

Case study - Transitioning to the circular economy in the South Asia region: A phased policy approach for Bangladesh, India, Sri Lanka and Pakistan

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Introduction

The South Asian region, comprising eight nations, has for decades faced a burgeoning problem of e-waste, the result of large population sizes, the ever-growing problem of rampant digital consumerism and the dumping of unusable electronics. India is one of the top three global generators of e-waste. However, as in other countries in the global South, the bulk of its e-waste goes unprocessed, and the recycling that is done is mostly by the informal sector.

While the region currently lacks policy drive to push for a circular economy, a few nascent trends – especially from India – could trigger the urgency needed in transitioning from a linear economic model for the digital device sector.

The burgeoning problem of e-waste in the region

Mobile usage data patterns are indicative of increasing digital device consumption in the region, and the unmanageable accumulation of e-waste and its related harmful effects on people and the environment. In January 2021, [Bangladesh](#) had 165.8 million mobile connections, which reflected an increase of 1.1% in a period of 12 months. Internet penetration was at 28.8% of population.^[1] [Sri Lanka](#) had 30.41 million mobile connections in January 2021, which increased at the rate of 2.1% in the previous year. Internet penetration was at 50.8% of the population.^[2] [Pakistan](#) had

173.2 million mobile connections, increasing at 4.2% over the previous year, with internet penetration at 27.5%.[3] India had 1.10 billion mobile connections, increasing 2.1% from the previous year. Internet penetration stood at 45%.[4]

Meanwhile, Bangladesh produced 0.40 million tonnes of e-waste in 2018.[5] It is estimated that the e-waste generated in the country could go up to 4.62 million tonnes by 2035.[6] In 2019, 3,230 kilotonnes of e-waste were generated in India, while 433 kilotonnes were generated in Pakistan in the same year.[7] Sri Lanka generated 138 kilotonnes of e-waste in 2019.[8]

The processing of e-waste in the region is largely reliant on informal sector activities for collection, dismantling and recycling. This is related to several social and economic factors. For one, many consumers in developing countries are unfamiliar with the concept of returning end-of-life digital devices and paying for their disposal. Second, many developing countries receive both legal and illegal imports of large quantities of e-waste brought in as second-hand devices. Third, there are often low levels of funding and investment in e-waste recycling systems at the local level, which results in deficient infrastructure for e-waste management and recycling. And fourth, the lax implementation of e-waste regulations in countries has enabled the informal economy to expand in the recovery and trade of valuable secondary raw materials extracted from e-waste.[9]

A study by the Associated Chambers of Commerce and Industry of India and KPMG called *Electronic Waste Management in India* found that computer equipment accounts for almost 70% of e-waste, followed by telecommunication equipment such as phones (12%), electrical equipment (8%) and medical equipment (7%), with household e-waste accounting for the remainder.[10] Because e-waste collection, transportation, processing and recycling are dominated by the informal sector, all the materials and value that could be potentially recovered in a formal system are not. The informality of the sector also leaves serious issues regarding the leakages of toxins into the environment and the safety and health of workers unattended.[11]

A lack of country-level e-waste policies

India

Though there is increased understanding and recognition of the need for proper e-waste management, presently India is the only country in the region with e-waste legislation, although other countries are considering legislation. In India, laws to manage e-waste have been in place since 2011 and mandate that only authorised dismantlers and recyclers collect e-waste. A target-based extended producer responsibility and liability clause with financial penalties **has started showing positive results on formalising waste collection in the country.**^[12] There are 312 authorised recyclers in India with the **capacity for treating approximately 800 kilotonnes of waste annually.**^[13]

Bangladesh

There are **currently no regulations specifically dealing with e-waste in Bangladesh.** However, the government has given top priority to the preparation of the “Electrical and Electronic Waste (Management and Handling) Rules”, first drafted in 2011. In addition, it has drafted a National 3R (Reduce, Reuse and Recycle) Strategy incorporating some aspects of e-waste management. Furthermore, two Rules, the Hazardous Waste Management Rule (under preparation) and the draft Solid Waste Management Rule (prepared and in the consultation stage) could also accommodate the issues related to e-waste.^[14]

Pakistan

Pakistan has no policy for managing e-waste. The Ministry of Environment oversees the environmental protection and movement of chemicals and waste. The informal recycling sector is very active, and a number of workers, including children, earn their living by dismantling the electronic scrap and extracting valuable metals.^[15]

Sri Lanka

Sri Lanka also does not have policies focusing specifically on e-waste. However, the Central Environmental Authority is the main institution responsible for e-waste management under an order of 2008.^[16]

From e-waste management to a circular economy

In South Asia, India is the only country to take formal steps towards a circular economy in e-waste management, a recent effort in mid-2021. The Ministry of Electronics and Information Technology drafted a policy paper in May 2021, called “**Circular Economy in Electronics and Electrical Sector**”, ^[17] inviting public comments from stakeholders until June 2021.

The draft paper highlights the following key objectives related to the circular economy of e-waste in India:

- The life cycle of digital devices has to be mapped out in the context of the circular economy from the first stage of raw material acquisition.
- The design of digital devices should make the products amenable to repair, refurbishment, remanufacturing, recoverability and recycling.
- Digital devices should be designed in a manner that ensures a longer life of the products in order to keep the materials and the value in use for as long as possible.
- Awareness needs to be increased among consumers and users of electronic products about the need for proper e-waste management.
- The informal sector needs to be trained and gradually integrated into mainstream e-waste management processes.

The draft policy’s emphasis on the circular approach is beneficial at many levels. The movement towards a circular and resource-efficient model compared to the traditional linear model of production, use and disposal has the potential for business savings for businesses willing to leverage the economic benefits of circularity.

Reduced extraction of raw materials because of circularity also has the potential to reduce the pressure on scarce resources, which has social benefits such as limiting the displacement of communities due to mining and the avoidance of conflict minerals.

The draft paper highlights that the focus of circularity needs to be across the life cycle of a digital device, from raw material acquisition, to product design, component manufacturing, product assembly, acquisition and use, e-waste collection systems, dismantling, recycling and the recovery of secondary materials. This makes it different from other e-waste management policies, which only tend to focus on the disposal, reuse and recycling of digital devices.

Accelerating the roadmap towards circularity of digital devices in the region

The linear and circular economic approaches are not antithetical or extremes in national economic planning and action. A judicious application of circular approaches in economies in the region could create a blended and sustainable economic model. Blending the linear with circular elements in the information and communication (ICT) device sectors could create an alternative economic growth paradigm and a phased approach to complete circularity in the economy, without an immediate shock to the economic system with unintended negative results.

Table 1 outlines, broadly, the potential benefits of moving from a linear to a circular economy for digital devices in South Asia.

Table 1. Potential benefits of moving from a linear to a circular economy for digital devices in South Asia

Policy approach	Benefits	Status
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Linear approach in digital devices and to social and market development	New vendors, new markets, new sources of revenue, tax generation, industrial push, growth in economy, jobs and employment	Mainstream process in South Asia and currently in priority
Circular approach in digital devices and to social and market development	New vendors in circularity, new and broader markets, new tax and revenue systems and potentials, broad-based contribution to economy, upliftment of society including through digital inclusion and employment, environmental benefits, preservation of scarce rare earth elements	Not a mainstream approach in policy decision making and implementation, exists in a different avatar in the market for second-hand digital devices.

Transitioning to a circular economy for digital devices in the region

There are several key needs to make the transition to a circular economy effective in the region:

- The circular economy approach has potential to create alternative forms of employment at each stage of the life cycle of the product. It is important to map these benefits at each stage clearly, so that stakeholders can see the added economic benefits of circularity.
- In order to develop workable policies for product design, component manufacturing and product assembly, best practices and global standards related to design for recycling and extension of product life need to be compiled, as well as standards to check for forced obsolescence in electronics. Detailed analysis should be carried out to estimate the costs of compliance with circularity for different kinds of digital products.
- The collection of e-waste needs to be strengthened through industry obligations, consumer awareness, incentives for new businesses and investment. **India generates the third highest amount of e-waste in the world** (with 3.2 million tonnes in 2019).[18] However, only 10% of the waste is collected for recycling. This is also a challenge for other countries in the region.
- Since e-waste is mostly handled by the informal sector and small aggregators, it is important that capacity is built in the sector to strengthen their skills in dismantling and that investments are made in appropriate recycling technology and systems efficiencies to improve their recycling ability. Dismantling and recycling infrastructure and upskilling would allow the informal sector to be formalised and would encourage entrepreneurship.
- E-waste is considered a rich source of secondary raw materials and can contribute towards resource security and environmental sustainability. There is a need to promote research to enhance the recovery of materials from e-waste, including rare earth materials. In order to encourage recovery, it is important to have mandates for the use of a certain percentage of secondary raw materials in manufacturing.
- At the consumer level, there should be awareness programmes on e-waste management, as well as product labelling with respect to recyclability and circularity. There should be a focus on skills development for repair centres, and bulk consumers should be aligned with these centres so that they have an avenue for disposal.

- A circular approach also has the benefit of bridging the digital divide through the reuse of technology and extending the useful life of devices. To achieve this, the reuse and refurbishment sector needs to be strengthened through incentives, investment and upskilling.
- Policy instruments are necessary to support the circular economy, including fiscal and regulatory changes that are implemented at the national, state and local levels.
- There has to be effective monitoring of the implementation of the circular economy and its progress so that performance, productivity and waste discharges can be evaluated.
- The future of e-waste management in the region depends not only on the effectiveness of local governments and the informal operators of recycling services, but also on community participation and the involvement of private manufacturers in national and regional initiatives.

Formalisation of the informal sector

The formalisation of the informal sector is key to policy change in the region. In 2019, 140 million smartphones were sold in India and around 40 million to 50 million of them were second-hand phones. In terms of sheer size, **India and China are the biggest second-hand phone markets**. However, both the United States and Europe have bigger refurbishment markets, as they have laws and systems in place.^[19]

The formalisation of the informal sector would require a number of stages. It needs to start with identifying the major clusters of activity within the informal sector. Once the clusters are identified, the next stage would be to federate the disparate members within the cluster and also to identify the various processes within these groups. Specific awareness programmes should also be developed. Hands-on training and upskilling and the development of process efficiencies are important steps towards the formalisation process.^[20]

The integration of the informal sector into the formal economy would require **building trust and relationships as well as identifying and strengthening the linkages between the two sectors** for holistic management. Further, the cost structure of the informal sector would change radically with the introduction of certain processes which were not a part of their value chain. This would require the support of the government in terms of the provision of financial aid, including easing access to credit, the provision of financial incentives such as subsidies, and the introduction of insurance schemes.^[21]

Conclusion

The circular economy of digital devices can be instrumental in decoupling digital economic growth from natural resource constraints and increasing societal needs. This would require planning new financing models and policy approaches that can accelerate collaboration to scale up the digital circular economy in key sectors in the region and across global value chains.

Decision making at the highest political executive levels is what determines policies, programmes,

implementation and impacts. These decisions are influenced by market revenues, including tax revenue and export-import earnings. These are intricately linked to national and local economic strengths and employment numbers, and they drive industrialisation. Therefore, policy change has multiple impacts on the status quo and the current course of economic development.

The other factor determining policy change is vested political interests and lobbying. This creates red tape and priorities in policy development, in the garb of working in the “national interest”. However, aggressively pursuing a linear and vendor-driven approach to economic development does not easily address wider digital inclusion challenges. Instead, the move to a circular economy in the digital device market would better achieve broad-based social, environmental and economic inclusion objectives in the region.

Through greater collaboration, multinationals, small and medium-sized enterprises (SMEs), entrepreneurs, academia, trade unions, civil society and associations could create a circular economy for digital devices in South Asia – the world’s most populous region – where the waste is designed out, the environmental impact is reduced, and decent work is created for millions.

Footnotes

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Revision #2

Created 19 November 2021 09:59:58 by Cathy

Updated 22 November 2021 09:20:40 by Cathy