

Advance Recycling and Circularity Market Sector grows at 8.23% CAGR, reaching US\$14.91B by 2032

The Advanced Recycling & Circularity Market in the US and Japan grows strongly, driven by sustainability goals, tech adoption, and material reuse

SAN FRANCISCO, CA, UNITED STATES,
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EINPresswire.com/ -- Advanced
Recycling and Circularity Market
Overview

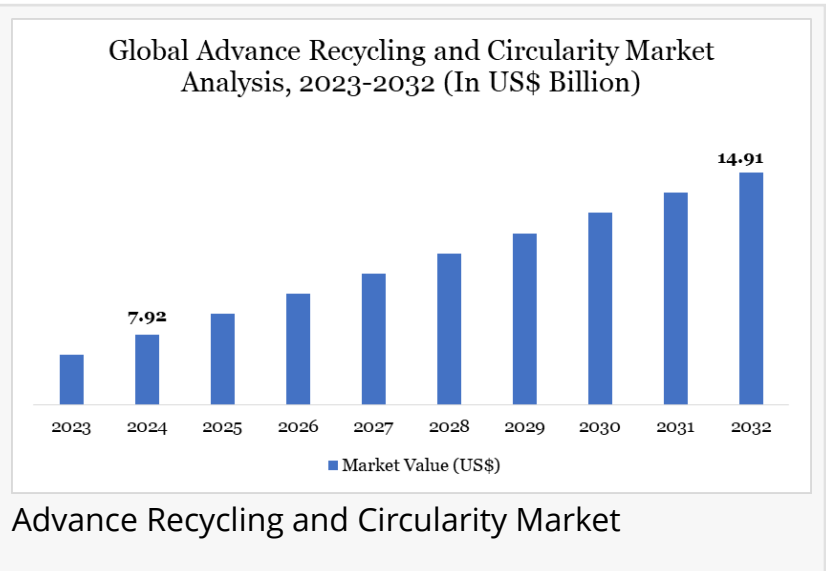
Advanced recycling and circularity represent a paradigm shift in waste management, resource recovery, and sustainable manufacturing. Unlike traditional linear processes, which follow a take-make-dispose model, advanced recycling emphasizes recovering materials, reducing waste, and reintroducing resources into production cycles. This approach not only conserves natural resources but also minimizes environmental impact, helping companies meet regulatory requirements and sustainability goals.



The Advanced Recycling & Circularity Market is projected to grow from US\$7.92B in 2024 to US\$14.91B by 2032 at 8.23% CAGR globally."

*DataM Intelligence 4Market
Research LLP*

The market is gaining traction globally, driven by rising environmental awareness, regulatory pressures, technological innovations, and the growing demand for sustainable products across industries. Advanced recycling encompasses chemical recycling, mechanical recycling, and bio-based circular solutions, each offering unique opportunities to capture value from waste streams that were previously considered non-recyclable.

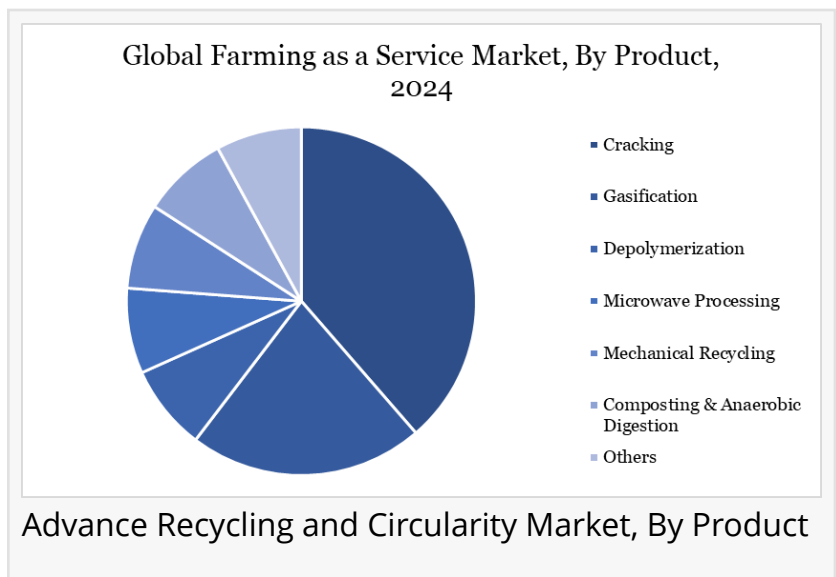


Market Size and Forecast

The [Advanced Recycling and Circularity industry](#) was valued at US\$ 7.92 billion in 2024 and is

expected to grow to US\$ 14.91 billion by 2032, expanding at a CAGR of 8.23% between 2025 and 2032.

In Feb 2025, the Global Impact Coalition partnered with seven major chemical and recycling firms to pilot automotive plastics circularity for ELVs. In Nov 2024, ExxonMobil invested US\$ 200M to expand Texas recycling sites, aiming for 1 billion pounds/year global capacity by 2027.



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Market Dynamics

US Infrastructure Investment: Modernizing recycling systems requires US\$ 36.5–43.4 billion, covering collection, sorting, and processing, posing a major barrier to adoption.

A key trend in the Advanced Recycling and Circularity Market is shifting from recycling to reuse, which can cut packaging production by 90% and emissions by 80%.

Key market drivers include:

- 1. AI & Robotics Boost Recycling:** AI-powered robots can sort 80 items per minute with up to 98% accuracy, improving efficiency and reducing contamination.
- 2. India Example:** Recykal's AI system (Google CircularNet CV) achieves >90% sorting accuracy, enhancing recyclable quality and reducing landfill waste.
- 3. High Capital Costs:** Establishing a 1-ton/day chemical recycling plant in India costs around US\$ 0.65 million.

Technical Overview

. Advanced recycling technologies focus on converting waste into high-value products. The technical landscape includes:

. **Chemical Recycling:** Processes such as pyrolysis, depolymerization, and solvolysis break down plastics and polymers into monomers or fuels, enabling reuse in manufacturing.

- . Mechanical Recycling: Traditional yet enhanced techniques like sorting, shredding, washing, and extrusion are being optimized to recover plastics, metals, and composites with higher quality.
- . Bio-Circular Solutions: Organic waste streams are transformed into biofuels, bioplastics, or compost through fermentation, enzymatic processes, or anaerobic digestion.
- . Digital & AI-Enhanced Sorting: Robotics, machine vision, and AI algorithms improve waste identification, sorting efficiency, and contamination reduction, enabling higher recovery rates.
- . These technologies allow manufacturers to reclaim materials previously considered non-recyclable, reduce dependency on virgin resources, and produce high-quality recycled feedstocks.

Key Players

1. BASF SE
2. ExxonMobil Corporation
3. Carbios
4. Umicore SA
5. Paprec Group
6. UBG Materials
7. Gypsum Recycling International A/S
8. Recover Textile Systems, S.L.
9. Agilyx Corporation
10. Honeywell International Inc.

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Regional Outlook

North America Demand: In the US, ExxonMobil is investing US\$ 200 million to expand recycling in Texas, processing over 1 billion pounds of plastic annually with Cyclyx. In Canada, a circular economy could cut 1.8 million tonnes of carbon and generate around 42,000 jobs by 2030.

North America: The US and Canada lead due to strong regulatory frameworks, established recycling infrastructure, and growing adoption of corporate ESG initiatives.

Europe: Driven by the EU Circular Economy Action Plan, countries like Germany, France, and the Netherlands emphasize chemical recycling and bio-circular innovations.

Asia-Pacific: Rapid industrialization and rising waste generation in countries like China, Japan,

and India are driving investment in advanced recycling facilities, often with government-backed initiatives.

Rest of the World: Latin America and the Middle East are emerging markets, where growing environmental awareness and investment in sustainable infrastructure are creating opportunities.

Challenges

While advanced recycling offers immense potential, the market faces hurdles:

High Capital Investment: Building chemical recycling plants and bio-circular facilities requires significant upfront costs.

Technological Complexity: Processing mixed waste streams or complex polymers demands specialized expertise and ongoing R&D.

Supply Chain Integration: Securing consistent feedstock and integrating recycled materials into production can be challenging.

Market Acceptance: Recycled materials need to meet quality and safety standards to gain acceptance in high-value applications.

Commercial Opportunities

Circular Supply Chains: Businesses can secure sustainable feedstocks, reduce dependency on virgin materials, and hedge against raw material price volatility.

Premium Products: High-quality recycled materials and bio-based alternatives can command price premiums in consumer-facing industries.

Government Incentives: Grants, subsidies, and tax incentives for recycling infrastructure accelerate market adoption.

Technology Licensing & Partnerships: Innovators can monetize proprietary recycling technologies through licensing or joint ventures.

Market Segmentation

The cracking/pyrolysis segment leads the Advanced Recycling Market, holding 20%+ share in 2024, efficiently converting mixed plastics and multi-material packaging into valuable resources.

By Technology: Cracking, Gasification, Depolymerization, Microwave Processing, Mechanical Recycling, Composting & Anaerobic Digestion, Others

By Material: Plastics, Metals, Textiles, Composites, Others

By Product: Naphtha, Heavy Gas Oil, Recycled Plastics, Secondary Metals, Recycled Construction Materials, Others

By Business Model: Circular Products, Closed-loop Recycling Services, Reverse Logistics, Material Recovery Services, Refurbishment and Remanufacturing, Others

By End-User: Food & Beverage Packaging, Industrial Packaging, Consumer Electronics, Construction and Building Materials, Automotive and Transportation, Agriculture and Food Processing, Waste Management Services, Others

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DataM Recommendations

1. Based on market trends and challenges, DataM Intelligence recommends:
2. Invest in Advanced Technologies: Focus on chemical and bio-circular processes that recover complex or previously non-recyclable materials.
3. Develop Integrated Circular Models: Combine collection, processing, and supply to ensure a steady flow of recycled feedstock to industries.
4. Collaborate with End-Users: Work with automotive, electronics, packaging, and consumer goods manufacturers to tailor recycled materials to their specifications.
5. Leverage AI & Automation: Improve sorting, contamination removal, and process efficiency to enhance product quality and reduce operational costs.
6. Focus on Regulatory Alignment: Engage with policymakers to benefit from incentives, certifications, and supportive frameworks.
7. Highlight ESG Impact: Communicate sustainability benefits to strengthen brand reputation and capture environmentally conscious consumers.

Conclusion

Advanced recycling and circularity are redefining the future of sustainable manufacturing. By

transforming waste into high-value resources, companies can reduce environmental impact, optimize material efficiency, and create resilient supply chains.

The market presents lucrative opportunities for technology providers, manufacturers, and investors who prioritize innovation, regulatory compliance, and circular business models. DataM Intelligence emphasizes that stakeholders who adopt integrated, technology-driven, and sustainable strategies will be best positioned to lead this rapidly evolving and high-growth market.

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