

India E-Waste Management Market, By Processed Material (Metal, Plastic, Glass, Others), By Recycler Type (Glass Recycler, Metal Recycler, Plastic Recycler, Printed Circuit Board Recycler), By Category (Temperature Exchange Equipment, Screens & Monitors, Large Equipment, Small Equipment, Small IT & Telecommunication Equipment), By Region, Competition, Forecast & Opportunities, 2020-2030F

<https://marketpublishers.com/r/I20A82652573EN.html>

Date: January 2025

Pages: 86

Price: US\$ 3,500.00 (Single User License)

ID: I20A82652573EN

Abstracts

India E-Waste Management Market was valued at USD 60.63 Billion in 2024 and is expected to reach USD 103.16 Billion by 2030 with a CAGR of 9.10% during the forecast period.

E-Waste Management refers to the process of handling, recycling, and disposing of electronic waste in an environmentally responsible manner. Electronic waste (e-waste) includes discarded electrical or electronic devices such as smartphones, computers, televisions, and refrigerators, which contain hazardous materials such as lead, mercury, and cadmium. Improper disposal of e-waste can lead to environmental pollution and pose serious health risks to humans and wildlife.

E-waste management involves several stages, starting with the collection and sorting of discarded devices. The next step is the safe dismantling of the electronic products to extract valuable materials like copper, gold, and aluminum. This process also includes the removal of hazardous substances to prevent contamination. Following this, recycling facilities safely process these materials, ensuring that reusable components are repurposed for new products, while harmful substances are disposed of according to

strict environmental regulations.

Proper e-waste management not only helps to minimize the negative environmental impact but also supports the circular economy by promoting the reuse and recycling of electronic components. Governments, organizations, and individuals are increasingly recognizing the importance of responsible e-waste disposal, with various laws and initiatives being introduced to promote sustainable practices and reduce the growing volume of e-waste globally.

Key Market Drivers

Stringent Government Regulations and Initiatives

The Indian government has recognized the environmental and health hazards posed by improper e-waste disposal and has taken steps to regulate the management of electronic waste. The implementation of the E-Waste Management Rules 2016 (amended in 2018) is one of the key regulatory measures driving the e-waste management market. These regulations require producers, importers, and sellers of electrical and electronic equipment to be responsible for the collection, recycling, and safe disposal of their products once they reach the end of their life cycle. This Extended Producer Responsibility (EPR) framework mandates that producers ensure proper collection and treatment of e-waste, which has significantly increased the demand for e-waste management solutions. Additionally, state governments in India have introduced initiatives and programs to encourage responsible e-waste recycling and management, including awareness campaigns, infrastructure development for e-waste collection, and collaborations with industry players to set up recycling facilities. The Central Pollution Control Board (CPCB) has also been working to establish guidelines for authorized recycling and dismantling facilities. These regulatory measures have created a structured framework for e-waste management in India, which has boosted market growth.

The government has increasingly emphasized the importance of e-waste segregation at the consumer level and encouraged individuals and businesses to dispose of their old electronics responsibly. The legal framework and government push for proper disposal and recycling have resulted in increased investments in the e-waste management infrastructure and services, leading to market expansion.

Growing Environmental and Health Concerns

Another major driver of the India E-Waste Management market is the growing awareness of the environmental and health hazards posed by improper e-waste disposal. E-waste contains hazardous materials like lead, mercury, cadmium, and brominated flame retardants, which, when improperly disposed of or recycled in an uncontrolled manner, can cause severe soil, water, and air pollution. Exposure to these toxic substances poses serious health risks, including neurological damage, kidney disease, and cancer, especially for workers involved in unregulated recycling practices.

As awareness of these risks increases, both consumers and businesses are becoming more concerned about the negative impact of improper e-waste management. This concern is driving the demand for sustainable e-waste recycling practices. More people are opting to dispose of their old electronics responsibly, and businesses are now more inclined to partner with certified e-waste management companies to ensure compliance with environmental standards. Moreover, environmental organizations and advocacy groups are playing a crucial role in educating the public and pushing for more stringent regulations on e-waste disposal. Public and private sector initiatives are promoting the recycling of valuable metals like gold, silver, and copper found in old electronic devices, which can help mitigate the environmental damage caused by raw material extraction. As consumers become more environmentally conscious, the demand for proper e-waste management services will continue to rise, fostering growth in the market. India's air quality is among the worst in the world, with 13 of the 20 most polluted cities globally located in India, according to the World Air Quality Report 2023. India generates about 9.46 million tonnes of plastic waste annually, making it one of the largest contributors to global plastic pollution.

Growth in the Electronics and IT Sector

The rapid expansion of India's electronics and IT sectors is another significant driver of the e-waste management market. With a booming economy, India is one of the largest markets for consumer electronics, including smartphones, laptops, and televisions. The country's growing IT and electronics manufacturing industries are contributing to an increased production and consumption of electronic devices, which in turn generates significant volumes of e-waste.

The growing dependence on electronic devices in both personal and professional spheres has resulted in a steady increase in e-waste production. For example, in urban areas, where digitization is accelerating, businesses and individuals are increasingly upgrading their electronic equipment, contributing to a steady stream of e-waste. The government's initiatives to promote the "Digital India" campaign and smart city projects

are encouraging digital adoption across various sectors, further boosting the demand for electronics. Additionally, the IT sector is experiencing a boom with increased outsourcing, cloud computing, and digital services, leading to a greater need for devices like servers, computers, and networking equipment. As businesses and consumers upgrade their devices to keep up with technological advancements, the e-waste generated from these discarded products requires proper management. The combined impact of the expanding electronics market, technological advancements, and digital adoption is fostering a growing need for effective e-waste recycling and disposal solutions in India. The Indian IT industry contributes to nearly 8% of the country's GDP and accounts for 50% of global outsourcing in terms of services.

Key Market Challenges

Lack of Infrastructure for E-Waste Collection and Recycling

One of the significant challenges faced by the India E-Waste Management market is the inadequate infrastructure for the collection, processing, and recycling of electronic waste. While e-waste generation in the country is rising rapidly, the infrastructure required to manage this waste efficiently remains underdeveloped. There are several factors contributing to this issue.

E-waste collection and recycling facilities are concentrated mainly in urban areas, leaving rural and remote regions under-served. Many parts of the country lack the necessary collection points for discarded electronics, leading to improper disposal or informal recycling practices. As a result, valuable and hazardous materials in e-waste, such as gold, silver, and toxic metals like mercury and lead, are not recovered or safely disposed of, resulting in environmental degradation.

The formal e-waste recycling sector remains fragmented and lacks scale. While there are a few established recycling facilities, they are not widespread enough to handle the vast volume of e-waste generated in India. Additionally, many recycling units operate under suboptimal conditions, with outdated technologies and insufficient environmental controls. The informal sector, consisting of small, unregulated recycling units, continues to play a significant role in processing e-waste, but these operations often use harmful methods such as open burning and acid baths, which lead to significant environmental pollution and pose health risks to workers. Moreover, there is a lack of awareness and education among the public and businesses about the importance of proper e-waste disposal. Many consumers still dispose of their old electronics in landfills or sell them to informal recyclers, contributing to the inefficiency of the waste management system. For

effective e-waste management, there needs to be a comprehensive network of authorized collection centers, recycling plants, and awareness campaigns that educate both the public and businesses on responsible disposal practices.

As the volume of e-waste continues to grow, the lack of robust infrastructure poses a serious challenge to the sustainable management of electronic waste in India. Addressing this challenge requires significant investments in recycling infrastructure, technological upgrades, and policies that promote responsible e-waste disposal at every level.

Informal E-Waste Recycling and Health & Environmental Risks

Another major challenge facing the India E-Waste Management market is the widespread presence of informal recycling practices, which contribute to both environmental and health risks. The informal sector in India is a significant player in e-waste recycling, accounting for a large portion of the waste processed in the country. However, the lack of regulations, proper handling techniques, and safety protocols makes these operations dangerous to both workers and the environment.

In the informal recycling sector, e-waste is often processed using primitive methods, such as manual dismantling, open burning, and acid-based extraction processes. These methods are not only inefficient but also highly hazardous. For example, open burning of plastics and cables to extract copper leads to the release of toxic fumes like dioxins and furans, which are harmful to human health and the atmosphere. Additionally, the use of acids and other chemicals to extract valuable metals from circuit boards can result in the leaching of hazardous substances like lead and mercury into the soil and water.

These informal recycling practices not only harm the workers who are often exposed to toxic substances without proper protective equipment but also pose significant risks to the local communities and ecosystems. The pollution from improperly disposed e-waste can contaminate water sources, harm wildlife, and contribute to long-term environmental degradation. Moreover, the informal sector lacks accountability and transparency, making it difficult for authorities to monitor and regulate the recycling processes. Although there are some laws in place to regulate e-waste management, enforcement remains weak, and the informal sector often operates outside the purview of these regulations. This lack of regulation exacerbates the problem, as electronic waste is often handled without regard to the health and safety standards required for proper recycling.

To address these challenges, India needs to strengthen enforcement of e-waste management laws and encourage a shift toward formal, regulated recycling practices. Additionally, training and educating informal sector workers about safe recycling techniques, improving working conditions, and promoting awareness of the health and environmental risks associated with improper e-waste disposal are essential steps toward ensuring sustainable and responsible e-waste management in the country.

Key Market Trends

Increased Adoption of E-Waste Recycling Technologies

As the volume of electronic waste in India continues to rise, the adoption of advanced e-waste recycling technologies is becoming a prominent market trend. Traditional recycling methods are being gradually replaced by more efficient, environmentally friendly technologies. This shift is driven by both government regulations and consumer demand for sustainable solutions to manage e-waste.

Emerging recycling technologies, such as mechanical shredding, chemical leaching, and thermal processing, are designed to recover valuable materials such as gold, silver, copper, and rare earth metals more efficiently while minimizing environmental harm. These processes allow recyclers to maximize material recovery, reduce energy consumption, and minimize toxic emissions compared to older, manual methods. Additionally, the use of automated systems for e-waste processing is increasing, which improves efficiency, reduces the risk of human error, and ensures that toxic substances, such as lead and mercury, are handled safely. Automation also allows for the separation of valuable metals and plastics, making the recycling process more economically viable.

The growth in technology adoption is supported by the increasing investments in research and development (R&D) by both private players and government organizations. Innovations in recycling technologies are also driving the creation of new markets for recovered materials, which can be reused in the manufacturing of new electronic products, promoting a circular economy. With regulatory frameworks, such as Extended Producer Responsibility (EPR), encouraging responsible disposal and recycling practices, technology adoption will play a pivotal role in shaping the future of India's e-waste management market. India is one of the largest producers of e-waste in the world, generating 2.5 million metric tonnes (MT) of e-waste in 2023. The country's e-waste generation is projected to increase by 10-15% annually, driven by the rising

consumption of electronic products like smartphones, laptops, televisions, and home appliances.

Rise in Consumer Awareness and Participation in E-Waste Disposal

One of the most important trends in the India E-Waste Management market is the rising awareness among consumers about the environmental and health risks posed by improper e-waste disposal. As the public becomes more informed about the harmful effects of toxic chemicals in electronic waste, there is a noticeable increase in demand for responsible e-waste recycling and disposal services.

The Indian government, alongside environmental organizations and private companies has been conducting educational campaigns to raise awareness regarding the dangers of improper disposal, such as soil and water contamination. These campaigns emphasize the need for consumers to participate in e-waste collection programs, where they can responsibly dispose of their old and unwanted electronics at authorized recycling centers. Additionally, major consumer electronics companies are playing an active role in educating their customers about how to recycle or dispose of their old devices properly. This is particularly important for the younger, tech-savvy population that frequently upgrades their devices but may not be fully aware of the environmental consequences of discarding old electronics improperly.

Many companies are also implementing take-back schemes, where consumers can return their old electronic products to the manufacturer for proper recycling or reuse. As more consumers take part in such initiatives, the volume of e-waste being collected and processed through formal channels is increasing, driving growth in the e-waste management market.

As consumer awareness continues to grow, the demand for certified recycling facilities and collection points will expand, accelerating the overall growth of the e-waste management market in India

Segmental Insights

Processed Material Insights

The Metal held the largest market share in 2024. Metal dominates the India E-Waste Management market primarily due to its high economic value and the significant demand for its recovery in the production of new electronic devices. E-waste contains a

variety of metals such as gold, silver, copper, palladium, and aluminum, all of which are valuable for recycling. The recovery of these metals is essential not only for environmental sustainability but also for reducing the reliance on mining raw materials, which is both expensive and environmentally harmful.

Precious metals like gold and silver are found in small quantities but are highly valuable due to their use in electronic components like circuit boards, connectors, and microchips. Gold, for instance, is widely used in electronics for its excellent conductivity and resistance to corrosion, making it a key material in devices like smartphones, computers, and televisions. Silver and palladium are also used in connectors and circuit boards, adding to their demand in the recycling process.

Copper, another significant metal found in e-waste, is widely used in wiring and electrical components due to its excellent electrical conductivity. As the demand for electronics continues to rise, the need for copper in the manufacturing of new devices also increases. The recovery of copper from e-waste is crucial to meet this demand, reducing the need for virgin copper extraction, which has high environmental and economic costs.

Aluminum, found in devices like smartphones, laptops, and televisions, is also a valuable material for recycling. It is lightweight, durable, and widely used in electronic casings and components.

Regional Insights

South India held the largest market share in 2024. South India is a dominant region in the India E-Waste Management market due to several key factors, including a robust industrial base, a high concentration of IT and electronics companies, and well-established infrastructure for recycling and disposal.

South India, particularly states like Tamil Nadu, Karnataka, Andhra Pradesh, and Telangana, is home to a large number of IT and electronics manufacturing companies. The region hosts major IT hubs like Bengaluru, Chennai, and Hyderabad, which are centers for technology innovation and electronic product manufacturing. As a result, there is a higher volume of e-waste generated from both consumer electronics and industrial equipment. The presence of multinational corporations and large domestic players in these cities further amplifies the need for efficient e-waste management solutions.

South India has seen significant investments in e-waste recycling infrastructure, with many certified recycling facilities being set up in the region. These facilities are equipped with advanced technology for safe recycling, making the region a leader in sustainable e-waste disposal. The government of Tamil Nadu, for instance, has also taken proactive measures to improve recycling processes and establish responsible e-waste disposal systems. Moreover, cities like Bengaluru have witnessed the growth of start-ups and organizations focused on developing innovative e-waste management solutions.

South India benefits from higher awareness levels regarding e-waste management. With increasing environmental consciousness and strong support from both local and state governments, the region has developed efficient collection and disposal systems. These factors, combined with strong consumer awareness campaigns, have made South India a pioneer in implementing structured and responsible e-waste management systems.

Key Market Players

Sims Limited

Electronic Recyclers International, Inc.

Waste Management Holdings, Inc

Aurubis AG

EnviroServe Inc.

Umicore N.V.

Veolia Environnement SA

Boliden Mineral AB

Report Scope:

In this report, the India E-Waste Management Market has been segmented into the following categories, in addition to the industry trends which have also been detailed

India E-Waste Management Market, By Processed Material (Metal, Plastic, Glass, Others), By Recycler Type (Glas...

below:

India E-Waste Management Market, By Processed Material:

Metal

Plastic

Glass

Others

India E-Waste Management Market, By Recycler Type:

Glass Recycler

Metal Recycler

Plastic Recycler

Printed Circuit Board Recycler

India E-Waste Management Market, By Category:

Temperature Exchange Equipment

Screens & Monitors

Large Equipment

Small Equipment

Small IT & Telecommunication Equipment

India E-Waste Management Market, By Region:

South India

North India

West India

East India

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the India E-Waste Management Market.

Available Customizations:

India E-Waste Management Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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