

Executive Summary

In 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 – 99.9% of electrical and electronic waste equipment (e-waste) is currently unmanaged or mismanaged. The e-waste ends up in landfills or managed by the informal sector, causing severe health and environmental impacts, due to the release of hazardous substances, emissions of greenhouse gasses, and loss of critical material resources. In this report, the future of e-waste management in West Asia is assessed to 2050 for two contrasting scenarios. The Business as Usual (BaU) scenario represents present-day consumption, lifespans, and recycling behaviours, extrapolated to 2050 with adjustments from economic and demographic drivers. Alternatively, the Circular Economy (CE) scenario assumes that products become more durable, are shared and reused more, and are managed in an environmentally sound manner when becoming e-waste, while the population still has access to the same functionality that EEE can offer under the BaU scenario.

In the BaU scenario, both the amount of electrical and electronic equipment (EEE) placed on market (POM) in the region and e-waste generation will more than double by 2050. In this scenario, EEE POM increases from 2.2 Mt (million metric tonnes) in 2020 to 4.8 - 7.5 Mt in the year 2050. The range here represents expected long-term variations in economy and population in West Asia, as well as the underlying differences in decarbonisation rates and the associated solar photovoltaic panel installations. The amount of e-waste generated is projected to steadily increase from 1.5 Mt in 2020 to 3.3 - 3.9 Mt in 2050.

The CE scenario could have a 33% decrease on EEE POM as compared to the BaU scenario, even though it would still lead to a growth from 2.2 Mt in 2020 to 3.1 - 5.6 Mt in 2050. The CE scenario could also have a 14% decrease in e-waste generated as compared to BaU, but still with an overall increase of e-waste generated from 1.5 Mt in 2020 to 2.9 - 3.4 Mt in 2050. The e-waste generated shows a delayed response to the CE transition due to longer lifespans of products. It is expected that the CE effects are going to be a lot more pronounced in e-waste generated in the latter parts of the 21st century. The fastest growing e-waste, both in relative and absolute terms, is that of photovoltaic panels, which are limited in the e-waste stream in 2020 and which are expected to experience immense growth rates, reaching 6% of the total weight of the e-waste stream.

Total EEE POM and e-waste generated are projected to grow faster in the low- and middle-income countries in West Asia than in the high-income countries. As a result, the middle- and lower-income sub-region in West Asia could overtake the higher-income sub-region in terms of the total quantity of POM and e-waste generated in the latter parts of the century.

The potential benefits of the transition toward the CE scenario are vast, both for resource recovery and emission reductions of hazardous substances. Cumulatively, between 39 and 43 Mt of e-waste is projected to be managed in West Asia from 2020 to 2050, assuming the e-waste collection rate gradually reaches 100% by 2050 as part of the

CE scenario. An estimated total of 130 t of gold, 5 t of rare earth metals, 17 Mt of iron and steel, 1.5 Mt of copper, and 2.6 Mt of aluminium could be recycled between 2020 and 2050. Simultaneously, a larger proportion of hazardous materials and greenhouse gases will be managed in an environmentally sound manner, leading to mitigated emissions of up to 6 t of mercury, 60 t of cadmium, and 53 Mt CO₂-eq of fugitive emissions of refrigerants between 2020 and 2050. It is estimated that roughly 225,000 FTE (full-time equivalent) jobs would be created by 2050 for repair of used EEE and collection and pre-treatment of e-waste.

In order to realise the benefits of the CE scenario, a considerable effort must be made in capital investments to set up e-waste management infrastructure, develop the right legislation, and raise consumer awareness of the issue across the entire West Asia region. Strong long-term binding targets, aiming to reach 100% e-waste collection rates by 2050 (or preferably earlier), are the only way to slow down and reverse the growth of the unmanaged e-waste. Specifically, the high-income countries could serve as one of the vehicles for devising and becoming early adopters of effective e-waste policies in the region.

Therefore, immediate and adequate e-waste management measures should be taken throughout the region, as summarised in the following 10 steps:

1. Establish a clear legal framework for e-waste collection and recycling.
2. Introduce extended producer responsibility to ensure that producers finance the collection and recycling of e-waste.
3. Enforce legislation for all stakeholders and strengthen monitoring, statistics, and compliance mechanisms across the country to ensure a level playing field for all, including socially disadvantaged groups and women.
4. Create favourable investment conditions for experienced recyclers (both female and male) to bring the required technical expertise to the country.
5. Create a licensing system or encourage certification via international standards for collection and recycling.
6. Develop a wide network of collection points or collectors to separately collect all e-waste generated at the source.
7. When no local end-processing facilities exist for an e-waste part, ensure good and easy access to international licensed treatment facilities.
8. Ensure that costs to run the system are transparent and that they stimulate competition in the collection and recycling system, driving cost effectiveness.
9. Ensure that all stakeholders involved in e-waste collection and recycling are aware of the potential gender-differentiated impacts on the environment and human health, as well as possible approaches to the environmentally sound treatment of e-waste.
10. Create targeted gender-differentiated awareness campaigns among consumers regarding circular economy and such an economy's environmental benefits.