

# Index

## C

Cathode-ray tube (CRT), 2–14, 48, 59, 212  
Chemical recycling, vi, 112–123  
Circular economy, 84, 87, 105, 171, 192, 216  
Clean fuel, 112–123  
Closed-loop process, v, 6, 7  
Combustion, vi, 121, 122, 212, 213, 225  
Contaminants, 68, 76, 191, 208, 212, 217, 223, 225, 228  
Cost and revenues of recycling, 20, 21, 23–26, 43, 45, 46  
Critical metals, 83, 171  
Cross-country comparison, 128

## D

Data envelopment analysis (DEA), vi, 130, 132, 133  
Developing countries, vi, 5, 14, 34, 60, 69, 71, 82–105, 115, 144, 145, 153, 188, 205, 206, 212, 216, 220–222, 228  
Disassembly, v, 20–26, 28–34, 70, 76, 139, 154, 173, 190, 193, 194, 222

## E

Economic, v, vii, 2, 22, 23, 25, 34, 40–61, 65, 67, 69, 73, 75, 82–87, 90–92, 94, 97, 98, 100–102, 104, 105, 115, 129, 130, 134, 148, 150, 154, 172, 174, 180, 186, 188, 192, 193, 203, 205  
Efficiency measurement, 128  
The efficiency of recycling, 25, 68, 154

Electrical and electronic equipment (EEE), vii, 65, 85, 88, 100, 115, 128, 135, 138, 139, 147, 150, 160, 162, 174, 180–189, 191, 192, 195, 196, 202–209, 211, 213, 216, 220  
Electronic residues, 105  
Electronic waste (e-waste), v–vii, 4, 14, 21, 22, 24, 29, 30, 40–61, 71, 82–105, 112–123, 128, 144–154, 166, 180–196, 202–217, 220–228  
Electronic waste management, vi, vii, 43–48, 58, 65–77, 91, 112, 115, 120, 202–217  
Electronic waste regulations, 68, 71, 82, 89, 145  
Elements recovery, 193  
Energy, vi, vii, 2, 8, 12, 25, 27, 42, 55, 73, 75–77, 115–122, 150–152, 160–162, 166, 174, 181, 192, 195, 210  
Environment, 5, 20, 44, 67, 83, 112, 128, 146, 160, 180, 220  
Environmental and social issues, 188  
Environmental challenges, v, vii, 2, 138  
Environmental regulations, 70, 84, 129, 189  
European Directives, 84, 91, 138  
European Union (EU), vi, 20, 45, 58, 59, 68, 71, 82, 128–139, 145, 182, 188, 205, 209, 216, 222, 227  
Extended producer responsibility (EPR), 5, 42, 94, 96, 104, 145, 147, 148, 228

## F

Frit, 5, 8, 9  
Funnel glass, 3, 6–14

**G**

Gasification, vi, 118, 119, 121, 122, 151

**H**

Hazards in electronic recycling, 181, 203  
 Heavy metal toxicity, 224  
 Heavy metals, 14, 33, 44, 65, 69, 70, 73, 75,  
 77, 102, 112, 144, 150, 153, 212, 213,  
 215, 217, 221, 223–227  
 Hitchhike metal/element, 192  
 Human health, vii, 20, 67, 95, 128, 129,  
 144, 145, 160, 190, 202–217,  
 220–228  
 Hydrothermal, vi, 11, 116, 119, 122, 123

**I**

Industrialization, 65, 93, 202

**L**

Lead (Pb), 2, 41, 67, 113, 150, 181, 208, 221  
 LED elements/metals, 161, 166–169,  
 173, 175  
 LED industry, 165  
 Life cycle assessment (LCA), 148, 149

**M**

Management policy, vi, 83, 86, 90, 102,  
 130, 145  
 Material composition, vi, 20, 21, 65–77, 210  
 Material flow analysis (MFA), 148, 149  
 Metallurgical recycling, 193, 211  
 Metallurgy, 150, 174  
 Metal recovery, 92, 150–153, 163, 186  
 Modular system, 33, 34

**N**

Nonparametric methods, vi, 130, 133, 134

**O**

Open-loop process, v, 6, 7

**P**

Panel glass, v, 2, 5, 7–10, 12, 13, 209  
 Plastics, 3, 22, 41, 65, 94, 112, 144, 165, 181,  
 207, 220  
 Precious metals, vii, 22, 24, 29, 42, 43, 45, 52,  
 84, 102, 105, 144, 150, 151, 154, 168,

172, 181, 191, 192, 195, 208, 210, 211,  
 223, 224  
 Printed wiring board (PWB), 73, 74, 77, 89,  
 144, 152, 153  
 Processing line configuration, v, 32, 33

**R**

Rare earth elements (REE), vii, 167–169, 174,  
 175, 180, 186–188, 191–196, 214  
 Reclamation, 180  
 Reconditioning, 89, 95, 105  
 Recovery/reclamation process, 10, 90, 190  
 Recycle process, 4, 6, 7, 12, 13, 42, 43, 60, 67,  
 68, 76, 86, 92, 96, 112, 116, 118, 121,  
 153, 154, 160–175, 190, 208, 210–212,  
 226  
 Recycling, 20, 41, 65, 82, 112, 128, 145, 161,  
 180, 203, 220  
 Recycling challenges, vi, 65, 82–105  
 Recycling hierarchy, 70–71  
 Recycling system, 2, 21, 30, 41, 58, 97, 216  
 Residues revalorization, 82  
 Reverse logistics, vi, 82–90, 93, 94, 96–105,  
 160, 193

**S**

Scarce resources, 180–196  
 Shredding and sorting, 22, 33  
 Sustainable developmental goals, 203, 204  
 Sustainable waste management, vii, 65, 67, 82,  
 83, 102, 149, 202–217, 222

**T**

Televisions, v, 2, 4, 12, 21, 28–30, 32, 42, 43,  
 45, 55, 58, 65, 67, 91, 94, 114, 147,  
 202, 204, 205, 208, 220  
 Thermoplastics in electronic waste, 65, 70

**U**

Urban mining, 93, 105, 153, 175, 186, 187,  
 191–193, 196

**V**

Valuable chemicals, 112

**W**

Waste, 4, 20, 40, 65, 82, 112, 128, 144, 160,  
 180, 202, 220

- Waste electrical and electronic equipment (WEEE), 20, 40, 65, 83, 112, 128, 146, 160, 180, 202, 227
- Waste generation, vi, 44, 67, 69, 75, 91, 95, 112, 189–191, 203, 205, 216
- Waste management, 60, 65, 67, 75, 82, 83, 85, 86, 90, 95, 123, 138, 175, 207, 216
- Waste processing, 21, 58, 93, 100, 194, 223