin Irrigation System, comprising six major rivers, storage reservoirs, canals and more than 120,000 watercourses, Pakistan has the world's largest adjoining irrigation system. From its source in the Hindu Kush to its delta by the Arabian Sea, the Indus travels 3,200 km. It is the main transporter of plastic waste across the country (World Bank, 2022) and into the ocean (SWITCH Asia, 2022).

Plastic producers / manufacturers: Pakistan produces small amounts of Polystyrene (PS), Polyvinyl Chloride (PVC) and Polyethylene Terephthalate (PET) but imports other types of polymers. Whereas plastic production reached 431,000 tonnes in 2016, in 2019 it had already reached 624,200 tonnes, with faster growth expected in the future. Imports of plastics for the plastics manufacturing industry increased sharply in 2021, suggesting that the industry (currently estimated to comprise close to 8,000 units) is also growing steadily (ibid.).

Per capita production of waste: Municipal solid waste amounted to 48 million tonnes in 2016, of which less than 50% was segregated at source. Of the segregated waste only 9% was plastic waste. Meanwhile, in 2017, the per capita consumption of plastics was 7.3 kg (UNCRD, 2019). According to the World Bank, in 2017, Pakistan generated 30.76 million tonnes of municipal solid waste, or 0.43 kg per capita per day (World Bank, 2022). Although this seemingly suggests that the per capita production of municipal solid waste has drastically decreased, it is more likely that estimates differ due to the fact that municipal solid waste is not well monitored or tracked.

Overall solid waste management: Solid waste is barely managed in Pakistan; it is most often dumped or burned in the open (SWITCH Asia, 2022). Reasons for such insufficient waste management systems are low awareness levels in the society as well as the lack of financial, technical and technological capacities. Unfortunately, the already deficient waste management systems are expected to come under more pressure from the predicted growth in urbanisation as well as economic and population growth linked with exponential increases in waste generation. The World Bank expects an increase of 36% in municipal solid waste generation by 2030 (from 2016), equivalent to 42 million tonnes. In a business-as-usual scenario, this rate would be even higher between 2030 and 2050, reaching 57% or 66 million tonnes (World Bank, 2022).

Plastic waste management: The proportion of plastics in municipal solid waste is growing in Pakistan. While in 2016 plastic waste was estimated to be 2.8 million tonnes annually, current estimates by the World Bank put it at 3.12 million tonnes (ibid.). Plastic waste from Pakistan is estimated to contribute to 0.09% of the global plastic ocean runoff (ibid.).

Collection rate: In Pakistan, as in many other developing countries, the primary focus of waste management is on collection and not on either treatment or disposal of waste (ibid.). Nevertheless, the existing waste collection remains insufficient. While in 2015, only 57% of urban areas benefitted from collection services, 95% of rural areas went without them. Research from the World Bank in 2021 suggests that these figures have not improved considerably since then (ibid.).

Recycling: The recycling rate of municipal solid waste in Pakistan amounts to only 8%. The remaining waste, including plastic waste, is dumped, burned or disposed of at non-sanitary landfills. A large part of the recycling business is conducted in the informal sector (ibid.).

Informal sector: The informal sector is involved in almost all aspects of solid waste management both at the individual level and as small businesses. They collect, sort and recycle dry waste, thereby generating more than US$1 billion in revenue. While their work takes a heavy burden off the municipalities. a negative side effect is that only the most valuable polymers (e.g., PET) are collected. Less easy to recycle plastics, such

as low-density PE (LDPE) remain in the waste and leach into the environment causing pollution. Although for the workers, working in informal waste management generates an income, but at the cost of having no social security, no health insurance nor any sort of representation (ibid.).

Waste imports / exports: Regardless of the provisions made by the Basel Convention's import policy order, noncertified shipments of plastic waste from countries in the European Union, and from Canada, Saudi Arabia and the United Kingdom enter ports in Pakistan. In fact, the imports increased by almost one-third after China banned plastic waste imports in 2018. In the first quarter of 2020, Pakistan's plastic-waste imports amounted to 65,000 tonnes (ibid.).

Policy: Since 2013, Pakistan has a law that prohibits nondegradable plastic products, thus promoting oxo-biodegradable products and materials (Karasik et al., 2020). According to the Prohibition of Non-degradable Plastic Products (manufacturing, sale and usage) Regulations 2013, an oxo-biodegradable plastic product contains an additive that supports oxo-biodegradation (such as transition metal salts, but not cobalt), which needs to come from a registered supplier (Government of Pakistan, 2013). Unfortunately, like in many other developing countries, laws and regulations in Pakistan often lack implementation and enforcement. Furthermore, since national-level policies are not concerned with the issue of solid waste management, the responsibility lies with local governments. Policies, laws and mechanisms concerning solid waste management are scattered across local governments and, therefore, lack integration and a common approach as well as a particular focus on plastics (World Bank, 2022).

National action plan: Though not solely focusing on plastics, the 2018 Clean Green Pakistan Program aims at strengthening institutions, including those responsible for solid waste management (ibid.).

Bans on single-use plastics: There is a theoretical ban on the manufacture and imports of disposable, nondegradable plastics (UNCRD, 2019). In addition, several local governments have banned thin plastic bags (<15 microns), although these bans have not been very effective (World Bank, 2022).

Extended producer responsibility: No effective, legally binding Extended Producer Responsibility (EPR) scheme exists in Pakistan. However, according to the relevant regulation, manufacturers with an exemption are required to have a recycling plan (ibid.). One case of a functioning voluntary EPR approach, though not focused on plastics, is the one for Tetra Pak (a multi-layered packaging consisting of paper, PET and aluminium). Tetra Pak entered into a collaboration with Green Earth Recycling (GER, the market leader in recycling) in Lahore, providing the machinery for recycling. The raw material (used Tetra Paks) is bought from informal waste pickers and companies (ibid.).

References

Government of Pakistan. 2013. Prohibition of Non-degradable Plastic Products (manufacturing, sale and usage) Regulations 2013. The Gazette of Pakistan. Government of Pakistan

Karasik, R., T. Vegh, Z. Diana, J. Bering, J. Caldas, A. Pickle, D. Rittschof & J. Virdin. 2020. *20 years of government responses to the global plastic pollution problem. The plastics policy inventory*. Durham, NC: Duke University

SWITCH Asia. 2022. Limiting plastic pollution. *Learning experiences from Islamabad and the relevance of EU policies for Pakistan*. https://www.switch-asia.eu/resource/limiting-plastic-pollution/

UNCRD. 2019. *State of plastics waste in Asia and the Pacific - Issues, challenges and circular economic opportunities*. United Nations Centre for Regional Development. https://www.uncrd.or.jp/content/documents/7838Report-State%20of%20Plastics-rev-20%20August%202019.pdf

World Bank. 2022. *Plastic waste: A journey down the Indus River Basin in Pakistan*. Washington, DC. https://openknowledge.worldbank.org/handle/10986/37501

Sri Lanka

Geography: Sri Lanka is an island state located southwest of India in the Indian Ocean. With a shoreline of 1,340 km, the country has ample contact points with marine litter. However, most of the debris washing up on the shorelines is carried there through Sri Lanka's 149 rivers

Plastic producers / manufacturers: There are more than 400 plastic manufacturers in Sri Lanka. All of them import plastic resin and the needed additives from abroad as there are no plastic producers in Sri Lanka (MoE, 2021). Currently, Sri Lankan plastics manufacturers have been processing up to 140,000 tonnes of plastics annually, a figure growing at an average of 10 to 12% each year (CEJ, 2021). Two-thirds of the plastic products manufactured in Sri Lanka are for the export market (ibid.).

Per capita production of (plastic) waste: According to the Ministry of Environment (MoE) of Sri Lanka (2021), an average of 10,768 tonnes of waste is generated every day, of which only about one-third is collected. Of the collected waste, approximately 6.9 % are plastics. The exact amount of per capita production of waste depends on the standard of living, varying between 0.4 and 1 kg per day (Nijamdeen et al., 2020; MoE, 2021).

Overall solid waste management: The majority of solid waste (60%) is generated in the most densely populated Western Province (CEJ, 2021). Figures of mismanaged (i.e., not collected or treated) waste vary between 68% (MoE, 2021) and 84% (Nijamdeen, 2020). Not surprisingly, solid waste management lies within the regulatory power of municipalities and urban authorities (CEJ, 2021), which are guided by the National Policy for Solid Waste Management (2007). Since its amendment in 2018, the Policy includes a financing mechanism based on the polluter pays principle (in this case, a collection fee for households) (CCET, 2020).

Plastic waste management: Plastic waste management in Sri Lanka starts with collection of the materials mainly by waste workers in the informal sector. Unfortunately, only one-third of the plastic waste that is generated is being collected. Of this, a large portion is being openly dumped and only a fraction is being brought to recycling facilities or to landfills. With 1.59 million tonnes of mismanaged plastic waste per year, Sri Lanka was one of the five infamous countries with the highest plastic pollution rates globally in 2017 (Nijamdeen et al., 2020). Almost two-thirds of the mismanaged plastic waste is openly burned, the rest is either self-disposed (e.g., buried on the premises, 21%), illegally dumped (11%) or directly discarded into waterways (1%) (MoE, 2021).

Collection rate: Only one-third of the plastic waste generated in Sri Lanka is being collected. The majority of the material collected is polyethylene terephthalate (PET) because there is no demand for other types of recycled plastics in the supply chain (ibid.).

Recycling: Recycling is undertaken either by plastics manufacturers themselves (so-called in-house recycling) or by large-scale professional recyclers. Both types of recyclers focus predominantly on mechanical recycling, and less on chemical or biological recycling. Though the MoE estimates that, overall, 12% of plastic waste is being recycled, they also estimate that the Western Province that produces the most waste, recycles as little as 3% of their overall municipal solid waste (ibid.).

Informal sector: As is common in most developing countries, the collection, sorting and trading of waste is largely undertaken by informal waste workers who work for low wages, in poor working conditions, and have a very low standing in society despite their extensive and important service to settlements and the environment. They retrieve waste from a multitude of sources -- households, industrial sites, dumpsites, streets etc. (ibid.). In Sri Lanka, the informal sector is the main provider of feedstock to the local large-scale recyclers.

Waste import / export: The National Waste Management Policy, from 2018, bans the import of post-consumer waste to Sri Lanka. An earlier Act (the 1980 National Environment Act 47) already prohibited waste imports, except for those previously approved by the Central Environment Agency (CEA) (CEJ, 2021).

Policy: The legal framework in Sri Lanka enshrines environmental protection in Articles 27 and 28 of the national constitution. Waste management provisions are directed at the local authorities by the Urban Council Ordinance No. 61 of 1947 as well as the Provincial Councils Act No. 42 of 1987 (MoE, 2021). In addition, there are several bans on single-use plastic products (see below). Overall, like many other developing countries, Sri Lanka faces a lack of enforcement capacity of its laws and regulations.

National Action Plan: In 2021, the MoE published the National Action Plan on Plastic Waste Management 2021-2030 (NAPPWM). Its development started in 2019 and was supported by the Institute for Global Environmental Strategies (IGES) Centre Collaborating with UNEP on Environmental Technologies (CCET), United Nations Environment Programme (UNEP), and the Ministry of the Environment of Japan (MOEJ). The process involved stakeholder consultations as well as studies. The NAPPWM is based on the waste hierarchy according to the 3Rs (reduce, reuse, recycle). It comprises several goals: 1) Inventory and monitoring (1 goal, 4 activities), 2) Reducing (6 goals, 31 activities), 3) Reusing (1 goal, 3 activities), 4) Recycling (2 goals, 8 activities), 5) Final disposal (1 goal, 2 activities), and 6) Cross-cutting issues, such as education, training, research and development (3 goals, 15 activities), health and safety (1 goal, 2 activities) and community participation (1 goal, 2 activities). Goals and activities range from phasing out of single-use plastic products, reduction of plastic content in products and establishing a pilot Extended Producers Responsibility (EPR) scheme, to the establishment of a financial mechanism with private sector participation. The plan has a multi-sectoral, multi-stakeholder approach that clearly assigns activities to different ministries and agencies. To date, there is no data available as to its success. Nonetheless, there are provisions for monitoring and review of the action plan, and the first (short-term) implementation phase ends in 2022.

Ban on single-use plastics: Since 2017, the manufacture, sale, exhibition or use of the following single-use plastic items are banned:

- Food wrappers
- High density polyethylene bags
- Expanded polystyrene food containers, plates, cups and spoons

In addition, the use "of all forms of polyethylene, polypropylene, polyethylene products or polypropylene products as decoration in political, social, religious, national, cultural or any other event or occasion" is also banned (CEJ, 2021). Regardless of these rather extensive regulations, their enforcement and implementation remain a challenge.

Extended Producer Responsibility: There is currently no existing approach to EPR in Sri Lanka. However, Goal 7 of the National Action Plan sets out to "introduce legal requirements to operationalize EPR and a pilot implementation for selected products by 2022", which suggests that an EPR is currently under development or at least being piloted.

References

CCET. 2020. *Effective plastic waste management in Sri Lanka*. IGES CCET. https://ccet.jp/sites/default/files/2021-01/EFFECTIVE%20PLASTIC%20WASTE%20MANAGEMENT%20IN%20SRI%20LANKA_0.pdf

CEJ. 2021. *Breaking the plastic cycle in Asia: Asia Pacific regional case study*. Centre for Environmental Justice. https://foeasiapacific.org/wp-content/uploads/2021/08/Breaking-the-Plastic-Cycle-in-Asia.pdf

MoE. 2021. *National Action Plan on Plastic Waste Management 2021-2030*. Ministry of Environment, Sri Lanka. https://apps1.unep.org/resolution/uploads/national_action_plan_on_plastic_waste_management.pdf

Nijamdeen, T.W.G.F.M., T. Atugoda, P. B. T. P. Kumara, A. J. M. Gunasekara & M. Vithanage. 2020. Status of particulate marine plastics in Sri Lanka: Research gaps and policy needs. In *Particulate plastics in terrestrial and aquatic environments*. https://www.taylorfrancis.com/chapters/edit/10.1201/9781003053071-22/status-particulate-marine-plastics-sri-lanka-mafaziya-nijamdeen-thilakshani-atugoda-terney-pradeep-kumara-gunasekara-meththika-vithanage