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POLICY BRIEF

Strengthening the Circular Economy in the Construction and Electronics Sectors



Background

Indonesia has positioned the circular economy as a strategic pillar of the National Long-Term Development Plan (RPJPN) 2025-2045, in line with the Indonesia Emas 2045 vision of a sovereign, advanced, and sustainable nation. As part of the Economic Transformation agenda through Green Economy development, the circular economy is expected to enhance national competitiveness, improve resource efficiency, reduce waste generation, and lower greenhouse gas (GHG) emissions to support the country's net-zero emissions target. The National Circular Economy Roadmap and Action Plan 2025-2045 identifies five priority sectors, namely food, retail (with a focus on plastic packaging), electronics, construction, and textiles, as key drivers of Indonesia's transition from the linear "Extract-Use-Dispose" model towards a circular economic system.

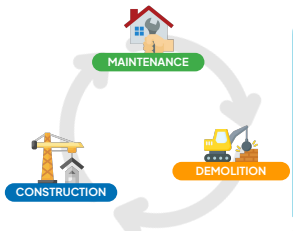
Within the national development planning framework, the National Medium-Term Development Plan (RPJMN) 2025-2029 translates circular economy principles into the policy direction of a "Circular Economy Ecosystem" under National Priority 2. This framework focuses on three core approaches: reducing resource consumption, extending the lifespan of products and materials, and strengthening recycling and recovery systems. Key strategic components include the adoption of resource efficiency measures, integration of eco-design principles, certification of environmentally friendly products, increased use of circular materials, higher industrial recycling rates, and waste prevention. Together, these measures reflect Indonesia's commitment to mainstreaming circularity within its industrial transformation and low-carbon development agenda.

In the construction sector, the 9R principles of the circular economy have gradually been incorporated into sectoral regulations covering the entire building life cycle. These include: (1) procurement, guided by National Public Procurement Agency (LKPP) Decree No. 157 of 2024 on Sustainable Procurement Guidelines; (2) construction and maintenance activities, regulated under Ministry of Public Works and Housing Regulation (Permen PUPR) No. 21 of 2021 on Green Building Performance Assessment; and (3) demolition activities, regulated under Permen PUPR No. 18 of 2021 on Building Demolition.

Construction sector regulations are also linked to national waste management policies. Government Regulation No. 27 of 2020 classifies construction and demolition waste as a specific waste stream and requires site managers to prepare demolition waste management plans prior to project implementation.

POLICY SUMMARY

Overview: **Integration of Circular Economy 9R Principles (R0–R9) Across Construction, Maintenance, and Demolition Activities in Indonesia**



Procurement Stage
R0: Avoid the procurement of resource-intensive materials.
R1: *Apply Life Cycle Costing (LCC) principles in sustainable construction procurement*[11]
R2: Require material waste reduction analysis and reporting
R8: Establish minimum recycled content requirements in construction materials

Construction Stage
R2: Reduce construction waste generation[2,4,8]
R3: Encourage reuse and life extension of materials and components[2,4,8]
R8: Promote recycling of construction materials[2,4,8]
R9: Support recovery of materials and energy from construction waste streams[2,4,8]

Demolition Stage
R1: Retain products and components that remain functional and suitable for continued use[2,4,8]
R2: Minimise waste generation during demolition activities[1,2,6,8,10]
R3: Promote the reuse of materials and building components[2,3,4,6,7,8]
R8: Require recycling of demolition waste and recoverable materials[1,2,3,4,7,8,10]
R9: Recover residual materials for further use or processing[2,4,6,7]

Maintenance & Renovation Stage
R0: Avoid unnecessary replacement of resource-intensive materials
R1: Adapt underutilised spaces or building components for continued use[3]
R2: Reduce embodied environmental impacts associated with maintenance activities[6]
R3: Extend the service life of building components[6]
R4: Repair components and assets to restore their original functionality[3]
R5: Refurbish components using equivalent performance specifications[3]
R7: Repurpose buildings, spaces, or components for alternative functions[3,4,8]

Regulations: 1) Key Regulatory Frameworks Law No. 18/2008 on Waste Management. 2) Government Regulation No. 27/2020: Management of Specific Waste; 3) Government Regulation No. 16/2021: Implementation of Law No. 28 of 2002 on Buildings; 4) Government Regulation No. 22/2021: Implementation of Environmental Protection and Management; 5) Ministry of Industry Regulation No. 39/2018: Procedures for Green Industry Certification (Green Industry Information System/SIH); 6) Ministry of Public Works and Housing Regulation No. 9/2021: Guidelines for Sustainable Construction Implementation; 7) Ministry of Public Works and Housing Regulation No. 18/2021: Building Demolition; 8) Ministry of Public Works and Housing Regulation No. 21/2021: Green Building Performance Assessment; 9) Ministry of Industry Regulation No. 46/2024: Green Industry Standards (SIH) for the Flat Glass Industry; 10) Ministry of Environment and Forestry Regulation No. 9/2024: Management of Waste Containing Hazardous and Toxic Materials and Hazardous and Toxic Waste; 11) Head of LKPP Decree No. 157/2024: Sustainable Procurement Guidelines.

Despite these regulatory developments, several challenges continue to hinder effective implementation of circular economy principles in the construction sector.

First, most regulatory requirements remain focused on administrative compliance rather than measurable circularity outcomes. For example, a Demolition Technical Plan is required as part of the permitting process, but it does not establish performance targets for material reuse, recycling rates, or diversion of waste from landfills. Similarly, public procurement systems have yet to integrate circularity indicators, such as minimum recycled content requirements.

Second, approaches such as design for disassembly, modular construction, and material passports have not yet been systematically integrated into project planning and development processes. While several construction materials, including steel, iron, cement, glass, and ceramics, are covered under Indonesia's Green Industry Standards, incentives for producers to adopt these standards remain limited. At the same time, innovation and market availability of other circular construction materials are still insufficient to meet demand across the country.

Third, binding requirements remain largely confined to government-funded projects through Building Information Modelling (BIM) and sustainable procurement policies, as well as large-scale developments subject to Green Building obligations. A significant proportion of construction activities, including renovations, routine demolition works, and small- to medium-scale private sector projects, remain outside the scope of these requirements. Implementation within the private sector also depends heavily on the capacity of local governments to enforce permitting and compliance mechanisms.



Gender Equality and Social Inclusion (GESI) is a critical dimension of circular economy implementation in the construction sector. The sector contributed approximately 9.82% of Indonesia's Gross Domestic Product in the third quarter of 2025 and is expected to become a significant source of green employment opportunities. The circular economy is projected to generate around 4.4 million new jobs by 2030, with approximately 75% of these opportunities potentially accessible to women. However, this potential has yet to be realised. Women currently account for only around 2% of Indonesia's construction workforce, significantly lower than the 11 to 12% recorded in the United States, where apprenticeship programmes, mentorship initiatives, and structured career pathways have supported greater participation. Beyond numerical representation, women continue to face structural barriers, including long working hours, male-dominated workplace cultures, and risks of sexual harassment. Nevertheless, women contribute across the circular value chain, from resource-efficient planning and design to community-based waste management and material recovery activities.

At the same time, construction material recovery chains, including building demolition, metal collection, and second-hand component trading, continue to rely heavily on informal workers, including women. Many of these workers operate without formal employment arrangements, social protection, or occupational health and safety safeguards. As a result, those who contribute most directly to material recovery are often the most exposed to workplace accidents and hazardous materials. Several emerging practices demonstrate that inclusion can be institutionalised within the sector. These include the engagement of female daily workers in the construction of Sekolah Rakyat facilities by the Ministry of Public Works, competency certification programmes for persons with disabilities in Belitung Regency in line with Law No. 8 of 2016, and the ILO-PAGE Indonesia initiative to address the absence of green construction skills standards through a Skills Needs Assessment.

For Indonesia's transition towards a circular construction sector to be both effective and equitable, circularity indicators in public procurement systems and national monitoring frameworks should be complemented by measurable inclusion indicators. These should include women's participation rates, formalisation and occupational safety protection for informal workers, and access to training and certification opportunities for persons with disabilities. Such an approach would help ensure that the benefits of circular economy transition are shared more broadly while strengthening social equity alongside environmental and economic outcomes.

[1] Badan Pusat Statistik. (2025). *Indikator konstruksi, triwulan III-2025* (Vol. 19, No. 4). Badan Pusat Statistik.
[2] Kementerian PPN/Bappenas. (2021). *The future is circular: Langkah nyata inisiatif ekonomi sirkular di Indonesia*. Kementerian PPN/Bappenas.
[3] Choiriyah, I. (2025). *Tantangan, faktor sukses, dan strategi pengembangan karier wanita pada sektor industri konstruksi di Indonesia* [Tesis magister, Universitas Gadjah Mada]. https://etd.repository.ugm.ac.id/penelitian/detail/243425
[4] Gallagher, C. M. (2022, April). *The construction industry: Characteristics of the employed, 2003–20*. U.S. Bureau of Labor Statistics. https://www.bls.gov/spotlight/2022/the-construction-industry-labor-force-2003-to-2020/home.htm
[5] Kementerian Pekerjaan Umum. (2025). *Keterlibatan perempuan dalam pembangunan Sekolah Rakyat* [Video]. Instagram. https://www.instagram.com/reels/DNQKfs4O6IV/
[6] Isneini, M., & Luthfianto, F. P. (2025, January 6). *Leave no one behind at Indonesian construction*. Direktorat Jenderal Bina Konstruksi, Kementerian Pekerjaan Umum. https://binakonstruksi.pu.go.id/publikasi/karya-tulis/leave-no-one-behind-at-indonesian-construction/
[7] Partnership for Action on Green Economy (PAGE) Indonesia. (2025, November 18). *Sculpting the future of work: Strategy for construction sector skills in the circular economy framework*. https://un-page.id/en/article/read/sculpting-the-future-of-work-strategy-for-construction-sector-skills-in-the-circular-economy-framework

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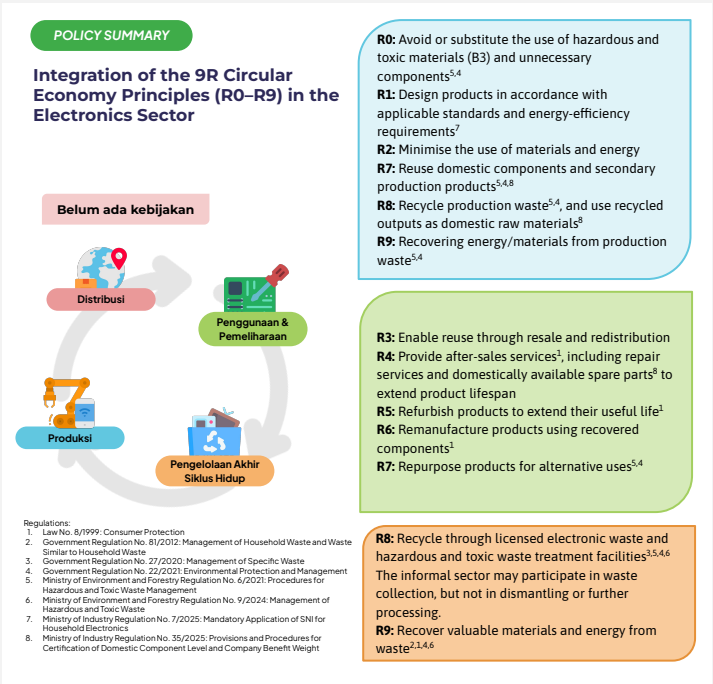
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POLICY BRIEF

Strengthening the Circular Economy in the Construction and Electronics Sectors



In the electronics sector, only eight regulations have been identified as being closely linked to the product life cycle.



These regulations incorporate some elements of the 9R principles across the production, use and maintenance, and end-of-life stages. They cover the implementation of mandatory Indonesian National Standards (SNI) for household electronics (Minister of Industry Regulation No. 7/2025), consumer protection (Law No. 8/1999), the use of domestic components (Minister of Industry Regulation No. 35/2025), environmental protection and management (Government Regulation No. 22/2021), and waste management, including household waste, specific waste, and hazardous and toxic waste (Government Regulation No. 27/2020, Government Regulation No. 81/2012, Minister of Environment and Forestry Regulation No. 6/2021, and Minister of Environment and Forestry Regulation No. 9/2024). No relevant regulation has yet been identified for the distribution stage. However, these policy instruments remain largely sector-specific and have not yet established an integrated electronic waste management system covering the entire value chain from upstream to downstream.

From the producer perspective, Indonesia's regulatory framework for electronic waste management does not yet specifically mandate the implementation of Extended Producer Responsibility (EPR). Current producer obligations are primarily limited to meeting product standards and managing waste generated from business activities. They do not yet cover take-back schemes, post-consumer product collection, collection and recycling targets, or reporting requirements for the volume of products placed on the market. In addition, limited eco-labelling requirements and a market structure dominated by assembly, distribution, and retail companies rather than original equipment manufacturers (OEMs) mean that critical upstream decisions related to circular product design largely remain outside the scope of domestic companies' policy obligations.

[8]Kementerian PPN/Bappenas. (2025). Peta jalan dan rencana aksi nasional ekonomi sirkular Indonesia 2025–2045. Low Carbon Development Indonesia (LCDI). https://lcdi-indonesia.id/wp-content/uploads/2025/06/ranes-en.pdf

At the same time, **local governments** are responsible for managing household electronic waste and reporting waste management performance through SIPSN. However, this system is not yet integrated with an EPR scheme. As a result, data gaps remain regarding electronic waste generation, collection, and recycling, while a formal collection system linking producers, local governments, and licensed waste management operators has yet to be established. Collection infrastructure for electronic waste has continued to develop, but recycling facilities remain underutilised and operate at only around 15% of their potential capacity.[8] Consequently, a significant share of electronic waste continues to flow into the informal sector, which plays an important role in collection and material recovery. However, the management of residues and hazardous components often does not meet environmental standards.

Indonesia's regulatory framework also distinguishes between **electronic waste classified as specific waste containing hazardous and toxic substances (B3) and hazardous and toxic waste (Limbah B3).** Household electronic waste is managed through the general waste management system, while waste generated from production processes is classified as hazardous and toxic waste and requires management through licensed facilities. This distinction creates gaps in the management chain, as electronic waste streams do not yet have clearly defined pathways to appropriate treatment and processing facilities.



Gender Equality and Social Inclusion (GESI) analysis is critical to the implementation of the circular economy in the electronics sector, as electronic waste collection, sorting, and dismantling in Indonesia continue to involve the informal sector, including women, young people, and low-income communities, who often have limited skills and occupational safety protection.

Globally, the World Health Organization (WHO) estimates that approximately 18 million children and adolescents and 12.9 million women may be exposed to health risks associated with informal e-waste recycling.[9] A study in areas surrounding Jakarta found that informal e-waste processing sites had heavy metal concentrations exceeding applicable standards, including lead at 3,653 mg/kg, cadmium at 3.4 mg/kg, and mercury at 15.2 mg/kg in soil, as well as manganese at 1.43 mg/L in water. Heavy metal concentrations in children's hair around these sites were also reported to be two to seven times higher than those in comparison areas and were associated with reduced attention, executive function, and academic performance.[10] Similar findings from Agbogbloshie, Ghana, documented the presence of polycyclic aromatic hydrocarbons in the breast milk of women living or working near e-waste processing sites.[11]

These findings indicate that risks are not limited to workers directly involved in dismantling activities. Women and children living, trading, or providing care in surrounding areas may also be exposed. Protection measures should therefore extend beyond individual workers to include workers' families and surrounding communities.

The participation of vulnerable groups should also extend beyond low-paid and high-risk collection activities towards higher-value activities such as repair, refurbishment, and reuse. Several initiatives demonstrate the potential of this approach, including the Coding Mama, Coding Difabel, and Solar Mama programmes in IKN, which had graduated 140 participants by the end of 2024,[12] electronic repair training for persons with disabilities in Magelang[13] and Depok,[14] and Telkom's Eduvice programme, which refurbishes used electronic devices for students in underserved regions.[15]

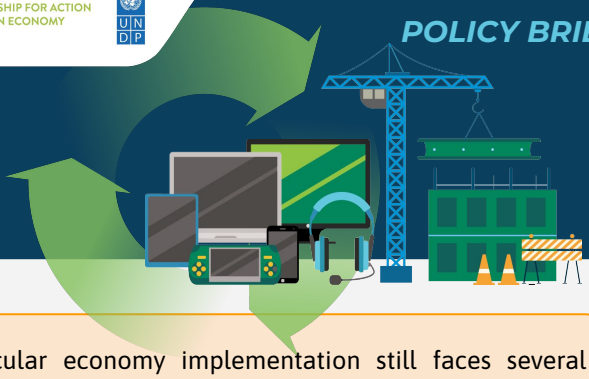
Therefore, EPR policies and the development of e-waste infrastructure should integrate social inclusion indicators, accessible skills training, occupational health and safety (OHS) protection, and contaminated-site remediation to ensure that the transition towards a circular electronics sector is both safe and inclusive.

[9] World Health Organization. (2021). *Children and digital dumpsites: E-waste exposure and child health.* World Health Organization. https://www.who.int/publications/i/item/9789240023901
[10]Soetrisno, F. N., & Delgado-Saborit, J. M. (2020). Chronic exposure to heavy metals from informal e-waste recycling plants and children's attention, executive function and academic performance. *Science of the Total Environment, 717*, 137099. https://doi.org/10.1016/j.scitotenv.2020.137099
[11]World Health Organization. (2023). *Electrical/electronic waste and children's health: Training for health care providers* (2nd ed.; WHO/HEP/ECH/CHE/23.03). World Health Organization.
[12] Otorita Ibu Kota Nusantara. (2024, December 13). *Otorita IKN cetak 140 lulusan program Coding Mama, Coding Difabel, dan Solar Mama.* https://ikn.go.id/id/posts/otorita-ikn-cetak-140-lulusan-program-coding-mama-coding-difabel-dan-solar-mama
[13]Pemerintah Provinsi Jawa Tengah. (2019, April 26). *Anak disabilitas rungu wicara di Kota Magelang dilatih servis HP.* https://jatengprov.go.id/beritadaerah/anak-disabilitas-rungu-wicara-di-kota-magelang-dilatih-servis-hp/
[14]ANTARA. (2023, May 24). *Pemkot Depok berikan pelatihan elektronik bagi disabilitas.* https://megapolitan.antaranews.com/berita/243657/pemkot-depok-berikan-pelatihan-elektronik-bagi-disabilitas
[15]Telkom Indonesia. (n.d.). *Telkom restores electronic waste with Eduvice.* https://www.telkom.co.id/sites/news-resources/en_US/news/telkom-restores-electronic-waste-with-eduvice-1815

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POLICY BRIEF

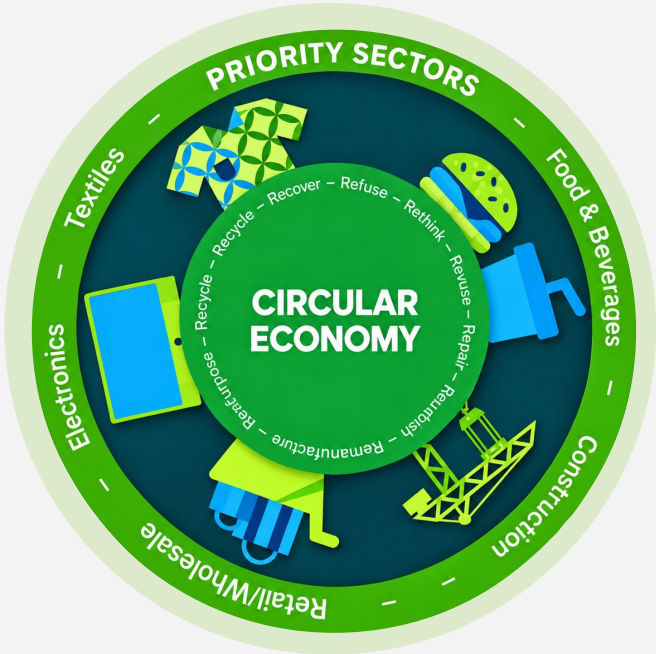
Strengthening the Circular Economy in the Construction and Electronics Sectors



The policy mapping and gap analysis indicate that Indonesia's circular economy implementation still faces several fundamental challenges. These challenges provide the basis for developing strategic recommendations and action plans at both the cross-cutting and priority sector levels, particularly for the construction and electronics sectors.

Three Key Challenges to Circular Economy Implementation in priority sectors:

- **Institutional governance remains fragmented and policies are not yet fully integrated.** The division of roles, cross-sector coordination, and implementation capacity across ministries, government agencies, and local governments have not yet been consistently strengthened and coordinated.
- **Market ecosystems and economic instruments remain underdeveloped.** Although the regulatory framework has continued to evolve, it has not yet been sufficiently supported by economic instruments, financing mechanisms, and incentives to stimulate investment, demand, and the uptake of circular materials.
- **Data, monitoring, and enforcement systems are not yet performance-based.** Data and reporting remain fragmented, while enforcement continues to focus more on administrative compliance than on achieving measurable circular economy outcomes.



Three Key Challenges to Circular Economy Implementation in the <u>Construction Sector</u>

- **Regulations are not yet sufficiently outcome-oriented.** Implementation remains largely focused on administrative compliance rather than measurable circular economy outcomes.
- **The circular construction ecosystem remains underdeveloped.** Circular design has not yet been systematically integrated into planning, while standards, incentives, and the availability of circular materials remain limited, constraining effective implementation.
- **Implementation coverage remains limited.** Binding requirements currently apply mainly to government projects and certain types of buildings, while adoption in private-sector projects remains largely dependent on local government capacity for permitting, monitoring, and enforcement.



Three Key Challenges to Circular Economy Implementation in the <u>Electronics Sector</u>

- **An EPR framework for the electronics sector ecosystem is not yet fully established.** Implementation remains largely focused on downstream waste management, without adequately covering producer responsibility across the product life cycle, including take-back, collection, and recycling.
- **Collection and material recovery systems are not yet integrated.** E-waste management infrastructure remains limited, with significant involvement from the informal sector, while material flows are not yet effectively connected from producers to collection and processing facilities.
- **Eco-design and product innovation remain limited.** Eco-design standards have not yet been established, constraining product innovation. Eco-labelling requirements also remain limited, while key product design decisions are largely beyond the control of domestic businesses.



These challenges highlight the need to **strengthen strategic interventions in priority sectors,** particularly **construction and electronics,** in **alignment with the direction of the National Circular Economy Action Plan (RANES) 2025–2045** to accelerate the transition towards a circular economy in Indonesia.

Policy Recommendation

Strengthening Circular Economy In Priority Sectors

Strategy 1 Establish Clear Mandates, Institutional Responsibilities, and Circular Economy Targets

No	Action Plan	Description	Implementation Period			Lead Institutions
			Short term (1 year)	Medium term (2-3 year)	Long term (5 year)	
1.1	Strengthen the implementation of existing circular economy regulations before introducing new policy instruments	New circular economy regulations are not the immediate priority. The more pressing need is to clarify how existing regulations should be implemented within current governance arrangements, enabling implementation gaps to be clearly identified. **Gap to Address:** Responsibilities between central and local governments remain unclear, particularly in implementing the waste reduction roadmap under Minister of Environment and Forestry Regulation No. 75/2019. Under Article 18, reporting on producers' roadmaps should be integrated with local government monitoring. In practice, however, reports are submitted directly to the Ministry of Environment. **Supporting Policy Framework**: (1) Law No. 59/2024 on the National Long-Term Development Plan (RPJPN) 2025–2045, (2) Presidential Regulation No. 12/2025 on the National Medium-Term Development Plan (RPJMN) 2025–2029.				1. Ministry of Environment 2. Ministry of Public Works 3. Ministry of Industry 4. Ministry of Agriculture
1.2	Set measurable circular economy targets with clear accountability in regional development plans, ministerial and agency strategic plans, and sectoral roadmaps	Develop standard circular economy indicators, supported by consistent measurement and reporting systems across levels of government, to inform planning and budgeting. **Gap to Address:** Indonesia's circular economy indicators cover the circular material input rate, resource efficiency, and the recycling rate. However, Regional Medium-Term Development Plans (RPJMD) still focus on the percentage of waste handled, placing greater emphasis on downstream waste management than on overall circular economy performance. **Supporting Policy and Standards Framework:** (1) Presidential Regulation No. 12/2025 on the National Medium-Term Development Plan (RPJMN) 2025–2029, (2) Minister of National Development Planning Regulation No. 10/2023 on Procedures for Preparing Ministerial and Agency Strategic Plans for 2025–2029, (3) Minister of Home Affairs Instruction No. 2/2025 on Guidelines for Preparing Regional Medium-Term Development Plans (RPJMD), (3) Circular Economy Roadmap and Action Plan 2025–2045, (4) ISO 59004:2024 on the circular economy.				1. Coordinating Ministry for Economic Affairs 2. Coordinating Ministry for Food Affairs 3. Coordinating Ministry for Infrastructure and Regional Development 4. Local Governments
1.3	Clarify institutional responsibilities and coordination mechanisms among ministries, agencies, and local governments	Clarify each institution's mandate, authority, and role in advancing the circular economy, and strengthen cross-sector coordination through effective institutional arrangements. **Gap to Address:** An integrated national team with a strong legal basis, such as a presidential regulation or decree, has yet to be established to coordinate circular economy efforts across sectors. At the local level, efforts also remain largely focused on downstream waste management and expanding service coverage. **Supporting Policy Framework:** (1) Law No. 59/2024 on the National Long-Term Development Plan (RPJPN) 2025–2045, (2) Presidential Regulation No. 12/2025 on the National Medium-Term Development Plan (RPJMN) 2025–2029, (3) Technical implementation is guided by applicable laws and regulations.				1. Coordinating Ministry for Economic Affairs 2. Coordinating Ministry for Food Affairs 3. Coordinating Ministry for Infrastructure and Regional Development

Policy Recommendation **Strengthening Circular Economy In Priority Sectors**

Strategy 2 Building Economic and Market Conditions to Adopt and Scale Circular Practices

No	Action Plan	Description	Implementation Period			Lead Institutions
			Short term (1 year)	Medium term (2-3 year)	Long term (5 year)	
2.1	Expand the production and supply of circular products and services through product standards, stronger industrial capacity, and production incentives	Expand domestic production of circular products and services by defining circular product criteria, extending Green Industry Standards and ecolabels to priority sectors, and providing fiscal and non-fiscal incentives for industries, including small and medium-sized enterprises, recyclers, and reuse service providers. These measures should align with the Domestic Content (TKDN) and Company Benefit Weight (BMP) schemes to ensure that domestic circular products meet public procurement requirements. The objective is to ensure the availability of affordable, high-quality, and accessible environmentally friendly products across Indonesia before circularity requirements are introduced into procurement systems. **Gap to Address:** Environmentally friendly products remain limited and concentrated in certain sectors and regions, particularly Java. In the construction sector, for example, the Green Industry Standard currently covers only five materials: iron, steel, cement, ceramics, and glass. Circular product criteria, including recycled content, recyclability, and service life, have not yet been standardised across sectors. The cost and complexity of green industry, ecolabel, and TKDN certification also create barriers for small and medium-sized enterprises and recyclers. In addition, the quality and continuity of secondary raw material supplies remain uncertain. These conditions limit the availability and selection of circular products for procurement across Indonesia, particularly outside Java. **Supporting Policy Framework:** Law No. 3/2014 on Industry, particularly Articles 77–83 on green industry; Law No. 20/2014 on Standardisation and Conformity Assessment; Government Regulation No. 46/2017 on Environmental Economic Instruments; Minister of Environment Regulation No. 2/2014 on the Use of Ecolabel Logos; Minister of Industry Regulations No. 51/M-IND/PER/6/2015 on Guidelines for Preparing Green Industry Standards, No. 39/2018 on Green Industry Certification Procedures, and No. 35/2025 on the Certification Requirements and Procedures for Domestic Content and Company Benefit Weight; and Minister of Environment and Forestry Regulation No. 75/2019 on the Roadmap for Waste Reduction by Producers.				
2.2	Strengthen sustainable public procurement through standards, certification, and market instruments to create demand for circular products and services	Integrate circular economy standards and indicators into the public procurement system, from needs planning and technical specifications to product labelling in the Electronic Catalogue and bid evaluation criteria. This integration should be supported by market instruments, including minimum requirements, incentives, and preferences for circular products, so that public spending can generate stable and predictable demand for the industries developed under Action Plan 2.1. **Gap to Address:** Public procurement remains largely linear, while environmental requirements and circularity indicators, such as recycled content, recyclability, and reuse services, are still applied on a limited basis. Products certified under ecolabel and green industry schemes also lack dedicated markers in the Electronic Catalogue and Online Store, making them difficult for procurement agencies to identify. **Supporting Policy Framework:** Government Regulation No. 46/2017 on Environmental Economic Instruments, particularly Articles 34 and 37; Presidential Regulation No. 46/2025 on Public Procurement of Goods and Services; Minister of Environment and Forestry Regulation No. P.5/MENLHK/SETJEN/KUM.1/2/2019 on Procedures for Applying Environmental Labels in the Procurement of Environmentally Friendly Goods and Services; and LKPP Regulation No. 12/2021 on Guidelines for Public Procurement through Suppliers.				National Public Procurement Agency (LKPP)
2.3	Improve access to finance and financial support for circular economy businesses	Expand access to finance through financial instruments that reflect the characteristics of circular business models. These instruments should include fiscal incentives, broader green financing, and investment and guarantee mechanisms that reduce risk and improve the attractiveness of circular economy investments. Support should cover businesses of different sizes, including small and medium-sized industries, recyclers, reuse service providers, and similar enterprises. **Gap to Address:** Existing fiscal incentives are not yet linked to circularity performance. For example, tax allowances under Government Regulation No. 78/2019 use criteria such as investment value, export orientation, and high employment generation. As a result, medium-sized recycling and reuse businesses may struggle to qualify despite their significant environmental contributions. Green financing also remains concentrated in the energy sector. Indonesia's Sustainable Finance Taxonomy, which began development in 2024, initially prioritised energy, while manufacturing, water supply, sanitation, and waste management are planned for later versions. Consequently, financial institutions lack technical criteria for classifying circular activities as green activities. Circular economy businesses also face limited access to credit because they are perceived as high risk. Their revenues depend on fluctuating secondary material prices, used materials generally cannot be used as collateral, and many downstream businesses do not have legal entity status and therefore cannot meet banking or People's Business Credit (KUR) requirements. **Supporting Policy Framework:** Law No. 32/2009 on Environmental Protection and Management; Law No. 4/2023 on Financial Sector Development and Strengthening; Government Regulations No. 46/2017 on Environmental Economic Instruments and No. 78/2019 on Income Tax Facilities for Investment in Certain Business Sectors and/or Regions; Minister of Finance Regulations No. 130/2020 on Corporate Income Tax Reduction Facilities and No. 153/2020 on Gross Income Deductions for Certain Research and Development Activities; Financial Services Authority Regulation No. 51/POJK.03/2017 on Sustainable Finance for Financial Institutions, Issuers, and Public Companies; and Financial Services Authority Regulation No. 18/2023 on the Issuance and Requirements of Sustainability-Based Debt Securities and Sukuk.				Ministry of Finance
2.4	Strengthen collection, repair, recycling, and material recovery infrastructure, together with supply chains and industry partnerships	Develop and expand circular economy infrastructure for collection, sorting, reuse, repair, recycling, and material recovery. Establish connections between circular material supply chains, from their sources to industrial users, through partnerships and public-private cooperation. This approach should ensure reliable upstream supply and sufficient downstream demand so that the infrastructure can operate sustainably. **Gap to Address:** Waste management remains focused on downstream handling and is not yet integrated from waste sources to industrial users. Some community-based facilities, such as TPS3R, have been built without assured markets for their outputs or adequate operating budgets. Their utilisation therefore declines after external assistance ends. Circular material supply chains also continue to depend on informal collector networks without quality standards or supply contracts. Industrial users consequently struggle to obtain secondary raw materials with consistent specifications and volumes and may return to virgin materials. Waste management ecosystems remain limited outside Java because recycling industries are concentrated on the island. Materials must therefore be transported between islands, and logistics costs that exceed material value reduce the economic viability of collection, particularly in eastern Indonesia. **Supporting Policy Framework:** Law No. 18/2008 on Waste Management; Government Regulations No. 81/2012 on Household and Household-like Waste Management, No. 27/2020 on Specific Waste Management, and No. 22/2021 on Environmental Protection and Management; Presidential Regulations No. 38/2015 on Public-Private Cooperation in Infrastructure Provision and No. 97/2017 on the National Policy and Strategy for Household and Household-like Waste Management; Minister of Public Works Regulation No. 03/PRT/M/2013 on Waste Management Infrastructure and Facilities; and Minister of Environment and Forestry Regulations No. 75/2019 on the Roadmap for Waste Reduction by Producers and No. 14/2021 on Waste Management through Waste Banks.				1. Ministry of Public Works 2. Ministry of Agriculture 3. Ministry of Industry 4. Local Governments
2.5	Design pilot projects that can be replicated and scaled through standardised implementation frameworks, clear institutional responsibilities, and long-term plans	Use pilot projects in priority sectors or regions to test approaches, develop technical guidance, and establish circular economy implementation mechanisms. These pilots should also provide a basis for replication and scaling through capacity building and stakeholder coordination. Planning should identify the responsible ministry or agency from the outset, establish uniform indicators and monitoring protocols, and provide mechanisms for transferring funding from initial sources to central and local government budgets. **Gap to Address:** Pilot projects remain local, short term, and dependent on donor funding. Activities commonly end after one to three years without transferring management responsibilities to local governments, while national replication mechanisms remain undeveloped. Pilot outputs, such as operating procedures and training modules, often remain project reports because no responsible ministry or agency adopts them as official guidance. As a result, each region must redesign its own approach. The absence of standard technical guidance also creates differences in indicators and monitoring methods, making results difficult to compare or use as a basis for scaling. From a budgeting perspective, circular economy programmes do not yet have a dedicated nomenclature code under Minister of Home Affairs Regulation No. 90/2019. Local governments must integrate these activities into existing waste management or environmental programmes, making circular economy initiatives less visible in planning documents and more vulnerable to budget reductions during fiscal efficiency measures. **Supporting Policy Framework:** Law No. 25/2004 on the National Development Planning System; Law No. 23/2014 on Local Government; Law No. 59/2024 on the National Long-Term Development Plan 2025–2045; Government Regulation No. 12/2019 on Regional Financial Management; Presidential Regulations No. 97/2017 on the National Policy and Strategy for Household and Household-like Waste Management and No. 12/2025 on the National Medium-Term Development Plan 2025–2029; and Minister of Home Affairs Regulation No. 90/2019 on the Classification, Coding, and Nomenclature of Regional Development Planning and Finance.				Ministry of National Development Planning / Bappenas

Policy Recommendation

Strengthening Circular Economy In Priority Sectors

Strategy 3 Developing Integrated Monitoring, Evaluation, and Enforcement Mechanisms

No	Action Plan	Description	Implementation Period			Lead Institutions
			Short term (1 year)	Medium term (2-3 year)	Long term (5 year)	
3.1	**Integrate circular economy reporting and monitoring into a single national platform**	Integrate existing circular economy reporting systems and databases from ministries, agencies, and local governments into a single national platform. The platform should collect, monitor, and evaluate circular economy performance through an integrated and interoperable system, supported by designated data custodians, data supervisors, and consistent indicator definitions across sectors. **Gap to Address:** Indonesia does not yet have an integrated national platform that consolidates circular economy data. As a result, data exchange and use remain limited. Data are distributed across systems with different owners, definitions, and reporting periods, including SIPSN for waste generation and waste management facilities, SIMBA for waste banks, producer reporting under Minister of Environment and Forestry Regulation No. 75/2019, SIINas for industrial data, and SIPD for regional planning and financial data. The legal basis for data integration already exists. Government Regulation No. 81/2012 requires waste management information to be connected through a single platform, while Minister of Environment and Forestry Regulation No. 6/2022 provides a basis for interoperability with SIPSN. However, indicator definitions remain inconsistent. Available data generally measure the proportion of waste managed, whereas circularity measurement requires systematic data on recycled content, reuse rates, and material flows between sectors. Circular economy data have also not yet been designated as priority data under the One Data Indonesia framework. Consequently, data custodians and data supervisors have not been formally appointed. **Supporting Policy Framework:** Law No. 14/2008 on Public Information Disclosure; Law No. 18/2008 on Waste Management; Law No. 27/2022 on Personal Data Protection; Government Regulation No. 81/2012 on Household and Household-like Waste Management, particularly Article 34(3); Government Regulation No. 71/2019 on the Operation of Electronic Systems and Transactions; Presidential Regulation No. 29/2014 on the Government Agency Performance Accountability System; Presidential Regulation No. 95/2018 on Electronic-Based Government; Presidential Regulation No. 39/2019 on One Data Indonesia; Presidential Regulation No. 132/2022 on the National Electronic-Based Government Architecture; Minister of Administrative and Bureaucratic Reform Regulation No. 53/2014 on Technical Guidelines for Performance Agreements, Performance Reporting, and the Review of Government Agency Performance Reports; Minister of Environment and Forestry Regulation No. 75/2019 on the Roadmap for Waste Reduction by Producers; Minister of Home Affairs Regulation No. 70/2019 on the Regional Government Information System; and Minister of Environment and Forestry Regulation No. 6/2022 on the National Waste Management Information System.				1) Coordinating Ministry for Economic Affairs 2) Coordinating Ministry for Food Affairs 3) Coordinating Ministry for Infrastructure and Regional Development
3.2	**Phase in compliance measures through incentives and disincentives once the circular economy ecosystem is ready**	Introduce performance-based incentives and disincentives gradually once the supporting circular economy ecosystem meets defined readiness benchmarks. The initial phase should prioritise incentives and performance recognition, followed by disincentives and administrative sanctions once adequate circular infrastructure, products, and services are available. The Corporate Environmental Performance Rating Programme (PROPER) can serve as an initial framework, with circularity indicators progressively expanded from the beyond-compliance level to basic compliance requirements. **Gap to Address:** Green regulatory obligations and targets are not yet supported by evenly distributed infrastructure. For example, Minister of Environment and Forestry Regulation No. 75/2019 sets a target for producers to reduce waste by up to 30% by 2029. However, limited collection and recycling facilities, particularly outside Java, make compliance difficult and may result in geographic limitations being treated as grounds for enforcement. A similar challenge affects source separation. Where separate collection and transport services are unavailable, separated waste is mixed again, reducing public confidence. PROPER already includes circular economy aspects under its Green and Gold ratings, such as resource efficiency, waste utilisation, Life Cycle Assessment, and eco-innovation. However, it does not yet cover basic compliance or actors such as small and medium-sized industries, recyclers, and reuse service providers. Its indicators also do not cover value-chain circularity, including recycled content, recyclability, and repairability. As a result, PROPER cannot yet serve as a national circularity indicator or a basis for fiscal incentives. At the local level, the incentive and disincentive mandates under Law No. 18/2008 and Government Regulation No. 46/2017 have also seen limited implementation, including through service charges based on the polluter pays principle. **Supporting Policy Framework:** Law No. 18/2008 on Waste Management, particularly Article 21 on incentives and disincentives; Law No. 32/2009 on Environmental Protection and Management, particularly Articles 42 and 43 on economic instruments and Articles 76–83 on administrative sanctions; Government Regulation No. 81/2012 on Household and Household-like Waste Management; Government Regulation No. 46/2017 on Environmental Economic Instruments; Government Regulation No. 5/2021 on Risk-Based Business Licensing; Government Regulation No. 22/2021 on Environmental Protection and Management; Minister of Environment and Forestry Regulation No. 75/2019 on the Roadmap for Waste Reduction by Producers; and Minister of Environment and Forestry Regulation No. 1/2021 on the Corporate Environmental Performance Rating Programme.				Ministry of Environment

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Strengthening Circular Economy In Construction



Strategy 1 Putting Existing Policy and Market Instruments into Practice for Circular Construction

This strategy strengthens implementation of the National Circular Economy Action Plan (RAN-ES, 2025–2045, link) by optimising existing regulatory and market instruments. Integrating circularity requirements into regulations and procurement will support prefabrication (Action 1.1), Building Information Modelling (BIM) (Action 1.2), sustainable construction principles (Action 1.3), environmentally labelled products (Action 3.1), and Green Industry Standards (Action 3.2). Material traceability from design through demolition will also support construction waste management (Action 2.2) and low-carbon buildings (Action 3.4).

No.	Action Plan	Description	Implementation Period			Lead Institutions
			Short term (1 year)	Medium term (2-3 year)	Long term (5 year)	
1.1	**Integrate circular construction requirements into building regulations and public procurement**	Integrate circular construction requirements into all public and private projects through existing building regulations. Circularity criteria, including recycled content, reuse, and recovery potential, should be incorporated from the procurement planning stage. This should cover contracts, technical specifications, bills of quantities (BoQ), and documentation requirements to ensure material traceability. Public procurement should serve as a market driver for circular products and practices. **Gap to Address:** A sustainable procurement framework is already in place under Presidential Regulation No. 46/2025, but it currently focuses on environmentally friendly products and domestic content rather than circularity criteria. Circularity requirements have not yet been incorporated into technical specifications, contracts, or bills of quantities. Tender evaluations still focus mainly on the lowest upfront cost, which places circular options at a disadvantage. Procurement contracts also do not consistently require material documentation. **Supporting Policy Framework:** (1) Government Regulation No. 22/2020 on the Implementing Regulation of Law No. 2/2017 on Construction Services, (2) Presidential Regulation No. 46/2025 on Public Procurement of Goods and Services, (3) Minister of Public Works and Housing Regulation No. 9/2021 on Guidelines for Sustainable Construction, (4) LKPP Regulation No. 12/2021 on Guidelines for Public Procurement through Suppliers.				1) Ministry of Public Works 2) Ministry of National Development Planning / Bappenas 3) National Public Procurement Agency (LKPP) 4) Local Governments
1.2	**Establish targets, standards, and traceability systems for construction materials throughout the building life cycle, from design to demolition**	Integrate material targets, standards, and traceability systems throughout the building life cycle, from design for disassembly to demolition. This may include phased targets for material recovery and reuse, standardised traceability systems for national and local government assets (BMN/BMD), mandatory pre-demolition circularity audits, and the consolidation of technical indicators for BIM, prefabrication, green certification, carbon emissions, and construction waste into a single national monitoring framework. **Gap to Address:** Material recovery targets and standardised traceability systems have not yet been established. Existing demolition standards under Minister of Public Works and Housing Regulation No. 18/2021 focus on safety and waste disposal, without requiring pre-demolition audits or material recovery targets. The demolition of national and local government assets (BMN/BMD) is treated primarily as an asset write-off rather than a material recovery opportunity. Markets for used construction materials remain underdeveloped, while technical indicators are still managed separately without an integrated monitoring framework. **Supporting Policy Framework:** (1) Minister of Public Works and Housing Regulation No. 24/PRT/M/2008 on Guidelines for Building Maintenance and Care, (2) Minister of Public Works and Housing Regulation No. 22/PRT/M/2018 on the Construction of Government Buildings, (3) Minister of Public Works and Housing Regulation No. 9/2021 on Guidelines for Sustainable Construction, (4) Minister of Public Works and Housing Regulation No. 18/2021 on Technical Guidelines for Building Demolition, (5) Related regulations on Building Information Modelling (BIM), green buildings, and construction waste management.				1) Ministry of Public Works 2) Local Governments

Strengthening Circular Economy In Construction



Strategy 2 Strengthening Governance for Sustainable Construction

This strategy complements the policy direction of the National Circular Economy Action Plan (RAN-ES, 2025–2045, link) by establishing a coordinating unit for circular construction. The unit will coordinate implementation across ministries, agencies, and local governments. Its establishment is expected to ensure that the various action plans are implemented in an integrated and mutually supportive manner.

No	Action Plan	Description	Implementation Period			Lead Institutions
			Short term (1 year)	Medium term (2-3 year)	Long term (5 year)	
2.1	**Strengthen institutional coordination by establishing a circular construction coordinating unit**	Establish a national coordinating unit responsible for guiding the implementation of circular construction while ensuring that the existing mandates of ministries and agencies remain effective. Coordination should focus on aligning policies and targets, implementation activities, and oversight across institutions. **Gap to Address:** Institutional mandates remain fragmented, with no single entity responsible for overall outcomes. The Ministry of Public Works oversees building standards, the Ministry of Environment oversees demolition waste and specific waste, the Ministry of Industry oversees recycled materials, and local governments oversee permits. Gaps arise at the points where these authorities interact. For example, responsibility for returning demolition materials to the supply chain remains unclear. Coordination has so far remained at the planning stage and has not yet been supported by binding authority across ministries, agencies, and local governments. **Supporting Policy Framework:** (1) Law No. 28/2002 on Buildings, (2) Government Regulation No. 39/2006 on Procedures for Monitoring and Evaluating the Implementation of Development Plans, (3) Government Regulation No. 16/2021 on the Implementing Regulation of Law No. 28/2002 on Buildings, (4) Minister of Public Works and Housing Regulation No. 9/2021 on Guidelines for Sustainable Construction.				1) Coordinating Ministry for Economic Affairs 2) Coordinating Ministry for Food Affairs 3) Coordinating Ministry for Infrastructure and Regional Development

Strengthening Circular Economy In Construction



Strategy 3 Strengthening Monitoring, Evaluation, and Data Systems for Circular Construction

This strategy supports the implementation of the National Circular Economy Action Plan (RAN-ES, 2025–2045, link) through integrated reporting systems, indicators, and data. The reporting system will support monitoring of prefabrication (Action 1.1), energy and water intensity, recycled material content (Action 3.3), implementation of the Green Rating System (Action 3.5), and verification of construction waste management targets (Action 2.2) and low-carbon buildings (Action 3.4).

No	Action Plan	Description	Implementation Period			Lead Institutions
			Short term (1 year)	Medium term (2-3 year)	Long term (5 year)	
3.1	**Shift monitoring from administrative reporting to measurable circularity indicators**	Apply consistent circularity indicators across ministries by adopting measurable technical parameters, including the Recycled Content Rate and Waste Diversion Rate, and incorporating them into technical regulations or planning documents. Support the system through digitalisation and the integration of the Building Management Information System (SIMBG) with the National Waste Management Information System (SIPSN) to ensure real-time traceability of material flows. Use circularity performance as a basis for financial decisions, including green loans and green bonds. **Gap to Address:** Reporting remains largely administrative and qualitative. SIMBG does not require information on recycled materials, while green building assessments rely on uploaded documents that are reviewed manually. National standards for recycled content and waste diversion rates have not yet been established, making figures difficult to compare across projects. Reporting channels also remain fragmented and do not adequately cover construction waste. SIPSN primarily covers household waste, while demolition waste does not have a dedicated reporting channel. As a result, materials cannot be traced throughout the full supply chain. **Supporting Policy Framework:** (1) Government Regulation No. 16/2021 on the Implementing Regulation of Law No. 28/2002 on Buildings, (2) Minister of Public Works and Housing Regulation No. 9/2021 on Guidelines for Sustainable Construction.				Ministry of Public Works

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Strengthening Circular Economy In Electronics



Strategy 1 Developing and Implementing EPR Policy for Electronic Products

This strategy supports the implementation of the National Circular Economy Action Plan (RAN-ES, 2025–2045, link) by strengthening the regulatory framework for extended producer responsibility (EPR) in the electronics sector. It covers the establishment of EPR regulations for electronic products (Action 1.1) and the implementation of EPR for priority products (Action 1.2).

No	Action Plan	Description	Implementation Period			Lead Institutions
			Short term (1 year)	Medium term (2-3 year)	Long term (5 year)	
1.1	Establish a dedicated EPR regulation for electronic products	Develop an EPR regulation specifically for electronic products. The regulation should define producer roles and responsibilities, collection and recycling targets, reporting mechanisms, financing arrangements, oversight, and enforcement. It will provide an integrated legal basis for national e-waste management. **Gap to Address:** Existing regulations cover only some aspects of e-waste management. Law No. 18/2008 establishes general producer responsibility, while Government Regulation No. 27/2020 classifies e-waste as specific waste containing hazardous and toxic substances. Once e-waste enters the hazardous waste management chain, Government Regulation No. 22/2021 and Minister of Environment and Forestry Regulation No. 6/2021 apply. However, these regulations do not establish a dedicated EPR scheme for electronics that defines product categories, take-back obligations, collection and recycling targets, producer financing, implementing organisations, reporting, verification, and sanctions for non-compliance. As a result, producer responsibility for post-consumer electronic products cannot yet be applied and enforced consistently. **Supporting Policy Framework:** (1) Law No. 18/2008 on Waste Management, (2) Government Regulation No. 81/2012 on Household and Household-like Waste Management, (3) Government Regulation No. 27/2020 on Specific Waste Management, (4) Government Regulation No. 22/2021 on Environmental Protection and Management, (5) Minister of Environment and Forestry Regulation No. 6/2021 on Procedures and Requirements for Hazardous Waste Management No instrument currently provides specific regulation for EPR in electronic products. A dedicated regulation is therefore required.				Ministry of Environment
1.2	Implement EPR schemes for priority electronic products	Apply EPR obligations to priority groups of electronic products through take-back, collection, treatment, and reporting systems, supported by progressive material recovery targets. Implementation should involve cooperation among producers, government institutions, and waste management operators. **Gap to Address:** No operational requirements currently oblige electronics producers to establish and finance systems for collecting post-consumer products. Producers are not yet required to provide take-back points, set collection targets based on the volume of products placed on the market, or ensure that collected e-waste is transferred to licensed treatment operators. As a result, consumers often sell used devices to informal collectors. These collectors may recover valuable components, while low-value or hazardous parts may not be managed safely. This situation contributes to low formal collection rates, unstable supplies for licensed treatment facilities, and weak traceability and producer accountability. **Supporting Policy Framework:** (1) Government Regulation No. 27/2020 on Specific Waste Management, (2) Government Regulation No. 22/2021 on Environmental Protection and Management, (3) Minister of Environment and Forestry Regulation No. 6/2021 on Procedures and Requirements for Hazardous Waste Management. These regulations can provide a basis for managing e-waste and hazardous waste. However, a new implementing instrument, namely a dedicated electronics EPR regulation, is required.				Ministry of Environment
1.3	Develop an integrated electronics EPR reporting system	Develop a national reporting system that integrates producer registration, collection targets and results, transport, treatment, material recovery, and e-waste residues. The system should connect EPR reporting with related platforms, including SIPSN and SPEED, through common data standards, operator identification, and data exchange mechanisms. Reporting should include transfer records or digital manifests, verification procedures, and monitoring dashboards to ensure traceability of e-waste flows from producers to final treatment facilities. **Gap to Address:** E-waste data are currently reported separately through several systems that use different classifications. For example, household e-waste may be recorded in SIPSN as specific waste or waste managed by local governments. After being transferred to a licensed operator, the same material may be reported through SPEED as hazardous waste. At the same time, producers are not yet required to report collection and waste reduction volumes through an EPR mechanism. Without a common data exchange system, these records are difficult to connect and may be omitted, remain unverifiable, or be counted more than once. Existing reporting also rarely provides a complete account of the waste origin, quantity collected, transport and treatment operators, material recovery rate, and quantity of residues disposed of. This limits the government's ability to assess producer compliance, measure national EPR performance, and verify that e-waste reaches appropriate treatment facilities. **Supporting Policy Framework:** (1) Presidential Regulation No. 39/2019 on One Data Indonesia, (2) Presidential Regulation No. 95/2018 on Electronic-Based Government, (3) Government Regulation No. 27/2020 on Specific Waste Management, (4) Government Regulation No. 22/2021 on Environmental Protection and Management, (5) Minister of Environment and Forestry Regulation No. 6/2021 on Procedures and Requirements for Hazardous Waste Management.				Ministry of Environment

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Strengthening Circular Economy In Electronics



Strategy 2 Developing Circular Economy Infrastructure

This strategy supports the implementation of the National Circular Economy Action Plan (RAN-ES, 2025–2045, link) by developing e-waste material recovery infrastructure for collection, sorting, treatment, and transfer to further processing facilities for refurbishment, remanufacturing, and recycling. It covers the expansion of e-waste material recovery facilities (Action 2.1), the integration of small and medium-sized industries, micro, small, and medium-sized enterprises, and informal operators into circular business ecosystems (Action 2.5), and research and development of recycling technologies (Action 2.6).

No	Action Plan	Description	Implementation Period			Lead Institutions
			Short term (1 year)	Medium term (2-3 year)	Long term (5 year)	
2.1	Establish temporary storage facilities for specific and hazardous waste (TPSSS-B3) across Indonesia	Develop a network of Temporary Storage Facilities for Specific and Hazardous Waste (TPSSS-B3) at the provincial and district or city levels. These facilities will serve as primary temporary collection points for e-waste before it is transferred to licensed treatment facilities. **Gap to Address:** E-waste collection and consolidation facilities connected to licensed operators remain limited and unevenly distributed. Jakarta, for example, has drop boxes, collection services, consolidation warehouses, and regular transport to treatment partners. However, similar service chains are not yet widely available in other regions. As a result, e-waste in underserved areas lacks accessible formal channels for collection and efficient transfer to appropriate treatment facilities. **Supporting Policy Framework:** (1) Government Regulation No. 27/2020 on Specific Waste Management, (2) Minister of Environment and Forestry Regulation No. 6/2021 on Procedures for the Management of Hazardous and Toxic Waste, (3) Minister of Environment and Forestry Regulation No. 9/2024 on the Management of Waste Containing Hazardous and Toxic Substances and Hazardous and Toxic Waste.				1. Ministry of Public Works 2. Local Governments 3. Hazardous Waste Management Service Providers
2.2	Encourage the establishment of hazardous waste management service providers in underserved regions to strengthen the recovery of valuable materials	Provide incentives and facilitate investment for hazardous waste collection, transport, and treatment service providers to expand their operations into regions that do not yet have access to e-waste management facilities. **Gap to Address:** Access to e-waste management services remains uneven across regions. Hazardous waste management service providers are still concentrated in Java, and their overall number remains limited. Regions located far from treatment centres must therefore bear higher costs for consolidation and transport across provinces or between islands. These conditions can lead to longer storage periods and make formal management channels less competitive than informal ones. **Supporting Policy Framework:** (1) Government Regulation No. 27/2020 on Specific Waste Management, (2) Government Regulation No. 22/2021 on Environmental Protection and Management, (3) Government Regulation No. 28/2025 on Risk-Based Business Licensing, (4) Minister of Environment and Forestry Regulation No. 6/2021 on Procedures for the Management of Hazardous and Toxic Waste.				1. Ministry of Industry 2. Producer Associations 3. Local Governments 4. Hazardous Waste Management Service Providers
2.3	Develop integrated e-waste collection and treatment systems	Establish scheduled collection services, drop-off points, consolidation centres, informal sector participation, and transport mechanisms integrated with formal treatment facilities to increase e-waste collection rates. **Gap to Address:** Formal e-waste collection remains low, while significant quantities continue to enter informal channels. Waste banks are generally not yet equipped to accept e-waste. Meanwhile, drop boxes, collection services, and transport to licensed treatment operators, as available in Jakarta, have not been provided consistently in other regions. Consequently, communities often rely on informal collectors, material flows remain unrecorded, and low-value or hazardous components may not be managed safely. **Supporting Policy Framework:** (1) Government Regulation No. 27/2020 on Specific Waste Management, (2) Government Regulation No. 22/2021 on Environmental Protection and Management, (3) Minister of Environment and Forestry Regulation No. 6/2021 on Procedures for the Management of Hazardous and Toxic Waste, (4) Minister of Environment and Forestry Regulation No. 9/2024 on the Management of Waste Containing Hazardous and Toxic Substances and Hazardous and Toxic Waste, (5) Relevant local waste management regulations.				1. Local Governments 2. Hazardous Waste Management Service Providers 3. Producer Associations
2.4	Advance research and recycling technology development	Support research, innovation, and pilot projects for e-waste treatment and electronic material recovery technologies to improve efficiency, increase added value, and strengthen the competitiveness of the national recycling industry. **Gap to Address:** Domestic treatment technologies for complex electronic components remain limited. Manual dismantling generally recovers only iron, copper, and aluminium. Valuable metals in circuit boards are not yet recovered optimally, while hazardous components may not be handled safely. **Supporting Policy Framework:** (1) National Circular Economy Action Plan, (2) National Strategic Research Roadmap and Agenda 2026.				National Research and Innovation Agency (BRIN)

Strengthening Circular Economy In Electronics



Strategy 3 Implementing Ecodesign and Product Innovation

This strategy supports the implementation of the National Circular Economy Action Plan (RAN-ES, 2025–2045, link) through ecodesign and product innovation. It promotes the application of ecodesign principles to electronic products and electrical equipment (Action 3.2).

No	Action Plan	Description	Implementation Period			Lead Institutions
			Short term (1 year)	Medium term (2-3 year)	Long term (5 year)	
3.1	**Use public procurement to support circular electronic products**	Use government purchasing power to create market demand for electronic products that meet criteria for repairability, reuse, and recycling. Apply ecodesign criteria to the procurement of refurbished electronics and incorporate them into sustainable procurement standards. **Gap to Address:** Public procurement does not yet apply specific and consistent circularity criteria to electronic products. For example, laptop procurement may specify technical requirements, domestic content (TKDN), and warranty periods, but it does not consistently assess battery replacement, spare part availability, repair services, service life, recycled content, or take-back at the end of the product's useful life. **Supporting Policy Framework:** (1) Presidential Regulation No. 16/2018 on Public Procurement of Goods and Services, as amended by Presidential Regulations No. 12/2021 and No. 46/2025, (2) LKPP Regulation No. 12/2021 on Guidelines for Implementing Public Procurement of Goods and Services through Suppliers. These instruments provide a general basis for sustainable procurement. However, specific technical criteria are still required for circular electronic products.				1. Ministry of Environment 2. National Public Procurement Agency (LKPP)
3.2	**Promote eco design principles in electronic products**	Encourage producers to integrate eco design principles into the product design stage, including modularity, spare part availability, repairability, reuse, and recyclability. This should be supported by appropriate standards, ecolabels, and policy instruments. **Gap to Address:** No policy instrument specifically regulates the design of electronic products to support circularity. As a result, repairability, reuse, and recyclability remain limited. For example, batteries or components that are difficult to remove, the use of permanent adhesives, unavailable spare parts, and limited repair information may result in the replacement of an entire product when only one component is damaged. Such designs shorten product service life and make reuse and material recovery more difficult. **Supporting Policy Framework:** No specific policy instrument is currently available. A new instrument is required to establish ecodesign requirements, repairability indicators, spare part availability requirements, and recycling standards for electronic products.				Ministry of Industry

Conclusion

Indonesia is at a critical point in advancing the circular economy. The necessary policy framework is largely in place, integrated into the RPJPN, operationalised through the RPJMN, and increasingly strengthened through sector-specific regulations. The challenge ahead is no longer to develop new policies, but to ensure that these commitments are translated into enforceable implementation mechanisms that deliver tangible economic impacts.

This gap is particularly evident in the construction and electronics sectors.



Construction Sector

The main challenge is fragmentation, as existing regulations, procurement systems, and BIM frameworks are not yet sufficiently linked to circularity outcomes. These instruments can be better integrated by using public procurement as a market demand signal, introducing demolition requirements that promote material recovery, and establishing an integrated monitoring framework. This approach can drive systemic change without waiting for the development of new regulations.



Electronics Sector

The structural challenges are more fundamental. A market structure dominated by assembly companies, distributors, and retailers, the absence of a comprehensive EPR framework, and the continued operation of informal collection networks outside the formal system have created significant gaps in e-waste governance. Addressing these gaps requires a phased approach, starting with the operationalisation of existing local regulations, followed by the integration of informal sector actors into formal collection systems, and ultimately the establishment of EPR accountability on the basis of the infrastructure already in place.

Both sectors point to a consistent conclusion: effective circular economy implementation requires clear accountability among policymakers and stakeholders, enforceable obligations, and data systems that support decision-making rather than merely fulfilling administrative reporting requirements. Indonesia already has a sufficient legal foundation. The next step is to operationalise this foundation through coordinated institutions, circularity-based procurement systems, targeted financing, and political commitment to strengthen results-based accountability rather than focusing solely on compliance with processes.

This is a timely opportunity to strengthen circular economy implementation. As Indonesia expands infrastructure development, accelerates urbanisation, and transitions towards renewable energy, material flows from the construction and electronics sectors are expected to continue increasing. The governance systems established today will determine whether these materials remain within a linear economic model or can be redirected towards a more circular and regenerative system. Without stronger implementation, Indonesia risks losing the economic value of materials that could otherwise be recovered, reused, and recycled.

