

4. OVERVIEW OF E-WASTE STATISTICS

This chapter will provide the main figures on the four indicators introduced in Chapter 2. Methodology for all the countries in the scope of the project:

- Indicator 1: EEE POM.
- Indicator 2: E-waste generated.
- Indicator 3: E-waste managed in an environmentally sound manner (also referred to as e-waste formally collected in the statistics guidelines) according to ESM standards for e-waste (e.g. under e-waste legislation).
- Indicator 4: E-waste collection rate (indicator 3 divided by indicator 2).

A. EEE POM and E-waste Generated

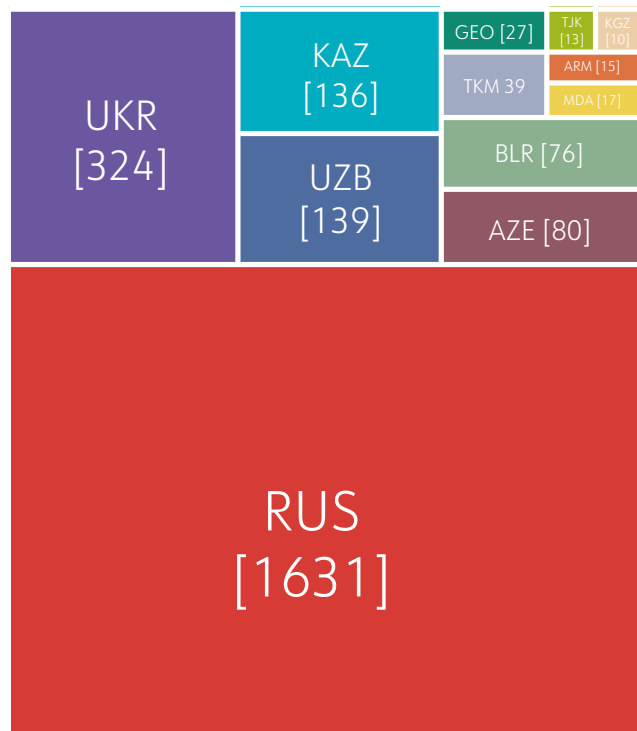
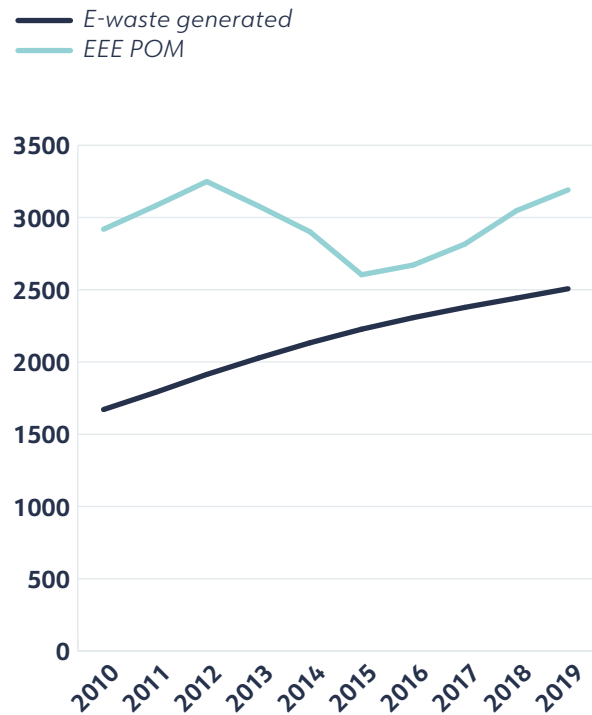
The Regional EEE POM increased by 10 percent from 2.9 Mt (10.4 kg/inh) in 2010 to 3.2 Mt (11.0 kg/inh) in 2019. Belarus and Russia have a large domestic production of EEE, while the other 10 countries mostly import EEE. E-waste generation in the region increased by 50 percent to 2.5 Mt (8.7 kg/inh) in 2019.

The total EEE POM shows fluctuations between 2010 and 2019. It peaked in 2012 with 3.3 Mt (11.5 kg/inh) and decreased thereafter, due to the financial crisis, to 2.6 Mt (9.2 kg/inh) in 2015. Subsequently, the total EEE POM recovered steadily to 3.2 Mt (11.0 kg/inh) in 2019 (Figure 5). Belarus and Russia are two countries in the region that manufacture EEE. Belarus manufactured 131 kt of EEE, and Russia produced 2 Mt in 2019; both countries also export EEE. Other countries in the region have limited domestic manufacturing of EEE and rely on imports.

The amount of e-waste generation shows a steady increase from 1.7 Mt (6.0 kg/inh) in 2010 to 2.5 Mt (8.7 kg/inh) in 2019, an average increase per annum of 80 kt. All data per country is shown in ANNEX D.

The CIS+ region generated 2.5 Mt of e-waste in 2019, representing a growth rate of 50% since 2010.

Figure 5. EEE POM and e-waste generated in the region (kt) for 2010-2019 (top), and the absolute amounts on e-waste generated in 2019 (bottom)

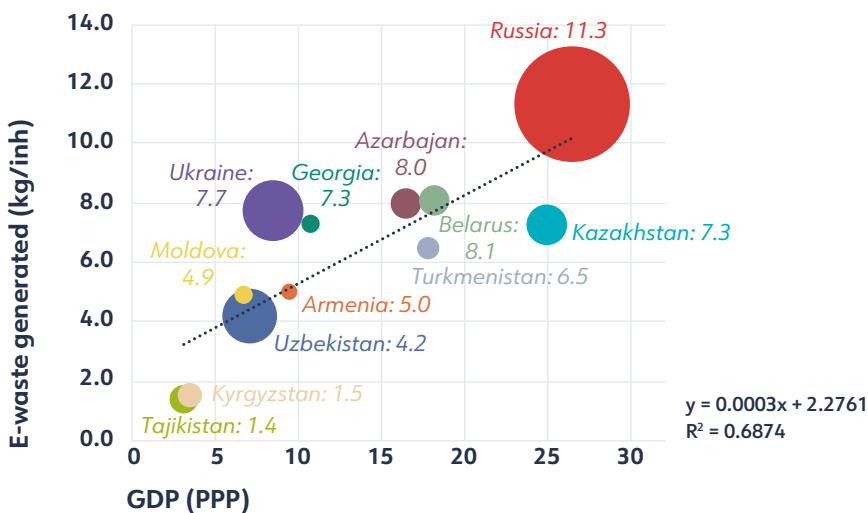
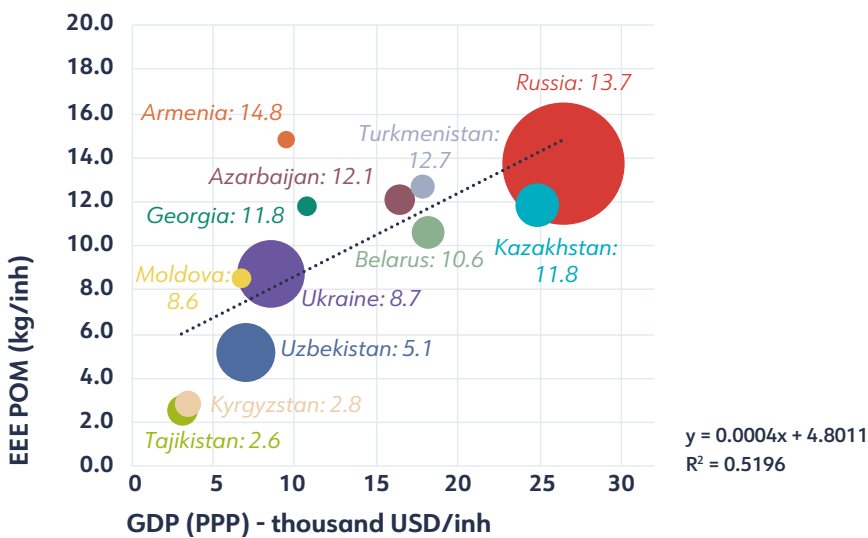


E-waste generation and EEE POM show a positive correlation with the PPP. Both the absolute and per inhabitant amount of e-waste generation is highest in Russia.

The EEE POM in the region varied from 2.6 kg/inh for Tajikistan to 18.4 kg/inh for Armenia (Figure 6). There is a weak correlation ($R^2 = 0.52$) between EEE POM in kg/inh and the purchasing power parity per inhabitant (PPP) of the countries, indicating that the EEE POM increases

when the PPP increases. Similar variations and trends were observed for e-waste generation. The amount of e-waste generated per inhabitant (Figure 6) was highest in Russia (11.3 kg/inh) and lowest in Tajikistan (1.4 kg/inh), and it showed a strong positive correlation ($R^2 = 0.68$) with PPP. The largest generator of e-waste is Russia, generating 2.0 Mt of e-waste in 2019, followed by Ukraine (366 kt) and Kazakhstan (222 kt).

Figure 6. EEE POM (top) and e-waste generated (bottom) in the region (USD/inh) for 2019. The bubble's size is indicative of the number of inhabitants



B. E-waste Categories

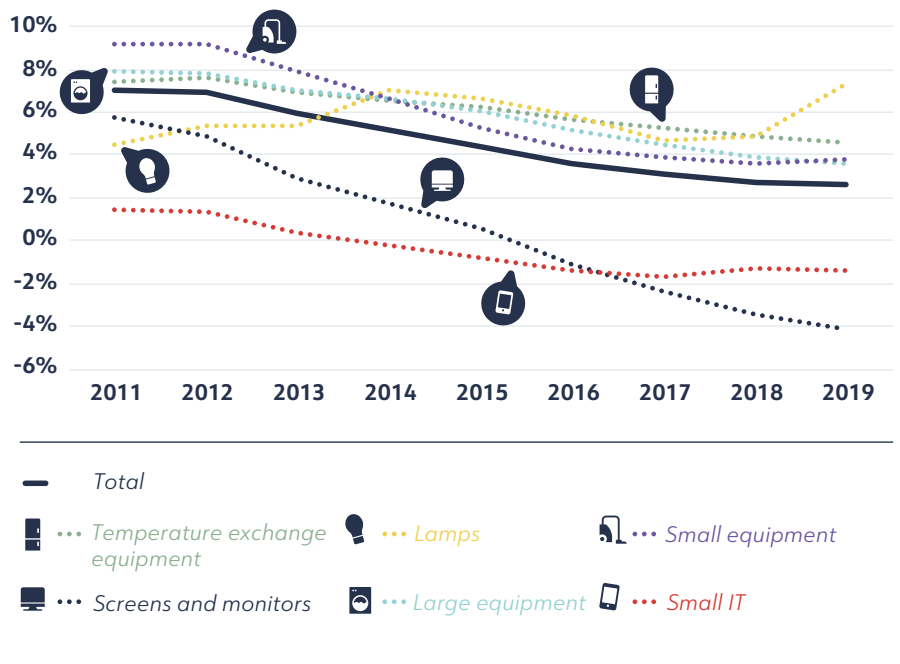
Temperature exchange (Cat. I) and large and small equipment (Cat. IV and V) have the highest share of e-waste generation at 77 percent. The annual growth rate declines for nearly all categories, but stays positive – except for screens and monitors and small IT equipment, which show negative growth rates.

When disaggregating the e-waste generated quantities into the six e-waste categories, the largest category (Cat.) is small equipment (30 percent), followed by large equipment (29 percent) and temperature exchange equipment (23 percent). The large equipment and temperature exchange equipment categories are comprised of large and bulky appliances with a relatively high unit weight and long lifespans that are commonly used, but both categories are characterised by a possession rate of no more than 1-2 appliances per household. By contrast, small equipment has a relatively smaller unit weight. Such items are sold in higher numbers and have shorter lifespans, and so are more frequently discarded. The smallest category in terms of e-waste generation is lamps (2 percent), which are used in every household, but which have a very small unit weight.

All annual growth rates (for EEE) are positive, except for the categories for screens and monitors and small IT.

These categories are decreasing in EEE POM in mass because the past decade has witnessed a technological change in computer and television screens, with nearly all applications of cathode ray tube (CRT) screens having been replaced with flat panel displays. The decrease of small IT equipment can be explained by miniaturisation, which is the trend of manufacturing smaller electrical and electronic products and devices. Though most growth rates are positive, a declining trend has been observed; the pace of increase slows down over time (Figure 7) for most products.

Figure 7. Year-to-year e-waste growth rate (top) and e-waste generated disaggregated per category (bottom) in the region



C. Environmentally Sound Management of E-waste

The CIS+ countries collected and managed a total of 79 kt (0.3 kg/inh) of e-waste in 2019. This is a collection rate of 3.2 percent as compared to e-waste generated. E-waste collection for ESM takes place in Belarus, Kazakhstan, Russia, and Ukraine. There are also countries with no collection (e.g. Georgia, Kyrgyzstan) due to lack of an organised separate collection infrastructure for e-waste and/or absence of official data. Belarus has the highest e-waste collection rate of 33.6 percent and collection per inhabitant of 2.7 kg/inh, followed by Kazakhstan (8.8 percent; 0.6 kg/inh).

The collection rate of e-waste was 3.2 percent in 2019.

The total e-waste managed in an environmentally sound manner in the region is 79 kt (0.3 kg/inh) (Figure 8). Most of this e-waste is collected in Belarus (25 kt), Kazakhstan (12 kt), and Russia (41 kt). Per inhabitant, collection is highest in Belarus, which collects 2.7 kg/inh of e-waste. In relation to the amount of e-waste generated in the country, i.e. the e-waste collection rate, Belarus collects 31.6 percent of the e-waste for environmental sound treatment. This is the highest achieved recycling rate in the CIS+ region and indicates that Belarus has a well-functioning e-waste collection and management system in relation to other countries in the region. Kazakhstan collects 8.8 percent of e waste, and Russia 2.5 percent. These percentages indicate that infrastructures are in place, but are not covering the entire population of the country. Other countries are either not collecting e-waste on a large scale or could not supply data, due to classifications incompatible with the ones used in this report. There was no statistically relevant correlation observed between PPP of countries and their e waste collection, so it is not shown.

Figure 8. E-waste collected for ESM (kg/inh) (left) and e-waste collection rate (right) for 2019

