Global Waste Valorization

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Editorial

# Redrawing the Boundaries of Resources: Inaugurating a New Academic Era for Global Waste Valorization

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Dear Colleagues from Academia, Pioneers from Industry, Policymakers, and All Friends Dedicated to a Sustainable Future,

We find ourselves at a hinge point in history. Much of the world still runs on a linear "take–make–dispose" model, one that depletes resources and fuels the intertwined crises of climate change, biodiversity loss, and pollution. If we are serious about changing course, we must reclaim the word *waste*. It is not the inevitable end of a product's life; it is a reservoir of untapped value.

With that conviction, we are proud to launch Global Waste Valorization, an international journal dedicated to the science, engineering, policy, and practice of transforming waste from environmental liability into economic, ecological, and social opportunity. Our aim is nothing short of a systemic shift that closes loops, creates positive externalities, and accelerates a genuinely circular economy.

Waste valorization reaches far beyond conventional recycling. It is an inherently interdisciplinary endeavor that blends fundamental research with applied innovation. It spans municipal and industrial streams, agricultural residues, and electronic waste; it draws on catalysis and bioprocessing, digital technologies and advanced materials, economics and governance. Yet the current knowledge landscape is fragmented: breakthroughs and case studies are scattered across disparate journals, slowing the feedback loop between discovery, deployment, and impact.

Global Waste Valorization is designed as a unifying hub rigorous, inclusive, and global in outlook—covering the entire value chain:

- Upstream: intelligent sorting & pre-treatment.
  AI, sensing, and IoT to improve separation efficiency and purity, enabling higher-value downstream pathways.
- Midstream: conversion technologies & process intensification.
  Biorefineries; thermochemical routes (pyrolysis, gasification); catalytic cracking; chemical recycling; hybrids that couple biology, chemistry, and heat/mass transfer.
- Downstream: high-value products & systems integration.
  Advanced materials, fuels, chemicals, and energy carriers designed for durability, reuse, and circularity at system scale.

- Cross-cutting: policy, assessment & decision science.
  Life-cycle assessment (LCA), techno-economic analysis (TEA), environmental justice, market design, and incentive alignment instruments for sustainability.

Solving global problems requires global collaboration. We especially welcome work that connects the Global South and North context-specific solutions, scalable designs, and adaptive policies that respect local realities while informing international practice. We seek submissions that are both original and actionable: studies that clarify mechanisms and kinetics, papers that provide engineers with design and operating windows, analyses that reveal market opportunities for entrepreneurs, and policy frameworks that help decision-makers craft effective incentives.

## An open invitation

- Researchers: Share your most compelling ideas and data-rich studies. Use this forum to set the agenda for what comes next.
- Industry practitioners: Bring your most challenging problems and your success stories. Let's tighten the loop between academic insight and industrial deployment.
- Policymakers: Contribute analyses, pilots, and evaluations that turn evidence into durable institutions for a circular economy.

Global Waste Valorization is more than a journal. It is a shared project to redraw the boundaries of what counts as a resource—and to connect theory with practice across disciplines and borders. The road ahead is long, but we are energized by the partners already leaning in.

Welcome to Global Waste Valorization!