Connact
Circular Economy

AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE

# INNOVATING IN CIRCULARITY: INITIATIVES, TOOLS AND TECHNOLOGIES IN THE EUROPEAN AND NATIONAL CONTEXT

**Brussels**, 4 February 2026

Connact
Annual Meeting
IL SISTEMA ITALIA E LE PRIORITÀ DELL'UNIONE EUROPEA

# ITALY, LEADER IN CIRCULARITY IN THE EU

## OVERALL PERFORMANCE LEADER


Italy maintains i**ts record for levels of circularity**, in second position after the Netherlands among the 27 EU countries but in first position in comparison with the other major European economies (Germany, France, and Spain). And increases resource productivity, with a **20% improvement over 2019**.

At the same time, however, dependence on imported materials remains high. In 2023, it amounted to 48% of total needs, which is significantly higher than the EU's 22% in the same year. The cost of our imports rose from €424.2 billion in 2019 to an impressive €568.7 billion in 2024, a 34% increase.

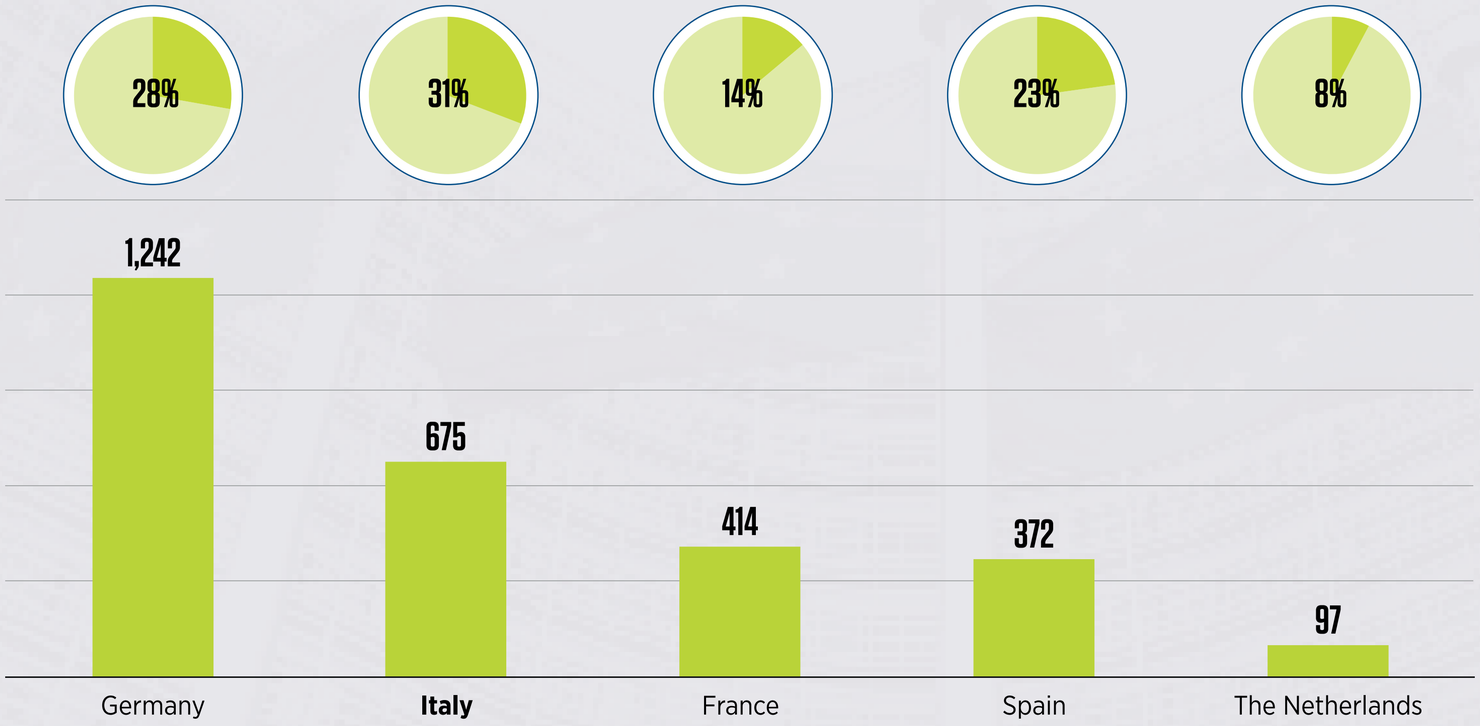
Increased material and energy productivity, increased recycling and reuse, reduced waste, and valorisation of secondary raw materials are the pillars on which to build a more resilient, sustainable, and self-sufficient industrial model, making circularity a strength of Italian manufacturing.

# CRM'S IMPORT DEPENDENCY

## THE SITUATION IN ITALY

### Value of Industrial Production Related to Critical Raw Materials

Figures in € billion, 2024 ◯ Value relative to national GDP




Among the top 5 European economies, Italy is the country most exposed to the relevance of CRMs in industrial production in relation to GDP (31%)

# EUROPE AND CRITICAL RAW MATERIALS

## THE LEGISLATIVE FRAMEWORK FOR THEIR PROCUREMENT

**The EU law of 2024**

**34** critical raw materials **17** strategic raw materials


> *[...] improve the functioning of the internal market by establishing a framework to ensure the Union's access to a secure, resilient, and sustainable supply of critical raw materials (CRM), including by fostering efficiency and circularity throughout the value chain [...] (Art.1).*

Source: https://www.consilium.europa.eu/it/infographics/critical-raw-materials/

# EUROPE AND CRITICAL RAW MATERIALS

## 2030 OBJECTIVES

**Intra-EU extractions:** at least **10%** of annual EU consumption must come from intra-EU extractions

**Intra-EU processing:** at least **40%** of annual EU consumption must come from intra-EU processing

**Intra-EU recycling:** at least **25%** of annual EU consumption must come from domestic recycling

**External Sources:** no more than **65%** of the Union's annual consumption of each strategic raw material at any relevant stage of processing may come from a single third country

- Strategic Projects
- Obligations to assess recycling potential
- Strengthening the collection and treatment of critical waste
- Standardisation and quality of CRMs
- Recycling flow monitoring of CRMs
- CRM Board

# EUROPE AND CRITICAL RAW MATERIALS

## NATIONAL LEVEL INITIATIVES

### Focus on Urban Mining and Ecodesign

The objectives of sustainable, circular, and secure procurement of critical raw materials

| | |
|---|---|
| **Ministerial Decree (MITE) 257 of 24 June 2022** | **Adoption of the National Waste Management Programme (PNGR).**<br>● develop a plant network, possibly with complex technology, for the high-efficiency treatment of WEEE for critical raw material recovery (CRM)<br>● develop technologies to recover phosphorus contained in sludge |
| **Ministerial Decree (MITE) 259 of 24 June 2022** | **Adoption of the National Strategy for the Circular Economy (SEC)**<br>● advanced recycling and urban mining;<br>● technological innovation;<br>● circular industrial supply chains<br>● traceability and governance to transform waste into a stable source of CRM and reduce critical dependency |
| **Law 27 December 2017 No. 205, Art.1 paragraph 122** | **The Italian Phosphorus Platform, managed by ENEA** and comprising stakeholders active in the phosphorus cycle, has been working since 2019 on regulatory, technological, and market aspects with the participation of research organisations, public and private institutions, businesses, and the third sector. |
| **Interinstitutional Decree (MIMIT-MASE) of 15/09/2022** | **Establishment of four national technical committees:**<br>● Needs Analysis (Confindustria);<br>● Mining (ISPRA);<br>● Ecodesign (ENEA);<br>● Urban Mining (ENEA) |
| **Decree-Law 84/2024** | **Urgent provisions on critical raw materials of strategic interest**<br>● Strategic projects and fast-track approvals<br>● National governance of MPCs<br>● Recovery and security of supply<br>● Incentives and investment support |

# ECODESIGN: THE PRINCIPLE OF THE CIRCULAR ECONOMY

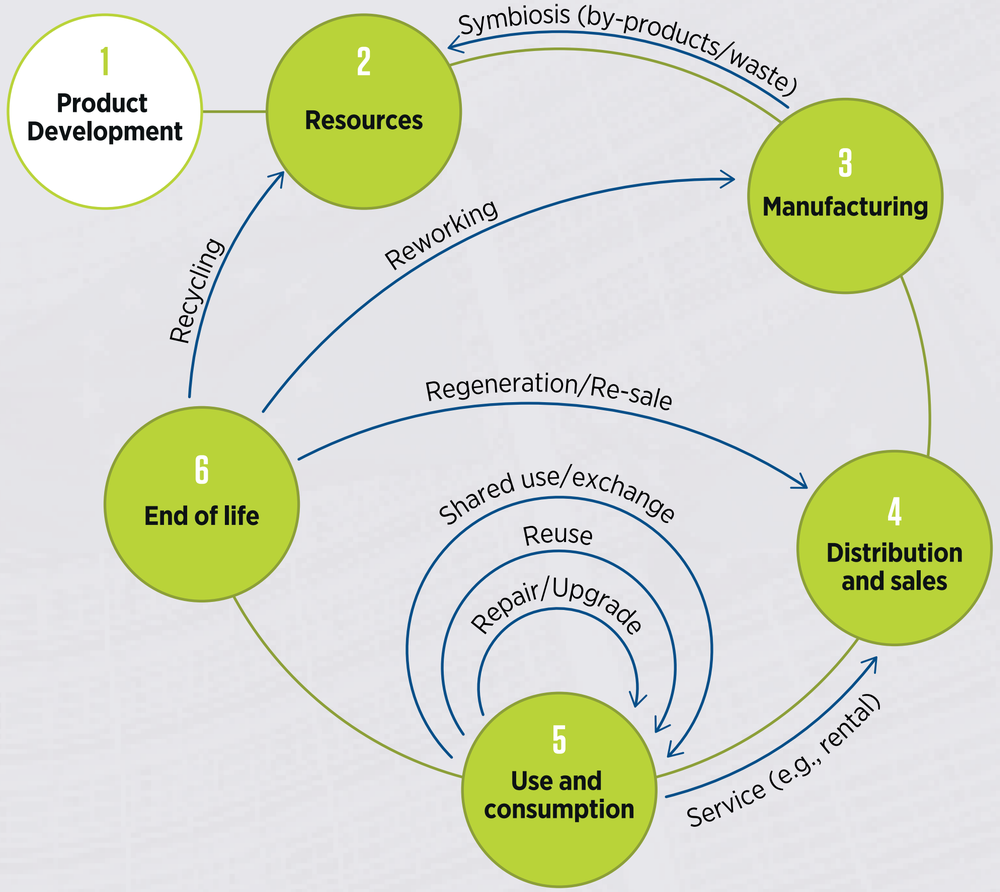
## PRODUCT INNOVATION

### Ecodesign Strategies & Life Cycle Thinking (LCA, LCC)

- Recyclability, durability, reparability, disassemblability
- Dematerialisation, lightweighting

### Alternative raw materials

- Nanomaterials, biomaterials, functional materials
- Secondary raw materials
- Substitution of critical and hazardous raw materials



# OTHER FIELDS OF INNOVATION

## PROCESS INNOVATION

- Clean technologies
- Low consumption of resources and energy
- Low emissions

## SYSTEM INNOVATION

- Industrial Symbiosis
- Sharing economy
- Regeneration/Reuse/Second-hand products
- From possession to access
- Integrated waste management
- Urban mining/landfill mining

# ECODESIGN FOR SUSTAINABLE PRODUCTS REGULATION

## EUROPEAN REGULATION 2024/1781

**MAIN OBJECTIVES: REDUCING ENVIRONMENTAL IMPACTS OF PRODUCT LIFE CYCLE AND IMPROVING THE FUNCTIONING OF THE INTERNAL MARKET.**

### ECODESIGN FORUM


- **Extends the range of affected products** placed on the market (including components and intermediate products, excluding food, feed, medicines and veterinary products), with **priorities for products with a high environmental impact** including textiles, furniture (including mattresses), iron and steel, aluminium, tyres, paints, lubricants and chemicals, as well as energy-related and other electronic products.

- It establishes a framework for the **definition of eco-design requirements** that products must comply with in order to be placed on the market or put into service

- Institutes a **digital product passport** containing **product information accessible on a web portal** open to the public (components and raw materials used, performance requirements, traceability, declaration of conformity, technical documentation, user manuals).

Source: elaboration based on European Commission

# NATIONAL STRATEGY FOR THE CIRCULAR ECONOMY

## THE ITALIAN PICTURE

**MACRO-OBJECTIVES: STRENGTHEN ACTIONS AIMED AT CIRCULARITY'S UPSTREAM (ECO-DESIGN, EXTENSION OF PRODUCT LIFE, REPARABILITY AND REUSE, ETC.).**

### ECODESIGN ACTIONS WITH 2035 TARGET

- introduce mandatory eco-design specifications;
- promote eco-innovation as a tool for competitiveness and sustainability and identifying tools to develop eco-innovation opportunities within the circular economy;
- promote and incentivise technologies and methodologies for the efficient use and management of products;
- promote the adoption of new business models that maximise product circularity (e.g. product-as-a-service models).

### Observatory for the Circular Economy (MASE)

**The Ecodesign Table (MASE)** established in 2024, as part of the SEC, to strengthen sustainable design policies, brings together institutions, research organisations, and industry associations

**National LCA Database**
Tool to support PAs and companies in the application of the Italian mandatory GPP Minimum Environmental Criteria and the Ecodesign Regulation

# ECODESIGN FOR SUSTAINABLE PRODUCTS REGULATION

## ESTIMATING THE IMPACTS OF REGULATION

### Environment

- Green Deal Goals in Agenda 2030
- Focus on products with a higher environmental impact

### Economics

- Increased decoupling of economic growth and resource consumption
- Increased circular use of materials
- Reducing dependence on imported materials
- Increased resilience

### Companies

- Reducing material costs and waste disposal
- Increased competitiveness and transparency along the supply chain
- Company management systems and product certification
- Economic opportunities for innovation and job creation, particularly in terms of remanufacturing, maintenance,

### Consumers

- Product life extension
- Information tools for informed choices

# THE POTENTIAL FOR CIRCULAR TRANSITION

## THE BENEFITS OF ECODESIGN

### In Europe

- Strong impetus for product innovation and along the entire value chain from the Ecodesign Regulation and other directives in the package of initiatives to promote the production and use of sustainable products.

### In Italy

- Supporting initiatives and tools
- Some Italian companies have already started to seize the opportunities for increased competitiveness
  and resilience arising from ecodesign.
- Further tools and extended initiatives are needed to promote the adoption of ecodesign on a large scale.

# BIOTECHNOLOGY FOR THE CIRCULAR ECONOMY

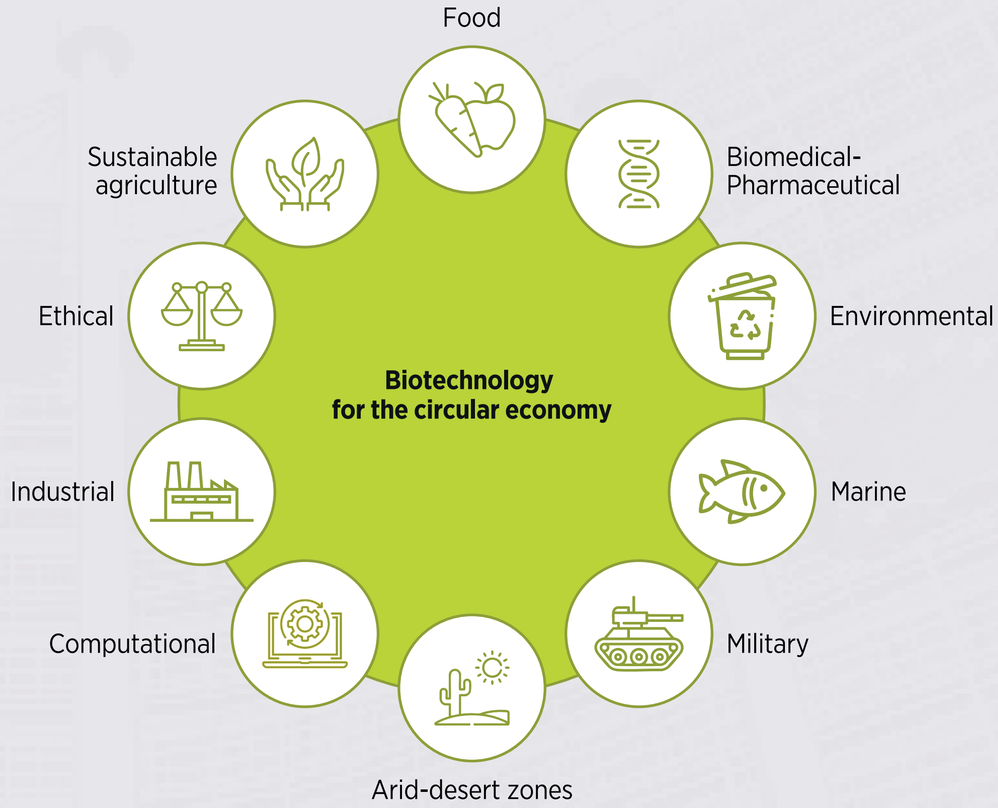
## STRATEGIC DRIVERS FOR INNOVATION

Powerful tool for **closing cycles** and transitioning to **a more sustainable and circular model of production and consumption**.

Enable the **conversion of organic residual materials** into new useful products, contribute to the **reduction of dependence on fossil raw materials and environmental impacts**.

Applications in sectors such as industry, environment, agriculture, health, and animal husbandry play a crucial role as a **main source of innovation** for the economy in general.

### Classification according to Kafarski



# BIOTECHNOLOGY FOR THE CIRCULAR ECONOMY

## FUNCTIONS AND BENEFITS

### WHAT IS NEEDED

- **Integrated approach** combining strategic vision, investment in innovation, multi-level governance and an evolved regulatory framework.

- Actions and measures to build **resilient, interconnected and sustainable value chains**, in which waste and scrap become new resources from the perspective of closing production cycles in the circular economy.


Source: European Commission: Secretariat-General, *Boosting biotechnology and biomanufacturing in the EU, Publications Office of the European Union*, 2024, https://data.europa.eu/doi/10.2792/612308

# TOWARDS THE CIRCULAR ECONOMY ACT

## WHAT'S NEW AT EUROPEAN LEVEL IN 2026

**THE CIRCULAR ECONOMY (CE) ACT IS THE NEW EUROPEAN PACKAGE DEDICATED TO STRENGTHENING THE GOVERNANCE OF CIRCULARITY. THE INFORMATION AVAILABLE COMES FROM PRELIMINARY DOCUMENTS, TECHNICAL DRAFTS, AND MATERIALS SUBMITTED FOR PUBLIC CONSULTATION.**

### GOALS

Increasing circularity in the single market, creating adequate supply and demand for secondary raw materials (including critical raw materials) and a true single market for waste and secondary raw materials

**Pillar 1:** collection and recycling of WEEE and restrained market demand for CRM.

**Pillar 2:** interventions aimed at promoting the single market for waste, CRM and their use in products.

- Extension of EPR schemes
- Digitisation
- GPP Mandatory Criteria
- EoW Criteria Reform

# TOWARDS THE CIRCULAR ECONOMY ACT

## THE SYSTEMIC APPROACH

- **Beyond the technical and thematic content** (e.g. sectoral policies, roadmaps, legislation, directives, regulations, technical standards), what clearly emerges is the **systemic approach** of the CE Act: a single framework designed to integrate policies, instruments, and requirements of the circular transition in a coherent manner.

- This general approach lays the foundations for a number of **structural needs** that will characterise the implementation of the new European framework.

# THE IMPLEMENTATION OF THE CIRCULAR ECONOMY ACT

## KEY POINTS

**Vertical and horizontal coherence of measures**, integrating sectoral regulations (ecodesign, CRM, digital technology, materials management) with cross-cutting tools (data, indicators, governance).

**Multilevel governance**, which aligns European level, national policies, and territorial implementation.

**Structured stakeholder consultation processes** to gather evidence, assess impacts, and verify the technical feasibility of measures.

**Spaces in which to test the applicability of the measures**, identifying critical operational issues and real conditions of the production sectors.