ONE INTRODUCTION

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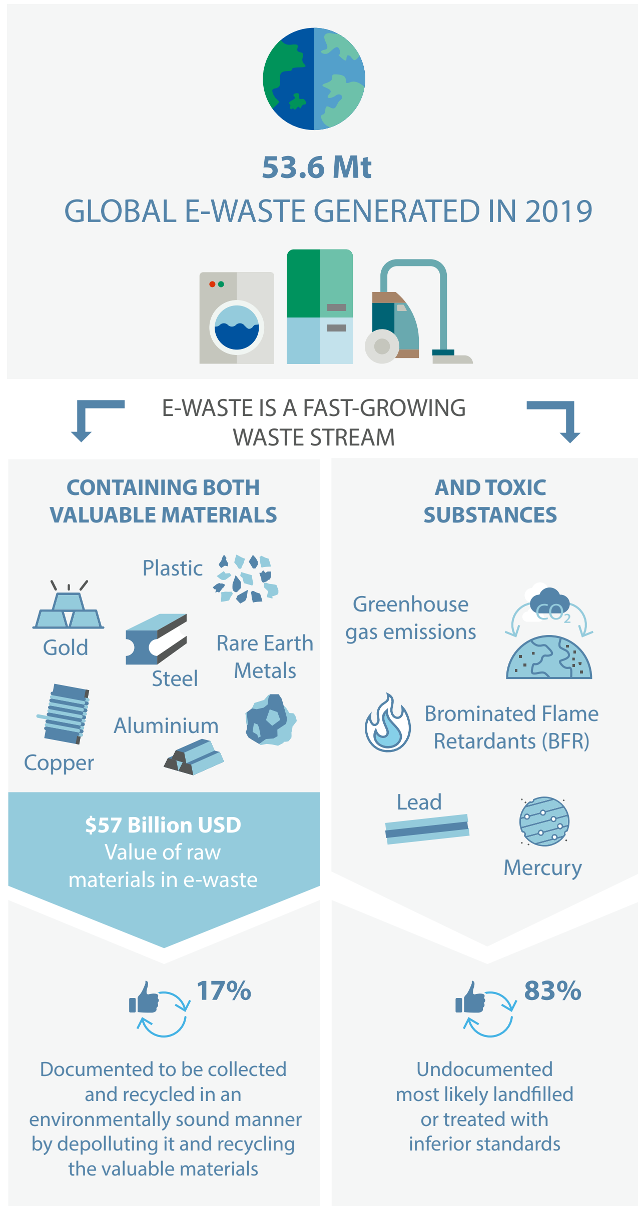
The term electrical and electronic equipment (EEE) refers to any household or business item (excluding vehicles) with circuitry or electrical components and a power or battery supply. The term EEE covers any product supplied to the national market for consumption and use by households, businesses, and public authorities. Once EEE is discarded by its owner, it becomes waste, and is referred to as waste electrical and electronic equipment (WEEE, or e-waste). The fast-growing quantities of e-waste comprise a major global issue. In 2019, 53.6 Mt (million metric tonnes) of e-waste were generated globally, equal to 7.3 kg/capita, and only 17% of it was managed environmentally soundly (Forti et al. 2020). The vast majority of EEE is mismanaged and creates considerable material losses of valuable commodities such as steel, aluminium, copper, and rare earth metals, leading to a greater pressure to extract new raw materials and causing more indirect environmental impacts as a result.

EEE also poses serious environmental hazards – directly, through the release of hazardous substances such as cadmium, lead, mercury, and brominated flame retardants, as well as indirectly, through greenhouse gases and ozone-depleting substances in refrigerants. In addition, a greater need for raw materials resulting from low e-waste recycling rates leads to larger indirect environmental impacts, including more greenhouse gas emissions. These problems are particularly acute in the countries with under-developed e-waste collections and recycling systems. In developing countries where there is a large informal sector and low labour-force costs, the collection and manual dismantling (followed, unfortunately, by hazardous recycling and value generation practices) is typically very common (UNEP & StEP Initiative 2009) (Forti et al. 2020). Integrated and complex metal and precious metal-containing components and parts, such as circuit boards and cell phones, can be best-recycled by high-tech state-of-the-art facilities. Likewise, batteries should be routed to specialised battery recycling plants that

INFOGRAPHIC 1: Global Status of E-waste from the Global E-waste Monitor, Source Forti et al. 2020



have the capabilities to recover the material and value content with maximum efficiency. Few such facilities exist globally and are located mainly in industrialised countries.

The West Asia region – which includes Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, State of Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, and Yemen – is characterised by inadequate e-waste management systems across the board (Table 1), regardless of the income level of an individual country. Only 0.1% of e-waste is currently managed in an environmentally sound manner. The vast majority of e-waste ends up in landfills or is managed by the informal sector, causing considerable material losses and environmental and health impacts (Iattoni et al. 2021).

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TABLE 1: **Estimated amounts of e-waste generated and collected in West Asia in 2019, and the resulting collection rate (Iattoni et al. 2021).**

	E-WASTE GENERATED		E-WASTE COLLECTED AND MANAGED ENVIRONMENTALLY SOUNDLY		COLLECTION RATE
	kt	kg/inh	kg/inh	kt	(%)
Saudi Arabia	595	17.6			n/a
Bahrain	24	15.9			n/a
Kuwait	74	15.8			n/a
Oman	69	15.8			n/a
United Arab Emirates	162	15.0	0.06	0.6	0.4%
Qatar	37	13.6	0.07	0.2	0.5%
Lebanon	50	8.2			n/a
Iraq	278	7.1			n/a
Jordan	53	5.3	0.13	1.3	2.4%
Syrian Arab Republic	91	5.2			n/a
State of Palestine	20	4.0	0.02	0.1	0.4%
Yemen	48	1.5			n/a
Total / average	**1,500**	**9.0**	**0.3**	**2.2**	**0.1%**

To help improve e-waste management in West Asian countries, we utilised the existing regional statistics on electrical and electronic equipment placed on the market (EEE POM), lifespans, e-waste generated, and e-waste collection and recycling in order to create long-term projections for West Asia.

Two contrasting scenarios have been developed:

1) The Business as Usual (BaU) scenario, which represents present-day consumption, lifespan, and recycling behaviours extrapolated to 2050 with adjustments from economic and demographic drivers

2) The Circular Economy (CE) scenario, in which product lifespans are projected to increase due to more reuse, repair, and remanufacturing, while sharing of certain equipment becomes more common, and e-waste collection and recycling infrastructure is incrementally developed until 100% collection rates are reached in 2050

A long-term horizon such as 2050 is required to capture relatively slow processes associated with changes in consumer behaviour and technology, the underlying regional and global socioeconomic trends, and the lags between new products being sold and their becoming e-waste (Baldé et al. 2015; Forti et al. 2020). The mid-century assessment horizon is also in line with the existing comparable policy pledges, e.g. the net zero carbon emissions target by 2050 established by several high-income countries such as the United Kingdom, United States of America, and countries in the European Union. Having a committed long-term policy roadmap spanning several decades is essential for addressing large-scale and systemic challenges such as e-waste and climate change.

This report begins with a brief description of the methodology employed herein, followed by the key results for the 2050 electrical and electronic equipment placed on the market (EEE POM) and e-waste generation in West Asia. Results are provided for the West Asia region as a whole and then are further broken down for high-income and middle- and low-income country groups, as well as into seven broad EEE product types. A separate section is dedicated to projected impacts of the CE transition pathway on e-waste outcomes in West Asia by 2050, focusing on the associated opportunities to avert environmental and health impacts and recycle valuable materials. The report concludes with an overview of policy recommendations and a country-level stepwise approach to e-waste management. Further methodological details and supplementary results are provided in the ANNEX.