



## Executive Summary

This study continues the work started within the frame of the “Regional Workshop on Capacity Building for the Environmentally Sound Management of Electrical and Electronic Equipment Waste through Regional Cooperation between countries in Eastern Europe and Central Asia” organized with the support provided by the Secretariat of the Basel Convention in July 2016 in the Kyrgyz Republic. It was decided to undertake this study after the discussion of the problems affecting the countries of Central Asia in the area of e-waste management. This project is funded by the European Union and is a part of the technical assistance programme of the Secretariat of the Basel Convention. It is implemented by the civil society “Independent Ecological Expertise”.

Currently, none of the Central Asian countries has a well-formed and efficiently functioning e-waste management system. But there is a need and opportunities for formulating and implementing common approaches to safely manage this type of waste both at the level of the individual countries and at the regional level.

As the world practice shows, the introduction and development of management system of electrical and electronic equipment waste require a comprehensive and structured approach based on the relevant legislation and a developed infrastructure.

In order to define a strategy and implement the most appropriate e-waste management system, it is necessary to understand the current conditions at the local, national or regional level. The assessment of the situation related to e-wastes allows to obtain the necessary knowledge about the current situation and the available capacity for integrated approach.

In this view, the initiative to carry out this study is determined by the following challenges present in the countries of the region:

- different degrees of development and implementation of regulatory and legal framework;
- different financial capacity;
- lack of reliable statistics regarding generation and recycling of EEE to develop economic forecasts and etc.;
- there is no infrastructure or underdeveloped infrastructure for collection and recycling of EEE and different levels of their organization;
- a large share of e-waste recycling done by the informal sector, and as a consequence, recycling operations are rather primitive.

Based on the scale and growth rates of the market regarding the electric and electronic equipment (EEE), the sharp increase in e-wastes in Central Asian states and the presence of the above-mentioned problems, it is necessary to assess current capacity in the countries in the region. This would include the understanding of the current situation with regard to legislation, identification of the participants to the process and undertaking an inventory analysis of EEE and its possible negative impact on human health and environment and socio-economic consequences.

In this regard, the purpose of this work is to provide the data available in the region to obtain knowledge of the current situation and capacities of Central Asian countries to address e-wastes management, and approbation of assessment methods presented in the manual “Electronic Waste Assessment Methodology. Teaching and reference manual” as of 2012<sup>1</sup>, which was recommended by the Secretariat of the Basel Convention.

This study is only an initial attempt to examine and conduct a preliminary assessment of current situation in the countries of Central Asia, since it is mainly based on the data available at the time when this work was performed. When assessing the stakeholders, only the results concerning the surveys in two countries (Kyrgyzstan and Tajikistan) were used; when assessing mass flows, four groups of goods were selected, which are the most common and in relation to which it was possible to collect the most detailed data.

The work was realized by civil society organizations “The Independent Ecological Expertise”, the Kyrgyz Republic and “Civil Initiatives Support Fund”, the Republic of Tajikistan, Dastgiri-Center.

In the course of the study, the methods described in the above-mentioned manual have been used as a basis.

During the first stage, **analysis of policies and legislation** of Central Asian countries was carried out. “Adviser” legal database and “Toktom” information and legal system were used to review normative legal acts effective in Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan. In order to review the legislative acts of Tajikistan it has been made use of the relevant databases available in the Republic.

The next stage - **stakeholder assessment** - was carried out only in Kyrgyzstan and Tajikistan and was based on the results of surveys conducted in these countries among importers and distributors of EEE, regular consumers, as well as repairers and recyclers of e-wastes of this group of goods. The questionnaires from the manual were used to conduct the study. Completion of the questionnaires and the consideration of the opinions coming from public and educational institutions were carried out through electronic mailings. Interviews with distributors, repairers and waste collectors were conducted directly in repair shops, places of EEE collection. In addition, observations were made on handling electronic devices in the points of their sale, collection and recycling, as well as existing informal markets intended for sale of used products.

**Mass flows assessment** is the third stage of the study. During this stage, available data was used from analytical and statistical sources for 4 groups of goods most common with consumers: refrigerators, computers, mobile phones, and mercury lamps. In addition, the availability of information on these types of products, namely production, exports and imports in both monetary and quantitative terms (mass per year) was one of the criteria for selecting the above-mentioned products.

The product groups selected correspond to the categories of the Directive of the European Parliament and the Council of the European Union # 2002/96/EU as of J27, 2003 “On electrical

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<sup>1</sup> “Electronic Waste Assessment Methodology. Teaching and reference manual” developed by EMPA have been used as a basis. The methodology was finalized as part of the project entitled “Building local capacity to address the flow of e-wastes and electrical and electronic products destined for reuse in selected African countries and augment the sustainable management of resources through the recovery of materials in e-wastes” (the Basel Convention, UNEP, 2012).

and electronic equipment waste". Table 1 lists the categories of these goods and their names in accordance with HS Classification<sup>2</sup> and codes of FEACN of the EAEU<sup>3</sup> (see Annex 1).

At the fourth stage - **assessment of impact on the environment and human health** - the available data regarding the negative impact of hazardous components of EEE was used with a focus on the activities of informal recycling sector, which is developed in the countries in question, and thus possible environmental and health impacts of informal sector were identified. In addition, the calculation was made for each component of waste of products selected for the study.

In this way, the initial assessment of e-wastes in five Central Asian countries, the framework conditions and the capacity of these countries to develop management systems have been identified. As a part of the study, a review of the national legislation was carried out to identify specific regulatory legal acts regulating e-waste management in those countries. Preliminary qualitative and quantitative assessment of groups of goods of selected categories has been carried out. Namely, it has been calculated that the current and the potential amounts of waste generation in several years will be depending on their service life. Key stakeholders involved in e-waste management have been identified for two countries: Kyrgyzstan and Tajikistan. Potential impacts of the processes related to EEE management on public health and the environment and have been assessed.

Based on the results obtained in the study it is possible to come up with the following conclusions:

- The countries of Central Asia differ in terms of area, the population, natural resources reserves, level of economic and human development and political course. Today, countries such as Kazakhstan and Uzbekistan experienced a rapid economic growth in comparison with other neighboring states. The positive aspects of economic development in Turkmenistan include the presence of large hydrocarbon reserves, the available transit potential, political stability and the continuity of the economic course. Kyrgyzstan may count on cheap labor force, favorable conditions for developing agriculture, consumer industry and tourism. This country along with Kazakhstan is a member state of the Eurasian Economic Union (EAEU) and has access to a unified market of the association. Tajikistan can count on cheap labor force, with mineral resources and a favorable climate for agricultural development. Economic growth in the region largely depends on commodity orientation of the economy and the world commodity prices;

- In Central Asian countries, as well as all over the world, the amount of electric and electronic waste is growing rapidly. For example, over the past decade, the number of computer and mobile phone users has increased dramatically. Judging by the scale and growth rates of the electronic equipment market and a sharp increase of electronic waste, in the countries of Central Asia there is a great need, and most importantly the ability to formulate and implement approaches to recycle this type of waste, based, on the one hand, on reducing the burden on the environment and the amount of waste to be disposed, and on the other hand, ensuring recovery and involvement of useful components into the secondary circulation;

- Although the legal frameworks in the area of waste management in all countries is sufficiently developed, in the practice they are not always properly enforced and require improvement, since there is a large number of various acts and regulations. Unlike other countries, Kazakhstan and Uzbekistan adopted legislation aimed at regulating the processes of EEE management, which creates prerequisites for the development of recycle industry in these

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<sup>2</sup>HS Classification – classification of goods according to the international harmonized system for description and coding of goods. HS code - Harmonized System code.

<sup>3</sup> In the EAEU, Foreign Economic Activity Commodity Nomenclature (FEACN) is applied, which almost completely coincides with HS.

countries, but the amount of collection and recycling of this type of waste is still small. The situation is complicated by the fact that a significant amount of waste is recycled in the semi-formal sector, which is common in all five countries of the Central Asian region. Many companies only recover the most commercially attractive components, and the remaining ones are dumped to municipal landfills;

- The low level of EEE collection is one of the main obstacles for the establishment of e-wastes recycling sector. Basically, all e-waste is dumped to landfill. The legislation of the countries either does not impose the obligation of consumers to transfer used equipment to licensed collectors and recyclers. On the contrary case, this norm is not sufficiently developed;

- Stakeholder assessment in Kyrgyzstan and Tajikistan revealed that so far there were no conditions for a separate collection of e-wastes and its processing, despite the sufficient awareness of stakeholders about the problems arising from unsound handling of EEE. A significant part of consumers of electrical and electronic equipment is limited to either storing it or throwing it away together with other household waste. Repairers do the same thing – the equipment that is not subject to be repaired gets to the landfill. Official waste collectors place e-wastes together with other household waste in landfills. The official recycling sector is poorly developed: for example, in Kyrgyzstan there is only one enterprise for EEE recycling. Informal recycling of electronic waste is quite a common phenomenon, since it is quite a profitable business, which is primarily due to low operating costs compared to that of official recyclers. Informal activities related to collection and recycling of e-wastes include labor-intensive and often dangerous manual dismantling of equipment using simple tools for rapid separation of materials and is mainly limited to recovering the most valuable and accessible components;

- Civil society and public organizations are important actors in this process, they often come up with initiatives that can influence policy at all levels, and their good will is a key for the success of local and national waste management strategies;

- Mass flow assessment was carried out based on four groups of electrical and electronic equipment selected for the study: refrigerators with separate doors, computers, mobile phones, and mercury lamps. It should be noted that Kyrgyzstan, Tajikistan and Turkmenistan are importers of electronic equipment selected for the study. Kazakhstan and Uzbekistan produce the selected groups of goods. But there is no statistical data broken down by years of production;

- A mass flow assessment revealed that the amount of e-waste generation for the selected categories of goods (refrigerators, computers, mobile phones, mercury lamps) in five Central Asian countries in 2016 equaled to 31,471 tons. According to the calculation, the highest amount of waste was generated in Kazakhstan amounting to 21,431 tons, the smallest amount - in Turkmenistan - 439 tons, which is directly related to the level of consumer demand for these types of goods, which depends on the purchasing power of the population for the period from 2006 to 2011. Currently, there are 49,456.6 tons of electrical and electronic equipment in five Central Asian countries for the selected category of goods. After 8-10 years, 41,261.3 tons of waste will be generated as end-of-life fridges; in 3-5 years – 7,373.7 tons of end-of-life computers, after 2-3 years - 821.5 tons of obsolete mobile phones.

Assessing the impact of the e-waste recycling sector on public health and the environment, it is found that the harm is mainly caused by informal recyclers, which includes open burning, direct melting of plastics, removal of toners, disposal of led-containing electro-ray tubes, acid treatment of printed circuit boards, and burial of other wastes containing such dangerous components as polychlorinated biphenyls and chlorofluorocarbons, directly affecting the soil or

getting into water sources. This practice poses a direct threat to the health of workers and the environment. Very often, workers in such facilities are the poor and the most vulnerable segments of the population, such as women and children.

Thus, summing up the results of the study, it should be noted that e-waste management system in the region is poorly developed and requires more attention from the governments. Efficiently operating system for EEE management as shown by the world practice, is based on the commitment of governments, the regulation of the system at legislative level, focusing on separate wastes collection in order to protect human health and preserve the environment.

To ensure a long-term sustainability of the system, apart from the different levels and actors of the process, special attention should be paid to the infrastructures, including collection, sorting, transportation, recycling, reuse and disposal, and links between different economic sectors and social issues. The positive emerging trends in Kazakhstan and Uzbekistan related to adoption of special legislative acts on e-waste management require an active law enforcement on practice. To develop the official recycling sector in the countries, incentives, economic mechanisms and a simplification of the procedures for legalization of e-waste- recycling sector are required.

## Groups of goods selected for the study

Groups of goods in accordance with the categories of the EU Directive # 2002/96/EU	Code of a group of goods according to HS Classification	Group of goods description according to HS Classification	Group of goods description according to FEACN of the EAEU
<b>1. Large household appliances –</b>	841810	Combined refrigerator-freezers, with separate external doors	Combined refrigerator-freezers, with separate external doors
<b>3. IT and telecommunications equipment –</b>	847141	Data-processing machines, automatic, comprising in the same housing at least a central processing	Computers containing in one case at least central data processing unit and input and output device combined or not
<b>3. IT and telecommunications equipment –</b>	851712	Telephones for cellular networks "mobile telephones" or for other wireless networks	Telephone sets for cellular communication networks or other wireless communication networks
<b>5. Lighting equipment –</b>	853932	Mercury or sodium vapour lamps; metal halide lamps	Mercury or sodium lamps; metal halide lamps