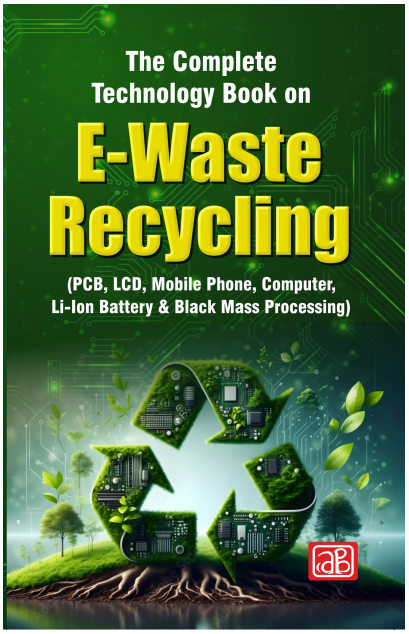
Entrepreneur India

106-E, Kamla Nagar, New Delhi-110007, India.
Tel: 91-11-23843955, +91 9097075054
Mobile: +91-9097075054
Email: npcs.ei@gmail.com, info@entrepreneurindia.co
Website: www.entrepreneurIndia.co



The Complete Technology Book on E-Waste Recycling (PCB, LCD, Mobile Phone, Computer, Li-Ion Battery & Black Mass Processing)

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Description

The Complete Technology Book on

E-Waste Recycling

(PCB, LCD, Mobile Phone, Computer, Li-Ion Battery & Black Mass Processing) 4th Edition

The e-waste recycling industry has become a vital pillar of sustainable development and modern environmental management. Accelerated technological innovation, frequent device upgrades, and shrinking product life cycles have significantly increased the volume of discarded electronic equipment worldwide. This growing stream of electronic waste contains both hazardous substances and high-value recoverable materials, making its proper management essential not only for environmental protection but also for resource optimization. Effective e-waste recycling minimizes soil, air, and water contamination while advancing circular economy practices through systematic material recovery and reuse.

Market expansion in the e-waste recycling sector is fuelled by the rapid growth of consumer electronics, digital infrastructure, electric vehicles, renewable energy systems, and battery-driven technologies generating valuable black mass for metal recovery. Strengthening regulatory frameworks, extended producer responsibility (EPR) policies, and increasing emphasis on sustainable raw material sourcing have further accelerated the demand for structured recycling ecosystems. Industries now view urban mining and black mass processing as strategic and cost-efficient alternatives to traditional mining, while forward-thinking entrepreneurs recognize e-waste recycling as a high-potential business opportunity aligned with environmental compliance, resource security, and green manufacturing.

This book offers a comprehensive technical and operational roadmap across the entire electronic waste value chain. It covers e-waste composition, hazardous material management, regulatory compliance, and systematic handling approaches. Detailed process explanations are provided for recycling printed circuit boards (PCBs), LCD panels, mobile devices, computers, lithium-ion batteries, and black mass. The book further explores mechanical separation, hydrometallurgical and pyrometallurgical techniques, as well as emerging recovery technologies, supported by discussions on pollution control, quality analysis, life-cycle assessment, and carbon footprint evaluation.

This handbook has been thoughtfully developed for start-ups, first-time entrepreneurs, and new entrants who are planning to establish their own business or manufacturing venture in the e-waste recycling sector. It provides a clear and practical understanding of the industry by blending emerging market opportunities with essential technical and operational know-how required to set up and run a successful recycling unit.

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About Niir

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