

# GLOBAL INFORMATION SOCIETY WATCH 2020

*Technology, the environment and  
a sustainable world: Responses from  
the global South*



ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS (APC)  
AND SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY (SIDA)

## Global Information Society Watch 2020

Technology, the environment and a sustainable world: Responses from the global South

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### Bytesforall Bangladesh

Partha Sarker and Munir Hasan

<https://www.bytesforall.org>

### Introduction

Electronic waste, or e-waste, is a big challenge for Bangladesh, not only because of its sheer volume that remains untreated, but also because of a lack of a policy framework and best practices that could make dismantling, processing and recycling of the waste an asset rather than a public health disaster. Bytesforall Bangladesh<sup>1</sup> worked on this issue for GISWatch back in 2010, and then as part of a larger research study on ICT and environmental sustainability back in 2011. Both the studies identified a systematic gap of policies, including ones on e-waste management in Bangladesh. This report evolves from there, takes stock of developments both in the space of policy and practices, scans the environment and builds up the evidence and rationale for a greener approach to e-waste management in Bangladesh.

### Context

Several studies done on the Bangladesh e-waste situation portray a very dismal picture of an unmanaged e-waste stream. For example, one study from the Department of Environment in Bangladesh suggests that the country generates about 400,000 metric tonnes of e-waste every year, which is likely to grow to over a million tonnes by 2035.<sup>2</sup> The most alarming part is that only 3% of e-waste is recycled or processed – the rest goes to landfills, causing a serious adverse impact on health, the environment and livelihoods.<sup>3</sup> One report suggests that more than 30 million children, women and non-formal workers are exposed to heavy metals such as lead, mercury, cadmium, zinc and chromium, as

well as dioxins and furans produced by e-waste.<sup>4</sup> Interestingly, the e-waste recycling sector is still unstructured and informal, and the work is done manually by a mostly unskilled labour force. This is partly because of regulatory neglect to address the issue from a solutions point of view, rather than as a problem issue, and the inability to give the e-waste sector the status of a formal recycling sector with revenue generating capacities. As one study highlights, despite the problems with e-waste, “its proper management using environmentally sound systems has numerous socio-economic opportunities that can stimulate entrepreneurship, employment and enhancement of livelihoods.”<sup>5</sup>

The accelerated transition to a circular economy model requires a corresponding policy that reflects the continuous building up of the potential of material and product circularity. It also requires the fullest use of the available potential based on the priorities of preserving the value of materials in the economic system as long as possible.<sup>6</sup>

There are a couple of factors that make the e-waste situation in Bangladesh even worse. On the one hand, waste is being generated internally by domestic demand for electronic goods and products. The laptop market, for example, has a growth rate of 15% to 20% and was worth about USD 175 million in 2018. The consumer electronics market, with an annual growth of 15%, stood at an estimated USD 3 billion in 2019.<sup>7</sup> A news report identified a wide range of factors contributing to this growth in consumption, including rapid globalisation, urbanisation, increased access to technologies, an increase in purchasing power, a substantial time reduction in the product development cycle,

1 <https://www.bytesforall.org>

2 Rokonuzzaman, M. (2019, 2 February). E-waste management in the age of robotics. *The Financial Express*. <https://thefinancialexpress.com.bd/views/views/e-waste-management-in-the-age-of-robotics-1549121879>

3 Ahamad, R. (2020, 30 January). Swelling e-waste threatens health, environment in Bangladesh. *New Age Bangladesh*. <https://www.newagebd.net/article/98178/swelling-e-waste-threatens-health-environment-in-bangladesh>

4 TechWorld Bangladesh. (2019, 26 February). E-waste: A Problem in Need of Solutions. <https://techworldbd24.com/index.php/techworld/741>

5 Hossain, S., Sulatan, S., Shahnaz, F., & Hossain, L. (2011). *Illegal import and trade off of e-waste in Bangladesh*. ESDO. <https://ipen.org/sites/default/files/t/2012/09/Report-on-Illegal-import-and-trade-off-of-e-waste.pdf>

6 Shevchenko, T., Laitala, K., & Danko, Y. (2019). Understanding Consumer E-Waste Recycling Behavior: Introducing a New Economic Incentive to Increase the Collection Rates. *Sustainability*, 11(9). <https://www.mdpi.com/2071-1050/11/9/2656>

7 Chakma, J. (2020, 27 September). Consumer electronics companies predict grim outlook for 2020. *The Daily Star*. <https://www.thedailystar.net/business/news/consumer-electronics-companies-predict-grim-outlook-2020-1968177>

an increase in the frequency of new products being offered, and an increase in the use of planned obsolescence as a strategy by electronic products manufacturers to encourage product replacement.<sup>8</sup>

On the other hand, recyclers in Bangladesh illegally import metal scrap and second-hand products from other countries, through which they earn money by recovering valuable materials from the discarded electronic products or through reusing components, sometimes even receiving payments from recyclers in developed countries in exchange for accepting the waste materials.<sup>9</sup> This practice is rampant. From January to October 2019, bulk scrap imports to Bangladesh were recorded at 1.25 million metric tonnes, witnessing a significant increase of 39% year on year.<sup>10</sup>

Bangladesh is also often a recipient of e-waste from developing countries. According to the Bangladesh Medical Research Council (MRC) report 2017, USD 2.2 billion worth of consumer electronic products were imported to Bangladesh in 2016, where China (69%) was the largest exporter of e-waste to the country.<sup>11</sup>

This practice indicates a mismatch between policy and practice. Bangladesh is a signatory to the Basel Convention which prohibits the movement and disposal of hazardous waste from one country to another. On paper at least, the existing Import Policy Order (2015-2018) does not allow the import of old computers or accessories, although the term “old” is not very clearly defined. It does, for example, allow the importation of refurbished computers by foreign firms.

The country’s policy framework for e-waste has always been a bit obscure. The Environment Conservation Act, 1995, authorises the Department of Environment as the implementing administrative agency that manages the quality of the environment and establishes controls, including preventing and mitigating pollution. It also has the mandate to organise environment tribunals and to issue environmental clearance certificates. Prior to this, the National Environmental Policy that regulates all activities that pollute and destroy the environment came into effect in 1992. E-waste was first briefly

mentioned as an action item in the country’s information and communications technology (ICT) policy 2002 and later updated in 2009.<sup>12</sup> At the same time, the Medical Waste Management Rules, 2008, address waste management issues for the medical sector, including e-waste. Apart from these, the Environmental Court Act, 2000, and the Environmental Conservation Rules, 1997, also have some bearing on e-waste issues. The Environmental Court Act gave jurisdiction to the court to impose penalties on any violation of environmental laws and the Environmental Conservation Rules describe the standards for waste disposal.

The country’s first serious focus on e-waste came into being when the E-waste Management Rules were drafted and amended in 2011 and 2017 respectively under the Environment Conservation Act. The rules focus on the “three Rs” principle (reduce, reuse and recycle). The rules were made for waste generated from household appliances, monitoring and control equipment, medical equipment, automatic machines, and IT and telecommunication equipment, and apply to waste generators, manufacturers, large importers, dismantlers, recyclers, traders, shopkeepers, hoarders, transporters, repairers, and collection centres, among others. The rules introduced the idea of extended producer responsibility (EPR) – where the responsibility of the producer does not end with the selling of the product. Instead, the producer has to provide an incentive to the consumer to return used products to a designated place, where producers need a plan for the collection, dismantling and recycling of the waste. For this, all producers would need to register their e-waste management plan with the Department of Environment. These rules also have penalty provisions.

But the e-waste management rules remain in draft form, and still have not seen any headway in terms of acceptance and implementation, other than an oblique reference to the 3Rs in the draft Environment Policy, 2018. In this sense, Bangladesh lags behind India, Pakistan, Sri Lanka and Nepal in South Asia, who have already established policies and regulatory frameworks to address e-waste management.

8 Akter, N., & Hossain, M. (2019, 18 December). Time to formalise informal e-waste management in Bangladesh. *The Daily Star*. <https://www.thedailystar.net/business/news/time-formalise-informal-e-waste-management-bangladesh-1841734>

9 Hossain, S., Sulatan, S., Shahnaz, F., & Hossain, L. (2011). Op. cit.

10 Maile, K. (2019, 3 December). Bulk ferrous scrap imports to Bangladesh surge. *Recycling Today*. <https://www.recyclingtoday.com/article/ferrous-scrap-imports-increase-bangladesh>

11 Akter, N., & Hossain, M. (2019, 18 December). Op. cit.

12 Sarker, P., & Hasan, M. (2010). Bangladesh. In A. Finlay (Ed.), *Global Information Society Watch 2010: ICTs and environmental sustainability*. Association for Progressive Communications (APC) & Humanist Institute for Cooperation with Developing Countries (Hivos). <https://www.giswatch.org/country-report/2010-icts-and-environmental-sustainability/bangladesh>

## E-waste management from a solutions perspective

The biggest challenge of the e-waste policy framework in Bangladesh is that it has identified e-waste only as a problem, and failed to see it as part of a solution too. Yes, e-waste is mounting in Bangladesh, yet it is not the waste but the management of this waste that is the root of the problem. Since the use of electronic devices and appliances has gone up many fold in recent times and will continue to grow, the e-waste supply will not die down. Rather, we should think how we can collect, dismantle, repurpose, recycle and reuse this waste using innovative, green technologies and an effective business model to create employment opportunities in a sector that traditionally used to be an informal, toxic and precarious one for quite a long time. In such a business model, all the recycling processes are incentivised to work in a multi-layered approach.

For example, e-waste collection is formalised through the EPR policy approach, where producers are given the responsibility to collect the waste and arrange for its treatment and disposal. Assigning such a responsibility could in principle provide incentives to prevent waste at the source, promote environmentally friendly product design, and support the achievement of public recycling and materials management goals.<sup>13</sup> In order to keep the toxic materials at bay during production, materials that have higher environmental or health risks can be made subject to higher material tax. As one report notes:

In some cases, consumers assume the responsibility of e-waste management by paying a deposit when purchasing a product and then receiving a refund – known as deposit or refund schemes – when returning the post-consumption product. Landfill taxes, illegal dumping fees, tax benefits and subsidies for eco-friendly design, labeling, products and promotions are other forms of EPR implementation.<sup>14</sup>

After the waste is disposed and collected, the process of refurbishment or dismantling starts. The refurbisher extends the functional life of electronic or electrical equipment by breaking apart the “end of use” equipment and selling the parts that can still be used.<sup>15</sup> Things that cannot be sold go to the dismantling process.

Separating the materials is an important part of this process. In an ideal, automated process, e-waste materials are shredded to separate plastics from metals and internal circuitry, and the rest are shredded into pieces as small as 100 mm. A powerful overhead magnet separates iron and other magnetic metals from the waste stream on the conveyor and then prepares it for sale as recycled metals. Further mechanical processing separates aluminum, copper and circuit boards from the material stream – which now is mostly plastic. Water separation technology is then used to separate glass from plastics.<sup>16</sup>

Once this shredding, sorting and separation is done, materials are categorised into core materials and components. Typically, these categories include items that you can reuse as they are and those that require further recycling processes.<sup>17</sup> As with the case of metals, reuse materials can be prepared for sale as usable raw materials for the production of new electronic and other products.

A reduction in the need to mine valuable metals is another by-product of this entire process. According to the United States Environmental Protection Agency, recycling one million laptops can save the energy equivalent of electricity that can run 3,657 US households for a year. Recycling one million cell phones can also recover 75 pounds of gold, 772 pounds of silver, 35,274 pounds of copper, and 33 pounds of palladium.<sup>18</sup>

Once e-waste recycling is a formal sector, each of these processes can offer numerous employment opportunities. An economic model for an e-waste factory that extracts valuable metals shows the “cost of around 500,000 Australian dollars [USD 400,000] for a micro-factory pays off in two to three years, and can generate revenue and create jobs.”<sup>19</sup>

In Bangladesh, almost the entire process of collection, separating, sorting and recycling is done manually and through an informal sector where, as per one estimation, 120,000 urban poor are involved.<sup>20</sup> Electronic products have a different life cycle here. For example, when an electronic device breaks down, most people in Bangladesh first go to a nearby repair shop to see if it can be

<sup>13</sup> <https://www.oecd.org/env/tools-evaluation/extendedproducerresponsibility.htm>

<sup>14</sup> Akter, N., & Hossain, M. (2019, 18 December). Op. cit.

<sup>15</sup> Hossain, S., Sulatan, S., Shahnaz, F., & Hossain, L. (2011). Op. cit.

<sup>16</sup> Haque, T. (2021, 5 February). Introduction to Electronics (E-Waste) Recycling. *The Balance Small Business*. <https://www.thebalancesmb.com/introduction-to-electronics-e-waste-recycling-4049386>

<sup>17</sup> Rinkesh. (n/d). The Reduce, Reuse, Recycle Waste Hierarchy. *Conserve Energy Future*. <https://www.conserve-energy-future.com/reduce-reuse-recycle.php>

<sup>18</sup> Haque, T. (2021, 5 February). Op. cit.

<sup>19</sup> Woollacott, E. (2018, 5 July). E-waste mining could be big business – and good for the planet. *BBC*. <https://www.bbc.com/news/business-44642176>

<sup>20</sup> TechWorld Bangladesh. (2019, 26 February). Op. cit.

repaired, because this process is cheaper and widely available. In many cases, the parts required to repair the particular electronic item come from another broken device and imports from abroad. If repair is not possible, then it goes to *bhangaris* (which means “who break things”) who extract the metals by scrapping, sorting and separating. These *bhangaris* are different from repairers who are skilled enough to fix a broken electronic device with available parts and accessories. *Bhangaris* represent the bulk of the current e-waste market. In Dhaka city they are located mostly in four different places: Nimtoli, Elephant Road, Islambag and Zinzira.<sup>21</sup> The *bhangaris* then sell the separated materials to other companies for recycling or reusing as raw materials for other products. The companies are the downstream recyclers. Although the businesses of *bhangaris* are booming, as demonstrated through the expansion of their market, formal recyclers are only getting 3% of the total generated waste. The rest is dumped in landfills.

A few e-waste recycling companies in the country, such as Azizu Trading Co., Yousuf Enterprise, Green Bangla Corporation, JR Enterprise, Zaman Enterprise, Techno Fair and NH Enterprise, have recently started to operate, but they are failing to run at their full capacity due to a shortage of sourcing e-waste through formal channels.<sup>22</sup>

Breaking this existing profitable nexus in informal e-waste businesses would be the biggest challenge. EPR is one policy tool that the government could use strategically to work both on the supply and the demand side of the e-waste market to mitigate its risks. Incentivising good practice and making the bad practices prohibitively expensive is one strategic way forward. For example, like many other countries, the government could introduce deposit or refund schemes to get consumers to adopt a behaviour of bringing back their “end of use” electronic products for proper disposal. The government could also incentivise the existing recyclers with tax holidays to build a well-regulated e-waste recycling industry. It can also provide land, space and other technological facilities, and facilitate transparency in order to make the industry a formal, accountable one.

On the other hand, as is proposed in the E-waste Management Rules, it can increase the extent of producer responsibility gradually from 15% to 55% from the first year to the fourth year of the implementation of the rules.<sup>23</sup> As the government is developing different “high-tech” parks, it would probably be necessary to incentivise these parks to have a proper e-waste management system from the very beginning.

## Conclusion

The future of e-waste management in developing countries depends not only on the effectiveness of local government and the informal operators of recycling services, but also on community participation and the participation of private manufacturers, together with national and regional initiatives.<sup>24</sup> In Bangladesh, making the e-waste market a formal sector requires policy interventions as well as an awareness drive – not only on the environmental and health impacts of unmanaged e-waste, but also on the labour rights of poor people who are working at the coalface of the e-waste catastrophe. Building their capacity and providing them with the technologies for the formal processing of e-waste, and arranging a smooth transition from an informal sector to a formal sector, can open up the door of many economic and employment opportunities. A stable e-waste market may, firstly, become a base for recycling, repurposing, material processing and remanufacture, and contribute to building a local industry in Bangladesh. The informal market activities, with proper recognition, can rise to a remanufacture industry. Secondly, a stable e-waste market will contribute to a culture of reproducing and repairing broken devices, and eventually help in reducing the burden of importing discarded technologies from overseas.<sup>25</sup>

## Action steps

It seems that there is a serious lack of data on the regular supply and demand of e-waste in Bangladesh. Informal and illegal e-waste markets are thriving in Dhaka and other cities as the latest versions of electronic products become obsolete at a quicker pace and are being replaced by new and refurbished ones. But no serious form of data is

21 Ahmed, S. I. (n/d). New Year: Electronic Waste Market in Dhaka, Bangladesh. *Institute of International Education*. <https://www.iie.org/en/Programs/IIE-Centennial-Fellowship/Blog/Syed-Ishtiaque-Ahmed>

22 Foraji, M., Alam, T., Hiro, K., & Hossain, J. (2019). *e-Waste Management Policy & Practices in Bangladesh*. BTRC. <https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/SiteAssets/Pages/Events/2019/Policy-awareness-workshop-on-E-waste/E-Waste%20Management%20Policy%20in%20Bangladesh.pdf>

23 Akter, N., & Hossain, M. (2019, 18 December). Op. cit.

24 Ibid.

25 Rifat, R., Prottoy, H., Aich, N., & Ahmed, S. (n/d). *Understanding the Opportunities and Challenges in E-waste Management Practices in Dhaka, Bangladesh*. [https://pdfs.semanticscholar.org/e7e7/67e1b5e1727c7906a75b96350e30ca7204.pdf?\\_ga=2.89388572.641988153.1597427471-55820860.1597427471](https://pdfs.semanticscholar.org/e7e7/67e1b5e1727c7906a75b96350e30ca7204.pdf?_ga=2.89388572.641988153.1597427471-55820860.1597427471)

available in terms of volumes, employment numbers, technology processes, business processes, labour requirements, skills requirements, profit margins, scales of investment, market opportunities, etc. This data is required not only to formalise the sector, but also to decide about a possible policy intervention. Civil society should support the gathering and development of this data ahead of any policy

implementation. The transition from an informal to a formal e-waste market may have lots of points of pain, including labour unrest, unemployment or loss of business. It would also be important for civil society to be vigilant about these potential points of crises, and support the rights of existing labour forces to be retrained and accommodated in any formal e-waste industry and new business processes.



# *Technology, the environment and a sustainable world: Responses from the global South*

The world is facing an unprecedented climate and environmental emergency. Scientists have identified human activity as primarily responsible for the climate crisis, which together with rampant environmental pollution, and the unbridled activities of the extractive and agricultural industries, pose a direct threat to the sustainability of life on this planet.

This edition of Global Information Society Watch (GISWatch) seeks to understand the constructive role that technology can play in confronting the crises. It disrupts the normative understanding of technology being an easy panacea to the planet's environmental challenges and suggests that a nuanced and contextual use of technology is necessary for real sustainability to be achieved. A series of thematic reports frame different aspects of the relationship between digital technology and environmental sustainability from a human rights and social justice perspective, while 46 country and regional reports explore the diverse frontiers where technology meets the needs of both the environment and communities, and where technology itself becomes a challenge to a sustainable future.

GLOBAL INFORMATION SOCIETY WATCH

2020 Report

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