1. INTRODUCTION

A. What is E-waste?

Electrical and Electronic Equipment (EEE) contains all products and parts that run on a power or battery supply. Upon being discarded by its owner, EEE becomes e-waste, which contains both valuable and hazardous materials.

EEE is a term used to define the wide variety of products having circuitry or electrical and electronic components that need a power or battery supply in order to perform their functions. EEE includes almost any such products available in households and businesses – including laptops, mobile phones, fridges, washing machines, dishwashers, cooking and kitchen appliances, many toys, servers, and musical instruments. The use of EEE is increasing rapidly alongside societies' general development and the rapid development of information and communications technology (ICT), and EEE is spreading quickly in emerging sectors such as electric transport, clean energy production, and smart cities, which base their services on EEE and sensors.

E-waste is discarded products or components that need a power or battery supply in order to perform their functions.

When an EEE item is discarded, it becomes Waste Electrical and Electronic Equipment (WEEE), also known as electronic waste, or e-waste. According to the StEP (Solving the E-waste Problem) Initiative, e-waste is: 'a term used to cover items of all types of EEE and its parts that have been discarded by the owner as waste without the intention of re-use' [1]. The International Telecommunication Union (ITU) and the legally binding definition of the Basel Convention also define e-waste or WEEE as 'electrical or electronic equipment that is waste, including all components, sub-assemblies, and consumables that are part of the equipment at the time the equipment becomes waste'[(1)].

Each type of e-waste has a specific size, hazardous components, and valuable materials that affect the way it must be collected, treated, recycled, or disposed of in an environmentally sound manner.

[(1)] Recommendation ITU-T L.1031/L.1032 and Technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment, especially regarding the distinction between waste and non-waste under the Basel Convention (2014).

E-waste encompasses a large variety of discarded products and is categorised into six main categories.

E-waste may be categorised in different ways, including by product type or product size. The European Union's WEEE Directive and the E-waste Statistics Standards Guidelines [2] use a treatment-oriented categorisation, with the following six main categories:

1. **Temperature exchange equipment**, including fridges, freezers, air conditioners, and heat pumps.

2. **Screens and monitors**, comprising liquid crystal displays (LCD) and light-emitting diode (LED) televisions and monitors, laptops, and tablets.

3. **Lamps**, including LED lamps, high-intensity discharge lamps, and compact and straight tube fluorescent lamps.

4. **Large equipment**, including dishwashers, washing machines, ovens and central heating systems, large printing systems, and photovoltaic panels.

5. **Small equipment**, comprising microwaves, grills and toasters, personal care products, speakers, cameras, audio sets and headphones, as well as toys, household tools, and medical and monitoring systems.

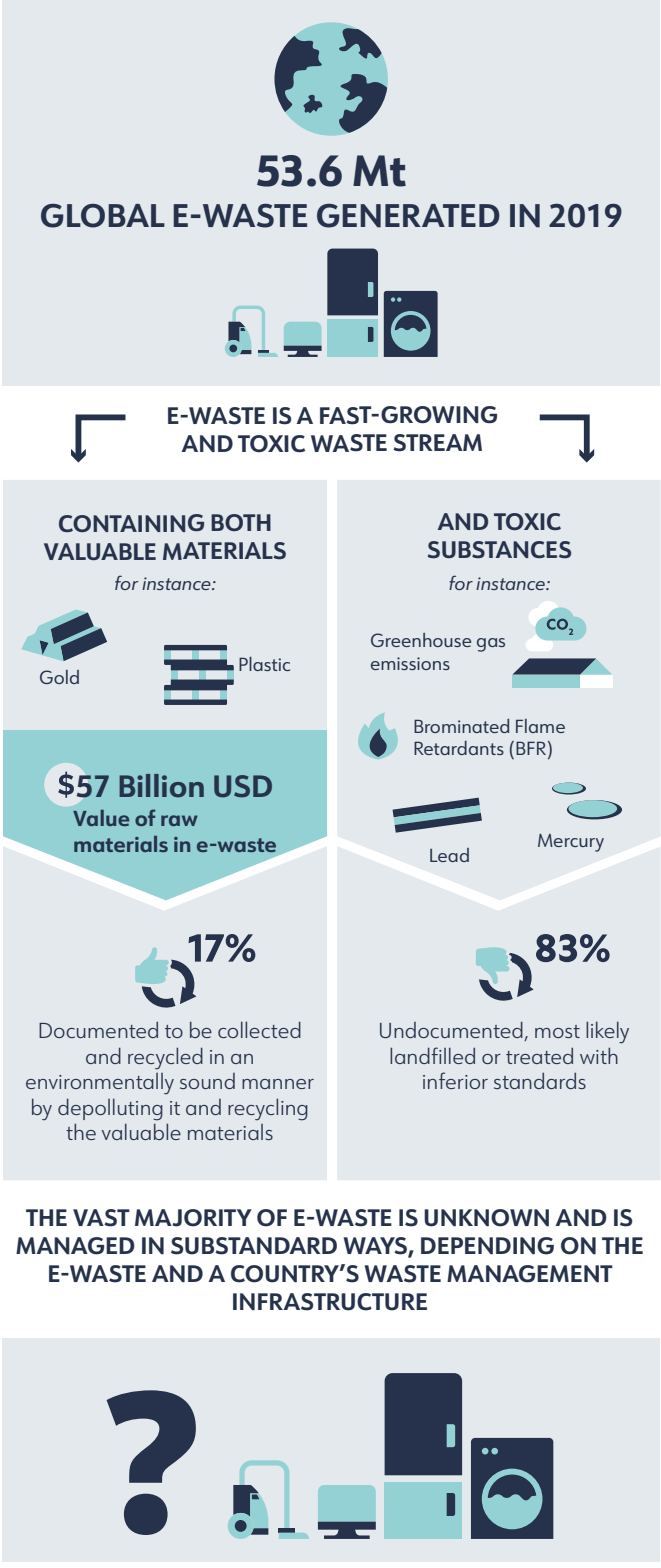
6. **Small IT and Telecommunication equipment**, including desktop personal computers, printers, mobile phones, cordless phones, keyboards, routers, and consoles.

B. E-waste: An International Issue

E-waste is one of the fastest-growing waste streams. Globally, only 17 percent is officially collected and recycled, wasting valuable materials and causing damage to the environment [3].

EEE, including equipment used for information and communication technology services, offers great opportunities for the world's development, guaranteeing higher living standards and satisfying several needs. However, discarded equipment such as phones, laptops, sensors, TVs, washings machines, air conditioners, fridges, and many other items that contain harmful substances pose considerable risks to human health and the environment, especially when managed inadequately.

E-waste constitutes one of the fastest-growing streams of solid waste. *The Global E-waste Monitor* (2020) highlighted that a record 53.6 million metric tonnes (Mt) of e-waste were generated in 2019 – an increase of 21 percent since 2014 [3]. This increase is linked to the growing number of people using EEE worldwide as well as to a constant technological development and the phasing out of old technologies – i.e. shorter product lifecycle and designs that do not support repair or reuse. Only 17 percent is reportedly collected and recycled in an environmentally sound manner. The majority of e-waste that is not recycled or disposed of in an environmentally sound manner usually ends up in landfills, mixed with other waste streams. Consequently, valuable resources, such as precious metals and rare earth elements, are wasted, and hazardous substances are released into the environment in ways that pose risks to human health and the environment.



Source: The Global E-waste Monitor [3]

Managing e-waste requires specific legislation and collection infrastructure, but it typically is poorly regulated and enforced at the global level.

As a complex and relatively recent waste stream, countries need to introduce specific legislation to enforce sound environmental treatment and management of e-waste. In 2019, 78 countries (comprising 71 percent of the global population) were covered by a legislation, policy, or regulation on e-waste, which is a significant development from the 67 countries (66 percent of the population) that were identified in 2017. Nevertheless, in most cases, policies are neither legally binding nor appropriately supported financially, which has been found to be less compelling for ensuring their implementation and compliance. Also, most legislative instruments concentrate on improving e-waste management, but both the reduction of the volumes of e-waste generated and management practices, such as repair and reuse of EEE, have not yet been properly examined.

E-waste management is monitored in the United Nations' Sustainable Development Goals under SDG 12 on Sustainable Consumption and Production.

In 2015, the United Nations Member States adopted the 2030 Agenda for Sustainable Development. This included the 17 Sustainable Development Goals (SDGs) and 169 targets for ending poverty, protecting the planet, and ensuring prosperity for all people over a 15-year span. Increasing e-waste generation and adopting improper and unsafe treatment and disposal approaches pose significant challenges to human health and the environment, as well as to the achievement of the SDGs. E-waste management is closely related to many SDGs, such as SDG 8 on decent work and economic growth, SDG 3 on good health and well-being, SDG 6 on clean water and sanitation, and SDG 14 on life below water. Considering the high raw material demand for EEE production, e-waste also relates to the SDG indicators on the material footprint (SDGs 8.4.1 and 12.1.1) and the SDGs on the domestic material consumption (SDGs 8.4.2 and 12.2.2). Consequently, e-waste remains a global challenge, not only because of its increasing generation worldwide, but also because the proper treatment and the prevention of its overall generation requires active engagement of a diverse set of actors, sometimes going beyond national borders. As such, the management of e-waste is monitored in SDG 12 on responsible consumption and production, under indicator 12.5.1 (national recycling rate), and under indicator 12.4.2 on hazardous waste generation, which has a specific sub-indicator defined [3], [4].

ITU's Connect 2030 Agenda set targets of increasing the global e-waste recycling rate to 30 percent (Target 3.2) and raising the number of countries with e-waste legislation to 50 percent by 2023 (Target 3.3)[2].

[2] ITU's Connect 2030 Agenda (PP-18 Resolution 200, Rev. Dubai, 2018) https://www.itu.int/en/mediacentre/backgrounders/Pages/connect-2030-agenda.aspx.

C. Framework Conditions of the Commonwealth of Independent States (CIS) plus Georgia

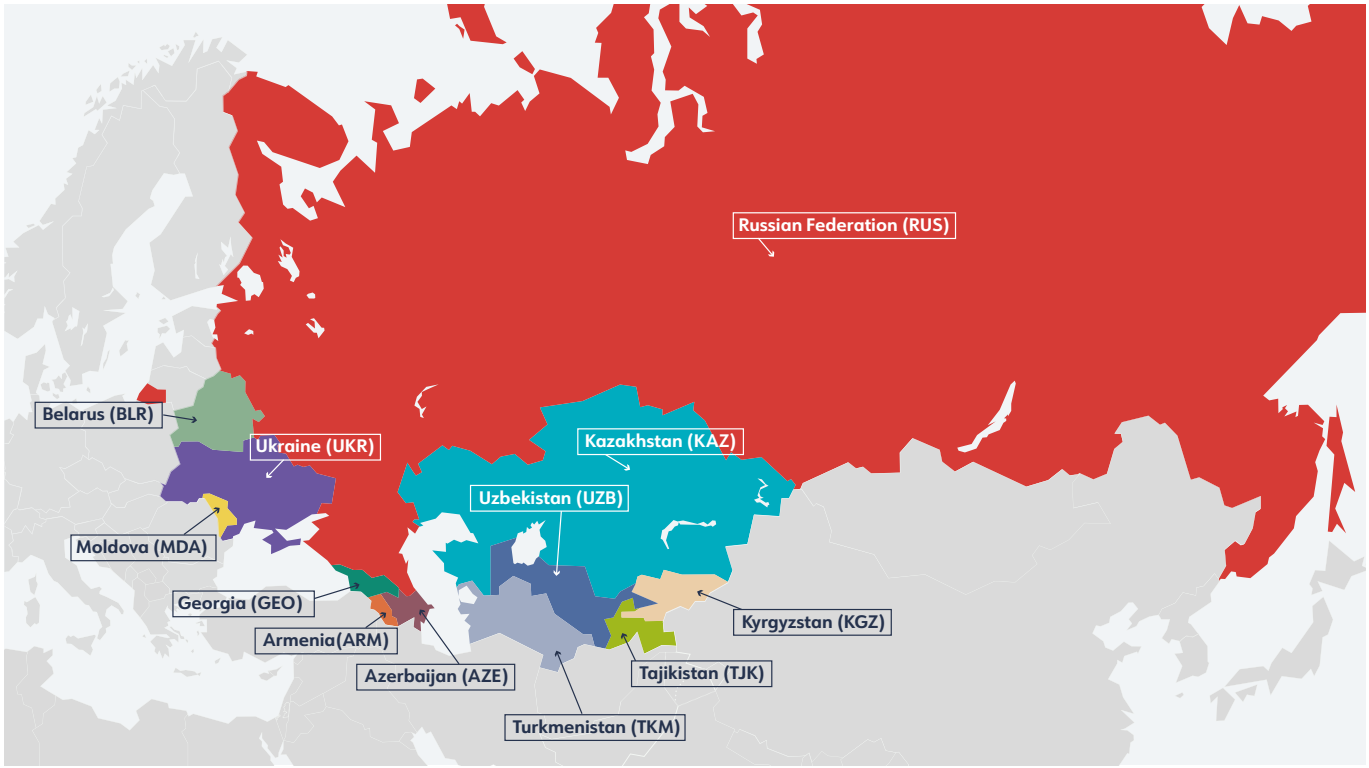
This report covers twelve countries that were formerly part of the Soviet Union. Eleven are members of the Commonwealth of Independent States (CIS), which is a regional intergovernmental organisation.

This Regional E-waste Monitor (REM) of the Commonwealth of Independent States (CIS) + Georgia, (REM CIS+) covers the following countries: Armenia (ARM), Azerbaijan (AZE), Belarus (BLR), Georgia (GEO), Kazakhstan (KAZ), Kyrgyzstan (KGZ), Moldova (MDA), Russia (RUS), Tajikistan (TJK), Turkmenistan (TKM), Ukraine (UKR), and Uzbekistan (UZB).

Azerbaijan, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, and Uzbekistan are currently active Member States of the CIS. The CIS coordinates its members' policies regarding their economies, foreign relations, defence, immigration policies, environmental protection, and law enforcement. It regulates the relationship and cooperation between the majority of states that were formerly part of Union of Soviet Socialist Republics (USSR). CIS is not a supranational entity; it operates on a voluntary basis.

Within the CIS, there is enhanced economic cooperation for five countries in the Eurasian Economic Union (EAEU).

Within the CIS, there is a greater economic cooperation between Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia, which are Member States of the Eurasian Economic Union (EAEU). The EAEU is an international organisation of the regional economic integration with international legal personality and is established by the Treaty for the EAEU. The EAEU provides freedom of movement of goods, as well as services, capital, labour, and implementation of coordinated, uniform policy in economic sectors.

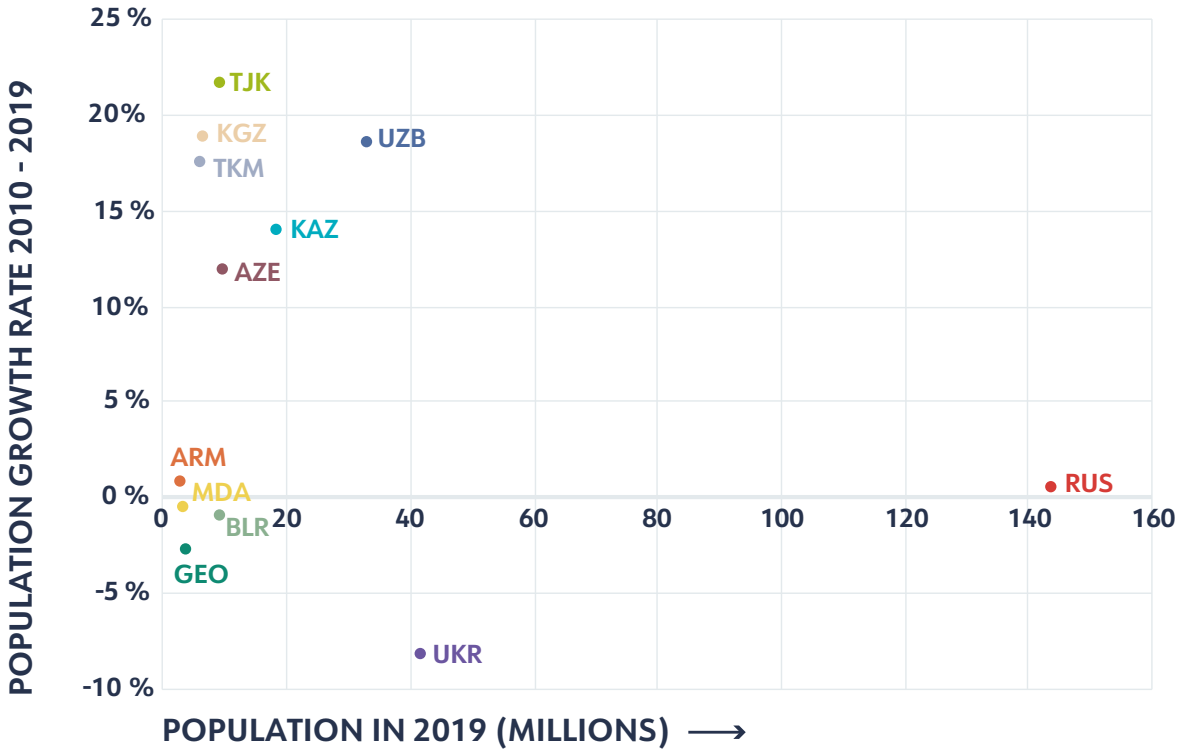


The CIS region has 289.2 million inhabitants. Russia is the most populous country in the region, while the countries in Central Asia have the highest population growth.

In term of demographics, the entire CIS region has 289.2 million inhabitants (inh) (2019). The most populous country is Russia, with 143.9 million inhabitants in 2019, followed by Ukraine (41.8 million) and Uzbekistan (33.2 million) (see Figure 1). The population growth rate between 2010 and 2019 averaged 4 percent. The Central Asian region (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) has the highest regional population growth rate, with each country averaging more than 14 percent. Belarus, Georgia, and Ukraine all have declining populations. The Ukrainian population has been declining since the 1990s, due to a high emigration rate, high death rates, and low birth rates. Meanwhile, demographics in Tajikistan are characterised by rapid growth and a young population.

The CIS+ region has 289.2 million inhabitants.

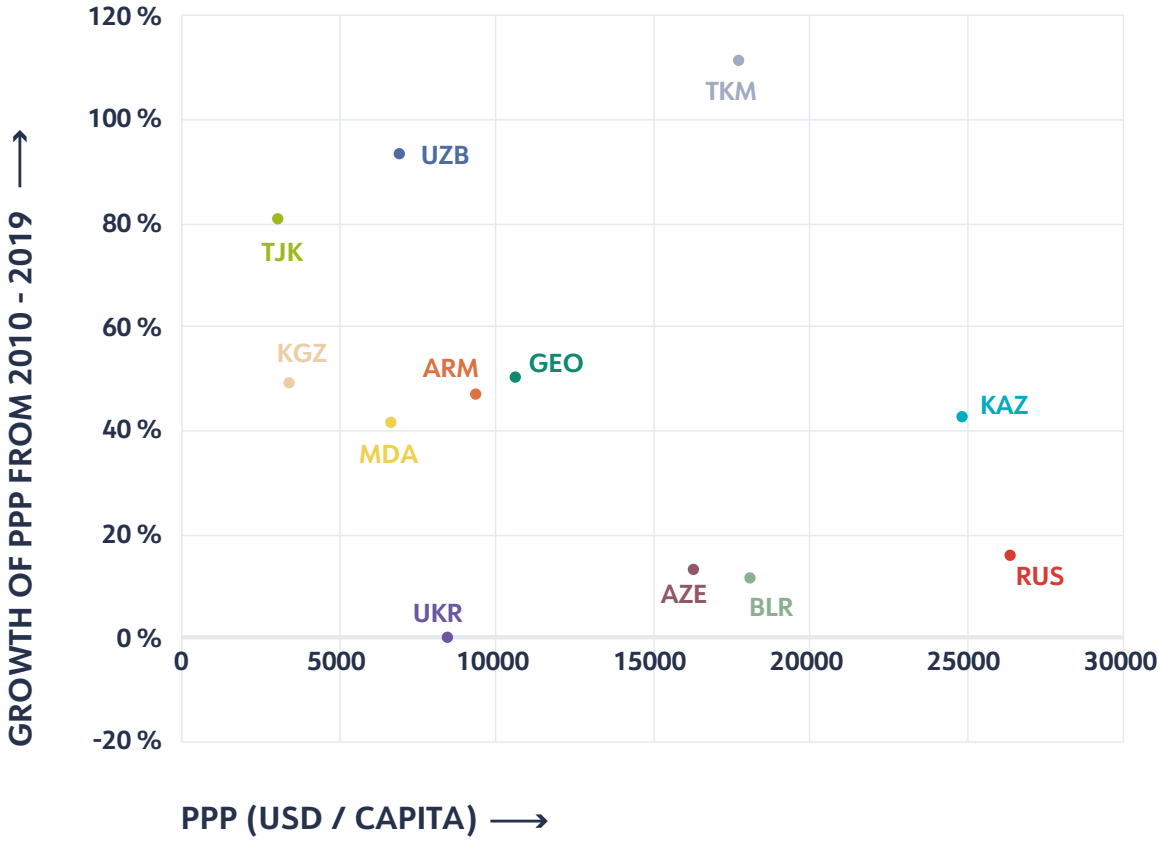
Figure 1. Demographic overview of the region



The difference in purchasing power per inhabitant is large among countries in the region, and a few countries have between 2 and 5 percent of their population below the poverty line. However, almost all of the population has access to electricity.

In terms of socioeconomic development, the region has a very wide range of product purchasing power parity (PPP)[3] , ranging from $3,000 USD/year in Tajikistan to $26,000 USD/year in Russia (see Figure 2)[4]. The entire region shows a growth of PPP. According to the World Bank classification, 7 countries are upper-middle income countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Russian, and Turkmenistan), 4 are lower-middle income countries (Kyrgyzstan, Moldova, Ukraine, and Uzbekistan), and 1 is a low income country (Tajikistan). Regarding poverty, available data for 2015 shows that just three countries – Armenia, Georgia, and Tajikistan – have between 2 and 5 percent of the population living below the poverty line and that they attained nearly 100 percent population access to electricity (not shown).

Figure 2. Economic overview of the region - showing the PPP in $1,000 USD/capita (2019) on the x-axis and the total PPP growth rate from 2010 to 2019 on the y-axis



[3] The purchasing power parity (PPP) is an economic indicator that allows researchers to compare economic productivity and standards of living between different countries and locations. It can be used to adjust the gross domestic product (GDP).
[4] UNDESA 2019.

D. Background to the Report

Although some assessments, projects, and initiatives on e-waste have taken place in recent years, a comprehensive overview and analysis of the e-waste situation in the region is still lacking. So, this report aims to fill the gap by presenting the past and current e-waste situation in the 12 countries under the scope of the project. This Regional E-waste Monitor in the Commonwealth and Independent States plus Georgia presents a summary of the regional e-waste status and has been prepared via collaboration with the governments, national statistical offices, and countries' independent experts. This summary allows for international comparisons and contributes to the development of more effective e-waste management systems in the region.