



Circular Economy and Waste Transformation

Highlights

- Air pollution is now the fourth leading cause of death globally, and microplastics have even been found in newborns. This highlights the urgent need for environmental action and pollution control.
- Despite sustainability discussions dating back to 1961, structural change has been minimal. The Brundtland Report emphasized development that meets current needs without harming future generations, but implementation has been inconsistent.
- The triple bottom line social, economic, and environmental needs better integration. The onion model suggests ecology should be the foundation, surrounded by society and economy.
- Climate change has altered every natural system, with predictions made over a thousand years ago. Yet, insecurity and uncertainty have only increased in today's world.
- Human-driven development has disconnected the built environment from nature. This violates key planetary principles like stability and resilience.
- Sustainable development should follow nature's continuous and balanced path. The circular economy, rooted in agriculture since 1890, promotes reuse, recycling, and reduction.
- Sri Lanka is aligning with global circular economy strategies through its NDCs and resource circulation agenda. Tools like Life Cycle Assessment and industrial park models support this transition.
- Business models such as circular subscriptions and eco-innovation are emerging, especially in food and textiles. However, scaling these models requires stronger regulations and support.

- Sri Lankan universities are researching composting, biochar, and natural system regeneration. But there's limited focus on designing out waste and developing plastic alternatives.
- Commercializing research is difficult due to weak collaboration and lack of third-party support. Lab-scale innovations need investment-ready frameworks and financial backing.
- Financing is essential for scaling circular solutions. Banks and financial institutions must help translate research into viable business models.
- Behavioral change is key to reducing waste and adopting sustainable habits. Reliable data is also crucial what isn't measured can't be managed.

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Recommendations

- Embrace reuse, recycling, reduction, and refusal as core strategies across industries. Align national policies with global circular economy frameworks.
- Use models like the onion model to place ecology at the center of planning. Ensure all development respects planetary boundaries like resilience and stability.
- Encourage research in waste prevention, eco-design, and biodegradable alternatives. Focus on turning academic work into practical, scalable solutions.
- Facilitate collaboration between universities, industry, and investors. Develop mechanisms to translate research into investment-ready products.
- Create financial tools and partnerships to support circular startups and innovations. Banks should help frame sustainability projects in terms of ROI.
- Invest in behavioral research to shift consumer habits toward sustainability. Public awareness and education are key to long-term change.
- Establish systems to collect and analyze environmental data. Effective management depends on accurate measurement.
- Implement tools like Life Cycle Assessment (LCA) and industrial park models. Enforce regulations that support circular practices and eco-compliance.